

# FOREIGN NOISE RESEARCH

## IN MACHINERY / CONSTRUCTION EQUIPMENT

DECEMBER 1977

OFFICE OF NOISE ABATEMENT & CONTROL

U.S. ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

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## PREFACE

### Method of Data Collection

The information was collected by means of inquiries to foreign noise contacts, both individuals and organizations. The contacts were queried about their research activities and the names of other individuals or organizations that they were aware of who might be involved in pertinent noise research. These referrals were then contacted to ascertain their research efforts. In addition, inquiries were made at the Ninth International Congress on Acoustics, July 1977, in Madrid, Spain. In total, approximately 1300 requests were made. The foreign researchers were asked to respond with information on their noise abatement research projects that have been completed since January 1976, are in progress, or are planned. They were asked to respond with information about research projects that deal with:

- o Aviation noise source control technology
- o Surface transportation noise source control technology
- o Machinery and construction equipment noise source control technology
- o Measurement methodology
- o Systems research for noise abatement

The latter two categories include projects not specifically classifiable under aviation, surface transportation, or machinery and construction equipment. "Systems research" includes path modification projects such as noise barriers and operational techniques such as modification of traffic flows.

From these contacts, 316 Machinery/Construction Equipment Noise Research Projects were identified,

#### Handling of Data

To retain reporting accuracy, where possible, the original responses were included in the report. In the case of foreign language reports, or data not in our format, the information was translated and/or transcribed to a unified format and is identified as having been so treated. Some researchers described their projects to us in a very limited fashion. Therefore, these projects, when listed in this report, show very fragmentary data elements. We did not try to augment these responses, but simply transcribed them verbatim in an abbreviated format at the end of each topical section.

Any funding data that was not reported in U. S. dollars has been converted and the reports show both the reported foreign currency figures in parentheses and the converted U. S. dollars figures. Below is the table of exchange rates used:

Exchange Rates as of Tuesday, June 21, 1977  
(Source: The Wall Street Journal)

Argentina-Peso	= 0.00281 US Dollar
Australia-Dollar	= 1.1100 US Dollar
Belgium-Franc	= 0.027715 US Dollar
Canada-Dollar	= 0.9428 US Dollar
Denmark-Krone	= 0.1649 US Dollar

Finland-Markka	= 0.2450 US Dollar
France-Franc	= 0.2024 US Dollar
Japan-Yen	= 0.003671 US Dollar
Netherlands-Franc	= 0.2024 US Dollar
Northern Ireland-Pound	= 1.7196 US Dollar
Norway-Krone	= 0.1884 US Dollar
Poland-Zloty	= 0.0502 US Dollar
Portugal-Escudo	= 0.02590 US Dollar
Scotland-Pound	= 1.7196 US Dollar
Sweden-Krona	= 0.2253 US Dollar
Switzerland-Franc	= 0.3997 US Dollar
United Kingdom-Pound	= 1.7196 US Dollar
West Germany-Mark	= 0.4240 US Dollar

#### Completeness and Accuracy of Information

##### Countries or International Organizations Where Researchers Were Contacted

Argentina	Luxembourg
Australia	North Atlantic Treaty Organization
Austria	Netherlands
Belguim	New Zealand
Bulgaria	Norway
Canada	Organization for Economic Cooperation and Development
Czechoslovakia	Poland
Denmark	Portugal
Finland	Rumania
France	South Africa
East Germany	Spain
West Germany	Sweden
Greece	Switzerland
Hungary	United Kingdom
International Civil Aviation Organization	United Nations
Ireland	Yugoslavia
International Standards Organization	Union of Soviet Socialist Republics
Israel	
Italy	
Japan	

In some of these countries we did not receive large numbers of responses. This does not prove conclusively that little or no research is being carried out in these countries. In some cases, we probably never identified the proper contacts. However, it is more likely that a low response rate is an indication that in these areas research is not widespread, with one exception--the USSR, where it is certain that research is being conducted but little response was forthcoming to our inquiries.

While it is impossible to be sure of the accuracy of the reported data, it is likely to be accurate because the data was mostly provided by the researchers themselves, not second or third hand. There is a wide variation in the amount of information reported per project. This probably reflects the varying amounts of time that researchers had available to respond to our inquiries.

The dollar figures given for the research efforts should not be taken too literally because they paint an oversimplified picture. The buying power of a fixed amount of dollars can vary from country to country due to fluctuating foreign exchange rates. There are also differences between countries in calculating costs of a project, for example, inclusion of overhead rates. The most important factor when considering the funding data is that it is available for only a fraction of the reported projects. This overshadows any other qualifying factors. It is felt that because of these factors, the total funding figures underestimate the total committed resources, but to an unknown degree.

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## INTRODUCTION

### Purpose of the Report

This is one of three reports which summarize foreign noise abatement research efforts, based on an appraisal carried out by Informatics Inc for the U. S. Environmental Protection Agency, Office of Noise Abatement and Control, as part of their noise research coordination efforts. The United States Environmental Protection Agency has reconstituted interagency noise research panels covering three areas: aviation, surface transportation, and machinery and construction equipment. The purpose of the panels is to assemble a total picture of U. S. Federally-sponsored noise abatement research recently completed, in progress, or planned, and provide recommendations for additional research which should be performed to meet the goals embodied in the national noise abatement strategy. The three panel reports are scheduled for release in early 1978.

The three reports on research abroad are to supplement the information provided in the panel reports by providing a broad overview of the international research effort underway in noise abatement and control.

## Categorization

For this report, Machinery/Construction Equipment Noise Abatement Technology Research, the projects were categorized as follows:

### Construction and Mining Equipment Noise

- Earthmovers and Related Equipment

- Compressors

- Specialized Mining Equipment

- General Construction Equipment

- Breakers and Drills

### Manufacturing Equipment Noise

- Woodworking Machinery

- Textile Machinery

- Metal Working Machinery

- Other Industrial Equipment

### Engine Technology and Machine Parts Noise

#### Consumer Products Noise

- Tools

- Appliances

- Toys

- General

### Agricultural Machinery Noise

#### Acoustic Properties

- Building Acoustics

- Impact and Vibration

- Physical Acoustics

- Measurement and Methodology

DISCUSSION OF FOREIGN RESEARCH  
MAGNITUDE OF RESEARCH EFFORT

Reported Research by Country

The following number of projects were reported by country:

West Germany	94
United Kingdom	64
Sweden	32
Netherlands	30
France	20
Australia	14
USSR	14
Norway	9
Japan	8
Canada	7
East Germany	6
Denmark	4
Switzerland	3
Poland	3
Argentina	2
Finland	2
New Zealand	2
Italy	1
Scotland	1
Czechoslovakia	1

Sponsorship of Research

In almost all countries, the majority of the research reported is government sponsored. In the Socialist countries such as East Germany and the USSR the government sponsorship rate is 100%. Australia, Denmark, Japan, the United Kingdom, and West Germany show levels of private sponsorship that are possibly significant.

Types\* of Research by Country

	*** Applied	Fundamental	Development	Demonstration	Measurement & Methodology	Unclassified	
Argentina		2					
Australia		5	5	3	4	4	
Canada		1	2	1	2	4	
Czechoslovakia						1	
Denmark			1	2	1	2	
East Germany						6	
Finland			1		1		
France						20	
Italy					1	1	
Japan		1	2	5		1	
Netherlands			1		2	28	
New Zealand			1		1		
Norway			4	4		5	
Poland		1	1		1	2	
Sweden		3	12	1	2	16	
Switzerland		2			2	1	
United Kingdom	2	11	15	8	6	40	
USSR						14	
West Germany		2		1	1	95	
TOTALS	2	28	45	25	23	240	363**

\* As self-reported by investigators who had the opportunity to classify their projects using one or more of the categories listed in the table.

\*\*The table sums to more than the total number of projects because some projects were classified as more than one type.

\*\*\*The title of this category was a new one volunteered as a write-in by one researcher.

The type of research was self-identified for less than half of the reported research. Even though there is only partial reporting in this area, there seem to be more developmental projects than any of the other types, which all appear to fall at about the same level of effort. The United Kingdom, Norway, Japan, and Australia appear to be doing most of the demonstration work. Each of these countries has three or more projects that are at least partially demonstration in nature,

#### Funding Information

Funding tables are provided on pages 19-24. They show funding by country for each major category for the period 1976-1977 and funding by country for each sub-category for the same period.

## ANALYSIS OF RESEARCH

### CONSTRUCTION AND MINING EQUIPMENT

#### Earthmovers and Related Equipment

Only a few projects have been reported on earthmovers and related equipment. Of note is a study in Japan in which a hydraulic power shovel was quieted from 70 dBA to 55 dBA at 30m distance. In West Germany, The Institute for Construction Machinery did a project on low-noise excavation techniques for urban application. There are also two studies on forest vehicles reported from West Germany, and a Polish study which includes quieting of earthmovers.

#### Compressors

The reported research is spread across Japan, United Kingdom, West Germany, Australia and The USSR. The studies relate to the use of silencers, resilient mountings and screening for noise and vibration.

Most of the work being done in this area is development and demonstration work. Kobe Steel, Japan has acoustically treated a compressor reducing noise level from 78 dBA to 62 dBA, at an additional cost of 50 to 100 dollars. In Australia, Comp Air, Ltd., is now marketing a line of mobile air compressors silenced from 75 dBA to 70 dBA. In the United Kingdom, Compair Industrial, Ltd., is developing an enclosed and acoustically treated plant to give an average sound pressure level of 70 dBA. In West Germany silo compressors and axial-flow compressors are being studied.

### Specialized Mining Equipment

Three studies are reported from Sweden, The United Kingdom, and West Germany. Equipment studied included rotary rock drills. Methods of silencing included machine design, the application of rubber to noise generating surfaces, and insulation and isolation.

### General Construction Equipment

The reported projects deal with noise abatement at general construction sites, in the concrete industry and track laying sites. Pile drivers are being studied in Japan, The Netherlands, West Germany, and The United Kingdom. According to a Japanese report there was a 30 dBA reduction achieved by using a cover on a pile driver. In the United Kingdom, The Building Research Establishment is working on a quiet pile driver, nibbler, and dumper. The Institute of Sound and Vibration is studying propagation of noise from pile drivers. There are two projects from Denmark on the concrete industry, and a German study on rail ballasts. In the USSR, a universal plant for molding concrete into various products was constructed with noise levels of 93 to 96 dBA. There are also a number of studies on construction site noise prediction and measurement and the collection and assessment of data for regulatory purposes.

### Breakers and Drills

Jack hammers and drills are some of the worst noise offenders and are difficult to quiet.

Projects specifically concerned with the development of low-noise hammers and drills are reported from Australia, France, The USSR, and West Germany. In France, the INRS has shown that a noise level of 96 dBA can be obtained with acoustical treatment, and they have plans to develop a quiet hammer in conjunction with a manufacturer.

#### MANUFACTURING EQUIPMENT

##### Woodworking Machinery

These studies relate to the lumber industry and wood products industries. Studies include the quieting of band saws and circular saws, planers, nailers and molding machines. There are a considerable number of projects going on in this area. Many deal with noise reduction of circular saws, which appear to be the most offensive noise source. By treating the blades and modifying operating procedures of saws, i.e., reducing speed while idling, it has been shown that considerable reduction of noise can be obtained. Gomex Verktug AB, Sweden, has developed and is marketing a sound dampened saw which is 5 to 10 dBA quieter than conventional saws. They have also developed a helical blade for planers. Australia, Sweden, The United Kingdom, West Germany and France have reported projects in the woodworking area.

##### Textile Machinery

In Sweden, a joint effort was undertaken in 1976 in the textile industry to develop new machinery and to improve existing ones in relation to their noise production. Other research includes noise abatement in spinning mills by application of damping materials in West



Germany and experimental and field development of noise abatement techniques for the knitting industry in the United Kingdom.

#### Metal Working Noise

More studies are reported in this area than either textile or woodworking machinery. The impact noise caused by metal working operations is of particular concern. Many studies deal with source reduction for different machines, such as presses. Others are concerned with identification of noise sources, and abatement measures in various factory settings. There are also several studies testing noise levels of existing machinery with the aim of making this information available to buyers. The equipment studied included presses, lathes, grinders, drills, pneumatic tools, sheet metal tools, steel furnaces, drop hammers and welding equipment. Also studied were planers, rolling machines, finishing shops, metal packing case manufacturing processes, and cutting torches. An interesting project was reported from Sweden in which sheet metal straightening was converted to an hydraulic operation at low cost, eliminating impact noise. Studies were reported from Scotland, Sweden, The United Kingdom, West Germany, Norway, France and Poland. Sweden and West Germany reported the greatest number of projects.

#### Other Industrial Equipment

This is a mixed bag of research projects with no trend predominating.

A major area of research effort is the reduction of noise in ducts. An Australian project has developed an experimental attenuator that has provided a 10 dBA reduction at a 90 degree bend in a duct system. The Institute of Sound and Vibration Research in the United Kingdom is conducting several projects including those concerned with wall vibrations in ducts, noise from centrifugal fans in ducts, and the use of splitter silencers and Helmholtz resonators as liners in ducts.

A project in Finland assessed the noise levels of paper machines. They found that the future Finnish 90 dBA limit could be met by existing or expected technology in all areas of the machines except the suction rollers. Noise reduction in concrete products production machines such as those for concrete pipe and blocks is an area of research in Denmark, Sweden, and France. Research efforts in Norway and the United Kingdom are attempting to evaluate acoustical treatment material for use in sterile industries (food, drink, and pharmaceutical). Other investigators in the United Kingdom are trying to develop polymer based flat or shaped noise control covers made from low cost bulk-usage materials. Several countries, including the United Kingdom, Netherlands, and Poland, are trying to set up noise zones around industrial areas. A West German research effort is attempting to develop hyperplastic noise damping materials for use in tight machine casings. France has a very basic effort underway to ascertain their industrial noise problem. They intend to survey the existing and future soundproofing methods, the gains possible, and the costs involved. The USSR is trying to

measure exhaust noise from pneumatic rotary engines and is working on the development of basic standards and guidelines for industrial noise abatement. West German researchers are trying to determine the noise levels of low polluting (by added steam) high rise torches in refining. Projects from West Germany, Switzerland, and the United Kingdom involve acoustical treatment of the industrial facilities rather than the machine themselves. They consider the use of noise screens, suspended absorption material, and the study of the acoustic field in plants and structures.

#### ENGINE TECHNOLOGY AND MACHINE PARTS

##### Combustion

The two research projects in this category are both from West Germany. They deal with noise abatement of engines by such methods as exhaust damping of chain saw motors and by applying material to the walls and covers of engines to isolate them from inner power transmitting parts.

#### CONSUMER PRODUCTS

##### Tools

Only a few projects, mostly on lawnmowers, have been reported under this category. (Other studies on tools such as mechanics tools and saws may be found under metalworking and woodworking noise). In Australia there is a study being done on noise characteristics of small 2-stroke engines. Piston slap was found to be the dominant source of mechanical noise. Another study is being done in Canada on muffler design for

small combustion engines used for lawnmowers and chain saws. In West Germany there are two studies, one on noise abatement in lawnmowers and combination tools being done in conjunction with regulation development and the other on portable chain saws in which the aim is to reduce the noise level at the operator's ear to 90dBA.

### Appliances

This category covers projects dealing with noise from air conditioners and other domestic appliances and office machines. Projects have been reported from Australia, Canada, The Netherlands, New Zealand, West Germany and The United Kingdom. In The Netherlands there are several projects sponsored by The Public and Environmental Hygiene Department concerning the development of a regulation for domestic appliances. A possible provision being investigated is labeling of products. This work is also tied to E.E.C. regulation development. A project has been reported from The United Kingdom dealing with high speed motors on domestic appliances. Studies on air conditioners have been reported from Australia, Canada and West Germany. In New Zealand, a survey is being done on office equipment noise which will lead to specifications for a "Code of Physical Working Conditions" for the New Zealand public service.

### Toys

Only one project was reported from The Netherlands on noise aspects of model planes.

#### General Consumer Products

All the reported projects are from The Netherlands. They deal with noise from acoustic warning devices, household appliances, gardening, and hobby and recreation equipment.

#### AGRICULTURAL MACHINERY

Two research projects dealing with tractors were identified in the United Kingdom. They first attempted to identify and reduce tractor component noise sources. A 43 horsepower tractor was treated and the noise emissions were reduced by 10 dBA to 88 dBA with no power loss. The follow-on project intends to reduce the noise of machinery trailed behind the tractor and to minimize the noise transmitted to nearby buildings.

#### ACOUSTIC PROPERTIES

##### Building Acoustics

Among the projects reported are studies on structure borne noise, floor noise generation, acoustic ceiling and wall treatments and the placement of machines inside factories to reduce noise transmission. Several studies have been reported on acoustic insulation materials for industrial plants, including two from the USSR, a project from West Germany to develop construction norms for sound and thermal insulation, and another study in the United Kingdom testing the acoustical effectiveness of thermal insulation. Other research projects were reported from Japan, the United Kingdom, East Germany, France, and The Netherlands.

### Impact and Vibration

Among the projects reported are two studies from the USSR on vibration isolation in machines, a study from Denmark on the measurement and evaluation of impact noise, a study from Norway surveying and evaluating methods to reduce vibration from industrial sites, and a study from the United Kingdom on a model for determining the vibration characteristics of a structure from measured frequency response data. Other projects in this category came from Argentina, West Germany, East Germany, and The Netherlands.

### Physical Acoustics

Research projects in this category were performed in West Germany, East Germany, France, Sweden and the United Kingdom. Projects dealt with meteorological influences on propagation, radiation intensity of machines (housings, mechanical impedance studies, turbulence, damping effects of air and water droplet mixtures, site characteristics and noise by frictions.

### Measurement and Methodology

These studies deal with the development standardization of measurement methodologies, instrumentation, and noise sampling in various industries. Included are studies on measurement methodologies for inside and outside industrial complexes, studies measuring different kinds of noise such as impact and in fluctuating noise, and computerized monitoring systems.

There is much work being done on the evaluation and standardization of measurement methodologies for industrial sites, and a growing sophistication in these methodologies to account for varying factors. Thirteen countries have reported studies in this category.

The greatest number of projects are reported from the Netherlands. Many of these studies sponsored by the Public Health and Environmental Hygiene Department, relate to new noise nuisance legislation and zoning requirements. ISO recommendations are being assessed and adopted a fair number of projects are also reported from West Germany and the United Kingdom. In France, the INRS is evaluating measurement methodologies for factory noise and measuring the noise levels of machines with the hope of working towards a product labeling regulation. Sweden, Denmark, Finland and Norway are jointly sponsoring a project on noise sampling in the wood and metal industries, and in Norway a data bank for industrial noise sources is being set up at the University of Trondheim. In Canada, a technique for monitoring blasts has been developed. Other projects are reported from Australia, East Germany, Czechoslovakia, Japan and the USSR.

#### SUMMARY

In total, 317 research projects were reported on machinery and construction equipment noise abatement. Most of these projects fell within the category of Manufacturing Equipment, which covers noise abatement studies in a wide range of industries. This category included 178 projects and nearly 9 million of the total 12 million dollars of reported funding. Most of this research was concentrated in Sweden, the United Kingdom, and West Germany. The distribution of projects within the Manufacturing Equipment category shows that metalworking and woodworking operations are both areas in which a great amount of work is being done. A wide range of projects was also reported under the topic Industrial Noise Other, essentially a miscellaneous grouping. Included were studies from many industrial settings--among which were pumping stations, refineries, paper plants, bottling and food processing operations, and shipyards, to list a few; and studies dealing with many different noise problems and treatments, including fans, ducts, furnaces, hydrostatic components, impact machines, the design of attenuators, enclosures, damping material, and industrial site planning.

In second place by number of projects is Acoustic Properties research. This is a very broad category. For details see the individual projects. The category Construction and Mining Equipment has the third highest number of projects and reported funding. In comparison to Manufacturing Equipment, far less work is going on in the construction and mining noise area. Thirty-four projects and 1,325 million dollars were reported in this area. (Only half the projects included funding data.) Among the equipment studied were piledrivers, rotary drills, jackhammers, earthmovers and compressors. The greatest number of projects was reported from West Germany and the United Kingdom.

In fourth place is the Consumer Products category, with 23 projects. Air conditioners and other domestic appliances were considered. Of note is a series of projects from The Netherlands concerned with the regulation of domestic appliances.

The last place was shared by Agricultural Machinery, with two studies on tractor noise, and Engine Technology and Machine Parts, with two projects. The latter category is underestimated, however, because of numerous related projects that were assigned to other categories.



## FUNDING CHARTS

MACHINERY NOISE R&D  
SUMMARY  
FUNDING IN THOUSANDS  
1976 - 1977  
COUNTRY

\* Some funding for other years included  
because projects extended longer than  
1976-1977.

Converted to thousands of U.S. Dollars.

	Argentina	Australia	Canada	Denmark	Finland	Japan	Netherlands	Norway	Poland	Scotland	Sweden	United Kingdom	West Germany	TOTALS	Projects with Funding Data
Construction & Mining Equipment		42*		71*		125*			110			428*	549*	1,325*	18 of 34
Manufacturing Equipment		115	19	50*	5*	107		84		9*	1,427*	748*	6,346*	8,910*	91 of 175
Engine Technology & Machine Parts													178*	178*	2 of 2
Consumer Products							141*						518*	659*	6 of 23
Agricultural Machinery												71		71	2 of 2
Acoustic Properties	20			8	5	26	51*				38*	148*	1,002*	1,298*	27 of 81
TOTALS	20	157*	160*	129	10	258*	51*	84	110	9*	1,465*	1,395*	8,593*	12,441*	146 of 316

CONSTRUCTION AND MINING EQUIPMENT NOISE R&D  
FUNDING IN THOUSANDS  
1976 - 1977  
COUNTRY

\*Some funding for other years included  
because projects extended longer than  
1976-1977.

Converted to thousands of U. S. Dollars.

CATEGORY	Australia	Denmark	Japan	Poland	United Kingdom	West Germany	TOTALS	Projects with Funding Data
Earthmovers & Related Equipment			20	110			130	2 of 3
Compressors			5		17	212*	234*	3 of 7
Specialized Mining Equipment					344*		344*	1 of 4
General Construction Equipment		71*	100*		67*	337*	575*	11 of 15
Breakers & Drills	42*						42*	1 of 5
TOTALS	42*	71*	125*	110	428*	549*	1325*	18 of 34

MANUFACTURING EQUIPMENT NOISE R&D  
FUNDING IN THOUSANDS  
1976 - 1977  
COUNTRY

\*Some funding for other years included  
because projects extended longer than  
1976-1977.

Converted to thousands of U. S. Dollars

CATEGORY	Australia	Canada	Denmark	Finland	Japan	Norway	Scotland	Sweden	United Kingdom	West Germany	TOTALS	Projects with Funding Data
Woodworking Machinery	50							16*	60*	314*	440*	6 of 19
Textile Machinery								50	84*	127	261*	2 of 5
Metal Working Machinery	1					26	9*	570*	214*	1539*	2359*	30 of 48
Other Industrial Equipment	64	19	50*	5*	107	58		791*	390*	4366*	5850*	52 of 103
TOTALS	115	19	50*	5*	107	84	9*	1427*	748*	6346*	8910*	91 of 175

CONSUMER PRODUCT NOISE R&D  
FUNDING IN THOUSANDS  
1976 -1977  
COUNTRY

\* Some funding for other years included  
because projects extended longer than  
1976-1977.

Converted to thousands of U.S. Dollars.

CATEGORY	Canada	West Germany	TOTALS	Projects With Funding Data
Tools		510*	510*	4 of 6
Appliances	47*	87*	134*	2 of 12
Toys				0 of 1
General Consumer Products				0 of 4
TOTALS	47*	597*	644*	6 of 23

\*Some funding for other years included because projects extend longer than 1976-1977.  
 Converted to thousands of U. S. Dollars.

ENGINE TECHNOLOGY AND MACHINE PARTS NOISE R&D  
 FUNDING IN THOUSANDS  
 1976 - 1977  
 COUNTRY

CATEGORY	Canada		West Germany		TOTALS	Projects with Funding Data
Engine Technology and Machine Parts	94		99*	193*	2 of 2	
TOTALS	94		99*	193*	2 of 2	

AGRICULTURAL MACHINERY NOISE R&D  
 FUNDING IN THOUSANDS  
 1976 - 1977  
 COUNTRY

CATEGORY	United Kingdom		TOTALS	Projects with Funding Data
Agricultural Machinery	71	71	71	2 of 2
TOTALS	71	71	71	2 of 2

ACOUSTIC PROPERTIES R&D  
FUNDING IN THOUSANDS  
1976 - 1977  
COUNTRY

\* Some funding for other years included  
because projects extended longer than  
1976 - 1977.  
Converted to thousands of U.S. Dollars.

	Argentina	Denmark	Finland	Japan	Netherlands	Sweden	United Kingdom	West Germany	TOTALS	Projects with Funding Data
Building Acoustics				26			36*	82*	144*	6 of 17
Impact and Vibration		8						191*	219	4 of 14
Physical Acoustics						12		349*	361*	5 of 13
Measurement & Methodology			5	1**	51*	26*	112*	380*	574**	12 of 36
TOTALS	25	8	5	26	51*	38*	148*	1,002*	1,298	27 of 80

\*\* Rounded to nearest thousand.  
Actual value \$246.

CONSTRUCTION AND MINING EQUIPMENT  
EARTHMOVERS AND RELATED EQUIPMENT

See Also Pages:

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Earthmovers and Related Equipment  
Japan

Project Title: The Quieting of the Hydraulic Power Shovel.																	
Performing Organization Name & Address: Kobe Steel, Ltd. 1-3-18 Wakinohama-cho Fukiai-ku Kobe, Japan	Sponsoring Organization Name & Address:																
Principal Investigator(s): Toru Abe Toshimitsu Tanaka	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, <u>Prototype</u> , or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: July 1, 1976	Completion Date: Estimated <u>Feb. 1, 1977</u> Actual <u>April 14, 1977</u>																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: \$20,000.</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: \$20,000.		-----		COMMENTS:	
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Many earth moving machines driven by diesel engines are noisy. So we have trouble obeying the laws on noise when we operate them.

We researched and developed methods to silence the noises generated from a hydraulic power shovel whose bucket capacity was 0.4 m<sup>3</sup>.

This shovel's noise level was 70 dB(A) at 30m distance, before quieting but it was 55 dB(A), after being fully silenced. Before and after silencing the same engine was mounted.

We studied and determined, by measuring and calculating, the contribution of airborne noise sources and solid-borne noise sources of this shovel. Then we identified the noise sources. Solid-borne noises were reduced by changing engine mount and using "Damplay", which was damping steel plate.

Cooling system, air intake system and exhaust system noises were quieted by silencers. Exhaust system was dual system mufflers.

By these improvements, we achieved the goal of 55 dB(A) at 30m distance and 75 dB(A) in the cab interior. We have no apprehension of over heating. We have no reports open to the public.

Earthmovers and Related Equipment  
Poland

**Project Title:**

Noise and Vibration Abatement in Construction Equipment

<b>Performing Organization Name &amp; Address:</b> y Instytut Mechanizacji Budownictwa (Institute of Mechanization in Building Industry) Racjonalizacji 6, PL-02-673 Warszawa Poland		<b>Sponsoring Organization Name &amp; Address:</b> Ministry for Building Industry of Poland Wspolna 2, PL-00-505 Warszawa Poland															
<b>Principal Investigator(s):</b> Krzysztof Szymanski D.Sc., Mech. Eng. Wlodzimierz Rajchert D.Sc., Mech. Eng. Andrzej Grzejszczyk M.Sc., Mech. Eng.		<b>Type of Research Program:</b> <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology															
<b>Start Date:</b> 1964	<b>Completion Date:</b> Estimated <u>Currently</u> Actual _____	<b>Funding:</b> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 15%;">Year</th> <th style="text-align: left; width: 40%;">Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>( ca 1 000 000 zl) \$50,200</td> </tr> <tr> <td>1977 (budget):</td> <td>( ca 1 200 000 zl) \$60,240</td> </tr> <tr> <td>1978 (forecast):</td> <td>( ca 1 500 000 zl) \$75,300</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><b>Or Total Funding Amount:</b></td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):	( ca 1 000 000 zl) \$50,200	1977 (budget):	( ca 1 200 000 zl) \$60,240	1978 (forecast):	( ca 1 500 000 zl) \$75,300	-----		<b>Or Total Funding Amount:</b>		-----	
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1978 (forecast):	( ca 1 500 000 zl) \$75,300																
-----																	
<b>Or Total Funding Amount:</b>																	
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<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.) <b>A. GOALS:</b> 1. Defining of measuring methodology of noise and vibration of construction and earth-moving equipment. 2. Noise and vibration measurements at the operators stand in all types of equipment produced and used in Poland. 3. Noise measurements in the surrounding of construction equipment and earthmoving machines produced and used in Poland. 4. Introducing noise abatement techniques to those machines whose noise and vibration levels are too high. 5. Co-operation with ISO and Comecon Standarizing Groups in preparing of Drafts and Standards in the area of noise and vibration of construction equipment and earthmoving machines.  <b>B. REPORTS:</b> 1. Evaluation criteria of noise and vibration emmitted by construction equipment and earthmoving machines (1967) 2. ditto (rev. 1972) 3. ditto (rev. 1977) 4. Measurement method of noise in the area surrounding construction equipment (1975) 5. Measurement methods of intra- and ultrasound emitted by construction equipment and earthmoving machines (1975)		<b>COMMENTS:</b> ----- ----- -----															

Transcribed from the original.

Earthmovers and Related Equipment  
West Germany

Project Title: Measurement of Mechanical Vibrations in Forestry Vehicles and at Work Sites of the Lumber Industry.																	
Performing Organization Name & Address: Institute for Labor Studies Reinbek, Vorwerksbusch 1 West Germany	Sponsoring Organization Name & Address:																
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Jan.1,1975	Completion Date: Estimated _____ Actual <u>Dec.31,1978</u>																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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The vibration-induced stress on the driver of the vehicle is to be evaluated along the three axes of the machine. Conclusions are to be drawn regarding work organization and conceiving recommendations that might be submitted to the vehicle industry to prevent future health damage to drivers.

CONSTRUCTION AND MINING EQUIPMENT  
COMPRESSORS

Project Title: Noise Suppression for Package Type Air Compressor.																	
Performing Organization Name & Address: Kobe Steel, Ltd. 1-3-18 Wakinohma-cho Fukiai-ku Kobe, Japan	Sponsoring Organization Name & Address:																
Principal Investigator(s): Toru Abe Toshimiutsu Tanaka	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, <u>Prototype</u> , or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: May 1976	Completion Date: Estimated <u>August 1976</u> Actual <u>October 1976</u>																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="0"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>\$5,000</td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><u>Or Total Funding Amount:</u></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):	\$5,000	1977 (budget):		1978 (forecast):		-----		<u>Or Total Funding Amount:</u>		-----		COMMENTS:	
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Noise suppression of package type air compressors is often required because they are placed in quiet plants in many cases.

The noise level was 78 dB(A) near the package compressor which was driven by a 40 Kw motor. We started the experimental research to reduce the noise level to 65 dB(A).

At first, we surveyed the transmission path of the solid borne noise and the noise levels generated from each part of the package surface in order to comprehend how they contributed to the measuring point. Referring to these results we designed the discharge silencer and selected the resilient rubber on which to mount the compressor. Next, in order to reduce the airborne noise we designed the silencer which was attached to the suction port that provided air for the compressor and motor cooling system.

As the result we achieved the noise level 62 dB(A), lower than the aimed level 65 dB(A). The increase in cost will be within 50 to 100 dollars.

We have no reports open to the public.

Transcribed from the original.

Compressors  
United Kingdom

Project Title: Development of Production Silenced Oil Injected Screw Air Compressor Plant

Performing Organization Name & Address: COMPAIR INDUSTRIAL LIMITED P.O. BOX 7, HIGH WYCOMBE, BUCKINGHAMSHIRE HP13 5SF UNITED KINGDOM		Sponsoring Organization Name & Address: COMPAIR INDUSTRIAL LIMITED P.O. BOX 7, HIGH WYCOMBE, BUCKINGHAMSHIRE HP13 5SF UNITED KINGDOM															
Principal Investigator(s):  G. L. COLLIER		Type of Research Program:  ___ Fundamental <u>x</u> Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology															
Start Date:  DEC, 1976	Completion Date: Estimated SEPT., 1977 Actual _____	Funding: <table border="1"><thead><tr><th>Year</th><th>Amount</th></tr></thead><tbody><tr><td>1976 (actual):</td><td></td></tr><tr><td>1977 (budget):</td><td></td></tr><tr><td>1978 (forecast):</td><td></td></tr><tr><td colspan="2">-----</td></tr><tr><td>Or Total Funding Amount:</td><td>(£10,000) \$17,196</td></tr><tr><td colspan="2">-----</td></tr></tbody></table> COMMENTS:		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(£10,000) \$17,196	-----	
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	

The development of an enclosed and acoustically treated plant to give an average of sound pressure level of 70 dBA when measured according to the CAGI-PNEUROP Test Code.

Design approach was to distinguish between airborne and structural generated noise.

Airborne noise was treated by acoustic infill with several designs evaluated in an acoustic laboratory, of the inlet and exhaust ducting. Absorption coefficients were obtained for a range of materials.

Structure generated noise assessed by the contribution of individual components. Object of 70 dBA met.

Internal CompAir report to be written. Paper I.Mech.E., October, 1977.

Compressors  
West Germany

Project Title: Noise Reduction in Axial-Flow Compressors																	
Performing Organization Name & Address: Gutehoffnungshuette Iron Works Sterkrade Oberhausen 11, Bahnhofstr 66 West Germany	Sponsoring Organization Name & Address: Ministry for Labor, Health and Welfare Duesseldorf																
Principal Investigator(s):  Arno Heinz	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Jan. 1, 1972	Completion Date: Estimated Dec. 31, 1978 Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">----- (500,000.00 D.M.) - \$212,000 -----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		----- (500,000.00 D.M.) - \$212,000 -----		COMMENTS:	
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COMMENTS:																	

Reduction of noise development through structural configuration of the machine -  
Screening off of noise generators by developing and integrating of suction - and compression  
sound dampers. Screening off of the entire axial-flow compressor installation by using  
sound shells.

Project Title: Application of 'Sound Power' Testing to Silenced Mobile Compressors.																	
Performing Organization Name & Address: COMPAIR (AUSTRALASIA ) LIMITED 34-40 RICKETTS ROAD, MOUNT WAVERLEY VICTORIA 3149 AUSTRALIA	Sponsoring Organization Name & Address: COMPAIR (AUSTRALASIA) LIMITED. 34-40 RICKETTS ROAD, MOUNT WAVERLEY VICTORIA 3149. AUSTRALIA																
Principal Investigator(s):  CHIEF ENGINEER	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																
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Or Total Funding Amount:																	
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COMMENTS:																	

In preparation for any change in market requirements or Tender Specifications the CompAir (Australasia) Limited range of silenced mobile compressors have been noise tested in accordance with ISO Draft Standard 3981.



Project Title: Development of Silenced Mobile Air Compressors.															
Performing Organization Name & Address: COMPAIR [AUSTRALASIA] LIMITED, 34-40 RICKETTS ROAD, MOUNT WAVERLEY VIC 3149 AUSTRALIA	Sponsoring Organization Name & Address: COMPAIR [AUSTRALASIA] LIMITED, 34-40 RICKETTS ROAD, MOUNT WAVERLEY VIC 3149 AUSTRALIA														
Principal Investigator(s):  CHIEF ENGINEER	Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
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CompAir already is successfully manufacturing and marketing a full range of mobile air compressors between 50 c.f.m. and 700 c.f.m. silenced to 75 dBA or 70 dBA [ISO 2151].

Since these acoustic levels match current and foreseeable market and legislative requirements, existing and proposed development is aimed at ensuring units to both degrees of silencing (a) maintain good accessibility for servicing, (b) are fully covered by automatic shut-down devices which are considered more necessary on silenced units due to their being completely enclosed and not subject to frequent visual inspection (c) are provided with external fuel, lubrication and coolant filling facilities to preclude spillage within the acoustic enclosure.

Compressors  
USSR

<b>Project Title:</b> An Aggregate of Sound Suppressing Devices for High Power Centrifugal Compressors at the Nevskiy Machine Building Plant																			
<b>Performing Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Laboratory of Industrial Acoustics Leningrad, USSR	<b>Sponsoring Organization Name &amp; Address:</b> All Union Central Council All Union Central Scientific Research Institute of Industrial Hygiene Leningrad, USSR																		
<b>Principal Investigator(s):</b>  I. M. Vitrinsky	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
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COMMENTS:																			

Noise suppressing facilities, such as vibration absorbent and sound-proof linings, sound proof engine casings, control room and operator's cabin, silencers, portable acoustic barriers, are described briefly. Most of these facilities were developed by the authors for use with compressors and pumps produced by the Nevskiy Machine Building Plant. They may be used also for control of noise from machines produced by other companies, including foreign companies. Acoustic efficiencies of the facilities are given in the 3 to 45 dB range, depending on the type of facility and the distance from the machine.

The described facilities were shown to be in compliance with specifications of the hygienic and sanitary standards.

Translated and abstracted from the original Russian.

Compressors  
West Germany

Project Title:

Investigations for Reducing the Noise of Silo Compressors.

Performing Organization Name & Address:

Heinrich Gillet KG  
Postfach 100  
An der Bundesstrasse 38  
6732 Edenkoben, West Germany

Sponsoring Organization Name & Address:

Principal Investigator(s):

Type of Research Program:

☐ Fundamental  
☐ Development (Component or System)  
☐ Demonstration (Experimental, Prototype, or  
Production)  
☐ Measurement Methodology

Start Date:

Completion Date:

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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

Transcribed from the original.

CONSTRUCTION AND MINING EQUIPMENT  
SPECIALIZED MINING EQUIPMENT

Specialized Mining Equipment  
United Kingdom

<b>Project Title:</b> Control of Noise (of Machines and Processes in the Vicinity of Coal Mining Operations).																			
<b>Performing Organization Name &amp; Address:</b> National Coal Board Mining Research and Development Establishment Stanhope Bretby Ashby Road, Barton-on-Trent United Kingdom	<b>Sponsoring Organization Name &amp; Address:</b>																		
<b>Principal Investigator(s):</b>  J. C. Leahy N. J. Stainer J. Clements	<b>Type of Research Program:</b>  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology																		
<b>Start Date:</b> Nov. 1974	<b>Completion Date:</b> Estimated <u>Nov. 1977</u> Actual _____																		
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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To provide data for the design of quieter machines and recommendations for treatment of existing machines and processes to reduce noise, hazard, and nuisance in the vicinity of coal mines.

Methods: i. Use of recording and narrow band analysis techniques to identify principal noise generating mechanisms. ii. Application of existing and novel noise reduction techniques on an experimental scale in the laboratory and the field to reduce noise at source and identify practical solutions. iii. Application of sound insulation or isolation techniques where direct treatment of sources is not practical. Noise sources studied include: percussive and rotary rock drills, earth-moving vehicles, coal preparation plant, air compressors and ventilating fans.

Transcribed from the original.

Specialized Mining Equipment  
Abbreviated Listings

Sweden. Noise Abatement in Mining. Skega AB, 930 40 Ersmark, Sweden.  
Type: Development. Prevention of noise generation by using rubber on  
surfaces where noise is generated in Mines, Quarries and other stone  
handling industries.

West Germany. Development of Low-Noise Technologies in Mining and  
Construction; Calculation of the Noise Dosage Distribution in Plant  
Hangars. Society for Space Exploration, Koeln 90, Postfach 906027,  
West Germany. Sponsor: Federal Minister for Research, and Technology.  
July 1, 1974 - Dec. 31, 1977.

West Germany. Improvement of Methods for Measuring Noise Emitted  
by Mining Machines. Westphalia Mining Center, Institute of  
Geophysics and Study of Noise and Vibrations, Hennerstrasse 45,  
Post Fach 2749, 4630 Bochum, West Germany.

CONSTRUCTION AND MINING EQUIPMENT

GENERAL CONSTRUCTION EQUIPMENT

See Also Pages:

28  
44  
64  
138  
140  
217  
237  
291

Project Title: Reduction of Noise in Concrete Industry																			
Performing Organization Name & Address: ENVIROPLAN A/S Rustenborgvej 7 DK-2800 Lyngby Denmark	Sponsoring Organization Name & Address: Teknologiradet Bredgade 31 DK-1260 København K. Denmark .																		
Principal Investigator(s): Ulrik Danneskiold-Samsøe Søren Damgaard Kristensen	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
Start Date: Aug. 1, 1977	Completion Date: Mar. 31, 1978 Estimated _____ Actual _____																		
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1977 (budget):																			
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Or Total Funding Amount: (130,000dkr) \$21,437																			
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COMMENTS:																			

Reduction of noise from a horizontal concrete mixing machine in order to demonstrate the state of art in noise reduction technology in the concrete industry.



Project Title:																	
Performing Organization Name & Address: F. L. Smidth & Co. A/S Vigerslev Alle 77 2500 Valby Denmark	Sponsoring Organization Name & Address: F. L. Smidth & Co. A/S Vigerslev Alle 77 2500 Valby Denmark																
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																
Start Date: _____ Completion Date: Estimated _____ Actual _____	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget): (yearly d.kr. 300,000)</td> <td>\$49,470</td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget): (yearly d.kr. 300,000)	\$49,470	1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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1977 (budget): (yearly d.kr. 300,000)	\$49,470																
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COMMENTS:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	

F. L. Smidth undertakes general research on the noise field including thorough measuring of noise levels of all types of cement making machinery as well as development of methods for abatement and screening of noise etc.

We possess a considerable amount of measuring equipment and have academically educated staff to carry out the work.

Our expenses are as follows:

2 men, corresponding to Dan.kr. 200,000 per year + replacement of measuring equipment, travels, relief staff, etc. Dan.kr. 100,000 per year, in total abt. Dan.kr 300,000 per year.

Transcribed from the original.

Project Title:

Study of Soundproof Cover for Pile Driving Works

Performing Organization Name & Address: Soundproof Cover Development Subcommittee, The Japanese Association for Steel Pipe Piles Address: see right space		Sponsoring Organization Name & Address: The Japanese Association for Steel Pipe Piles 3-16 Nihonbashi-Kayabacho, Chuo-Ku, Tokyo 103 Japan															
Principal Investigator(s):  Chairman JIRO SAITO		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, <u>Prototype</u> , or Production) <input type="checkbox"/> Measurement Methodology															
Start Date: Oct., 1972	Completion Date: Estimated _____ Actual <u>March, 1976</u>	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>\$100,000</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	\$100,000	-----	
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Or Total Funding Amount:	\$100,000																
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		COMMENTS:   															

The Subcommittee investigated in detail the form of noise emission by diesel pile hammers, carried out studies on materials and structures for soundproof covers, designed a cover referring to test data obtained in the past, and succeeded in reducing noise by approximately 30 dB(A) with an experimental product.

PUBLICATION

- (1) Soundproof cover Development Subcommittee, The Japanese Association for Steel Pipe Piles : Report on Measurements of Noise Levels at Various Parts of Diesel Pile Hammers, 1973.
- (2) " : Report on Experiments for Noise Control by Total Enclosure System for Diesel Pile Hammers, 1974.
- (3) " : Report on Experiments for Noise Control by Trial-Manufactured Total Enclosure Covers for Diesel Pile Hammers, 1976.

Project Title: Assessment and Prediction of Noise From Construction Sites/  
Propagation of Noise From Construction Processes

Performing Organization Name & Address: Institute of Sound & Vibration Research The University of Southampton Southampton England		Sponsoring Organization Name & Address: . Science Research Council State House High Holborn London WC1R 4TA England															
Principal Investigator(s): Professor J.B. Large Dr. J.E. Ludlow Mr. H.S. Gill		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology															
Start Date: 1st April 1974	Completion Date: Estimated 30 April 78 Actual _____	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>( £39,000 ) \$67,064</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	( £39,000 ) \$67,064	-----	
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1978 (forecast):																	
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Or Total Funding Amount:	( £39,000 ) \$67,064																
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  <p>A programme of measurement of levels and effects of noise from construction sites has been carried out at ISVR since 1972. The first phase consisted of a noise and social survey conducted around a road construction site in N.W. London.(1,2,3). This study demonstrated the relationship between noise exposure, annoyance due to construction noise and other attitudes. In 1974 support was received from the UK Science Research Council for a study of the characteristics of construction noise exposure, to be supervised by Professor J.B.Large. Data gathered from noise sources on a range of civil engineering sites were analysed to yield information on typical levels, spectra and source characteristics. In addition propagation of construction noise in realistic situations was studied to provide the information on rates of attenuation necessary for accurate prediction of construction noise exposure in realistic conditions such as in embankments and in cuttings (4). Particular attention was given to noise from impact pile drivers (5) since noise from this source would appear to make a very significant contribution to construction noise nuisance.</p> <p>The programme described above was carried out by J.E. Ludlow, In May 1977 funds were received from the SRC for the continuation of this work which is being undertaken by H.S.Gill. The current programme is mainly aimed at further study of the propagation of noise from pile drivers and the attenuation provided in some circumstances by cuttings, embankments and other barriers.</p>		COMMENTS: over four years															

Refs:

1. J.E.Ludlow. A survey of the effects of noise around a construction site. ISVR Memo 553, 1976
  2. J.B.Large & J.E.Ludlow. Community reaction to construction noise. Invited paper Internoise 75, Sendai, Japan. 1975.
  3. J.B.Large & J.E.Ludlow. Community reaction to noise from a construction site. Noise Control Engineering, March/April 1976.
  4. J.E.Ludlow. Measurement and prediction of noise from construction sites. ISVR Memo 554.1976
  5. J.E.Ludlow. Noise from impact pile drivers. ISVR Memo 541
- J.E.Ludlow. Options for the control of construction site noise. Contributed paper. Internoise 76. Washington DC. USA 1976
- K.Ratcliffe & J.E.Ludlow. Noise regulation and control on mobile construction equipment. Institute of Mechanical Engineers Conference Paper 199/75. May 1975.

General Construction Equipment  
West Germany

Project Title:		Development of Integrated Noise Protection Services on Construction Machinery for Track Laying.																	
Performing Organization Name & Address:		Sponsoring Organization Name & Address:																	
Federal RR's - Central Office Munich 2, Arnulfster. 19 West Germany																			
Principal Investigator(s):		Type of Research Program:																	
Dipl Ing Klaus Riebold		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date:	Completion Date:	Funding:																	
Jan.1,1974	Estimated _____ Actual <u>Dec.31,1977</u>	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (313,000DM) \$132,712</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (313,000DM) \$132,712		-----		COMMENTS:	
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COMMENTS:																			
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

In some machines, particularly in machinery for the processing of rail ballast, the noise levels are higher than in other track laying machines. For these noise-intensive machines, integrated noise protection devices are to be developed in collaboration with the appropriate industry, tried out in actual operation and their effectiveness is to be assessed.

Translated and transcribed from the original.

General Construction Equipment  
Abbreviated Listings With Funding

West Germany. Research and Development Trends Toward Low-Noise Excavation Techniques for Urban Applications. Institute for Construction Machinery, Karlsruhe University, Karlsruhe, Am Fasanengarten West Germany. Sponsor: Federal Ministry of the Interior. Prof. Dr. Ing. Guenter Kuehn. July 1, 1975 - Jun. 30, 1976. (540,000 DM) \$22896. Reduction of noise by professional and non-professional installations by establishing objective emission limits that are graduated in time.

West Germany. Development of Integrated Noise Abatement measures for Pile Drivers - Investigation of Noise Emission By New Types of Pile Drivers. Institute for Construction Machinery and Operations, Aachen, Templergraben 55, West Germany. Dr. Ing. Hubert Frenking. Jan. 1, 1975 - Dec. 31, 1976. (75,000 DM) \$31,800. Reduction of the noise in professional and non-professional installations by creation of objective regulations providing for time-graduated emission limits.

West Germany. Improvement of Environmental impact of machines, in particular of construction machines. Institute for Construction Machinery, Karlsruhe, Am Fasanengarten, West Germany. Sponsor: Federal Ministry for the Interior. Sept. 1, 1974 - Jun. 30, 1977. (352,000 DM) \$149,248. Measures against the noise by professional and non-professional installations. Reduction of the noise by establishing objective emission limits that are graduated in time by legislative regulations.

General Construction Equipment  
Netherlands

Project Title: Noise Requirements for Industrial Equipment.																									
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands																								
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																								
Start Date: est 1976	Completion Date: Estimated _____ Actual _____																								
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																									
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In this study, data will be obtained that are required for the taking of executive decisions on the basis of article 2 of the noise nuisance bill with respect to noise production by industrial equipment which is predominantly used outside of buildings, such as motor chain saws, dredging tools and the like. In conducting the study, use will be made of data obtained from earlier studies and, if applicable, data used abroad for establishing noise requirements and EG guidelines. The study will concern types or categories of industrial equipment under typical conditions of use, the pertinent noise levels, the measuring methods used, and other possible aspects for the establishment of specifications and the requirements imposed for operating controls.

Translated and transcribed from the original Dutch.

General Construction Equipment  
Netherlands

Project Title: Noise Requirements on Construction Machinery.																	
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. And Sociale Zaken Amsterdam, Netherlands																
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: est 1976	Completion Date: Estimated _____ Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
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1977 (budget):																	
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COMMENTS:																	

In the framework of this study, the necessary data will be obtained for establishing executive decisions on the basis of article 2 of the noise nuisance bill with regard to noise production by construction machinery. In conducting the study, use will be made of data obtained in an earlier study, and if applicable, of data used abroad for establishing noise requirements and EG guidelines. The study will pertain to a type or category of construction machines under the typical conditions of use, the existing noise levels, the measuring methods used, and other possible relevant aspects for the specifications being established, as well as for the requirements that will be imposed on operating controls.

Translated and transcribed from the original Dutch.

General Construction Equipment  
Switzerland

Project Title: Noise Measurement of Construction Machines																	
Performing Organization Name & Address:  The Gartenman Engineer A.G. Company Laubeggstrasse 22 3006 Bern, Switzerland	Sponsoring Organization Name & Address:  Federal Office for Environmental Protection 3003 Bern, Switzerland																
Principal Investigator(s):  Herrn H.P. Zeugin Herrn Iseli Herrn Dr. Rathe	Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																
Start Date: 1975	Completion Date: Estimated _____ Actual 1976 _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	<p>Funding:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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1978 (forecast):																	
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COMMENTS:																	

The measuring of noise of a variety of construction machine types should render practical measurement test work, as regulated by the task group "Limitation of noise from construction machines."

Translated and transcribed from the original German.



<b>Project Title:</b> Universal Molding Plant with Improved Noise and Vibration Characteristics																			
<b>Performing Organization Name &amp; Address:</b> All Union Central Scientific Presearch Institute of Industrial Hygiene Laboratory of Industrial Acoustics Leningrad, USSR	<b>Sponsoring Organization Name &amp; Address:</b> All Union Central Council All Union Central Scientific Research Institute of Industrial Hygiene Leningrad, USSR																		
<b>Principal Investigator(s):</b> Ya. A. Leydman                      F. G. Braude I. I. Nabokin                        O. A. Osmakov A. I. Mytsyk Yu. A. Dzhaparidze	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
<b>Start Date:</b>	<b>Completion Date:</b> Estimated _____ Actual _____																		
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
<table border="0"> <tr> <td colspan="2" style="text-align: right;"><b>Funding:</b></td> </tr> <tr> <td style="text-align: right;"><u>Year</u></td> <td style="text-align: right;"><u>Amount</u></td> </tr> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><u>Or Total Funding Amount:</u></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><b>COMMENTS:</b></td> </tr> </table>		<b>Funding:</b>		<u>Year</u>	<u>Amount</u>	1976 (actual):		1977 (budget):		1978 (forecast):		-----		<u>Or Total Funding Amount:</u>		-----		<b>COMMENTS:</b>	
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<u>Or Total Funding Amount:</u>																			
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<b>COMMENTS:</b>																			

A universal plant for molding concrete mix into various concrete products is described. The plant was designed by the standard research office of the Main Administration of Major Constructions of the Ministry of Transportation on the basis of research by the authors. The plant was constructed and tested in production of reinforced concrete structures, such as staircase flights, panels and prestressed reinforced concrete sleepers. The noise frequency spectra show that noise level from the described plant was by 1.6 to 1.75 factor lower (93 to 96 dBA) than noise level from conventional vibroplates produced in the USSR (100 to 104 dBA). The plant compresses efficiently concrete mixes of various composition either in impact mode operation at 25 Hz frequency or in vibration mode operation at 50 Hz frequency.

Translated and abstracted from the original Russian.

General Construction Equipment  
Abbreviated Listings

United Kingdom. Prediction and Monitoring of Noise Construction Sites, Transport and Road Research Laboratory, Crowthorne, Berkshire, United Kingdom. This project aims at collecting information about costs of noise control at construction sites and other data needed to help in the enactment of the provisions to control the noise of construction and demolition under the control of Pollution Act.

United Kingdom. Construction Equipment: Dumper and Nibbler. Building Research Establishment, Aylesbur, Buckinghamshire, United Kingdom. Research has already produced two quiet devices. One is the quiet dumper with a noise reduction of 10 dBA from engine compartment, and the other device is a nibbler which breaks concrete quietly. Work is also in progress to study the quieting of pile driving.

West Germany. Development of Emission Values in Construction Machines - Elaboration of Scientific - Technical Principles for the Formulation of Regulations under the Federal Legislation on Emission Protection. Institute for Construction Machinery and Construction Operations, Aachen, Templergraben 55, West Germany. Dr. Ing. Hubert Frenking. January 1, 1975 - December 31, 1977. Measurements of the emission by construction machines with due regard for new construction and machines with better emission characteristics. Verification of standard levels with regard to transferability into the "eg" - domain by the use of an altered eg-uniform measurement technique.

West Germany. Development of Means for Noise Reduction for Pile Drivers, Hydraulic Drill, Radial Fan, and Transport Systems. Rahrkohle, Essen c/o GRW in DRVLR, Koeln, West Germany. Sponsor: Federal Ministry of Research and Development. 1974-1977.

CONSTRUCTION AND MINING EQUIPMENT

BREAKERS AND DRILLS

See Also Page:

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Project Title: Pneumatic Rock Drill Noise															
Performing Organization Name & Address: Department of Mechanical Engineering University of Queensland St. Lucia, Qld. 4067 Australia	Sponsoring Organization Name & Address: Australian Mineral Industries Research Association Ltd. P.O. Box 310 Carlton South, Vic. 3053, Australia														
Principal Investigator(s):  Dr. R. J. Hooker	Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: 1972	Completion Date: Estimated <u>1975</u> Actual <u>1977</u>														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount: (\$38,000)</td> <td>\$42,180</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table> COMMENTS:		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (\$38,000)	\$42,180	-----	
Year	Amount														
1976 (actual):															
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1978 (forecast):															
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Or Total Funding Amount: (\$38,000)	\$42,180														
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The goal is to produce a practical pneumatic rock drill which is substantially quieter than existing drills. The approach is to review the working cycle of the drill, by experiment and simulation and hence devise an inherently quiet operation. In addition, a re-designed layout is proposed.

One publication has been released:-

R. J. Hooker, R. H. Rumble & M. H. Andrews "Experimental study of noise from a pulsed jet", Proc. Noise Shock Vib. Conf. Monash University, 1974.

Project Title:  Noise From Pneumatic Hammers																			
Performing Organization Name & Address: INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France	Sponsoring Organization Name & Address:																		
Principal Investigator(s): M. T. Ho H. Leblond G. Andre	Type of Research Program:  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology																		
Start Date:	Completion Date: Estimated _____ Actual _____																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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COMMENTS:																			

### 1. REASONS FOR THE STUDY

Environmental regulations set a limit of 100 dB(A) (average of 5 points per 1 m) acoustic pressure level emitted by stitcher hammers. This noise level is still too high, especially for the worker operating the hammer. It is thus of interest to see to what extent it would be possible to reduce further the noise emitted by stitcher hammers.

### 2. CONTENTS OF THE STUDY - METHODOLOGY

It is important to note that the problem is a difficult one, for the limit of 100 dB(A) already corresponds to certain tools that are acoustically treated: coverings, use of an escape silencer.

In a first stage, it is important to try to identify the different noise sources and to evaluate their acoustic force in different types of hammers. Thus, it will be possible to learn the limit of the residual levels towards which one should work in applying various sound-proofing techniques. If this limit is clearly lower than 100 dB(A), i.e. if the gains we might expect are significant, then the INRS might consent to a great effort in the hopes of obtaining an improvement.

### 3. STATE OF PROGRESS

The study of noise radiated by treated and untreated hammers yielded emission levels between 98 dB(A) and 108 dB(A).

The treated hammers have an escape silencer, and their level varies between 98 and 103 dB(A), approximately. Identification of the noise sources, as well as evaluation of their acoustic force, has been completed.

This identification, performed on three conventional hammers of average size, has shown that a level of 96 dB(A) could be obtained by means of various treatments.

#### 4. PURSUIT OF THE STUDY

The already completed identification of the noise sources will be complemented by a more detailed study of the vibration modes and the acoustic radiation of the needles.

All the results of this study and the study of the reduction of vibrations transmitted by pneumatic hammers make it possible to envision the development of relatively silent and low-vibration hammer. The development of such a hammer will be undertaken in cooperation with a French manufacturer.

Breakers and Drills  
United Kingdom

**Project Title:**

Evaluation and Improvement of Construction Plant  
To Encourage the Development of Quieter and More Efficient Plants

**Performing Organization Name & Address:**

Building Research Establishment  
Building Research Station  
Bucknalls Lane  
Garston, Watford  
Herts WD2 7JR United Kingdom

**Sponsoring Organization Name & Address:**

**Principal Investigator(s):**

Mr D E Sexton

**Type of Research Program:**

- ☐ Fundamental  
☒ Development (Component or System)  
☐ Demonstration (Experimental, Prototype, or  
Production)  
☐ Measurement Methodology

**Start Date:**

1976

**Completion Date:**

Estimated 1977  
Actual \_\_\_\_\_

**Funding:**

Year	Amount
1976 (actual):	
1977 (budget):	
1978 (forecast):	

**Project Summary:** (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

Or Total Funding Amount: \_\_\_\_\_

COMMENTS:

Studies of quieter demolition equipment will be pursued including trials of an improved muffler for a hand-held concrete breaker and the next stage of development of a crane-mounted Nibbler for demolishing beams, floors and walls. The development of an acoustic shield for reducing the noise of sheet pile driving with a pneumatic hammer will continue and the results of the quieter Dumper work will be exploited.



<b>Project Title:</b> Design of High-Efficiency Silencer of Noise from Hand-Operated Compressed Air Machines																			
<b>Performing Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Laboratory of Industrial Acoustics Leningrad, USSR	<b>Sponsoring Organization Name &amp; Address:</b> All Union Central Council All Union Central Scientific Research Institute of Industrial Hygiene Leningrad, USSR																		
<b>Principal Investigator(s):</b>  D. Kh. Slobodnik	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
<b>Start Date:</b>	<b>Completion Date:</b> Estimated _____ Actual _____																		
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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<u>Or Total Funding Amount:</u>																			
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<b>COMMENTS:</b>																			

Acoustic efficiency of a noise silencer for hand-operated compressed air machine was formulated as a function of structural characteristics of the silencer. The formulas are derived for efficiency of a silencer with one or several apertures and a silencer with a capillary aperture (0.01 to 0.04 cm. wide slit). The formulas are to be used for engineering calculation of silencers. Experimental determination is described of the ratio K of acoustic energy loss in an aperture to energy emitted into environment. A table shows calculated and experimental acoustic efficiencies in dB for slit silencers with 1 to  $4 \times 10^{-4}$  m. wide slits. It is concluded that the data calculated from the theoretical formulas are in good agreement with the experimental data (maximum discrepancy is 2 dB).

Translated and abstracted from the original Russian.

Breakers and Drills  
Abbreviated Listings

United Kingdom. Pile Driving and Hand-Held Concrete Breaker. Building  
Research Establishment, Aylesbur, Buckinghamshire, United Kingdom.

MANUFACTURING EQUIPMENT

WOODWORKING MACHINERY

See Also Page:

287

Project Title:

Noise Control for Circular and Band Saws

Performing Organization Name & Address:

The University of Adelaide,  
Dept. of Mechanical Engineering,  
G.P.O. Box 498,  
Adelaide. S.Aust. 5001.

Sponsoring Organization Name & Address:

Department of Labour & Industry,  
S.A. Government,  
Adelaide.

Principal Investigator(s):

Dr. D.A. Bies  
Dr. M. Zockel  
Mr. S. Page

Type of Research Program:

- ☒ Fundamental  
☒ Development (Component or System)  
☒ Demonstration (Experimental, Prototype, or  
Production)  
☐ Measurement Methodology

Start Date:

March '77

Completion Date:

Estimated '79  
Actual

Funding:

Year	Amount
1976 (actual):	This is part of work sponsored by
1977 (budget):	Dept. of Labour & Industry grant
1978 (forecast):	for (\$50,000) per year for 1977,
	1978, 1979

Or Total Funding Amount:

COMMENTS:

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

The aims of this project are:

(a) to identify and quantify the noise sources e.g. blade, workpiece and windage.

(b) to evaluate techniques already reported in literature and internally generated ideas from the point of view of cost effectiveness and engineering practicality

(c) to summarise these results in a report from which industry can choose the most suitable noise control technique for their situation.

At present only circular blades are being investigated with a view of damping the blade by either air pads, viscoelastic means or an alternative support for the blade from what is presently standard practice. It is intended to measure the amplitude of vibration of the blade while cutting using a Laser Doppler Velocimeter developed in the Department as well as various techniques for mode identification. The Laser Doppler Velocimeter will also be used to obtain a better understanding of the noise radiation mechanism from band saws.

The work on the noise radiated from the workpiece will begin in July 1977 and this will of course have a much wider application than simply saw noise.

Windage noise is expected to be investigated in 1978.

The only results so far have been with a 300 mm diam. rip saw using 0.25 mm slim steel discs attached to the blade with adhesive. A maximum noise reduction of 10 dBA was achieved.

Project Title: Noise Reduction of Nailers																									
Performing Organization Name & Address:  Ingemansson Acoustics Box 93037 S-40014 Gothenburg, Sweden	Sponsoring Organization Name & Address:  Nordisk Kartro Box 99 S-12321 Farsta, Sweden																								
Principal Investigator(s):  Hasse Moss Hans Elvhamman	Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																								
Start Date: Jan. 1976	Completion Date: Estimated <u>Continuous</u> Actual _____																								
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																									
<table border="1"> <thead> <tr> <th>Year</th> <th>Funding:</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> <td></td> </tr> <tr> <td colspan="3">-----</td> </tr> <tr> <td colspan="3">Or Total Funding Amount: (Scr. \$70,000.) \$15,771.</td> </tr> <tr> <td colspan="3">-----</td> </tr> <tr> <td colspan="3">COMMENTS:</td> </tr> </tbody> </table>		Year	Funding:	Amount	1976 (actual):			1977 (budget):			1978 (forecast):			-----			Or Total Funding Amount: (Scr. \$70,000.) \$15,771.			-----			COMMENTS:		
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1977 (budget):																									
1978 (forecast):																									
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Or Total Funding Amount: (Scr. \$70,000.) \$15,771.																									
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COMMENTS:																									

Noise from nailers reduced with respect to damage risk for hearing (peak level). Different kinds of nailers. Continuously reported to the sponsoring organization.

Transcribed from the original.

Woodworking Machinery  
United Kingdom

Project Title:		Reduction of Noise from Circular Sawing (Mainly Timber but applicable also to metal)															
Performing Organization Name & Address:		Sponsoring Organization Name & Address:															
SOUND RESEARCH LABORATORIES LIMITED HOLBROOK HALL LITTLE WALDINGFIELD SUDBURY SUFFOLK COLO OTH United Kingdom		Department of Trade and Industry Abell House John Islip Street London SW1P 4LH United Kingdom															
Principal Investigator(s):		Type of Research Program:															
T P C BRAMER (MR)		<input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology															
Start Date:	Completion Date:	Funding:															
JAN 1977	Estimated JAN 1978 Actual _____	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(£35,000) \$60186</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(£35,000) \$60186	-----	
Year	Amount																
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1977 (budget):																	
1978 (forecast):																	
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Or Total Funding Amount:	(£35,000) \$60186																
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		COMMENTS:															
<p>The project is to gather together previous and present on-going research into circular sawing noise reduction. Main objective is a practical and economical noise reduction by modifications to present techniques and machines rather than by radical changes.</p> <p>No publication yet.</p>																	

Woodworking Machinery  
United Kingdom

Project Title: Industrial Noise: Investigation of Methods of Noise Control in Woodworking Establishments.															
Performing Organization Name & Address: Production Engineering Research Association Melton Leicestershire LE13 OPB United Kingdom	Sponsoring Organization Name & Address:														
Principal Investigator(s):  K. Healiss	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: Jan. 1975	Completion Date: Estimated <u>March 1977</u> Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding:														
	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount: (£10,000 - £ 25,000)</td> <td></td> </tr> <tr> <td colspan="2">----- \$17,196 = \$42,990 -----</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (£10,000 - £ 25,000)		----- \$17,196 = \$42,990 -----	
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1977 (budget):															
1978 (forecast):															
-----															
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----- \$17,196 = \$42,990 -----															
COMMENTS:															

To investigate feasible methods of reducing the exposure to noise of personnel in woodworking environments, involving detailed studies and measurements in a number of woodworking companies. In addition, the production processes are studied, in relation to plant layout, production planning and the manning of machines. Noise control measures will be determined in conjunction with machinery users and builders and the results of implementation of recommendations will be analysed. The final report will include the results and recommendations and an analysis of the technical feasibility and costs of the various recommendations.

Transcribed from the original.

Woodworking Machinery  
West Germany

Project Title: The Propagation of the Noise Generated by Forest Vehicles and Operations of the Lumber Industry in Certain Types of Stands or Terrain Contours.																			
Performing Organization Name & Address: Institute for Labor Studies of the Federal Res. Inst. for Forestry, Lumber and Economy Reinbek, Vorwerkbusch 1 West Germany	Sponsoring Organization Name & Address:  Foundation of the Society for Labor Studies in Forestry																		
Principal Investigator(s): Prof. Dr. Gerhard Kaminsky	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
Start Date: Jan. 1, 1975	Completion Date: Estimated _____ Actual Dec. 31, 1978																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
<table border="0"> <tr> <td colspan="2">Funding:</td> </tr> <tr> <td>Year</td> <td>Amount</td> </tr> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (90,000DM) \$38,160</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </table>		Funding:		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (90,000DM) \$38,160		-----		COMMENTS:	
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Or Total Funding Amount: (90,000DM) \$38,160																			
-----																			
COMMENTS:																			

Determination of noise registers in installations of the  
lumber industry and the environment of lumber-processing enterprises.  
Identification of the damaging areas. Proposal for the reduction of noise  
impact.



Woodworking Machinery  
West Germany

Project Title: Determination of the Noise Emission by Production Liner for Lumber Processing.																	
Performing Organization Name & Address: Institute for Machine Tools and Finishing Technique Braunschweig, Langer Kamp 19 West Germany	Sponsoring Organization Name & Address: German Research Society Research Directorate Machine Construction																
Principal Investigator(s):  Dr. IngI. Ernst Salje	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Oct.1,1975	Completion Date: Estimated <u>Oct.31,1977</u> Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="0"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (200,000DM) \$84,800</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (200,000DM) \$84,800		-----		COMMENTS:	
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1977 (budget):																	
1978 (forecast):																	
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Or Total Funding Amount: (200,000DM) \$84,800																	
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COMMENTS:																	

Determination of the state of technology in regard to noise emission by production liner for lumber processing. Classification of individual machines in the production line in respect to their noise generation. Reduction of noise on those machines.

Translated and transcribed from the original

Woodworking Machinery  
West Germany

Project Title: Effect Levels on Noise Emission in Hot and Cold Saws and Measures for Noise Abatement.															
Performing Organization Name & Address: Operations Research Institute Duesseldorf, Sohnstr. 65 West Germany	Sponsoring Organization Name & Address:  Federal Minister for Research and Technology														
Principal Investigator(s): Dipl Ing. Dirk Pannhausen	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: July 1, 1974	Completion Date: Estimated _____ Actual Dec. 31, 1977														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding:														
	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount: (450,000DM)</td> <td>\$190,800</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (450,000DM)	\$190,800	-----	
	Year	Amount													
1976 (actual):															
1977 (budget):															
1978 (forecast):															
-----															
Or Total Funding Amount: (450,000DM)	\$190,800														
-----															
COMMENTS:															

Aim is to determine the effect levels on noise generation in hot and cold saws in order to deduce constructive alteration proposals. In selected tests on one saw the effect levels are measured systematically. Genesis, propagation and radiation are studied on saws of various constructions and outputs. The changes worked out in laboratory tests are then tried out in actual practice.

Translated and transcribed from the original.

Project Title:

Noise Measurement in the Timber Industry.

Performing Organization Name & Address: Division of Building Research CSIRO P. O. Box 56 Highett, Vic. 3190 Australia		Sponsoring Organization Name & Address:	
Principal Investigator(s):  W. A. Davern  E. P. Lhuede		Type of Research Program:  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology	
Start Date:	Completion Date: Estimated _____ Actual _____	Funding:  Year                      Amount 1976 (actual): 1977 (budget): 1978 (forecast): ----- Or Total Funding Amount: ----- COMMENTS:	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)			

1. Sawmilling Noise Studies

(a) A previous survey carried out in sawmills indicated that the levels of noise in Australian timber mills could lead to a loss of hearing of machine operators. Further detailed investigations are being conducted to establish more accurately the numbers of workers at risk, and the degree of hazard associated with various items of sawmilling machinery. For some benches, the degree of hazard has been found to be substantially greater than formerly estimated.

(b) Investigation of the noise generation process with wide band saws and the larger diameter circular saws are being investigated as these are a major noise source in Australian timber mills. The surface speed of band saws has been found to influence the noise generated when the saw is not cutting; thus, one particular saw operating at a speed of 23 m/sec. produced a non-cutting noise level some 8 dB lower than normally encountered with similar diameter saws operating at 30-35 m/sec.

(c) As a first step in improving the noise environment for sawmill operators, recommendations relating to design of planer enclosures, operator screens and booths, and of exhaust silencers have been published.

2. A survey was carried out in five particleboard mills as part of a study of noise in Australian forest based industries. The smaller diameter circular saws which are used widely for board cutting in this industry and flaking machines were identified as major noise sources. The numbers of operators involved, however, is relatively small in relation to the timber industry. As particleboard plants are sometimes operated on a 3-shift basis, the problem of plant noise and community annoyance has come into prominence.

Reports:

Noise in Particleboard Plants by E.P. Lhuede and W.A. Davern.

Division of Building Research Technical Paper  
(Second Series) No. 16, 1977.

Commonwealth Scientific & Industrial Research Organisation, Australia.

Noise Reduction for the Operator in Industry, by W.A. Davern and E.P. Lhuede. Paper presented at Fourth Acoustic Conference in New Zealand, Wellington, N.Z. March 1977.

**Project Title:**

Noise From Planing Machines

<b>Performing Organization Name &amp; Address:</b> INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France		<b>Sponsoring Organization Name &amp; Address:</b>														
<b>Principal Investigator(s):</b> M. T. Ho H. Leblond G. Andre		<b>Type of Research Program:</b> <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
<b>Start Date:</b>	<b>Completion Date:</b> Estimated 1977 Actual	<b>Funding:</b> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----	
Year	Amount															
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Or Total Funding Amount:																
-----																
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.) 1. <u>REASONS FOR THE STUDY</u> The level of noise due to planing machines is generally found to be between 95 to 105 dB (A). Even greater values have been found in the case of machines of greater power. The Regional Banks have drawn attention to this problem several times. 2. <u>CONTENTS OF THE STUDY</u> The noise emitted by an empty planing machine is essentially due to the rotation of the tool in the air and the passage of the knives in front of the working tables. When the machine is loaded, the noise of the machining of the wood is added to this aerodynamic noise. Various systems have been proposed to reduce noise emission: - use of perforated or toothed rims - use of a specially-shaped air-guide - use of spiral knives. The last are difficult to manufacture and sharpen. The study consists of verifying the acoustic efficiency and effectiveness of toothed rims and the air guides. A theoretical study on the aerodynamic noise of the tool will be done to effect a better understanding of the emission mechanism and to optimize the usable reduction devices. No device will be recommended by the INRS if it is not certain that its use will involve no supplementary risk of accident or injury. 3. <u>STATE OF PROGRESS</u> Tests have been done on various planing machines at the INRS. For a small machine, empty, with a rotation speed of a rather high level (7,200 t/min), the level was 96 dB (A) without suction and 104 dB (A) with suction. Toothed edges make it possible to reduce these levels to 84 dB (A), thus a gain of 13 dB, and air-guides of an appropriate shape to 84 dB (A) (or a gain of 12 dB). For a machine of greater power, with a rotation speed of 5,000 t/min, the level when the machine is empty, without suction, is 92 dB (A), suction causing an increase of about 2 dB. The toothed rims tested reduced the emitted noise to 89 dB (A). The use of special air-guides seems to yield a gain of about 8 dB (A) over the initial level. The noise level of the machine without the table under the same conditions is 82 dB (A). As concerns the use of toothed rims, the Swiss Health Insurance Bank has confirmed that the use of these rims in 50 machines has not thus far caused an particular problem.																

Translated and transcribed from the original.

#### 4. CONTINUATION OF THE STUDY

The reduction achieved by the two devices was quite significant, so they will continue to be studied. Specifically, their effectiveness when the machine is loaded and their effect on the spiration of shavings remains to be verified.

The theoretical study will perhaps make it possible to optimize the shape and form of the air-guides. The first air-guide is connected to the planer's movable table by a mechanism that allows it to retain its level of efficiency regardless of the adjustment of the moving table. A very viable version of this mechanism remains to be found.

All the above work may continue until the end of 1977.

<b>Project Title:</b> Noise From Molding Machines	
<b>Performing Organization Name &amp; Address:</b>  INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France	<b>Sponsoring Organization Name &amp; Address:</b>  
<b>Principal Investigator(s):</b>  M. T. Ho H. Leblond G. Andre	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology
<b>Start Date:</b>	<b>Completion Date:</b> Estimated _____ Actual _____
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	
1. <u>REASONS FOR THE STUDY</u> This study was undertaken at the initiative of the INRS. It is part of a set of projects aimed at finding out about the noise levels emitted by various machines used in the wood industry: circular saw, planer, molding machine, etc., and to recommend, insofar as possible, means of reducing these noise levels.	
2. <u>CONTENTS OF THE STUDY</u> The study consists of determining initially the noise levels emitted by these machines when they are loaded and when they are empty. Knowledge of these levels will make it possible to compare the molding machine to two other very noisy machines, to find out about the circular saw and the planer, and to recommend rules for placement of these machines in the same workshop. The object is to avoid the possibility that a gain in silence made with one machine, such as the circular saw, for example, could be neutralized by the presence of another machine, whose noise level cannot be reduced. Although the problem appears to be very difficult, we will attempt to determine whether there are other possibilities of reducing the noise of molding machines.	
3. <u>STATE OF PROGRESS</u> Only a few preliminary measurements have been made. The results of these measurements, as well as those found in the literature, seem to indicate that in general, molding machines are less noisy than circular saws and no more noisy than planers. Thus, in a workshop where these three types of machines are used, the gains obtained on one of the two latter types can be safeguarded even if it is not known how the noise of molding machines can be reduced, under the condition that certain precautions are taken during installation of the machines.	
4. <u>CONTINUATION OF THE STUDY</u> This study has been suspended until the study on planing machine noise has progressed further, or until the end of 1977.	

Funding:	
Year	Amount
1976 (actual):	
1977 (budget):	
1978 (forecast):	
-----	
Or Total Funding Amount:	
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COMMENTS:	
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Translated and transcribed from the original.

Project Title:

Environmental Impact of Mechanical Lumber Industry

Performing Organization Name & Address: Institute for Wood Physics and the Mechanical Technology of Wood of the Federal Research Center for Forest and Lumber Economy Hamburg 80, Leuchnerstr, 91C West Germany		Sponsoring Organization Name & Address:																	
Principal Investigator(s):  Dr. Arno Fruehwald		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date: Jan. 1, 1973	Completion Date: Estimated _____ Actual _____	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
		Year	Amount																
		1976 (actual):																	
		1977 (budget):																	
1978 (forecast):																			
-----																			
Or Total Funding Amount:																			
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COMMENTS:																			

Although the lumber industry is considered environmentally benign in comparison to other branches of industry, there are now in isolated cases considerable problems owing to the emission of dust and noise. In the long run, these problems can be eliminated only by changing existing -- or introducing new processing techniques. A study and quantification of present environmental impact aims at evaluating such changed techniques; to initiate such efforts; and to provide responsible authorities with documentation for objective judgements.

Woodworking Machinery  
Abbreviated Listings

France. Fractional Means of Reducing Noise at Work Places; Wood-Sawing Machines with Circular Blades (proposal). Council of Europe, 67006 Strasbourg Cedex, France. Sub-Committee on Industrial Safety and Health (Engineering questions). Sponsor: Council of Europe, 67006 Strasbourg Cedex, France.

Sweden. Reduction of Noise Generated in Sawmill Machinery. Swedish Forest Products, Research Laboratory, Box 5604 S-114, 86 Stockholm 5, Sweden. March 1973 - Feb. 1977. The aim of this project is to ascertain how noise is generated and what machinery conditions can be influenced with a view to reducing the noise level.

Sweden. Sound Dampened Saw. Gomex Verktyg AB, Box 83, S-381 01 Kalmar, Sweden. G. Wikner. Type: Development. 1972 - 1976. Reduces noise at idling and cutting with 5-10 dB(A) compared to conventional saws. The ready product is introduced in our marketing program consisting of saws for the woodworking - plastic and metal industries.

Sweden. Sound Dampened Helical Cutter Head. AB Nora-Gomex, Kvarnvagen, S-713 00 NORA, Sweden. J. Danielsen. 1975 - 1977. Type: Development (Component). Reduces noise in machines for planing and thicknessing. The products have been exhibited at the Ligna fair in May 77 and tests in different applications and machines are carried out.

United Kingdom. Noise Reduction Technique for Router. Princes Risborough Laboratory, Princes Risborough, Aylesbury, Bucks, United Kingdom. J.N. Smithies. Sponsor: Health & Safety Executive, 403-405 Edgemoor Road, London, United Kingdom. July 1976 - December 1976. Type: Development, Demonstration.

United Kingdom. Noise Reduction Techniques for Circular Saws. Princes Risborough Laboratory, Princes Risborough, Aylesbury, Bucks, United Kingdom. J.N. Smithies. Sponsor: Health & Safety Executive, 403-405 Edgemoor Road, London, United Kingdom. Feb. 1976 - July 1976. Type: Development, Demonstration. Practical means of reducing circular saw noise by damping and local partial enclosure.

West Germany. Noise Research and Noise Reduction in Circular Saws for Lumber Industry. Institute for Machine Tools and Manufacturing Technology of Braunschweig Tech. Univ., Braunschweig, Langer Kamp 19, West Germany. Prof. Dr. Ing. Ernst Salje. Jan. 1, 1976. Reduction of idling and cutting noise in circular saws and scoring saws used for lumber processing. The considerable reduction is achieved by alterations in the main blade.

West Germany. Possibilities of Reducing Noise Emission by Lumber Processing Machinery. Inst. for the Physics & Behavioral Tech. of Wood, Fed. Research Inst. for Forestry and Lumber Economy, Hamburg 80, Leuschnerstr. 91C West Germany. Prof. Dr. Noack.



MANUFACTURING EQUIPMENT

TEXTILE MACHINERY

<b>Project Title:</b> Development of New Machinery and Improvement of Existing Ones																			
<b>Performing Organization Name &amp; Address:</b> Working Party Against Noise in the Machine Cover Industry	<b>Sponsoring Organization Name &amp; Address:</b> ASF-Sweden Moelndalsvaegen 85 412 85 Goeteborg, Sweden																		
<b>Principal Investigator(s):</b> Maths-Olof Hoernsten	<b>Type of Research Program:</b> <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
<b>Start Date:</b> Jan, 1, 1976	<b>Completion Date:</b> Estimated _____ Actual <u>Dec. 31, 1976</u>																		
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
<table border="0"> <tr> <td colspan="2" style="text-align: right;"><b>Funding:</b></td> </tr> <tr> <td style="text-align: right;"><u>Year</u></td> <td style="text-align: right;"><u>Amount</u></td> </tr> <tr> <td>1976 (actual):</td> <td>(220,000 Skr) \$49,566</td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><u>Or Total Funding Amount:</u></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </table>		<b>Funding:</b>		<u>Year</u>	<u>Amount</u>	1976 (actual):	(220,000 Skr) \$49,566	1977 (budget):		1978 (forecast):		-----		<u>Or Total Funding Amount:</u>		-----		COMMENTS:	
<b>Funding:</b>																			
<u>Year</u>	<u>Amount</u>																		
1976 (actual):	(220,000 Skr) \$49,566																		
1977 (budget):																			
1978 (forecast):																			
-----																			
<u>Or Total Funding Amount:</u>																			
-----																			
COMMENTS:																			

A joint working party, of machine producers and union, is composed to develop new machinery and to improve existing ones. Member organizations include Clothing Workers Union, Nordisk Maskinfilt AB, Wallbergs Fabriks AB, and Scandiofelt Ltd.

Trnascribed from the original.

Textile Machinery  
United Kingdom

Project Title: Improvement of Working Environments in the Knitting Industries by Reduction of Process Noise

Performing Organization Name & Address:

Hatra,  
7 Gregory Boulevard,  
Nottingham, England

Sponsoring Organization Name & Address:

Principal Investigator(s):

G. M. Coles

Type of Research Program:

- ☐ Fundamental  
☒ Development (Component or System)  
☒ Demonstration (Experimental, Prototype, or Production)  
☐ Measurement Methodology

Start Date:

October  
1976

Completion Date:

Estimated Sept. 1978  
Actual

Funding:

Year Amount

1976 (actual):

1977 (budget):

1978 (forecast):

Or Total Funding Amount: (£49,000) \$84260

COMMENTS:

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

In the United Kingdom a definition of an acceptable working environment in terms of noise was first provided by the 'Code of practice for reducing the exposure of employed persons to noise' of 1972, and it is anticipated that forthcoming legislation within the scope of the Health and Safety at Work, etc., Act of 1974 will be based on this definition.

Survey work carried out by Hatra has shown that a number of processes commonly found in the knitting industries produce working environments having noise levels above these standards, the most significant contraventions being in the fields of seamless hose knitting, fully-fashioned garment knitting, and garment steam pressing. The proposed project is aimed at the development of noise reduction techniques for the second and third of these specific classes of equipment in order that Government standards can be achieved in a manner acceptable within the context of the operational needs of the industry. (The first category referred to, seamless hose knitting, has already been the subject of a Hatra research programme).

The work involved in the project falls into four major stages in each of the two cases to be considered; the first stage, comprising a detailed assessment of the types of noise generation mechanism involved and their separate relevance to the overall problem, will be based on machines currently available at Hatra. From the results of this type of detailed scrutiny, the second stage, the application of noise control methods as and where applicable, will result. The third stage, covers laboratory assessment of these techniques as applied to the Hatra machines, and the fourth, final, stage would involve field trials of suitable developments in conjunction with a co-operating knitting company.

Textile Machinery  
West Germany

Project Title: Study and Determination of Measures for Noise Abatement on Our Spinning Frames and Drawing Frames																			
Performing Organization Name & Address: Fried. Krupp Corp. Bremen 71, Fargerstr. 130 West Germany	Sponsoring Organization Name & Address:																		
Principal Investigator(s): Gerhard Rehme	Type of Research Program: ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology																		
Start Date: Jan.1, 1976	Completion Date: Estimated Dec. 31, 1977 Actual _____																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
<table border="0"> <tr> <td colspan="2">Funding:</td> </tr> <tr> <td><u>Year</u></td> <td><u>Amount</u></td> </tr> <tr> <td>1976 (actual)</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(300,000 DM) \$127,200</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </table>		Funding:		<u>Year</u>	<u>Amount</u>	1976 (actual)		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(300,000 DM) \$127,200	-----		COMMENTS:	
Funding:																			
<u>Year</u>	<u>Amount</u>																		
1976 (actual)																			
1977 (budget):																			
1978 (forecast):																			
-----																			
Or Total Funding Amount:	(300,000 DM) \$127,200																		
-----																			
COMMENTS:																			

In 1976, governmental regulations on maximum admissible noise levels at the work site are becoming effective, which affect a part of our machine program; namely, open-end spinning frames, intersecting gill boxes and ring spinners. The required measures can only be found through a systematic study of the noise problem. It is planned to test damping procedures on the basis of noise analyses, some of which have already been completed, on certain structural elements and then to adopt the optimum measures still to be determined.

Translated and transcribed from the original.

Textile Machinery  
Abbreviated Listings

United Kingdom. Reduction of Noise in the Textile Industry.  
Health and Safety Executive, London, United Kingdom. 1977.

United Kingdom. Garment and Allied Industries. Dept. of Industry,  
London, United Kingdom. Noise reduction in knitting machines.  
Noise in the wool industry. 1977.

MANUFACTURING EQUIPMENT

METAL WORKING EQUIPMENT

See Also Pages:

159

212

287

Project Title:  
Noise Control in Impulsive Operations

Performing Organization Name & Address: Department of Mechanical Engineering Monash University Layton, Vic, Australia		Sponsoring Organization Name & Address:															
Principal Investigator(s): Dr. Leonard L. Koss		Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology															
Start Date: 1973	Completion Date: Estimated <u>Continuing</u> Actual _____	Funding:															
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  The purpose of the Project is to develop methods of reducing impulsive noises. Consequently, the areas of investigation has been broken up into the following:		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget): (\$500.00)</td> <td>\$555.</td> </tr> <tr> <td>1978 (forecast): (\$500.00)</td> <td>\$555.</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount: (\$1,500.00)</td> <td>\$1,665.</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget): (\$500.00)	\$555.	1978 (forecast): (\$500.00)	\$555.	-----		Or Total Funding Amount: (\$1,500.00)	\$1,665.	-----	
Year	Amount																
1976 (actual):																	
1977 (budget): (\$500.00)	\$555.																
1978 (forecast): (\$500.00)	\$555.																
-----																	
Or Total Funding Amount: (\$1,500.00)	\$1,665.																
-----																	
<ol style="list-style-type: none"> <li>1. Punch Press Operations</li> <li>2. Solid Body Acceleration</li> <li>3. Noise Analysis Procedures.</li> </ol>		COMMENTS:															

Basic phenomenology is being looked at with regard to developing practical methods of noise reduction.

Publications:

Koss, L. L. and Alfredson, R. J. "Multiple Input Correlation Theory and the Least Square Method for the Analysis of Transient Sound". Letter to Editor, JSV, 32(3), 1974, p423-427.

Koss, L. L. and Alfredson, R. J. "Identification of Transient Sound Sources on a Punch Press", JSV, 34(1), 1974, p11-33.

Koss, L. L. and Alfredson, R. J. "Transient Sound Radiated by Spheres Undergoing an Elastic Collision". JSV, 27(1), 1973, p59-75.

Koss, L. L. "Application of Transient Acoustic Fields to Noise Control". Monash Uni., MMER 10, 1972.

Koss, L. L. "Vibrational Analysis of a Punch Press", Noise, Shock & Vibration Conf., held at Monash Uni., May 22-25, 1974, p445-456.

Koss, L. L. "Transient Sound from Colliding Spheres-Normalized Results", JSV, Vol. 36, No. 4, 1974, p541-553.

Koss, L. L. "Transient Sound from Colliding Spheres-Inelastic Collisions", JSV, Vol. 36, No. 4, 1974, p555-562.

Koss, L. L. "Noise from Two, Four and Eight Ton Punch Presses", Vibration & Noise Control Engineering Conference, held at Sebel Town House, Sydney, October 11-12, 1976.

Alfredson, R. J. "Noise Source Identification and Control of Noise in Punch Presses", Reduction of Machinery Noise", Purdue University, December 10-12, 1975.

Koss, L. L. "Punch Press Load-Radiation Characteristics", Accepted for Publication in Noise Control Engineering, Spring 1977.

Koss, L. L. and Tang, Y. A. "Analysis of Noise from a 23 Ton Punch Press and Methods of Noise Reduction". To be Presented at the Australian Conference on Manufacturing Engineering, Adelaide, August 1977.

Transcribed from the original.

Project Title:

Noise in Foundry Industry

Performing Organization Name & Address:

National Inst. of Technology,  
P.box 8116 Oslo dep. -Oslo 1  
Norway.

Sponsoring Organization Name & Address:

Norges Teknisk-naturvitenskapelig  
Forskningsråd, NTNF.  
Gaustadalléen 3b,  
Oslo 3, Norway.

Principal Investigator(s):

Ole J. Krudtaa,  
Hans Fjerdingsstad.

Type of Research Program:

☐ Fundamental  
☒ Development (Component or System)  
☒ Demonstration (Experimental, Prototype, or  
Production)  
☐ Measurement Methodology

Start Date:

1.Jan.1975

Completion Date:

Estimated

Actual open

Project Summary: (Briefly describe the  
goals, approach, expected or actual results,  
report(s) generated and the date(s) of  
publication.)

Funding:

Year	Amount
1976 (actual): (Nkr. 70.000)	\$13,188
1977 (budget): (Nkr. 70.000)	\$13,188
1978 (forecast):	

Or Total Funding Amount:

COMMENTS:

1. Study of the acoustical environment in foundries.
2. Study of the different processes, particularly grinding, both machinery and working place.



Project Title: Press Noise Reduction															
Performing Organization Name & Address: Paisley College of Technology High Street Paisley Renfrewshire Scotland	Sponsoring Organization Name & Address:														
Principal Investigator(s):  Dr. A. M. Petrie	Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: Feb. 1977	Completion Date: Estimated Feb. 1979 Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
Funding: <table border="0"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount: (£5000)</td> <td>\$8,598</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (£5000)	\$8,598	-----	
Year	Amount														
1976 (actual):															
1977 (budget):															
1978 (forecast):															
-----															
Or Total Funding Amount: (£5000)	\$8,598														
-----															
COMMENTS:															

From the available literature it is clear that there is not sufficient data to construct a general model which will predict the noise level from a range of presses. The purpose of this project is to assess the methods of measurement, recording and analysis of the forces and acoustic output associated with various components of a range of punch presses in order to establish a method for predicting the overall acoustic output.

<b>Project Title:</b> Noise Reduction of Excenter Presses																			
<b>Performing Organization Name &amp; Address:</b> Ingemansson Acoustics Box 53037 S-40014 Gothenburg, Sweden	<b>Sponsoring Organization Name &amp; Address:</b> Arbetarskyddsfonden Sveavagen 166 S-11346 Stockholm, Sweden																		
<b>Principal Investigator(s):</b> Roger Ekstroem Peter Bengtsson Hans Elvhammar	<b>Type of Research Program:</b> <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
<b>Start Date:</b> Dec. 1976	<b>Completion Date:</b> Estimated <u>Sept. 1977</u> Actual _____																		
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
<table border="0"> <tr> <td colspan="2"><b>Funding:</b></td> </tr> <tr> <td><u>Year</u></td> <td><u>Amount</u></td> </tr> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><u>Or</u> Total Funding Amount: (Scr. \$99,000.) \$11,040.</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </table>		<b>Funding:</b>		<u>Year</u>	<u>Amount</u>	1976 (actual):		1977 (budget):		1978 (forecast):		-----		<u>Or</u> Total Funding Amount: (Scr. \$99,000.) \$11,040.		-----		COMMENTS:	
<b>Funding:</b>																			
<u>Year</u>	<u>Amount</u>																		
1976 (actual):																			
1977 (budget):																			
1978 (forecast):																			
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<u>Or</u> Total Funding Amount: (Scr. \$99,000.) \$11,040.																			
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COMMENTS:																			

Reduction of impulsive noise from excenter presses with the aid of special dampers. Published as messages from Arbetsgruppen mot buller inom Verkstadsindustgin.

Project Title: Improvement of Workplace Noise from Cutting Tools															
Performing Organization Name & Address:  Ingemansson Acoustics Box 53037 S-40014 Gothenburg, Sweden	Sponsoring Organization Name & Address:  Arbetarskyddsfonden Sveavagen 166 S-11346 Stockholm, Sweden														
Principal Investigator(s):  Hans Elvhammar Hasse Moss	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: Dec. 1976	Completion Date: Estimated <u>Dec. 1978</u> Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
Funding: <table border="0"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount (SCR 245,000)</td> <td>\$55,199</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount (SCR 245,000)	\$55,199	-----	
Year	Amount														
1976 (actual):															
1977 (budget):															
1978 (forecast):															
-----															
Or Total Funding Amount (SCR 245,000)	\$55,199														
-----															
COMMENTS:															

Reduction of noise from lathes, cutters, grinders, drilling machines and pneumatic tools at Volvo-BM. Factory layout, ventilation, etc. acoustically treated.

Transcribed from the original.

Project Title:

Reduction of Noise from Sheet Tooling

Performing Organization Name & Address:  Ingemansson Acoustics Box 53037 S-40014 Gothenburg, Sweden		Sponsoring Organization Name & Address:  Arbetarskyddsfonden Sveavagen 166 S-11346 Stockholm, Sweden															
Principal Investigator(s):  Hans Elvhammar Roger Ekstroem Peter Bengtsson		Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
Start Date: Dec. 1976	Completion Date: Estimated <u>June 1977</u> Actual _____	Funding:															
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (Scr. \$100,000.) \$22,530.</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (Scr. \$100,000.) \$22,530.		-----	
		Year	Amount														
		1976 (actual):															
1977 (budget):																	
1978 (forecast):																	
-----																	
Or Total Funding Amount: (Scr. \$100,000.) \$22,530.																	
-----																	
COMMENTS:																	

Noise from metal sheet tooling is studied with certain attention to hand shop tools and their modification in order to reduce noise. Result published as messages from Arbetsgruppen mot buller inom Verkstadsindustrin.

Transcribed from the original.

**Project Title:** Reducing Noise by Changing Over to Hydraulic Methods. Preliminary Study.

<b>Performing Organization Name &amp; Address:</b> IFM-Akustikbyran AB Box 30021 400 43 Goeteborg, Sweden		<b>Sponsoring Organization Name &amp; Address:</b> Styrelsen faer teknisk at veckling Fack 100 72 Stockholm, Sweden																	
<b>Principal Investigator(s):</b> Lars Nordlund		<b>Type of Research Program:</b> <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
<b>Start Date:</b> Sept. 1, 1976	<b>Completion Date:</b> Estimated _____ Actual Sept. 30, 1977	<b>Funding:</b> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(50,000 sKr.)</td> </tr> <tr> <td></td> <td>\$11,265</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(50,000 sKr.)		\$11,265	-----	
Year	Amount																		
1976 (actual):																			
1977 (budget):																			
1978 (forecast):																			
-----																			
Or Total Funding Amount:	(50,000 sKr.)																		
	\$11,265																		
-----																			
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.) The effort to combat noise in industrial plants has, to a great extent, so far been aimed at constructive changes in machinery and at the enclosure of noisy phases of the work. In cases where this has not been possible, only the possibility of introducing absorbents and screens on the premises has been used. Sledge-hammering for the straightening of sheet metal, etc., has often been accepted as unavoidable.		<b>COMMENTS:</b>																	

This study makes a comparison between noise-reducing effects and costs in sound absorption and the transition to hydraulic methods for the straightening of sheet metal. The study only includes one test sample from the manufacturing industries. In this test sample it was estimated that twice as big a noise reduction (4 dB(A)/2 dB(A)) at 40% of the cost (60,000.-/150,000.-Sw. Crowns \$13,518-\$33,795) could be achieved when the efforts are aimed at changing the work methods rather than the physical plant.

The cost of hydraulic equipment necessary in order to achieve the same results as in the test was estimated to be quite moderate. Some of the costs could probably be covered by savings in the form of shortened production time.

The stated noise reductions refer to equivalent noise levels. By changing over to hydraulic methods for the straightening of sheet metal, the loudest impulse sounds are eliminated. This is of great importance considering the risk of hearing loss.

#### Publication

Report 13 6056.01 "Reducing Noise by Changing Over to Hydraulic Methods. Preliminary Study". September 1977.

Translated and transcribed from the original Swedish.

Project Title:

Combating Noise at Electric Steel Plants

<b>Performing Organization Name &amp; Address:</b> IFM-Akustikbyran AB Box 30021 400 43 Goeteborg, Sweden		<b>Sponsoring Organization Name &amp; Address:</b> Arbetarskyddsfonden Wenner-Gren Center Sveavaegen 166 113 46 Stockholm, Sweden															
<b>Principal Investigator(s):</b>  Lars Nordlund		<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
<b>Start Date:</b>  July 1, 1976	<b>Completion Date:</b> Estimated <u>June 30, 1979</u> Actual _____	<b>Funding:</b> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>(125,000 sKr) \$28,162</td> </tr> <tr> <td>1977 (budget):</td> <td>(280,000 sKr) \$ 63,084</td> </tr> <tr> <td>1978 (forecast):</td> <td>?</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><u>Or Total Funding Amount:</u></td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):	(125,000 sKr) \$28,162	1977 (budget):	(280,000 sKr) \$ 63,084	1978 (forecast):	?	-----		<u>Or Total Funding Amount:</u>		-----	
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1978 (forecast):	?																
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<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<b>COMMENTS:</b>  															

The project is intended to develop practical constructions and measures in order to decrease the noise at electric steel plants, mainly by combating the noise of arc furnaces at the source. The project is also aimed at noise-producing mechanisms and factors which may produce noise in arc furnaces. In addition, there will be a development, evaluation and compilation of engineering procedures aimed at decreasing the spread of noise in steel plants. Finally the increased automation and other significant changes in future steel plants will be evaluated with regard to noise. The experiences gained are to be distributed among the planning, operational and safety personnel of the steel plants as well as to furnace manufacturers, acoustics consultants, university institutes and others who might be interested. The objective of the project is to obtain necessary knowledge and technical means so that those combinations of noise combating measures may be chosen, which, at the lowest possible cost, will be able to achieve a projected level for existing as well as for new installations.

Publication

Report 13 6028.01-07: "Combating Noise at Electric Steel Plants", September 76 - September 77 (Excerpted reports).

Translated and transcribed from the original Swedish.

<b>Project Title:</b> Shockabsorbers at Blanking Operations																												
<b>Performing Organization Name &amp; Address:</b> The Swedish Institute of Production Engineering Research Molndalsvagen 85 412 85 Goteborg Sweden	<b>Sponsoring Organization Name &amp; Address:</b> The Swedish work environment Fund (ASF)																											
<b>Principal Investigator(s):</b> Christer Bramberger	<b>Type of Research Program:</b> <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																											
<b>Start Date:</b> Jan. 1, 1976	<b>Completion Date:</b> Estimated Jan. 1, 1978 Actual _____																											
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																												
<table border="1"> <thead> <tr> <th colspan="3">Funding:</th> </tr> <tr> <th>Year</th> <th colspan="2">Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>(100,000 Skr)</td> <td>\$22,530</td> </tr> <tr> <td>1977 (budget):</td> <td>(120,000 Skr)</td> <td>\$27,036</td> </tr> <tr> <td>1978 (forecast):</td> <td></td> <td></td> </tr> <tr> <td colspan="3">-----</td> </tr> <tr> <td colspan="3">Or Total Funding Amount: (220,000 Skr) \$49,566</td> </tr> <tr> <td colspan="3">-----</td> </tr> <tr> <td colspan="3">COMMENTS:</td> </tr> </tbody> </table>		Funding:			Year	Amount		1976 (actual):	(100,000 Skr)	\$22,530	1977 (budget):	(120,000 Skr)	\$27,036	1978 (forecast):			-----			Or Total Funding Amount: (220,000 Skr) \$49,566			-----			COMMENTS:		
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COMMENTS:																												

During the time just before blanking operation in presses, the press components are put under compression and the press becomes a giant spring. At the moment of blanking all the stored energy is suddenly released at tremendous velocity. The sudden breakthrough causes vibrations and noise problems, often like shot guns. The aim of this project is to find the criteria, of the function of shockabsorbers, to make the time-force curve more favourable without an overload on the press.

Transcribed from the original.

<b>Project Title:</b> Noise Abatement in the Engineering Industry																			
<b>Performing Organization Name &amp; Address:</b> Swedish Engineering Employers' Association Joint Working Party Against Noise in the Engineering Industry	<b>Sponsoring Organization Name &amp; Address:</b> ASF, Sweden Moeindalsvaegen 85 412 85 Goeteborg, Sweden																		
<b>Principal Investigator(s):</b>  Olle Ustafsson	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
<b>Start Date:</b> 1974	<b>Completion Date:</b> Estimated 1977 Actual _____																		
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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Or Total Funding Amount:																			
-----																			
COMMENTS:																			

Improvements in an engineering shop for cutting.  
Acoustical planning of an engineering workshop.  
Reduction of noise when working on sheet metal with hand tools.  
Reduction of noise from excenter presses with welded foundations.  
Reduction of noise from conveyors.  
Survey of noise and risks for hearing impairments in workplaces with impact noise.  
Noise from equipment (belts)

Transcribed from the original.



<b>Project Title:</b> Noise From Excenterpresses.															
<b>Performing Organization Name &amp; Address:</b> The Swedish Institute of Production Engineering Research Molndalsvagen 85 412 85 Goteborg Sweden	<b>Sponsoring Organization Name &amp; Address:</b> The Swedish Work Environment Fund														
<b>Principal Investigator(s):</b> Kurt Stenudd	<b>Type of Research Program:</b> <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology														
<b>Start Date:</b> Jan. 1, 1976	<b>Completion Date:</b> Estimated June 30, 1977 Actual _____														
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
<b>Funding:</b> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(165,000 Skr) \$37,175</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table> <b>COMMENTS:</b>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(165,000 Skr) \$37,175	-----	
Year	Amount														
1976 (actual):															
1977 (budget):															
1978 (forecast):															
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Or Total Funding Amount:	(165,000 Skr) \$37,175														
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The aim of this project is to give reasonable levels of the noise permitted for mechanical presses. Measurements of many presses new and old, will give statistical material. Experiments of silenced values etc. has also been done. More modern presses are compared to older but due to the higher working speed the noise level has in general not been reduced.

Transcribed from the original.

Project Title: The Mechanisms of Noise Generation From Electric Arc Furnaces.															
Performing Organization Name & Address: British Steel Corporation Swinden Laboratories Moorgate, Rotherham Yorkshire, United Kingdom	Sponsoring Organization Name & Address: Commission of the European Communities Directorate of Social Affaires Batiment Jean Monnet Kirschberg, Luxembourg														
Principal Investigator(s):  Dr. G. R. Jordan	Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: Sept. 1977	Completion Date: Estimated <u>Sept. 1979</u> Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
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Year	Amount														
1976 (actual):															
1977 (budget):															
1978 (forecast):															
-----															
Or Total Funding Amount: (±120,000)	\$206,352														
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The objective of the Project is to investigate systematically the causes of noise produced in electric arc furnaces and to determine the influence on the noise of operating conditions such as the power and current of the arc, the relative difference in melting and refining periods, the effect of metal/slag surface conditions and the characteristics of the arc.

Research will be conducted both in the laboratory and on production furnaces, and both A.C. and D.C. power will be used. The laboratory studies will include:

- investigations of the causes of noise.
- estimation of the amount of noise as a function of the operating conditions.
- determination of the effects of the surface condition of "doped" and impregnated electrodes.
- estimation of the effects of different conditions of slag and metal. The production plant studies will be made on furnaces of up to 84 MVA and with charged capacities of 17 to 180 tonnes. Noise levels will be measured and correlated with the results of the laboratory experiments defined above. The effect on noise of continuously charging scrap and pre-reduced material will also be studied.

This programme has recently started (June 1977) and will be reported at 6 monthly intervals to the European Commission. The final report will be available late 1979/early 1980.

It should be noted that the above project is a collaborative contract with IRSID, Maizieres le Metz, France (Antoine) and BFI, 4 Dusseldorf, Sohnstrasse 65, Germany (Dr. Keck).

Transcribed from the original.

Project Title:

Hammer Noise at Source

Performing Organization Name & Address: Drop Forging Research Association Shepard Street Sheffield S3 7BA United Kingdom		Sponsoring Organization Name & Address: Drop Forging Research Association; Department of Employment, Health & Safety Executive																	
Principal Investigator(s): A.C. Hobdell R. Rodgers		Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date: Jan. 1976	Completion Date: Estimated <u>Dec. 1976</u> Actual _____	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>(£4,600) \$7,910.</td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):	(£4,600) \$7,910.	1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
Year	Amount																		
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1977 (budget):																			
1978 (forecast):																			
-----																			
Or Total Funding Amount:																			
-----																			
COMMENTS:																			
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  Following a preliminary study of the actual sources and causes of noise from drop hammers, trials are being made of practical means for reducing this noise at sources, e.g. overlapping shields around the dies.																			

Transcribed from the original.

Metal Working Machinery  
West Germany

Project Title: Humanizing Working Conditions For the Welder															
Performing Organization Name & Address: German Association for Welding Technology Duesseldorf, Aachener Strasse 172 West Germany	Sponsoring Organization Name & Address:  Federal Minister for Research & Technology Federal Minister for Labor and Social Welfare														
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date:	Completion Date: Estimated _____ Actual _____														
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Year	Amount														
1976 (actual):															
1977 (budget):															
1978 (forecast):															
-----															
Or Total Funding Amount:															
-----	(2,100,000 DM) \$890,400 -----														

Study of the formation of health-endangering welding smoke and gas. Measures to reduce or prevent them -- or procedures to protect against their injurious effects. Determination of noise emission levels and measures for the prevention or reduction of harmful effects. (The listed themes apply to welding as well as to related operations, such as flame cutting, soldering and thermal spraying).

Metal Working Machinery  
West Germany

Project Title: Noise Abatement at Work Sites in Heavy-Plate Shearing Roll Trains.

Performing Organization Name & Address: August Thyssen Iron Works Duisburg, Postfach. 67 West Germany		Sponsoring Organization Name & Address:  Society for Space Exploration	
Principal Investigator(s):		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology	
Start Date: Sept.15,1974	Completion Date: Estimated _____ Actual <u>Dec. 31, 1976</u>	Funding:	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		Year	Amount
		1976 (actual):	
		1977 (budget):	
		1978 (forecast):	
		-----	
		Or Total Funding Amount (887,000DM) \$376,088	
		-----	
COMMENTS:			

Aim is to test structural possibilities for noise abatement possibilities in certain sections of the plate shearing roll train in actual use, and to evaluate their effect with comparative measurements.

Translated and transcribed from the original.

Metal Working Machinery  
West Germany

Project Title: Determination of the impulse sound directly radiated by the Forge Hammer as part of the Total Response.																	
Performing Organization Name & Address: Institute and Chair for Measurement Technique in Machine Construction Hannover, Nienburger Strasse 17 West Germany	Sponsoring Organization Name & Address:																
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Apr. 1, 1976	Completion Date: Estimated _____ Actual <u>Sept. 30, 1976</u>																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>(37,000DM) \$12,720</td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):	(37,000DM) \$12,720	1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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-----																	
Or Total Funding Amount:																	
-----																	
COMMENTS:																	

The task resides in reporting how the two acting noise components, direct and indirect sound transmitted by air, contribute energetically in the case of forge hammers to the total air-transmitted noise. The results yield consequences for measurement technique for impulse-type sound phenomena in the case of forge hammers and for the protection of men working in the immediate vicinity of such noise generation.

Translated and transcribed from the original

Metal Working Machinery  
West Germany

Project Title: Study of the Behavior of Machine Tool Motors in Regard to Stiffness and Noise Generation.											
Performing Organization Name & Address:  Institute for Machine Tools and Management Techniques Munich 2, Arcisstr 21 West Germany	Sponsoring Organization Name & Address:  Union of German Machine Tool Manufacturers										
Principal Investigator(s):  Dipl. Ing. Reiner Boehm	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology										
Start Date: May 1, 1976	Completion Date: Estimated Actual May 31, 1977										
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)											
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">Or Total Funding Amount (40,000DM) \$16,960</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		Or Total Funding Amount (40,000DM) \$16,960	
Year	Amount										
1976 (actual):											
1977 (budget):											
1978 (forecast):											
Or Total Funding Amount (40,000DM) \$16,960											
COMMENTS:											

Noise level measurements and frequency analysis of the radiated noise from machine tool motors. Correlation with structural causes and development of remedial measures. The study is carried out with noise level meter and digital frequency analyzer.

Translated and transcribed from the original.

Metal Working Machinery  
West Germany

Project Title: Noise Abatement in Grinding of Sheet Metal and of Construction Elements Made of Sheet Metal.															
Performing Organization Name & Address: Ministry and Chair for Measurement Techniques in Machine Construction Hannover, Nienburger Strasse. 17 West Germany	Sponsoring Organization Name & Address:  German Research Society for Sheetmetal Processing														
Principal Investigator(s): Dr. Ing. Frohmund Hock	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: Nov.1, 1973	Completion Date: Estimated _____ Actual <u>Apr. 30, 1976</u>														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(463,000DM) \$196,312</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table> COMMENTS:		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(463,000DM) \$196,312	-----	
Year	Amount														
1976 (actual):															
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1978 (forecast):															
-----															
Or Total Funding Amount:	(463,000DM) \$196,312														
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Point of departure: grinding process, vibration behavior and noise radiation of thin plate.

Research object: Measures for reduction of noise stimulation. Separation of effect of tool, workpiece, machine on noise (already led through), noise abatement on machine, work piece, work piece utilization: environmental protection, means: parameter variables affected by: work piece, tool, machine.

Translated and transcribed from the original.



Metal Working Machinery  
West Germany

Project Title: Development of a Low-Noise Processing Technique for Sheet Metal and Sheet Metal Construction in Substitution for Noise-Intensive Grinding Processes with Hand-Held Grinding Machines.

Performing Organization Name & Address:  Chair and Institute for Finishing Technique and Planing Machine Tools Hannover, Welfengarten 1A West Germany		Sponsoring Organization Name & Address:																	
Principal Investigator(s):  Prof. Dr. Ing. Hans Kurt Toenshoff		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																	
Start Date:	Completion Date: Estimated _____ Actual _____	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="0"> <thead> <tr> <th><u>Year</u></th> <th><u>Amount</u></th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:(320,000DM) \$135,680</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		<u>Year</u>	<u>Amount</u>	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:(320,000DM) \$135,680		-----		COMMENTS:	
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Or Total Funding Amount:(320,000DM) \$135,680																			
-----																			
COMMENTS:																			

Adaptation of the tool to the demands of hand processing while maintaining minimum noise level; conception of a drive mechanism and of power transmission for a hand tool.

Translated and transcribed from the original.

<b>Project Title:</b> Study of data and Methods for the Predetermination of Noise-Related Behavior of Milling Machines Under Conditions of Actual Operation.																					
<b>Performing Organization Name &amp; Address:</b> Chair and Institute for Finishing Technique and Planing Machine Tools Hannover, Welfengarten 1A West Germany	<b>Sponsoring Organization Name &amp; Address:</b>																				
<b>Principal Investigator(s):</b>  Prof. Dr. Ing1. Hans Kurt Toenshoff	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype. Production) <input type="checkbox"/> Measurement Methodology																				
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<b>COMMENTS:</b>																					
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																					

Translated and transcribed from the original.

Metal Working Machinery  
West Germany

Project Title: Technical Limiting values for Planning Machine Tools With Due Alteration to Economic Potential for Low-Noise Design.																									
Performing Organization Name & Address:  Laboratory for Machine Tools and Operations Technique Aachen, Wuellnerstr. 5 West Germany	Sponsoring Organization Name & Address:																								
Principal Investigator(s):  Prof. Dr. Ing1. Manfred Weck	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																								
Start Date: Jun 1, 1975	Completion Date: Estimated May 31, 1978 Actual _____																								
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																									
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Aim is to provide basis for decisions regarding the determination of admissible technical limiting noise levels for machine tools. To this effect serial tests are analyzed which were run by industry and which characterize the present state of technology with respect to noise behavior in machine tools. In addition, possibilities for noise abatement in machine tools are tested in the laboratory. The results of this project serve as basis for a "vdi" guideline which is presented in the "ets" sub committee on "planning machine tools."

Translated and transcribed from the original.

Metal Working Machinery  
West Germany

<b>Project Title:</b> Noise Abatement in the Grinding of Sheet Metal and of Construction Elements made of Sheet Metal																			
Performing Organization Name & Address: Chair and Institute for Finishing Technique and Planing Machine Tools Hannover, Welfengarten 1A West Germany	Sponsoring Organization Name & Address:																		
Principal Investigator(s):  Prof. Dr. Ing. Hans Kurt Toenshoff	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																		
Start Date: Dec.1,1973	Completion Date: Estimated _____ Actual <u>Dec.31,1976</u>																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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COMMENTS:																			

Reduction of noise radiation, effect of the processing technique on the noise parameters: fusion, granulation, speed of revolution, diameter of grinding wheel.

Translated and transcribed from the original.

Metal Working Machinery  
West Germany

Project Title: Noise Abatement in Rolling Mill Installations and Finishing Shops													
Performing Organization Name & Address: Operations Research Inst. Duesseldorf, Sohnstr 65 West Germany	Sponsoring Organization Name & Address: European Coal and Steel Community												
Principal Investigator(s):  Dr. Ing. Herbert Fritz	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology												
Start Date: March 1, 1975	Completion Date: Estimated <u>February 28, 1978</u> Actual _____												
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding:												
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COMMENTS:													

The rolling mill installations and finishing shops of the iron and steel industry, workers are subjected to noise stresses with peak levels up to 115 dba. This study is to determine noise emissions and resulting stresses in personnel in a number of plants. On the basis of these measurements, proposals are to be submitted and evaluated regarding technological, structural and organizational changes for noise abatement. Practical planning documentation for new construction or alterations is provided by this procedure.

Translated and transcribed from the original.

Metal Working Machinery  
West Germany

Project Title: Studies for the Development of Noise Abatement Measures for Forging Presses  
Based on the Example of a Double-Sided Executive Forging Press

Performing Organization Name & Address:  Ingenieurbuero K.P. Schmidt VDI Mettman, West Germany		Sponsoring Organization Name & Address:  Federal Minister for Labor and Social Welfare																	
Principal Investigator(s):		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																	
Start Date: Apr.1,1975	Completion Date: Estimated Actual <u>Sept.30,1976</u>	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Of Total Funding Amount:(112,000DM) \$47,488</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Of Total Funding Amount:(112,000DM) \$47,488		-----		COMMENTS:	
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Technical noise abatement measures are to be developed from studies of the noise generation mechanism. These measures will be tested under actual operating conditions. The required structural changes are then to be listed which must be used actively to reduce noises in certain forge presses.

Translated and transcribed from the original.

Metal Working Machinery  
West Germany

Project Title: Noise Distribution and Propagation in Hangars of the Steel Industry.																	
Performing Organization Name & Address:  Operations Research Institute Duesseldorf, Sohnstr. 65 West Germany	Sponsoring Organization Name & Address:  Federal Minister for Research and Technology																
Principal Investigator(s):  Dipl Ing Gerhard Neugebauer	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Dec.1,1974	Completion Date: Estimated _____ Actual <u>Dec.31,1977</u>																
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Aim is to ascertain possibilities for affecting noise distribution and propagation in the hangars of the steel industry, so as to reduce noise levels at the actual work sites: a) measurement of noise distribution in the hangars; b) individual measures for noise abatement; c) compilation of a list of preventive measures; d) computations; e) data in noise distribution and propagation made available for generally applicable projects for improvement.

Translated and transcribed from the original.

Metal Working Machinery  
Abbreviated Listings With Funding

Sweden. Development of Better Systems For Fastening Forging Dies. Swedish Engineering Association, IVF, Goeteborg, Sweden. dr Per Boije. Sponsor: ASF Sweden, Moelndalsvaegen 85, 412 85 Goeteborg, Sweden. March 1, 1975-June 30, 1976. (96,000 Dkr) \$21,629.

Sweden. Acoustical Planning of Mechanic Workshops. Ingemansson Acoustics, Box 53037, S-40014 Gothenburg, Sweden. Hans Elvhammar, Lars Olaf Roseu. Sponsor: Arbetarskyddsfonden, Sveavagen 166, S-11346 Stockholm, Sweden. Type: Development. Dec. 1976-Nov. 1977. (Scr. \$140,000) \$31,542. Noise Abatement Principles Performed and Evaluated in roll-bearing production factory (SKF).

Sweden. Arc Welding, Air Gapping, Improvement of Equipment. Swedish Engineering Association, IVF, Goeteborg, Sweden. Per Boije. Sponsor: ASF Sweden Moelndalsvaegen 85, 412 85 Goeteborg, Sweden. July 1, 1975-Sept. 30, 1976. (93,000 Dkr) \$20,953.

Sweden. Noise Reduction in Cold Forging. Swedish Engineering Association, IVF, Goeteborg, Sweden. Per Boije. Sponsor: ASF, Sweden, Moelndalsvaegen 85, 412 85 Goeteborg, Sweden. Nov. 1, 1974-April 30, 1976. (125,000 Dkr) \$28,163.

Sweden. Noise Abatement in Connection with Welding. Swedish Engineering Association, IVF, Goeteborg, Sweden. Per Boije. Sponsor: ASF Sweden, Moelndalsvaegen 85, 412 85 Goeteborg, Sweden. July 1, 1975 -Dec. 31, 1976. (200,000 Dkr) \$45,060.

Sweden. Oil Burners in the Forging Industry. Swedish Engineering Industry Association, IVF, Goeteborg, Sweden. Per Boije, dr Eng. Sc. Sponsor: ASF Sweden, Moelndalsvaegen 85, 412 85, Goeteborg, Sweden. Nov. 1, 1974 -Feb. 29, 1976. (133,000 Dkr) \$29,965. Modifications and construction changes of oil burners and ovens to reduce noise.

Sweden. Survey of the Existence of Infra-Noise in a Steel Mill. University of Lulea, Noise and Vibration Project, Lulea, Sweden. dr. Ulrik Dundbaeck. Sponsor: ASF Sweden, Moelndalsvaegen 85, 412 85 Goeteborg, Sweden. July 1, 1975-June 30, 1976. (29,130 Skr) \$6,563.



Metal Working Machinery  
France

Project Title:  Noise From Rotary Pneumatic Tools		Performing Organization Name & Address: INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France		Sponsoring Organization Name & Address:															
Principal Investigator(s): M. T. Ho H. Leblond G. Andre		Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																	
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1. ORIGIN AND REASONS FOR THE STUDY

This study, undertaken at the initiative of the INRS, is aimed at determining and measuring the acoustic force and mechanical properties of supposedly noisy pneumatic rotary tools, such as drills, grinders, screws.

2. PRESENTATION OF THE STUDY

The present study is essentially concerned with the measurement of the noise emitted by pneumatic rotary tools during their normal use in industry, or, at least, under experimental conditions simulating such normal use as closely as possible. In order to verify the fact that "silent" operation has not been obtained to the detriment of a loss in mechanical power or an increase in compressed air consumption, these two parameters (mechanical power and air consumption) will be measured as well for each of the tools.

3. STATE OF PROGRESS

Preliminary tests have already been performed in order to determine the types of tools that should be tested. Actually, these comparative materials tests are of no value unless the noise emitted depends, to a substantial degree, on the quality of the tool, and not only on the type of work being done. We also decided to limit ourselves in this study to the following tools: straight grinders, surfacing grinders and drills. As concerns the measurements of mechanical power, the test bench was made by INRS, as well as the test for yield, which were done with precision using calibrated venturis. A working reunion was organized for May 15, 1975, where pneumatic materials manufacturers and importers, as well as the professional union representative (himself a manufacturer) met. Only two corporations sent representatives to this reunion. Despite this reticence, the meeting made it possible to reach certain specifications regarding the choice for the tests of tools currently being used (power, diameter of the grinders or drills), as well as regarding the noise measurements themselves. On this subject there was a disagreement of opinions between the position of the INRS, which was interested, on the prevention level, in the noise emitted during normal operation of the machine, and that of the "pneuop" code promoters, who were more interested in the noise of the machine itself (during the tests, the mechanical force of the machine was released beneath a soundproofing casing).

Translated and transcribed from the original.

Subsequently, the suppliers' doubts were overcome after information was provided, and they even accepted for the most part, the idea of lending their full range of tools to the INRS. In total, 17 drills, 8 straight grinders and 10 surfacing grinders were reviewed and subjected to tests. These tests consisted of:

- mechanical: measurement, as a function of rotating speed, of couple (from which the mechanical power is derived), and of compressed air consumption;
- acoustic: measurement of the noise pressure level at the working area and evaluation of acoustic force during operation of the tools when empty and during two types of operations: cast-iron trimming and grinding of mechanically welded structures.

#### 4. CONTINUATION OF THE STUDY

The results are in the process of being communicated to the suppliers and manufacturers for purposes of information and possible comments. A report will be prepared for publication in "Work and Safety", if possible before the end of 1976.

Metal Working Machinery  
France

Project Title: Noise From Manufacture of Metal Packing Cases																	
Performing Organization Name & Address: INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France	Sponsoring Organization Name & Address:																
Principal Investigator(s):  A. Damongeot	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																
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1. ORIGIN AND REASONS FOR THE STUDY

This type of factory generally contains several noise sources: operation of rapid cutting presses, striking of metal boxes against each other or against various obstacles, pneumatic exhausts, etc. Often, the noise ambience is further aggravated by too great a density of machines.

2. CONTENTS OF THE STUDY

Within the framework of activities of the CRAM, the INRS has already been invited to participate in the study of soundproofing devices for a metal packing case manufacturing factory in the region of NANCY.

Similar work has been done by the Rennes Bank.

However, the knowledge obtained concerning soundproofing in factories, where metal packing cases are manufactured remains fragmentary. It is of interest to examine the question on a more general level (manufacturing process, design of the factories, machine soundproofing, etc.) and to strike a balance in relation to the soundproofing possibilities, a balance which can be based on actual models.

3. STATE OF PROGRESS

This study can be considered half-finished.

4. CONTINUATION OF THE STUDY

Since it is being conducted part-time because of a heavy workload, it would be continued in 1976, with a possible spillover into 1977.

Project Title: Noise From Turning Lathes																									
Performing Organization Name & Address: INRS 30, Rue Olivier Noyer 75680 Paris Dedex 14 France	Sponsoring Organization Name & Address:																								
Principal Investigator(s): M. T. Ho H. Leblond G. Andre	Type of Research Program: ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, Production) ___ Measurement Methodology																								
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#### 1. REASONS FOR THE STUDY

The level of noise in screw cutting plans often exceeds 95 db (A) by quite a bit, as a sonometric study, the results of which were presented in an article which appeared in the Documentary Notebooks, no. 55, of the second trimester of 1969, has shown. It therefore appeared to be a good idea to study the noise of these machines.

#### 2. CONTENTS OF THE STUDY

The noise comes from the lathe, but it also often comes from the rubbing and striking of the bars against the guide. Such a study should take into account on the one hand tests on silent guide-bar tubes and coverings, the perfection of more effective devices if the ones available on the market are not sufficiently effective, and on the other hand tests on reducing the noise of the lathe itself. All these tests have not been undertaken by the INRS, because the Screw Cutting Technical Center (CTDEC) is conducting a similar study.

#### 3. STATE OF PROGRESS

The CTDEC study conducted in collaboration with the CNRS of Marseilles is practically finished, It has made it possible for the CTDEC to perfect a cheaper device, to conduct a comparative study on tubes being sold on the market, and to propose an original test code to the AFNOR. For its part, the INRS has studied the noise of an automatic lathe manufactured in France. In relation to this lathe, a gain of 15 db (A) was obtained by uncoupling the gear box and adapting its housing. Furthermore, a series of tests has been undertaken in the screw cutting plants of the Cluses region toward the end of determining the effect of reverberation in the plants and the arrangement of the lathes on the noise level in the plant.

#### 4. CONTINUATION OF THE STUDY

Various noise-reducing devices for guide bar tubes are now available, so it is a good idea to study the best practical manner of using them to obtain a notable reduction in noise in screw cutting plants. This study will be undertaken in conjunction with the Prevention Service of the CRAM in Lyon. A pilot model could be envisioned in the Cluses region. It will be undertaken in collaboration with the Rhone Alpes Health Insurance Regional Bank.

Translated and transcribed from the original.

Project Title:																			
Performing Organization Name & Address: Instytut Obrobki Skrawaniem Ul. Wroclawska 37a 30-011 Krakow, Poland	Sponsoring Organization Name & Address:																		
Principal Investigator(s):  R. Sniechowski, D. Sc. Ing.	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
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We conduct the research on noise abatement of machine tools and have had very good results so far.

There are also some other Institutes in Poland co-operating with us on these matters.

Transcribed from the original

Project Title: Reduction of Noise From the Operation of Machine Tools																	
Performing Organization Name & Address: Machine Tool Industry Research Association Hutley Road Macclesfield, Cheshire SK10 2NE United Kingdom	Sponsoring Organization Name & Address: Department of Industry, Research Requirements Board; UK Machine Tool Industry (MTIRA Member Companies)																
Principal Investigator(s):  G.M. Tomlin D. Hartley	Type of Research Program:  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology																
Start Date: 1970	Completion Date: Estimated 1978 Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	<p>Funding:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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1976 (actual):																	
1977 (budget):																	
1978 (forecast):																	
-----																	
Or Total Funding Amount:																	
-----																	
COMMENTS:																	

Noise measurement methods, UK and international regulations, standard tests and conditions: developed BS 4813:1972; collected noise data from different types of machine tool; preparing draft standards for machines when cutting. Generation, transmission and radiation of noise in mechanisms and design techniques for noise reduction: developing techniques for identifying noise sources; current work on structural design - methods of damping, etc. Noise generated by cutting processes and its suppression; examination of machines to identify contribution made by cutting process; examination of parameters involved in cutting process which influence noise. Methods of treatment for existing noisy mechanisms: identification of high-noise mechanisms and methods of treatment. Transfer of technology to, and liaison with, industry.

Publications:

MTIRA notes on machine noise  
Proceedings MTIRA Conference, 1973

The reduction of noise from machine tools  
G.M. Tomlin and D. Hartley  
Proceedings 15th International Machine Tool Design and Research Conference  
Birmingham, 1974 Macmillan, 1975

A survey of the noise levels of machine tools  
D. Hartley, A. Golder, N.D. Cirtu and R. Dimitriu  
Proceedings 16th International Machine Tool Design and Research Conference  
Manchester, 1975, Macmillan, 1976

Transcribed from the original.

Metal Working Machinery  
West Germany

Project Title: Noise Generation By Cutting Torches and Flame Cutters

Performing Organization Name & Address: Planck Institute for Flow Research Goettingen, Boettingerstr. 6-8 West Germany		Sponsoring Organization Name & Address:  Messer Griesheim GMBH Frankfurt West Germany															
Principal Investigator(s): Dr. Albrecht Dinkelacker		Type of Research Program:  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology															
Start Date: May 1, 1973	Completion Date: Estimated _____ Actual <u>Apr. 30, 1976</u>	Funding: <table><thead><tr><th><u>Year</u></th><th><u>Amount</u></th></tr></thead><tbody><tr><td>1976 (actual):</td><td></td></tr><tr><td>1977 (budget):</td><td></td></tr><tr><td>1978 (forecast):</td><td></td></tr><tr><td colspan="2">-----</td></tr><tr><td colspan="2">Or Total Funding Amount:</td></tr><tr><td colspan="2">-----</td></tr></tbody></table> COMMENTS:		<u>Year</u>	<u>Amount</u>	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----	
<u>Year</u>	<u>Amount</u>																
1976 (actual):																	
1977 (budget):																	
1978 (forecast):																	
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Or Total Funding Amount:																	
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	

Measurement of the noises created by cutting and flaming  
in order to find out how and why these noises occur and to search  
for ways of reducing them.

Translated and transcribed from the original.

Metal Working Machinery  
West Germany

Project Title:		Advance Computation of Noise Dosage Distribution in Plant Hangars															
Performing Organization Name & Address: Institute for Industrial Plant Installations Hannover Technical University Hannover, Welfengarten 1 West Germany		Sponsoring Organization Name & Address: Society for Space Exploration															
Principal Investigator(s):		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
Start Date: Jan.1, 1975	Completion Date: Estimated Actual June 30, 1977	Funding:															
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----	
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1977 (budget):																	
1978 (forecast):																	
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Or Total Funding Amount:																	
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COMMENTS:																	

A computer program is being developed with which noise maps (graphic representation of the distribution of the estimated noise level) with adequate precision can be prepared in advance for the installations of the sheet metal processing industry (elevated pulse-like emission values). Parallel to that, a program is being developed for production oriented layouts, (machine positioning maps) which can be used together with the noise map program.



Metal Working Machinery  
Abbreviated Listings

Norway. Noise Reduction in the Machine Tool Industry. SINTEF, The Laboratory of Acoustics, ELAB, Universitetet i Trondheim, 7034 Trondheim, Norway. Jan. 1, 1976. Close cooperation with 17 Norwegian firms with the aim of improving the physical working environment.

United Kingdom. Reduction in Noise in Foundries. Health and Safety Executive, London, United Kingdom. 1977.

West Germany. Improvement of Working Conditions in Cleaning Rooms of Foundries. Burdeurs, c/o DFVLR (GRW), Koeln, West Germany. Sponsor: Federal Ministry for Research and Development. 1975 - 1977.

West Germany. Study of Noise Impact and Its Reduction in Sheet Metal Industry. Thyssen, AG, 40 DFVLR (GRW), Koeln, West Germany. Federal Ministry for Research and Development. 1974 - 1976.

West Germany. Noise of Machine Tools Used for Removal of Material (Basic Studies of Types of Machines, Statistical Properties, Limitation of the Noise Level). The Rhine-Westphalia Tech. Sch. of Aachen, Machine Research Service, Wuellnerstrasse 5, 5100 Aachen, West Germany.

West Germany. Measures for Reducing the noise of Sheet Metal Processing Machines. Heinrich Gillet KG, 6732 Edenkoben, Post Fach 100, An der Bundesstrasse 38, West Germany.

West Germany. Noise Reduction in Machine Tools. Technical University of Hanover, Hanover, West Germany. Prof. Toenshoff. Sponsor: German Research Council, Federal Ministry of Research & Development. 1973 - 1977.

West Germany. Noise Reduction in Rolling Mills, Furnaces, Saws. Research Institute of VdEH, Duesseldorf, West Germany. Sponsor: European Community for Coal and Steel, Federal Ministry for Research and Development. 1975 - 1978.

West Germany. Improvement of Working Conditions for Welders. Federal Cooperation of Welders, Duesseldorf, West Germany. Sponsor: Federal Ministry for Research and Development, State Ministry Work, Health and Social Affairs, Duesseldorf, West Germany. 1976.

MANUFACTURING EQUIPMENT  
OTHER INDUSTRIAL EQUIPMENT



Project Title:																	
Attenuation of Low Frequency Sound in Ducts with Flow.																	
Performing Organization Name & Address:	Sponsoring Organization Name & Address:																
Dept. of Mechanical Engineering University of Adelaide South Australia 5001	Department of Silence Australian Government Research Grant P.O. Box 449, Woden, A.C.T., Australia 260																
Principal Investigator(s):	Type of Research Program:																
David Alan Bies Christopher Robert Fuller	<input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date:	Completion Date:																
March 1975	Estimated <u>May 1978</u> Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding:																
	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>(\$ 2,000.) \$ 2,220.</td> </tr> <tr> <td>1977 (budget):</td> <td>(\$ 6,000.) \$ 6,660.</td> </tr> <tr> <td>1978 (forecast):</td> <td>(\$20,000.) \$22,200.</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):	(\$ 2,000.) \$ 2,220.	1977 (budget):	(\$ 6,000.) \$ 6,660.	1978 (forecast):	(\$20,000.) \$22,200.	-----		Or Total Funding Amount:		-----		COMMENTS:	
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1978 (forecast):	(\$20,000.) \$22,200.																
-----																	
Or Total Funding Amount:																	
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COMMENTS:																	

The aim of this project is to develop acoustic reactive attenuators for use in ducts with flow. The research program is basically a theoretical predictor of the performance of the attenuator followed by experimental investigation of a scale model. An attenuator which fits into a 90° bend in the duct system has been investigated theoretically and experimentally without flow and was found to provide attenuation of 10 dB over 3/4 of an octave for frequencies less than the cut-off of the (1,0) mode.

Present work is to experimentally confirm a theory which predicts how the attenuator will perform with flow. Investigation is also being carried out on a reactive attenuator which utilizes delay lines and could be used in high speed circular ducts.

Transcribed from the original.

Other Industrial Equipment  
Canada

Project Title:

Noise from Compressor Stations

Performing Organization Name & Address:		Sponsoring Organization Name & Address:																	
E. Bolstand Engineering Edmonton, Alberta Canada		Alberta Environment 9820 - 106 Str. Edmonton, Alberta T5K 2J6 Canada																	
Principal Investigator(s):		Type of Research Program:																	
		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																	
Start Date:	Completion Date:																		
August 1977	Estimated November 1977 Actual _____																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td>(\$20,000) \$18,856</td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):	(\$20,000) \$18,856	1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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1977 (budget):	(\$20,000) \$18,856																		
1978 (forecast):																			
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Or Total Funding Amount:																			
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COMMENTS:																			

Purpose of the study - to develop a set of criteria for control of noise emanating from oil and gas compressor and pumping stations and processing plants including typical noise control measures to be required and basic procedures for monitoring the noise climate around the plant. The documentation is expected to be particularly useful to the Standards and Approvals Division in evaluating license applications for new construction and to the Pollution Control Division in evaluating complaints.

The project will basically involve an examination of the range of plant sizes and types typically used in Alberta, selection of a suitable sample or samples to be studied in each category, field investigation of the noise climate surrounding the selected samples and the principle sources of noise in each case, and development of a handbook which will enable licensing and enforcement officers to quickly evaluate potential and/or actual noise problems.

The handbook would be expected to contain tables of data in respect to sound sources and attenuation devices, and a calculation procedure for predicting the overall result. The procedure would be adaptable to a short computer or calculator program.

Project Title: Noise Reduction Methods in Existing Concrete Component Factories.																	
Performing Organization Name & Address: Enviroplan A/S 7 Rustenborgvej DK-2800 Lyngby Denmark	Sponsoring Organization Name & Address: Betonelement-Foreningen (The Danish Precast Concrete Federation) 106 N. Voldgade DK-1358 Copenhagen K Denmark																
Principal Investigator(s):  Enviroplan A/S	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Sept. 1977	Completion Date: Estimated <u>Feb. 1978</u> Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: approx. \$50,000</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS: Partly financed by public funds</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: approx. \$50,000		-----		COMMENTS: Partly financed by public funds	
Year	Amount																
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1977 (budget):																	
1978 (forecast):																	
-----																	
Or Total Funding Amount: approx. \$50,000																	
-----																	
COMMENTS: Partly financed by public funds																	

Pilot project aiming at:

- Localizing noise sources and the transmission of noise in plant equipment.
- Measuring noise impact levels.
- Calculating means of noise reduction.
- Executing noise reduction changes in noise transmission ways of machinery.
- Check resulting noise impact levels.

Transcribed from the original.

Project Title:

Paper Machine Noise.

Performing Organization Name & Address: Institute of Occupational Health Laajaniityntie 1 01620 Vantaa 62 Finland		Sponsoring Organization Name & Address:																	
Principal Investigator(s):  P. U. Lehtinen Jukka Starck		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date: Jan. 1, 1972	Completion Date: Estimated July 6, 1977 Actual _____	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount: (20,000 Fmk)</td> <td>\$4,900</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (20,000 Fmk)	\$4,900	-----		COMMENTS:	
Year	Amount																		
1976 (actual):																			
1977 (budget):																			
1978 (forecast):																			
-----																			
Or Total Funding Amount: (20,000 Fmk)	\$4,900																		
-----																			
COMMENTS:																			

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

The aim of the study was to measure the noise levels in halls where paper machines are operated and to determine the paper machine and hall characteristics which affect the noise. A total of nine machines and halls were included in the investigation.

The study was a part of the preparatory work of the Committee on Security Regulations for Paper Machines. The Committee's report to the National Board of Labor Protection led to the establishment of safety regulations for paper machines in 1975.

The airborne noise was measured and analyzed with a 1/3 octave real-time analyzer at the distances of 1, 2, 4, 8, and 16 meters from the headbox and the press section, at the middle of the predryer section and at the machine calender or pope reel. Moreover the noise at the trimming refiners, vacuum pumps and winders, and also in the control room, was measured.

Reverberation times were measured and analyzed in octave bands in the wet and dry sections of the hall.

After the report to the Committee the noise caused by a newer and more silent Finnish paper machine was measured. In the present study the results are compared to those from the other machines and also to the noise limits in the safety regulations for paper machines. The comparison shows that the noise levels in paper machine halls can be lowered to meet the limits in the regulations for paper machines, except in the area of the suction rollers. Currently in Finland procedures for lowering the noise in the area of these rollers to a level below the noise limit (90 dB) that becomes effective on 1 January 1980 are not available in all cases.

Finally the sources of the highest noise levels are revealed and some recommendations on the lowering of noise levels are presented.

Transcribed from the original.

Project Title:

Super-Quiet Fan.

Performing Organization Name & Address: Sumitomo Precision Productions Co. Ltd. 6,2 Chome, Nishinagasu-hondori Amagasaki, Japan		Sponsoring Organization Name & Address:															
Principal Investigator(s):  K. Funada		Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
Start Date: March 1976	Completion Date: Estimated <u>March 1978</u> Actual _____	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>\$70,000</td> </tr> <tr> <td>1977 (budget):</td> <td>\$10,000</td> </tr> <tr> <td>1978 (forecast):</td> <td>\$10,000</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):	\$70,000	1977 (budget):	\$10,000	1978 (forecast):	\$10,000	-----		Or Total Funding Amount:		-----	
Year	Amount																
1976 (actual):	\$70,000																
1977 (budget):	\$10,000																
1978 (forecast):	\$10,000																
-----																	
Or Total Funding Amount:																	
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		COMMENTS:															

Target :

Specific Sound Level ※1	
Conventional	Target
45 ~ 55 dBA	30 dBA (MAX)

Fan Dia.	Static Press X Air Qnt'y	expected ※3 Noise Level	Actual ※3 Noise Level	Specific Sound Level
3FT	12mmAq X 500 m <sup>3</sup> /min <sup>※2</sup>	57 dBA	54 dBA	27.5 dBA
4FT	12mmAq X 900 m <sup>3</sup> /min	55 dBA	62 dBA	27.5 dBA
5FT	12mmAq X 1400 m <sup>3</sup> /min	71 dBA	68 dBA	27.5 dBA

$$LS = LA - 10 \log(Pt^2 Q) + 10 \log(4\pi) + 20 \log(1.5D)$$

Specific Sound Level : LS (dBA)

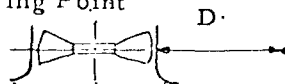
Noise Level : LA (dBA)

Air Quantiy : Q (normal m<sup>3</sup>/min)

Total Pressure : Pt (mmAq)

※2 Normal m<sup>3</sup>/min

※3 Measuring Point



Transcribed from the original.



Project Title:

Noise Reduction and Prediction System for Thermal Power Plants

Performing Organization Name & Address: Nimura Laboratory Faculty of Engineering Tohoku University Aoba Aramaki, Sendai, Japan		Sponsoring Organization Name & Address:  Tohoku Electric Power Co. 7-1 1 Bancho, Sendai, Japan	
Principal Investigator(s):  T. Nimura, S. Kono, M. Yuzawa, T. Sone, T. Negoro et al		Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology	
Start Date: April, 1971	Completion Date: Estimated <u>Sept. 1979</u> Actual _____	Funding:	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  GOALS; 1. We aim to make it possible to design the power plants which have little effect relating to noise on surrounding community. 2. The integrated calculating system for noise from power plants is to be prepared. Many factors will be included in this work such as the treatment of composite noise sources, excess attenuations, source identification and others. 3. We aim to improve the working environment by reducing noise level inside power plants.  APPROACH; 1. Measuring the power level of noise generated from various installations in power plants. ( " NOISE REDUCTION FOR THERMAL POWER PLANT " Technical Report of Tohoku Electric Power Co. No. 71027 March, 1972 ) 2. Estimating the attenuation by a duct with large opening and a sound insulation wall used as a countermeasure against power plant noise. 3. Establishing the calculating system for the accurate prediction of composite noise from power plants.  RESULTS; 1. We established the calculating method of noise attenuation through large intake and exhaust system. We set up those system to several power plants and the expected attenuations were obtained. ( " NOISE REDUCTION OF 180° BEND IN VENTILATING DUCT " By T. Negoro et al. Trans. I.E.E.J. Vol. 94-C, No.11 1974 ) 2. We established the calculating method of noise attenuation by barriers ( knife edge, right-angled edge and multiple barriers etc. ). ( " NOISE REDUCTION BY VARIOUS SHAPES OF BARRIERS " Inter Noise 75 1975 ) ( " SOUND ATTENUATION BY MULTIPLE BARRIERS WITH KNIFE AND/OR RIGHT-ANGLED EDGES " By M. Yuzawa et al Jour. Acoust. Soc. Japan Vol.31 No.9 ) 3. The integrated calculating system for noise from power plants was prepared and its availability was ascertained in the trial stage from the comparison between calculated and measured level of noise in an existing power plant. But its accuracy is to be improved in successive study. ( " NOISE REDUCTION SYSTEM FOR PLANNING ON THERMAL POWER PLANT " By T. Nimura et al INCE/JAPAN Technical Report Decem. 1976 )		Year	Amount
		1976 (actual):	(¥ 800,000) \$2,937
		1977 (budget):	(¥ 1,000,000) \$3,671
		1978 (forecast):	(¥ 1,000,000) \$3,671
		Or Total Funding Amount: _____	
		COMMENTS:	

Project Title:																	
A Study on Prevention of Factory Noise and Vibration.																	
Performing Organization Name & Address: Noise Section, Research Institute for Environmental Protection Toyko Metropolitan Government 7-2, Yurakucho, Chiyoda-ku Tokyo, Japan	Sponsoring Organization Name & Address: Tokyo Metropolitan Government 1-5-3 Manunochi, Chiyoda-ku Tokyo, Japan																
Principal Investigator(s):  Takashi Takayama	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: 1977	Completion Date: Estimated 1980 Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
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Year	Amount																
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1978 (forecast):	?																
-----																	
Or Total Funding Amount:																	
-----																	
COMMENTS:																	

The following items will be studied aiming at the effectiveness of the prevention of factory noise by building and room structures.

1. Compare the sound-insulating characteristics in cases where the noise sources are radio speakers and the actual machines.
2. Effect of leaked noise (for example, through a crevice) on the noise insulation.
3. Effect of opened areas such as windows and doors on noise insulation.
4. Combine items 1, 2, and 3, and investigate a formula to assess outdoor noise level.

Translated and transcribed from the original Japanese.

Project Title:

Noise in Food-Processing Industry

Performing Organization Name & Address: Nat. Inst. of Techn. P.box 8116 -Oslo dep., Oslo 1 Norway		Sponsoring Organization Name & Address: Norges Tekniske-naturvitenskapelige Forskningsråd, NTNF. Gaustadalléen 3b Oslo 3, Norway.																	
Principal Investigator(s):  Hans Fjerdingsstad		Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date: 1 Jan. 1975	Completion Date: Estimated 1 Jan. 1978 Actual	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual): (Nkr. 70.000)</td> <td>\$13188</td> </tr> <tr> <td>1977 (budget): (Nkr. 30.000)</td> <td>\$ 5652</td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2"></td> <td colspan="2">-----\$28260-----</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">Or Total Funding Amount: (aprox Nkr. 150.000)</td> </tr> </tbody> </table>		Year	Amount	1976 (actual): (Nkr. 70.000)	\$13188	1977 (budget): (Nkr. 30.000)	\$ 5652	1978 (forecast):				-----\$28260-----				Or Total Funding Amount: (aprox Nkr. 150.000)	
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1978 (forecast):																			
		-----\$28260-----																	
		Or Total Funding Amount: (aprox Nkr. 150.000)																	
COMMENTS:																			
1. Noise survey of industry, including measurments of production halls acoustical properties.																			
2. Measuring the acoustical and hygienic properties of available acoustical materials. Investigate wear due to ordinary wasting procedures.																			
3. Build a prototype of a hygienic acoustical enclosure for food - processing machineries.																			
4. Establish a "Noise - abatement group" in food - processing industry.																			

Project Title:

Noise in Fish-Refinery Industry

Performing Organization Name & Address: National Inst. of Technology P.Box 8116-Oslo dep. Oslo 1, Norway.		Sponsoring Organization Name & Address: Norges Fiskeriforskningsråd (NFFR) P.b. 1853 7001 Trondheim, Norway.											
Principal Investigator(s): Knut Finsveen Hans Fjerdingsstad		Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology											
Start Date: Jan. 1. 1976	Completion Date: Estimated _____ Actual Jan. 1. 1978	Funding:											
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>(Nkr. 110.000) \$20724</td> </tr> <tr> <td>1977 (budget):</td> <td>(Nkr. 100.000) \$18840</td> </tr> <tr> <td>1978 (forecast):</td> <td>----- \$47100 -----</td> </tr> <tr> <td colspan="2"><u>Or Total Funding Amount:</u> (Nkr. 250.000)</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):	(Nkr. 110.000) \$20724	1977 (budget):	(Nkr. 100.000) \$18840	1978 (forecast):	----- \$47100 -----	<u>Or Total Funding Amount:</u> (Nkr. 250.000)	
		Year	Amount										
		1976 (actual):	(Nkr. 110.000) \$20724										
1977 (budget):	(Nkr. 100.000) \$18840												
1978 (forecast):	----- \$47100 -----												
<u>Or Total Funding Amount:</u> (Nkr. 250.000)													
COMMENTS:													

1. Noise reduction on fish - filet - machinery.
2. Planning an "ideal" acoustical environment for fish - filet production halls.

Project Title:

**Less Noisy Consolidation Methods For Production of Concrete Elements.**

Performing Organization Name & Address:  IFM Akustikbyrån AB Warfvinges väg 26 S-112 51 Stockholm, Sweden		Sponsoring Organization Name & Address:  Swedish Work Environmental Fund (Arbetskyddsnämnden) Sveavägen 166 S-113 46 Stockholm, Sweden											
Principal Investigator(s):  Lars Holmberg		Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology											
Start Date:  1 April 1977	Completion Date: Estimated <u>part 1: 1 Oct-77</u> Actual _____	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget): (part 1</td> <td>525,000 SwCrs) \$118,282.</td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget): (part 1	525,000 SwCrs) \$118,282.	1978 (forecast):		Or Total Funding Amount:	
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1978 (forecast):													
Or Total Funding Amount:													
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		COMMENTS:   											

The goals of the project are to develop less noisy consolidation methods for production of concrete elements. Part 1 of the project is divided into two sections. In section 1 investigation of present technologies for production of concrete elements will be done. Section 2 includes collection of external information and development of a model of the mould filled with fresh concrete during consolidation. In later parts of the project optimal consolidation data for concrete will be determined and tests with new consolidation methods will be performed. Reports will be published continuously from November 1977 and onwards.

Project Title:

Noise Reduction at Painting Spray Guns.

Performing Organization Name & Address: The Swedish Institute of Production Engineering Research Molndalsvagen 85 412 85 Goteborg Sweden		Sponsoring Organization Name & Address:																	
Principal Investigator(s):  Christer Bramberger		Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date: Jan. 1, 1977	Completion Date: Estimated Jan. 3, 1978 Actual _____	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td>\$43,934</td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (195,000 Skr) \$43,934</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):	\$43,934	1978 (forecast):		-----		Or Total Funding Amount: (195,000 Skr) \$43,934		-----		COMMENTS:	
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-----																			
COMMENTS:																			

The aim of the project is to investigate the noise emission of spray guns in order to find out the origin of the noise. Some new theories for quieter spray guns will be tested out and this information will be helpful for the manufacturers of spray guns. All the practical tests are done with reference to the quality of the painted surface.

Transcribed from the original.

Project Title:

Noise Control of Machines for Production of Concrete Products.

Performing Organization Name & Address:

IFM Akustikbyrån AB  
Warfvinges väg 26  
S-112 51 Stockholm, Sweden

Sponsoring Organization Name & Address:

Swedish Work Environmental Fund  
(Arbetarskyddsnämnden)  
Sveavägen 166  
S-113 46 Sweden

Principal Investigator(s):

Lars Holmberg

Type of Research Program:

\_\_\_ Fundamental  
x Development (Component or System)  
\_\_\_ Demonstration (Experimental, Prototype, or  
Production)  
\_\_\_ Measurement Methodology

Start Date:

Jan 1978

Completion Date:

Estimated 30 June 1979  
Actual

Project Summary: (Briefly describe the  
goals, approach, expected or actual results,  
report(s) generated and the date(s) of  
publication.)

Funding:

Year	Amount
1976 (actual):	
1977 (budget):	
1978 (forecast):	
Or Total Funding Amount: (150.000 Sw Crs (forecast))	
COMMENTS:	

This project is a part of a long-time project concerning noise control of machines for production of concrete products. The work was started in 1971 with a survey and since then different machines have been investigated and noise control measures have been developed. This part of the work will deal with machines for production of large concrete pipes, machines for production of tiles and noise control of existing machinery for production of concrete elements.

Reports will be published continuously from approx. April 1978 and onwards.

Project Title:  
Reduction of Noise Emission from Paper and Board Machines.

Performing Organization Name & Address: PIRA Randalls Road Leatherhead Surrey KT22 7RU England		Sponsoring Organization Name & Address: PIRA Members Department of Industry																	
Principal Investigator(s): E R Gates P G Burkitt plus sub-contractors		Type of Research Program: <input checked="" type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date: Feb 1977	Completion Date: Estimated <u>March 1978</u> Actual _____	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast)</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (£45,000 sterling) \$77,382.</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast)		-----		Or Total Funding Amount: (£45,000 sterling) \$77,382.		-----		COMMENTS:	
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COMMENTS:																			
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

Goals 1 Identify and quantify the principal sources of noise in paper and board making machines.

2 Propose appropriate actions for reducing noise emission in the immediate, short and longer term.

Programme: Use cross-correlation and coherence techniques to identify and quantify noise sources.

If these techniques are not successful in a highly reverberant machine house, simpler methods, such as running parts of a machine if possible, will be tried.

The actions recommended for reducing noise levels will depend on the results of the first part of the programme.

Reports: A report will be issued at the end of the project, but its circulation will be decided by the Department of Industry and PIRA at a later date.



Project Title: Industrial Noise: Investigation of Noise Generated in Materials Handling Systems.																	
Performing Organization Name & Address: Production Engineering Research Association Melton Mowbray Leicestershire LE13 OPB United Kingdom	Sponsoring Organization Name & Address: Department of Industry																
Principal Investigator(s):  K. Healiss	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Aug. 1974	Completion Date: Estimated <u>June 1976</u> Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding: <table border="0"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>\$17,196.- \$42,990.</td> </tr> <tr> <td></td> <td>----- (£10,000 - £25,000) -----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	\$17,196.- \$42,990.		----- (£10,000 - £25,000) -----	COMMENTS:	
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	----- (£10,000 - £25,000) -----																
COMMENTS:																	

To identify major sources of noise in materials handling systems and recommend the most cost-effective measures to reduce noise from these sources to an acceptable level, in conjunction with a number of industrial users and manufacturers of material handling equipment. The investigation will continue and the results of the noise control measure will be monitored.

Transcribed from the original.

Project Title: Oscillations in Supersonic Flow in a Duct Following an Abrupt Change in Cross-Section.

Performing Organization Name & Address: The City University, St. John Street, London, EC1V 4PB; and The Max-Planck-Institut für Strömungsforschung, D 3400 Göttingen, Böttlingerstrasse.		Sponsoring Organization Name & Address: NATO Brussels (Part Sponsor)	
Principal Investigator(s): Dr. J.S. Anderson (T.C.U.); Dr. W.M. Jungowski; Dr. G.E.A. Meier (M.P.I.).		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology	
Start Date: August 1975	Completion Date: Estimated 1978 Actual _____	Funding:	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  The aim is to perform a fundamental experimental and theoretical investigation of large amplitude oscillations in supersonic flow in a rectangular duct. The oscillations occur in a duct downstream of an abrupt change in section.  The main tool of the experimental approach is a Mach-Zehnder interferometer which is used to visualize the flow. High-speed films can also be taken and can be synchronised with piezo-electric pressure transducers on the walls of the duct.  The results show that there are several types of oscillations which can occur. The two major types are a base pressure oscillation and a shock-pattern oscillation. In the former there is a variation in the position and strength of a normal shock during a cycle. In the latter there is a cyclical change from a normal to an oblique shock system. The oscillations produce considerable external noise.  It is intended that the project will be indirectly of help in describing the flow and noise produced in pressure reducing valves, supersonic diffusers, and aircraft propelling nozzles.		Year	Amount
		1976 (actual):	\$5000
		1977 (budget):	\$4000
		1978 (forecast):	\$2000
		Or Total Funding Amount: _____	
		COMMENTS:	

Publication:

J.S. Anderson, W.M. Jungowski, W.J. Hiller and G.E.A. Meier,  
Flow oscillations in a duct with a rectangular cross-section,  
Journal of Fluid Mechanics (1977) 79, pt. 4, pp. 769-784.

Project Title:	
Electromagnetically Induced Vibrations in Rotating Electrical Machines.	
Performing Organization Name & Address:	Sponsoring Organization Name & Address:
University of Nottingham, University Park, Nottingham, United Kingdom	
Principal Investigator(s):	Type of Research Program:
Dr. K. J. Bradley Professor A. Wright Mr. Abd El-Kader	<input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology
Start Date:	Completion Date:
Jan. 9, 1976	Estimated Jan. 9, 1979 Actual _____
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	
<p>A detailed investigation is being conducted into the parameters affecting the levels of the electromagnetically induced vibrations in machines. The ultimate aim is to develop design procedures, and determine the manufacturing tolerances necessary to achieve a low vibration specification. The work stemmed from industrial contact with Y-ARD, Ltd concerning machines for particular applications.</p> <p>Presently, both experimental and theoretical investigations are in progress. Experimental work is being conducted on a specially constructed rig capable of testing motors over a wide speed range at loadings up to 45 kW with negligible vibration introduced from the load machine</p> <p>The experimental programme includes a study of the effects produced by rotor eccentricity, as well as providing data for correlation with the results of the theoretical investigation.</p> <p>The basis of the computational analysis is an operational model of the machine in which account is taken of the effects of teeth and of saturation, and electromagnetic conditions must be determined to a degree of accuracy which is acceptable in engineering terms. This development is an extension of an existing computational facility of proven accuracy for determining the performance of machines when operating under fault conditions, or from non-sinusoidal supplies.</p>	
Funding:	
Year	Amount
1976 (actual):	\$859
1977 (budget):	\$860.
1978 (forecast):	\$860.
-----	
Or Total Funding Amount: ( £1500 ) \$2,579.	
-----	
COMMENTS: Excluding salaries and computation expenses.	

Project Title: Reduction of Noise From Large Boiler Flues.

Performing Organization Name & Address: Rupert Taylor & Partners Ltd. 113 Westbourne Grove London W2 4UP United Kingdom		Sponsoring Organization Name & Address:  S. W. Thames Regional Health Authority London																	
Principal Investigator(s):  Rupert Taylor		Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date:  1976	Completion Date: Estimated _____ Actual 1977 _____	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (£3,000) \$5,159.</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS: Work carried out in a consultancy capacity ( £40,000) \$68,784</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (£3,000) \$5,159.		-----		COMMENTS: Work carried out in a consultancy capacity ( £40,000) \$68,784	
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		1977 (budget):																	
1978 (forecast):																			
-----																			
Or Total Funding Amount: (£3,000) \$5,159.																			
-----																			
COMMENTS: Work carried out in a consultancy capacity ( £40,000) \$68,784																			

Design of reactive attenuators for reduction of noise below 100 Hz from 15,000 lb/hr. boilers.  
 Stage 1) construction of 1:6 scale model of boiler flue system.  
 2) design of reactive attenuators, and model testing.  
 3) Installation of full scale units.

Actual results: 10 dB reduction between 50 Hz and 100 Hz in attenuators 1 metre long.

Transcribed from the original.

Project Title: Industrial Noise: Investigation of Suitable Materials for Sound Absorption and Sound Insulation in Sterile Plant.														
Performing Organization Name & Address: Production Engineering Research Association Melton Mowbray Leicestershire LE13 OPB	Sponsoring Organization Name & Address:  Department of Industry													
Principal Investigator(s):  K. Healiss	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology													
Start Date: May 1975	Completion Date: Estimated March 1977 Actual _____													
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding:													
	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">----- (£10,000 = £ 25,000) -----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>\$17,196 - 42,990</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table> <p>COMMENTS:</p>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		----- (£10,000 = £ 25,000) -----		Or Total Funding Amount:	\$17,196 - 42,990	-----
Year	Amount													
1976 (actual):														
1977 (budget):														
1978 (forecast):														
----- (£10,000 = £ 25,000) -----														
Or Total Funding Amount:	\$17,196 - 42,990													
-----														

To investigate the suitability of materials and material combinations for noise control in sterile environments such as the food, drinks and pharmaceutical industries, where sterilisation can affect such materials and the materials themselves could contaminate the products.

It involves the evaluation and testing of various materials and material combinations. The environmental requirements will be determined in conjunction with works engineers, chemists and bacteriologists in the industries concerned. New material combinations investigated where standard commercial products are not available and site trials will evaluate the performance under typical working conditions.

Transcribed from the original.

Project Title:		Self-noise of Perforate Plate Multiple Helmholtz Resonator Type Acoustic Liners in Flow Ducts.	
Performing Organization Name & Address: Institute of Sound and Vibration Research, The University, Southampton, SO9 5NH, England.		Sponsoring Organization Name & Address: Sound Attenuators Ltd., providing the research studentship and I.S.V.R. in-house cost sharing, with indirect assistance from Science Research Council on laser Doppler anemometry development.	
Principal Investigator(s): Professor P.E. Doak (Supervisor) P.A. Nelson (Ph.D. student, 1976-) Ad hoc assistance from Dr. N.A. Halliwell (S.R.C. Research Fellow, 1976-)		Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology	
Start Date: 1.1.1975	Completion Date: Estimated <u>30.12.1977</u> Actual _____	Funding:  Year                      Amount 1976 (actual): 1977 (budget): 1978 (forecast): ----- Or Total Funding Amount: (£15,000 (est.)) \$25794 ----- COMMENTS: Estimated Total Funding Amount includes 3 years Sound Attenuators Ltd. support for Research Studentship and £5,000 I.S.V.R. in-house cost-sharing (with indirect S.R.C. support on laser Doppler instrumentation).	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  The project is part of a group of I.S.V.R. researches on flow/acoustic interactions. A rotating disk, two-beam Laser Doppler Velocimeter (LDV) developed at the University of Southampton is being used to provide simultaneous amplitude and phase measurements of the streamwise and transverse (mean and fluctuating) particle velocities in the neck of a Helmholtz resonator which is "singing" under mean flow excitation. A pressure probe provides corresponding pressure fluctuation measurements. Momentum potential theory (as yet unpublished) for determining the source regions of acoustic and "turbulent" power, and hence identification of the mechanism, is being used. In initial work, semi-empirical prediction formulas for perforated plate liner self- noise in flow have been developed. A preliminary (verbal) report on the work was given at the 1976 Spring Meeting of the Institute of Acoustics and a further brief report will be made at the 9th I.C.A., Madrid, July 1977.			

Project Title:  
Investigation of Acoustic Enclosures.

Performing Organization Name & Address:

The City University,  
St. John Street,  
London, EC1V 4PB.  
United Kingdom

Sponsoring Organization Name & Address:

-----

Principal Investigator(s):

Dr. J.S. Anderson

Type of Research Program:

- ☒ Fundamental  
☐ Development (Component or System)  
☐ Demonstration (Experimental, Prototype, or  
 Production)  
☐ Measurement Methodology

Start Date:

1976

Completion Date:

Estimated 1978

Actual

Funding:

Year	Amount
1976 (actual):	\$ 500
1977 (budget):	\$1000
1978 (forecast):	

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

-----  
 Or Total Funding Amount:  
 -----

COMMENTS:

The aims of the project are to consider the different ways in which the performance of an acoustic enclosure may be specified, to investigate the effect of using sound-absorptive material within the enclosure and to investigate any amplitude-dependent effects.

Various methods are used by manufacturers to specify the attenuation achieved by their enclosures, and these different methods have been compared experimentally in the current project. Also the insertion loss of a typical commercial enclosure has been measured for different sound source intensities. Slight amplitude dependence has been measured at high frequencies.

No reports as yet published.

Project Title:

Velocity-Generated Noise in Air-Conditioning Ducts.

Performing Organization Name & Address: Atkins Research and Development Woodcote Grove Ashley Road Epsom, Surrey KT18 5BW United Kingdom		Sponsoring Organization Name & Address:															
Principal Investigator(s): A. Igbal T.K. Willson		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
Start Date: June 1975	Completion Date: Estimated <u>Dec. 1976</u> Actual _____	Funding:															
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  Modern trends in air-conditioning demand ever increasing air velocities in ducts, but knowledge is limited about the noise from air passing through duct fittings above a velocity 200 ft/min. This project is to study the noise, by actual measurements over a wide range of fittings extended by 12000 to 15000 ft/min. air velocities. To develop some theory or generalised correlations which would then be integrated into computer programs for prediction and design.		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast)</td> <td></td> </tr> <tr> <td colspan="2">----- \$8,598- \$17,196- - - -</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (£5,000. - £10,000.)</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast)		----- \$8,598- \$17,196- - - -		Or Total Funding Amount: (£5,000. - £10,000.)		-----	
		Year	Amount														
1976 (actual):																	
1977 (budget):																	
1978 (forecast)																	
----- \$8,598- \$17,196- - - -																	
Or Total Funding Amount: (£5,000. - £10,000.)																	
-----																	
COMMENTS:																	

Transcribed from the original.



Project Title:  Control of Noise and Vibration.															
Performing Organization Name & Address: National Engineering Laboratory East Kilbride Glasgow G75 0QU United Kingdom	Sponsoring Organization Name & Address: Department of Industry														
Principal Investigator(s):  J. Tweedle	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: 1960	Completion Date: Estimated _____ Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  To reduce noise of machinery either at source or by suitable screening. This work includes both measurement and theoretical prediction of noise levels. Example of noise reduction techniques include the development of acoustic screens, the investigation of composite materials for use as casings and machine structures. A survey of manufacturing machinery is being carried out to determine principal noise sources and hence area where maximum effort needs to be applied.															
Funding: <table border="0"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">----- (over £ 30,000) -----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>\$85,980</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table> COMMENTS:		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		----- (over £ 30,000) -----		Or Total Funding Amount:	\$85,980	-----	
Year	Amount														
1976 (actual):															
1977 (budget):															
1978 (forecast):															
----- (over £ 30,000) -----															
Or Total Funding Amount:	\$85,980														
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Transcribed from the original.

Project Title:

Reduction of Acoustic Noise in Small Electrical Machines.

Performing Organization Name & Address: Heriot-Watt University Dept. of Electrical & Electronic Engineering Edinburgh, EH1 2HT United Kingdom		Sponsoring Organization Name & Address: The Science Research Council State House, High Holborn, London, United Kingdom and a number of machine manufacturers																	
Principal Investigator(s):  Dr. S.J. Yang		Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date:  Jan. 1976	Completion Date: Estimated <u>May 1976</u> Actual <u>June 1977</u>	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: Approx. U.S. \$10,000 for equipment plus 12 man-months</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: Approx. U.S. \$10,000 for equipment plus 12 man-months		-----		COMMENTS:	
Year	Amount																		
1976 (actual):																			
1977 (budget):																			
1978 (forecast):																			
-----																			
Or Total Funding Amount: Approx. U.S. \$10,000 for equipment plus 12 man-months																			
-----																			
COMMENTS:																			
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

The effects of non-sinusoidal supply from solid-state devices on noise and vibration of fractional horse power machines have been investigated. For a 3-phase machine, a series of zero-order and non-zero-order radial force components were found analytically at frequencies equal to six times the supply fundamental frequency and its multiples. These force waves are introduced by the 5th, 7th, and 11th current harmonies and could cause excessive noise and vibration when their frequencies are near or equal to the machine natural frequencies. The analytical findings were confirmed by noise measurements on a machine fed from an inverter with variable fundamental frequencies in the range from 5Hz to 85Hz. Part of the results is published:

S.J. Yang: "Noise and vibration of inverter-fed induction motors", Proc. of the International Conference on Electrical Machines, Sept. 1976, Vienna, pp. **I9-1** - **I9-10**.

Transcribed from the original.

Project Title: Structural Panels With Noise Suppression Characteristics.															
Performing Organization Name & Address: Rubber and Plastics Research Association Shawbury, Shrewsbury Shropshire United Kingdom	Sponsoring Organization Name & Address: Department of Industry, Engineering Materials Requirements Board														
Principal Investigator(s):  D.L. James	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: Jan. 1976	Completion Date: Estimated <u>Dec. 1979</u> Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  To develop high transmission loss structural composites of polymer-based flat or shaped sheet, ideally made from low-cost bulk-usage materials, for use as large noise control covers. A special plant is used for manufacturing GRP sandwich structures.															
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (£90,000) \$154,764.</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table> COMMENTS:		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (£90,000) \$154,764.		-----	
Year	Amount														
1976 (actual):															
1977 (budget):															
1978 (forecast):															
-----															
Or Total Funding Amount: (£90,000) \$154,764.															
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Transcribed from the original.

Project Title:

The Design of Dissipative Duct Silencers.

Performing Organization Name & Address: Institute of Environmental Science and Technology, Polytechnic of the South Bank, London SE1 0AA, England		Sponsoring Organization Name & Address: Science Research Council															
Principal Investigator(s):  Mr. H. Haddad Dr. A. Cummings		Type of Research Program: <u>  x  </u> Applied Research _____ Fundamental _____ Development (Component or System) _____ Demonstration (Experimental, Prototype, or Production) _____ Measurement Methodology															
Start Date:  1975	Completion Date: Estimated <u>  1978  </u> Actual <u>probably later</u>	Funding:															
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  <u>Goals:</u> to produce one or more computer pro- grams which will, fairly reliable, predict the insertion loss of dissipative mufflers in a variety of duct systems; also to write appropriate "design guides" to enable these programs to be used by non-acousticians in silencer design.		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (£ 3,461) \$5,952.</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (£ 3,461) \$5,952.		-----	
		Year	Amount														
		1976 (actual):															
1977 (budget):																	
1978 (forecast):																	
-----																	
Or Total Funding Amount: (£ 3,461) \$5,952.																	
-----																	
COMMENTS:																	

Approach: to devise mathematical/physical models for each silencer "element" and to test these against experiment, eventually producing the simplest, possible satisfactory model for each element; next, to incorporate these various models, in the form of computer algorithms, into programs to predict the behavior of whole duct sections including silencers. Then, sound sources in ducts are to be included in the model, with specificable boundary conditions at the duct terminations. Eventually, whole programs will (it is expected) be produced, to predict the insertion loss of various types of silencer in a number of different situations, which may involve axial temperature gradients and near flow. Where possible, fundamental-mode acoustic models will be utilized, to reduce computation time.

Results so far: satisfactory models of "bulk-reacting" duct liners and of the high-temperature behavior of porous sound-absorbing materials have been produced. Uniform near flow models appear to be adequate.

Publications: one paper associated with this project has been published:  
A. Cummings, Journal of Sound & Vibration 1976, 49(1), 9-35. Sound Attenuation in Ducts Lined on Two Opposite Walls with Porous Material, with Some Applications to Splitters.  
Several embryonic articles exist, probably to be submitted to the Journal of Sound & Vibration.

Transcribed from the original.

Project Title:  Sound and Vibration of Small Electrical Machines.																	
Performing Organization Name & Address: Heriot-Watt University Dept. of Electrical & Electronic Engineering Grassmarket, Edinburgh, EH1 2Ht United Kingdom	Sponsoring Organization Name & Address: The Science Research Council State House, High Holborn, London, United Kingdom and a number of machine manufacturers																
Principal Investigator(s):  Dr. S.J. Yang	Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Sept. 1977	Completion Date: Estimated <u>August 1980</u> Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	<p>Funding:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">----- Appox. U.S. \$9,500 for -----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: -----</td> </tr> <tr> <td colspan="2">----- equipment plus 18 man-months -----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		----- Appox. U.S. \$9,500 for -----		Or Total Funding Amount: -----		----- equipment plus 18 man-months -----		COMMENTS:	
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1978 (forecast):																	
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----- equipment plus 18 man-months -----																	
COMMENTS:																	

The aims of the research project are to obtain a more thorough understanding of the mechanisms of sound and vibration production and to provide guidelines on how to design for minimum sound emission for small electrical machines with a rating up to 10 kw.

The investigations will consist of three parts: (1) the sources of exciting forces; (2) the behavior of the machine structure and (3) the sound radiation.

Analytical method will be developed to optimise the design of machine parameters based on the studies on sound radiation efficiency. The analysis will calculate the absolute sound reductions due to variations in the vibration mode, length-diameter ratio, main machine dimensions, amplitude and frequency of surface vibrations.

From the results of the above investigations, guidelines on how to design for minimum sound emission will be presented.

Project Title:  
Noise Control

Performing Organization Name & Address: British Gas Corporation: Research and Development Division, Engineering Research Station P.O. Box 11H Killingsworth New Castle-upon-Tyne, NE 99 11H U.K.		Sponsoring Organization Name & Address:															
Principal Investigator(s):  D. Headon		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
Start Date:  Apr. 1972	Completion Date: Estimated _____ Actual _____	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>(Over £50,000) \$85,980.</td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):	(Over £50,000) \$85,980.	1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----	
Year	Amount																
1976 (actual):	(Over £50,000) \$85,980.																
1977 (budget):																	
1978 (forecast):																	
-----																	
Or Total Funding Amount:																	
-----																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  To provide economic noise control advice, design data and codes of practice for use in the design of new and existing above-ground gas installations: to carry out complaint assessments and make noise control recommendations. Silencing techniques and noise prediction programmes are being developed. Educational courses on noise appreciation are conducted for the benefit of British Gas personnel.		COMMENTS:															

Publication: Coping with noise problems in the Gas Industry.  
D. Headon  
Paper presented to the Northern Junior Gas Association  
British Gas paper E.94, September 1973.

Transcribed from the original

Project Title: Gear Noise - Effect of Tooth Profile Modification															
Performing Organization Name & Address: Department of Mechanical Engineering The University, Sheffield S1 3JD England	Sponsoring Organization Name & Address: Department of Mechanical Engineering The University, Sheffield S1 3JD England														
Principal Investigator(s): H. Kohler	Type of Research Program: <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: June 1977	Completion Date: Estimated <u>Spring 1978</u> Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (<del>£</del>2,000) \$3,439.</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: ( <del>£</del> 2,000) \$3,439.		-----	
Year	Amount														
1976 (actual):															
1977 (budget):															
1978 (forecast):															
-----															
Or Total Funding Amount: ( <del>£</del> 2,000) \$3,439.															
-----															
COMMENTS: Includes overheads															

There is no consensus of view or experimental data on acentric action gearing in relation to noise. Tests with a range of gears with actions from all approaches to all acentricities continue. Machine, as distinct from gear tooth effects on radiated noise effects, are to be excluded in an attempt to reach a definitive conclusion on the relationship between profile modification and noise (and vibration) excitation.

Method: Gears run on variable speed power circulator, acoustic hood over test gearbox - dB(A) and spectral composition as functions of speed, load, temp., lubrication, etc.

Publication: Departmental Thesis, also technical publication when reliable results achieved.

Transcribed from the original.

Project Title: Industrial Noise																			
Performing Organization Name & Address:  Metra Consulting Group LTD 23 Lower Belgrave Street London, SW1W 0NS United Kingdom	Sponsoring Organization Name & Address:  (Ministry of the Environment) Ministries van Volksgezondheid en Milieuhygiene, Netherlands																		
Principal Investigator(s):  P.M.H. Kendall R.N. Charlton J. Crayston	Type of Research Program:  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology																		
Start Date: Jan. 1976	Completion Date: Estimated <u>Aug. 1976</u> Actual _____																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
<table border="0"> <tr> <td colspan="2">Funding:</td> </tr> <tr> <td><u>Year</u></td> <td><u>Amount</u></td> </tr> <tr> <td>1976 (actual):</td> <td>(£38,500) \$66,204.</td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </table>		Funding:		<u>Year</u>	<u>Amount</u>	1976 (actual):	(£38,500) \$66,204.	1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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1977 (budget):																			
1978 (forecast):																			
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Or Total Funding Amount:																			
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COMMENTS:																			

To investigate the economic consequences of imposing noise zones around agglomerations of industrial activity. Methods and costs of noise abatement equipment and procedures are being investigated, together with the reduction of noise at dwelling places within the set zones.

Transcribed from the original.



Other Industrial Equipment  
West Germany

Project Title: Noise Research on Outer and Inner-Geared Pressure-Compensated  
Helical Gear Wheels and Wheels With Non-Involute Gear Profile

Performing Organization Name & Address:  Institute for Machine Tools of Stuttgart University Stuttgart 1, Holzgartenstr. 17 West Germany		Sponsoring Organization Name & Address:  German Research Society																	
Principal Investigator(s):  Dr. Ing. Cosmas Magnus Lang		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date:  Oct.1,1974	Completion Date: Estimated Actual <u>Oct.31, 1976</u>	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:(100,000DM) \$42,400</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:(100,000DM) \$42,400		-----		COMMENTS:	
		Year	Amount																
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		1977 (budget):																	
1978 (forecast):																			
-----																			
Or Total Funding Amount:(100,000DM) \$42,400																			
-----																			
COMMENTS:																			

The purpose is to determine which design for the pump and for the gears provides the most favorable condition for an operation generating little noise in this connection. Experiments are to be conducted regarding pressure build-up, control of compression oil flow and of pressure pulsation.

Other Industrial Equipment  
West Germany

Project Title: Noise Sources in Presses and Development of Noise Abatement Measures, as Well as Their Control.																	
Performing Organization Name & Address: Institute and Chair for Measurement Technique in Machine Construction Hannover, Nienburger Strasse 17 West Germany	Sponsoring Organization Name & Address:																
Principal Investigator(s):  Dr. Ing. Frank Schroeder	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Jun.1,1974 Completion Date: Estimated _____ Actual Jun. 30,1976	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:(251,000DM)</td> <td>\$106,424</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:(251,000DM)	\$106,424	-----		COMMENTS:	
Year	Amount																
1976 (actual):																	
1977 (budget):																	
1978 (forecast):																	
-----																	
Or Total Funding Amount:(251,000DM)	\$106,424																
-----																	
COMMENTS:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	

Determination of noise sources in several presses; technical measurements in regard to noise and vibration on noise-intensive structural elements and aggregates with due regard for coupling effects; development and testing of noise abatement measures; formulation of guidelines, under which already produced machines as well as new ones can be improved in regard to noise generation.

Other Industrial Equipment  
West Germany

Project Title: Noise Reduction in Adjustable Axial Piston Pumps by Affecting the Speed of Pressure Alternation in the Reversing Mechanism.																									
Performing Organization Name & Address: Chair and Institute for Machine Tools and Operational Techniques, Karlsruhe, Kaiserstr. 12 West Germany	Sponsoring Organization Name & Address:																								
Principal Investigator(s):  Dipl.Ing. Egon Lechner	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																								
Start Date: Oct.1, 1974	Completion Date: Estimated Actual <u>Sept. 1, 1976</u>																								
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																									
<table border="0"> <thead> <tr> <th>Year</th> <th>Funding:</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> <td></td> </tr> <tr> <td colspan="3">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> <td></td> </tr> <tr> <td colspan="2"></td> <td>(119,000 DM) \$50,456 - - -</td> </tr> <tr> <td colspan="3">COMMENTS:</td> </tr> </tbody> </table>		Year	Funding:	Amount	1976 (actual):			1977 (budget):			1978 (forecast):			-----			Or Total Funding Amount:					(119,000 DM) \$50,456 - - -	COMMENTS:		
Year	Funding:	Amount																							
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1978 (forecast):																									
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Or Total Funding Amount:																									
		(119,000 DM) \$50,456 - - -																							
COMMENTS:																									

Among other characteristics, axial piston pumps have that of being normally operated at high system pressures. During the alternation from low pressure to high pressure and back, significant changes occur in the forces involved which cause the drive flange and the housing to vibrate. The project aims at effecting an appropriate alternation geometry so as to stretch the process over as wide an angular range as possible and then to achieve a damping effect. A computer program is set up to this effect which calculates the pressure variation in the piston. On the assumption of a favorable pressure configuration, this program should insure the proper alternation geometry.

Translated and transcribed from the original.

Other Industrial Equipment  
West Germany

Project Title: Safety Spacing for Refineries and Petrochemical Installations - Noise Immission.																	
Performing Organization Name & Address:  Technical Monitoring Association Koeln, Konstantin-Wille-STR 1 West Germany	Sponsoring Organization Name & Address:																
Principal Investigator(s):  Dr. K. Tegeder	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Nov.1,1975	Completion Date: Estimated _____ Actual <u>Mar.31,1976</u>																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding: <table border="0"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><u>Or</u> Total Funding Amount: (20,000DM) \$8,480</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		<u>Or</u> Total Funding Amount: (20,000DM) \$8,480		-----		COMMENTS:	
Year	Amount																
1976 (actual):																	
1977 (budget):																	
1978 (forecast):																	
-----																	
<u>Or</u> Total Funding Amount: (20,000DM) \$8,480																	
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COMMENTS:																	

Calculation of the safe distances for a refinery, assumed to be a model operation with petrochemical processing (of ca.  $10^7$  tons of crude oil per year) is based on noise immission. The computation of the immission level occurring in the immediate surroundings - with indication of duration and frequency - takes into account the periodic shutting off and damping within the operation as well as air and soil absorption. Lines of equal noise level were worked out for levels 35 to 50 db(a) in step intervals of 5 db(a).

Translated and transcribed from the original.

Other Industrial Equipment  
West Germany

<b>Project Title:</b> Study of the Behavior in Regard to Noise and of the Causes of Noise in Controllable and Adjustable Hydrostatic Pumps.																									
<b>Performing Organization Name &amp; Address:</b> Chair and Institute for Machine Tools and Operational Techniques Karlsruhe, Kaiserstr, 12 West Germany	<b>Sponsoring Organization Name &amp; Address:</b>																								
<b>Principal Investigator(s):</b> Dipl.-Ing. Bodo Stich	<b>Type of Research Program:</b> <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																								
<b>Start Date:</b> March 1, 1973	<b>Completion Date:</b> Estimated _____ Actual <u>March 1, 1977</u>																								
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																									
<table><tr><th>Year</th><th>Funding:</th><th>Amount</th></tr><tr><td>1976 (actual):</td><td></td><td></td></tr><tr><td>1977 (budget):</td><td></td><td></td></tr><tr><td>1978 (forecast):</td><td></td><td></td></tr><tr><td colspan="3">-----</td></tr><tr><td colspan="2">Or Total Funding Amount:</td><td>(385,000 DM) \$163,240</td></tr><tr><td colspan="3">-----</td></tr><tr><td colspan="3">COMMENTS:</td></tr></table>		Year	Funding:	Amount	1976 (actual):			1977 (budget):			1978 (forecast):			-----			Or Total Funding Amount:		(385,000 DM) \$163,240	-----			COMMENTS:		
Year	Funding:	Amount																							
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1978 (forecast):																									
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Or Total Funding Amount:		(385,000 DM) \$163,240																							
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COMMENTS:																									

Aim is to develop a meaningful conception, closely tied to actual operating conditions, for noise reduction controllable and adjustable hydrostatic pumps by close collaboration with manufacturers and utilizers of hydraulic drive systems.

- Methodology:
- 1) Construction of an appropriate test bench.
  - 2) Exploration of the present state of the technology (noise generation) (operation parameters: pump dimensions model)
  - 3) Analysis of sound transmitted by air and sound transmitted by machine frame (causes of noise and transmission mechanism)
  - 4) Development of noise abatement measures (such as pump model with forces compensation)

Translated and transcribed from the original.

Project Title: Noise Production in Flames.																			
Performing Organization Name & Address: Engler-Bunte Institute of Karlsruhe University Karlsruhe, Richard. Willstaetter. Allee 5 West Germany	Sponsoring Organization Name & Address: Working Group of Industrial Research Associations F.V. (AIF)																		
Principal Investigator(s):  Dietmar Pauls	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
Start Date: Jan. 1, 1972	Completion Date: Estimated _____ Actual <u>Dec. 31, 1976</u>																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
<table border="0"> <tr> <td colspan="2">Funding:</td> </tr> <tr> <td><u>Year</u></td> <td><u>Amount</u></td> </tr> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>\$63,600</td> </tr> <tr> <td colspan="2">----- (150,000 DM) -----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </table>		Funding:		<u>Year</u>	<u>Amount</u>	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	\$63,600	----- (150,000 DM) -----		COMMENTS:	
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1978 (forecast):																			
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Or Total Funding Amount:	\$63,600																		
----- (150,000 DM) -----																			
COMMENTS:																			

Level and frequency distribution in flames of varying geometries is measured, in particular in beam flame with and without twist - A special sampling device is used to measure noise distribution inside the flames.

Other Industrial Equipment  
West Germany

Project Title:		Noise Abatement Measures in Hydrostatic Components and Systems.															
Performing Organization Name & Address:		Sponsoring Organization Name & Address:															
Department for Machine Elements and Gears, Darmstadt Technical Institute Darmstadt, Magdalenenstr 8-10 West Germany		Federal Ministry for Research and Technology Trade Association Oil Hydraulics															
Principal Investigator(s):		Type of Research Program:															
Dipl. Ing. Wilfried Gerwig		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
Start Date:	Completion Date:	Funding:															
Oct.1,1974	Estimated _____ Actual <u>Dec. 31, 1976</u>	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td></td> </tr> <tr> <td colspan="2">----- (180,000 DM) \$76,320 --</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		----- (180,000 DM) \$76,320 --	
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Or Total Funding Amount:																	
----- (180,000 DM) \$76,320 --																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		COMMENTS:															

Theoretical and experimental studies on frame sound uncoupling of aggregates in hydrostatic components and systems. Development of calculation bases and selection criteria for optimally adapted insulation elements as well as preparation of a catalog of noise abatement measures in the area of hydraulics.

Translated and transcribed from the original.

Other Industrial Equipment  
West Germany

Project Title: Noise Emission and Noise Reduction in Electric Arc Furnaces - Improvement of Health Protection for Personnel.															
Performing Organization Name & Address: Operations Research Institute VDEH Duesseldorf, Sohnstr 65 West Germany	Sponsoring Organization Name & Address: European Coal and Steel Community, Luxemburg.														
Principal Investigator(s):  Dr. Ing. Alfred Schmitz	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: April 1, 1975	Completion Date: Estimated <u>Mar. 31, 1978</u> Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
Funding: <table border="0"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(1,429,000 DM) \$605,896</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table> COMMENTS:		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(1,429,000 DM) \$605,896	-----	
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1976 (actual):															
1977 (budget):															
1978 (forecast):															
-----															
Or Total Funding Amount:	(1,429,000 DM) \$605,896														
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Electric arc furnaces of various types and output (up to 85 mva) are to be compared experimentally. The charging with various types of charges must be taken into consideration as well as transformer noises and the mode of operation. Comparative evaluation should lead to conclusions regarding the most efficient way to reduce noise.



Other Industrial Equipment  
West Germany

Project Title: Causes of Noise Formation and Pulsations in Gas Burners For Industrial Furnaces.																					
Performing Organization Name & Address: Operations Research Institute Duesseldorf, Sohnstr. 65 West Germany	Sponsoring Organization Name & Address: Federal Minister for Research and Technology																				
Principal Investigator(s): Dr. Ing. Alfred Schmitz	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																				
Start Date: July 1, 1974	Completion Date: Estimated _____ Actual <u>June 30, 1977</u>																				
<table border="0"> <tr> <td colspan="2">Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)</td> <td colspan="2">           Funding:  <table border="0"> <tr> <td>Year</td> <td>Amount</td> </tr> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (531,000DM) \$225,144</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </table> </td> </tr> </table>		Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		Funding: <table border="0"> <tr> <td>Year</td> <td>Amount</td> </tr> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (531,000DM) \$225,144</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (531,000DM) \$225,144		-----		COMMENTS:	
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COMMENTS:																					

Noise measurements are carried out on various industrial burners of similar construction but varying output. On the basis of frequency analysis, ways are to be found to achieve reduction of the generated noises. Using scale model formulas, it is to be determined whether, e.g., the insights gained on small combustion chambers and burners regarding chamber geometry and burner output can be applied to large industrial installations. This research is to produce suggestions on structural and operational measures in respect to burner and chamber to reduce noises in the interest of humane working conditions.

Other Industrial Equipment  
West Germany

Project Title: Development of Devices for Noise Abatement.															
Performing Organization Name & Address: Ruhrkohle Corp. Essen, Postfach 5 West Germany	Sponsoring Organization Name & Address: Society for Space Exploration, Lim.														
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: July 1, 1974	Completion Date: Estimated Dec. 31, 1977 Actual: _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
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-----															
Or Total Funding Amount:	\$1,686,000 DM) \$714,864														
-----															
COMMENTS:															

Development of a low-noise pneumatic hammer drill. Development of a low-noise hydraulic hammer drill. Further development of radial sound dampers. Development of a low-noise planer. Development of a low-noise chain conveyer. Development of low-noise pushers for chain conveyers.

Translated and transcribed from the original.

Other Industrial Equipment  
West Germany

Project Title: Noise Level Measurement and Preventive Steps for Reducing Noise Levels in Stone Shaping Machinery.																	
Performing Organization Name & Address: Knauer Corporation Geretsried 1, Elbestr. 11 West Germany	Sponsoring Organization Name & Address: Ministry for Labor, Health and Welfare, Duesseldorf																
Principal Investigator(s):  Rudolf Pappers	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: May 1, 1975	Completion Date: Estimated _____ Actual <u>August 31, 1976</u>																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding:																
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1978 (forecast):																	
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	(336,000 DM) \$142,464																
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COMMENTS:																	

Determination of noise level IST values in stone shaping machinery (soil processing); ascertaining the principal sources of noise and the radiation behavior - Setting up a list of preventive measures for noise abatement - Execution of the preventive measures under laboratory conditions; measurement of control results; introduction of control results; introduction of improvements in actual practice.

Other Industrial Equipment  
West Germany

Project Title: Noise Reduction in Adjustable Axial Piston-Pumps and Engines.															
Performing Organization Name & Address: Brueninghaus Hydraulics Horb 1, Postfach 80 West Germany	Sponsoring Organization Name & Address: Society for Space Exploration														
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: Oct.1, 1974	Completion Date: Estimated _____ Actual <u>Sept. 30, 1976</u>														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
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1977 (budget):															
1978 (forecast):															
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Or Total Funding Amount:															
----- (170,000 DM) \$326,480 -----															

Aim: through experimental and theoretical study of the pressure reversal mechanism, (differential cylinder segments, damping slots, combined reversing systems, damping slot at control level set up according to pressure divider principle) to achieve noise reduction in axial piston pumps. A research program independent of pump shape or size is initiated. Specific coefficients are to take into account geometric and physical similarity.

Translated and transcribed from the original.

Other Industrial Equipment  
West Germany

Project Title: Developmental Work Toward Improving Working Conditions, in Cleaning Installations.																									
Performing Organization Name & Address: Buderus Iron Works Wetzlar, Postfach 1220 West Germany	Sponsoring Organization Name & Address:  Society for Space Exploration																								
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																								
Start Date: Sept. 1, 1975	Completion Date: Estimated Actual Mar. 28, 1977																								
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COMMENTS:																									
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																									

Aim of this project is to set up a production program that will lead to the reorganization of a cleaning plant appropriately selected as pilot model. The pilot model is described as to its actual condition including the levels of dust and noise and the general climate affecting the men working there.

Other Industrial Equipment  
West Germany

<b>Project Title:</b> Development of an Active Liquid Sound Damper for the Reduction of Pressure Pulsation and Noise Generation in Hydraulic Installations.																			
<b>Performing Organization Name &amp; Address:</b> Institute for Machine Tools of Stuttgart University Stuttgart 1, Holzgartenstr. 17 West Germany	<b>Sponsoring Organization Name &amp; Address:</b> German Research Society																		
<b>Principal Investigator(s):</b> Dr. Ing. Cosmas Magnus Lang	<b>Type of Research Program:</b> <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
<b>Start Date:</b> Jan.1, 1976	<b>Completion Date:</b> Estimated _____ Actual <u>Dec.31, 1976</u>																		
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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<b>COMMENTS:</b>																			

Periodic pressure fluctuations in a hydraulic installation caused by positive-displacement pumps often produce high noise level - The disadvantages of passive liquid sound dampers -- such as limited effectiveness and reduced rigidity of the system -- can be avoided by applying the principle of active sound damping - An electro - hydraulic control loop is to be tested with which a periodic counter-pressure pulsation is created to balance the pulsation in the system. This technique is to be tested and analyzed in regard to its behavior and effectiveness.

Other Industrial Equipment  
West Germany

Project Title		Development and Prototypal Use of Metallic Construction Elements Made of Hyperplastic Materials to Achieve Noise Damping by Means of the Tight Casing Principle.															
Performing Organization Name & Address:		Sponsoring Organization Name & Address:															
Metallgesellschaft Corp. Frankfurt 1, Postfach 3724 West Germany		Society for Space Exploration,  Cologne															
Principal Investigator(s):		Type of Research Program:															
		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
Start Date:	Completion Date:	Funding:															
May 1, 1975	Estimated <u>April 30, 1978</u> Actual _____	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td></td> </tr> <tr> <td>----- (1,843,000 DM) -----</td> <td>\$781,432</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		----- (1,843,000 DM) -----	\$781,432
Year	Amount																
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		COMMENTS:															

Using casings or casing elements made of super-elastic metal, prototypes are to be tested - The principle of tight casing is to be examined for varying wall distances. At the same time, variation of the conversion process and the resulting variation in wall thickness distribution is to be used to determine to what degree the acoustic characteristics are modified in regard to damping and insulation.

Translated and transcribed from the original.

Other Industrial Equipment  
Abbreviated Listings With Funding

Australia. Industrial Noise Problems - Research. Dept. of Mechanical Engineering, University of Adelaide, Box 498 GPO, Adelaide (SA) 5001, Australia. Dr. David A. Bies, Reader in Mechanical Engineering & Director of Acoustics Laboratory. Sponsor: SA Dept. of Labour & Industry, 55 Waymouth Street, Adelaide, South Australia 5000. 1977. continuance. Type: Development (Component or System), Demonstration (Experimental, Prototype, & Measurement Methodology. 1977: (\$50,000.) \$55,500 . Noise radiation from pipes. Vibrational energy in coupled structures. Holography - sound radiation. Muffler design. Duct flow - low frequency control. Circular saws.

Sweden. Development of Less Noisy Methods When Making Cement Blocks for the Building. Joint Council for Occupational Safety & Health, Joint Working Party Against Noise in the Cement Industry. Ingvar Soederstroem. Sponsor: ASF Sweden, Moelndalsvaegen 85, 412 85 Goteborg, Sweden. 1975 - 1977. 1975: (300,000 Dkr) \$67,590, 1977: (273,000 Dkr) \$61,507.

Sweden. Noise Abatement in Shipyards. Ingemansson Acoustics, Box 53037, S-40014 Gothenburg, Sweden. Per-Ake Berg Hans Elvhammar. Sponsor: Arbetarskyddsfonden, Sveavagen 166, S-11346 Stockholm, Sweden. July 1977 - June 1980. Type: Development (Component or System). (Scr 1,900,000) \$428,070. Noise abatement in ship building and ship repair work with respect to worker's hearing damage risk.

Sweden. Noise and Dust Control in Connection with Jet Burning in the Quarrying Industry. IFM-Akustikbyran AB, Warfvinges vaeg 26, S-112 51 Stockholm, Sweden. Sponsor: Swedish Workers Protection Committee. Stig Soederkvist. 1973-1977. (Scr 250,000) \$56,325. General studies of the industry.

Sweden. Noise Reduction in the Food Industry. Joint Council on Occupational Safety & Health, Working Party Against Noise in the Food Industry. Sponsor: ASF, Sweden, Moelndalsvaegen 85, 412 85 Goeteborg, Sweden. 1974: (290,000 Dkr) \$65,337. 1975: (385,000 Dkr) \$86,740. 1977: (370,000 Dkr) \$83,361.

United Kingdom. Noise Attenuation By Means of Splitters in Building Ventilation and Air-Conditioning Systems. Bath University: Sch of Arch & Blg, Calverton Down, Bath BA 27 AY, United Kingdom. Sound Attenuator LTD, East Gates, Colchester, Essex, COL 2TW, United Kingdom. C.B. Phelps. Sponsor: Science Research Council. Oct. 1975 - Sept. 1978. (under £5,000) \$8,598. To study percentage perforation and materials used for facing the splitters, effect of diameter, packing, bonding and orientation of fibres in the splitter, and geometry of splitter design.



United Kingdom. Measurement and Reduction of Paper and Board Machinery Noise. Paper Industries Research Association, Randalls Road, Paisley, Renfrewshire PA1 2BE, United Kingdom. E.R. Gates Feb. 1975-1976. (L6200) \$10,662. To identify ways of reducing noise in mills, collect further in-plant data and keep up-to-date with noise legislation.

West Germany. Analysis of Behavior in Regard To Noise and Noise Abatement Procedure in Circular Saws Used for Rock Cutting. Chair and Institute for Finishing Technique and Planing Machine Tools, Hannover, Welfengarten 1A, West Germany. Prof. Dr. Ing. Hans Kurt Toenshoff. (300,000 DM) \$127,200. Execution of noise abatement procedure on a circular saw. Estimation of cost for abatement measures. Presentation of possibilities for compensating increased costs if they should occur.

West Germany. Noise Measurements on Toothed-Wheel gearing. Institute for Machine Elements, Munich Technical University, Munich 2, Arcisstr. 21 West Germany. Prof. Dr. Ing. Winter. Sponsor: German Research Society. Jan. 1, 1970-Dec. 31, 1976. (30,000 DM) \$12,720. Aim: Tooth-wheel noise-vibrations; study of geometric parameters under high stresses and speed of revolution beyond the critical range.

West Germany. Noise Studies in Industrial Installations and Technical Processes On Single Machines as On Groups of Machinery to Determine Characteristic Emission Levels. Institute for Construction Machinery and Construction Technology, TH Aachen, Aachen, Templergraben 55, West Germany. Dr. Ing. Hubert Frenking. Sponsor: Federal Ministry of the Interior. Oct. 15, 1973-Dec. 31, 1976. (1,136,000.00 DM) \$481,664.

West Germany. Studies for the Reduction of Cavitation Noises In Valves Used In Oil Hydraulics. Institute for Hydraulic and Pneumatic Propulsion and Control, Aachen Technical Institute, West Germany. Prof. Dr. Ing. Wolfgang Backe. Sponsor: German Research Society. Sept. 1, 1973. (338,000 DM) \$143,312. Aim is to investigate appropriate structural and wiring alterations by means of which the cavitation noises of the valves for oil hydraulics might be reduced to an acceptable level or be eliminated entirely.

West Germany. Extrapolation of Noise Measurements on Hydraulic Piston Engines. Institute for Piston Engines, Hannover Technical University, Hannover, Welfengarten 1A, West Germany. Sponsor: German Research Society. Dipl. Ing. Heyne. Nov. 1, 1973-Dec. 31, 1977. (180,000DM) \$76,320. Investigation of extrapolation possibilities of noise measurements on hydraulic piston engines.

**Project Title:**

Vibration of Transformer Tanks

<b>Performing Organization Name &amp; Address:</b> Department of Mechanical Engineering University of Queensland St. Lucia, Qld. 4067 Australia		<b>Sponsoring Organization Name &amp; Address:</b>																	
<b>Principal Investigator(s):</b>  Dr. R. J. Hooker		<b>Type of Research Program:</b> <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
<b>Start Date:</b> 1975	<b>Completion Date:</b> Estimated 1977 Actual 1977	<b>Funding:</b> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><b>Or Total Funding Amount:</b></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"> <b>COMMENTS:</b> No external funding. One in-house graduate student.               </td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		<b>Or Total Funding Amount:</b>		-----		<b>COMMENTS:</b> No external funding. One in-house graduate student.	
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<b>COMMENTS:</b> No external funding. One in-house graduate student.																			
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

Noise from large transfer tanks arises when a tank natural frequency is in resonance with twice mains frequency or a multiple thereof.

The aim is to devise finite element methods for the calculation of natural frequencies of transformer tanks, taking into account:-

- (1) the closed box nature of the structure
- (2) addition of stiffening ribs to the tank sides
- (3) internal components (core and coils)
- (4) filling with transformer oil (i.e. a joint structure-fluid problem with fluid possibly compressible).

The project is virtually complete. One publication has been issued:-

W.J.T. Daniel and R. J. Hooker, "Natural frequencies of stiffened box structures",  
I.E. Aust. Conference on Vibration and Noise Control Engineering, 1976 1-5.

Project Title:																	
Performing Organization Name & Address: Commonwealth Aircraft Corporation Limited 304 Lorimer Street Port Melbourne Victoria 3207, Australia	Sponsoring Organization Name & Address:																
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
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Our main activities in the noise field have been in the installation of noise abatement equipment in factory operating areas so as to reduce noise levels perceived by the operator. Such equipment included noise booths and special protective clothing for plasma metal spray work.

Transcribed from the original.

Project Title: To Investigate Aerodynamic Sources of Noise Generation in Centrifugal Fans and Blowers.															
Performing Organization Name & Address: National Research Council of Canada Division of Mechanical Engineering Ottawa, Canada	Sponsoring Organization Name & Address: In-house research														
Principal Investigator(s):  G. Krishnappa	Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component <del>XXXXXX</del> ) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: 1975	Completion Date: Estimated _____ Actual _____														
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The program is intended to establish experimentally the principal sources of noise generation and to correlate the generated noise with the aerodynamic performance parameters of the blower. It is anticipated that these studies would lead to the design of quiet blowers and fans with acceptable aerodynamic performances.

In order to establish the areas of research a review of the existing literature on the subject was published in Reference 1. Noise measurements were made on a wide variety of blowers identifying the important frequency components. Detailed aerodynamic and acoustic tests were conducted on two blowers and the results are described in Reference 2. Further investigations are underway.

#### REFERENCES

1. Krishnappa, G. Centrifugal Blower Noise Studies, Literature Survey and Noise Measurements NRC ME-244, 1976
2. Krishnappa, G. Some Experimental Studies on Centrifugal Blower Noise INTER-NOISE 77, 1977

Project Title:  Noise in Bottling Plants														
Performing Organization Name & Address: INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France	Sponsoring Organization Name & Address:  Lyon CRAM													
Principal Investigator(s):  A. Bamongeot	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology													
Start Date:  1977	Completion Date: Estimated 1978 Actual _____													
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1 - ORIGIN AND REASONS FOR THE STUDY

This study was begun at the request of the Lyon CRAM dated June 6, 1975.

The same problems are found in the Paris and Strasbourg regions especially.

2 - CONTENTS OF THE STUDY

The object is to review the various solutions for noise reduction in bottling plants. Certain model systems have already been set up in other countries: for example, Karlsberg-Tuborg in Denmark.

3 - STATE OF PROGRESS

This study has not yet been set into motion. It would require visits to a certain number of plants in order to evaluate the risks of hearing loss, and to review applicable soundproofing devices. It could begin in 1977 and continue into 1978.

Project Title:

Noise Propagation and Establishment of Acoustic Level in an Industrial Shop

Performing Organization Name & Address:  INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France		Sponsoring Organization Name & Address:																	
Principal Investigator(s):  H. Leblond		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
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# 1 - REASONS FOR THE STUDY

The average noise level that arises in an industrial shop depends upon the acoustic force emitted by each of the machines, their number, their placement, the geometric properties of the plant, the number of absorption units in the plant, etc.

Other factors, such as diffraction around the machines, atmospheric absorption and others are also taken into account.

If the machines are too densely placed, the worker is almost always exposed to the direct field of noise emitted by the machines, and any acoustic treatment or protective devices will not be very effective. By spacing the machines out, it is possible to gain about 5-6 dB on the average noise level. This greater spacing also aids in the efficiency of the acoustic treatment if the number of absorption units existing in the beginning is small.

In addition, the use of screens and baffles can also contribute to improving the noise ambience of an industrial shop.

It is thus interesting to be able to estimate with some precision the noise level, that will reign in an industrial shop before the factory is built, and thus to undertake, at the proper time, adequate anti-noise measures.

Translated and transcribed from the original.

## 2 - CONTENTS OF THE STUDY

To make the estimate, classical and easy-to-apply formulas are used, but these formulas are based on the hypothesis of a perfectly diffused acoustic field.

It is possible to obtain a better estimate using the method of image sources or the method of zones; in these methods, the plants are represented by simple geometric forms.

Despite this simplification, such calculations require the use of a calculator. To take into account the complex shapes and forms of the industrial plants - partially separated areas, shape of the roofs, etc. - it is necessary to turn to experiments with models. It is not certain whether the gain in precision obtained by a more faithful reconstruction of the shapes may not be neutralized, without special precautions, by other sources of error related to an analogical simulation method.

Taking into account the importance of the work that needs to be done, particularly the programming and planning work in the case of methods based on source images and zone methods, and the importance of the investment that would have to be made in the case of experiments on models before beginning work on complex calculation programs or the construction of laboratory models, it will be necessary to verify that the acoustic estimate obtained by applying classical formulas is sufficient to warrant action on the level of actually beginning construction of factories. To this end, we will search out plants for which the acoustic force of the machines, their placement, the acoustic characteristics of the sites and the average noise levels are known. The values measured will be compared with the values calculated by means of the classical formulas.

Furthermore, it will also be necessary, by means of applying the results of onsite research, to estimate a little more precisely the size of the gains it will be possible to obtain by modifying the characteristics of the rooms. It is evident that research of great precision is not justified unless the stakes are sufficiently high.

The results of this preliminary phase will determine the remainder of the study. In general, it would seem wise to proceed in stages in this study; the estimates obtained at each stage will be compared with the values measured in actual plants.

## 3 - STATE OF PROGRESS

This study is in the course of being prepared.

Acoustic estimate programs have been set up on an INRS computer. They call on formulas based on the hypothesis of a diffused field. Application of these methods to several concrete cases and comparison with results of measurements "in situ" are underway.

Project Title: Study of the Noise From Briquette-Manufacturing Devices																			
Performing Organization Name & Address: INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France	Sponsoring Organization Name & Address:																		
Principal Investigator(s): Mr. T. Ho. H. Leblond G. Andre	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
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# 1. ORIGIN AND REASONS

This study is in response to a request for preventive services by the Bank of Nantes, dated November 25, 1975.

The acoustic pressure levels found in working places in these industrial plants are generally greater than 100 dB(A) sometimes 110 dB(A) during operations of concrete vibration.

# 2. CONTENTS OF THE STUDY

This project consists of studying the various possibilities of reducing noise from these machines. According to preliminary observations, two cases can be distinguished:

- plants in which the sources of noise are small crafts manufacturing machines;
- plants in which one or several machines perform a variety of basic functions: filling up the molds, stirring, emptying of the molds, transport and storage of the finished product.

In the first case, it seems that only perfection of the technology of the equipment being used (setting of the molds, reduction of parasitic vibrations, etc.) would make it possible to achieve a reduction in noise.

In the second case, greater automation of the machines, which would make complete enclosure possible, could be a reasonable and economic solution.

Since the Center for Research of the Concrete Manufacturing Industry (CERIB) is also interested in this problem, it is anticipated that the INRS will limit itself for the time being to a general study designed to define the soundproofing possibilities, allowing the CERIB to produce certain models. The INRS retains all rights to perform any studies at any time, by its own means, that it deems necessary.



### 3. STATE OF PROGRESS

Engineers of the INRS paid a visit to the CERIB to meet the people occupied with these problems who are doing the studies and research on the techniques and materials intended for use in manufacturing concrete.

Preliminary data has been collected at a plant in the Moselle region, where the levels found in fixed work areas during the "concrete vibration" phase reach 105 dB(A), and in a factory producing concrete traverses for the railroad (Sarthe), where the levels reach 114 dB(A).

Project Title:

Inquiry Into Soundproofing Work Being Done In Industry

Performing Organization Name & Address: INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France		Sponsoring Organization Name & Address:																	
Principal Investigator(s):  A. Damongeot		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
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1. ORIGIN AND REASONS FOR THE STUDY

This study was undertaken at the initiative of the INRS. It has a double aim:

- on the one hand, to establish a catalogue of models and examples that could be useful to persons confronted with soundproofing problems. This document will group together a certain number of French and foreign soundproofing examples. This project is in response to a wish often expressed by the Regional Banks Prevention Service.

- on the other hand, to make cost estimates. By cost, we mean not only the financial cost, but also the changes made in working habits, particular precautions to be taken, etc., changes and precautions which are more or less important depending upon the soundproofing method used: reduction at the source, covering, use of screens, etc.

2. CONTENTS OF THE STUDY - METHODOLOGY

The study consists of reviewing, with the help of the CRAM, soundproofing systems set up within the last several years, or systems which will be set up in coming years.

This review will be made under two different phases:

- comparisons within a single factory, before and after soundproofing;

- comparison of two or more factories of similar production which use different methods or which are organized differently (different machines, different spacing of machines, areas treated or not, etc.)

We will note the noise levels, differences between them, financial or other costs as well as the number of people who profit in each case where improvement has been achieved. The difficulty we will have in collecting these data should be underlined.

### 3. STATE OF PROGRESS

This study has just begun: 85 dossiers that can be partially or entirely used have been sent by the Regional Banks and Centers for Physical Research. A sample sheet has just been completed, with a simple coding system that will make it possible to determine the origin of the sheet, and the type of soundproofing used, immediately.

### 4. CONTINUATION OF THE STUDY - PERSPECTIVES FOR THE FUTURE

This is a very long term study. It will indicate the soundproofing methods most used in industry, the gains they make possible, and the costs they incur, the word cost being used in the sense defined in section 1.

Once this inquiry is sufficiently advanced, it will be necessary to conduct another inquiry, a probe of French industry, in order to estimate the number of workers exposed to different noise levels: 90 to 95 dB(A), 95 to 100 dB(A), etc.

The results of these two inquiries combined with those of the epidemiological study should make it possible to find out how many people risk a hearing loss or an aggravation of a hearing problem each year, the costs of soundproofing, the technological methods, and, based on that, the national effort that should be undertaken to diminish the risk of professional deafness.

These three inquiries, concerning the problem of noise and deafness, will provide experience that will be useful in performing similar inquiries into other types of problems and inquiries.

Other Industrial Equipment  
Netherlands

Project Title: Study of Noise Sensitivity of Different Facilities Within Noise Zones Around Industrial Areas.															
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands														
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
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With regard to the application of zoning systems around industrial areas and a good planological arrangement of the area inside the noise zones, a summary should be made of the noise sensitivity of the different facilities. Here a relationship should be sought with the corresponding research projects in the research programs, traffic noise and aviation noise. An investigation should also be made of which nonacoustic criteria, chiefly from the standpoint of landscape, cultural history, and suitability, play a role in the taking of executive decisions regarding the permissibility of higher noise loads than the preferred limits for noise-sensitive facilities within the noise zones around industrial areas.

Translated and transcribed from the original Dutch.

Other Industrial Equipment  
Netherlands

Project Title: Taking Inventory of the Possibilities of Reducing Noise Emission in Certain Installations and Parts of Institutions.	
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology
Start Date: est 1976	Completion Date: Estimated _____ Actual _____
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This study includes a preliminary study of the possibility of reducing noise production of certain dominant noise sources within institutions in order to prepare one or more development projects for quieter noise sources. A proposal should be made of the types of noise sources coming into consideration and a summary should be given per noise source regarding the possible noise reducing measures with a concluding proposal for further research and development work.

Translated and transcribed from the original Dutch.

Other Industrial Equipment  
Netherlands

Project Title: Zoning Around Industrial Areas.															
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands														
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
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COMMENTS:															

Within the framework of the noise zoning systems around industrial areas included in the draft noise nuisance legislation, a manual should be written for the application of the different zoning instructions. Here, data obtained on the basis of different research projects concerning industrial noise should be brought into operational form with regard to litigation which may arise in zoning procedures. The study has the purpose not only of making the zoning regulations operational but also to support and inform governmental and technical litigation which, in the period prior to the introduction of the new law, has already resulted in a better acoustic formulation of investment plans and planning decisions.

Translated and transcribed from the original Dutch.

Other Industrial Equipment  
Netherlands

Project Title: Study of the Possibility of Reducing the Noise Emission of Categories of Institutions.																	
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands																
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Estimated 1976	Completion Date: Estimated _____ Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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In order to establish noise zones around industrial areas and the setting of standards within the framework of the nuisance law and the noise nuisance law for noise emission by institutions, the parties involved should be able to obtain a good insight concerning the state of the art in this regard, as well as concerning the anticipated developments in the technical and economic field that may be relevant for noise production. This research project intends to acquire an overall view of all of the developments and possibilities expected in the near future for the reduction of noise emission by different categories of institutions and their noise-relevant parts. A summarizing view will also be given on developments that could lead to an increase in noise emission and of possible measures for preventing this.

Translated and transcribed from the original Dutch.

Other Industrial Equipment  
New Zealand

Project Title: Noise Reduction in Beef Slaughterboard																	
Performing Organization Name & Address: Physics & Engineering Laboratory Dept. of Scientific and Industrial Research New Zealand	Sponsoring Organization Name & Address: Thomas Borthwick and Sons Ltd																
Principal Investigator(s):  K.O. Ballagh	Type of Research Program:  <del>_____</del> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <del>_____</del> Demonstration (Experimental, Prototype, Production)xx <del>_____</del> Measurement Methodology																
Start Date: 1/3/77	Completion Date: Estimated 1/10/77 Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
<p style="text-align: right;">Funding:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS: No separate funding</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS: No separate funding	
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COMMENTS: No separate funding																	

The aim of the project was to reduce the noise level in the beef slaughterboard area of the freezing works to a comfortable level by reducing peak impulsive noises and reducing the background noise levels. The goal was an Leq for 8 hours of less than 85 dBA at any operator position, with no peak level greater than 90 dBA.

By identifying and measuring each noise source contributing significantly to the overall noise climate a 4 part program to reduce impulsive noises, ventilation fan noise, excess reverberation, and general machinery noise was instituted. The program drawn up is at present being implemented and no results are as yet available.

Reports to date      Internal Acoustics report  
                         "Noise Control in Waingawa Freezing Works"  
                         Report No. S6905      June 1977



Project Title: Noise Output From Cage Induction Motor with Non-Sinusoidal Supply Voltage																	
Performing Organization Name & Address:  Department of Electronics and Electrical Engineering University of Glasgow Glasgow G12 8QQ, Scotland	Sponsoring Organization Name & Address:																
Principal Investigator(s):  Dr. D. S. Gordon	Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																
Start Date:	Completion Date: Estimated _____ Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	<p>Funding:</p> <table> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>None</td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):	None	1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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The effects of gap eccentricity have been investigated with a sinusoidal supply voltage and relationships obtained between eccentricity, torque and sound power. Similar tests are being carried out with a variable frequency thyristor inverter supply having a stepped voltage waveform.

Transcribed from the original.

Project Title:

Sound Transmission & Generation in Flow ducts with Axial Temperative Gradients

Performing Organization Name & Address: Institute of Environmental Science and Tech. Polytechnic of the South Bank London SE10AA, England		Sponsoring Organization Name & Address: Science Research Council															
Principal Investigator(s):  Dr. A. Cummings		Type of Research Program: <input checked="" type="checkbox"/> Applied Research <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
Start Date: Circa 1976 (early)	Completion Date: Estimated <u>1978</u> Actual _____	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----	
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  <u>Goals:</u> to identify (as far as possible) the mechanisms of sound generation and transmission in flow ducts with axial temperative gradients, and rigid walls; then to produce mathematical models, based on the solutions of a one-dimensional acoustic wave equation, which describe sound generation and transmission in <u>finite-length</u> ducts with known boundary and source conditions. These models are to be tested against experimental measurements.  <u>Approach:</u> to utilize fundamental fluid dynamic equations in producing an appropriate one-dimensional wave equation, and then to solve this equation for specified source and boundary conditions the solution is reached by a numerical technique (Range-Kutta) and an approximate analytical method (WKB).  <u>Results:</u> the problem was solved, first in the absence of flow and later in its presence. Good agreement between experiment and theory was obtained.  <u>Publications:</u> (i) A. Cummings 1977, Journal of Sound & Vibration 51(1), 55-67. Ducts with Axial Temperative Gradients: an Approximate Solution for Sound Transmission and Generation. (ii) A. Cummings 1977, Journal of Sound & Vibration 51(1), 143-145. Standing-Wave Analysis with Temperative Gradients. (iii) A. Cummings. Paper to be presented at 9th I.C.A., Madrid July 1977 "Sound Transmission and Generation in Flow Ducts with Axial Temperative Grad. (iv) Papers of similar title to be submitted to the Journal of Sound & Vibration for publication.		COMMENTS: Difficult to assess; some funding comes from the Dissipative Muffler Project.															

Transcribed from the original.

Project Title: Splitter Attenuation - Static Insertion Loss																			
Performing Organization Name & Address:  Sound Attenuators Ltd Eastgates Colchester Essex U K	Sponsoring Organization Name & Address:  Sound Attenuators Ltd Eastgates Colchester Essex U K																		
Principal Investigator(s):  G Phelps	Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
Start Date:	Completion Date: Estimated <u>October 1977</u> Actual _____																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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To study the basic attenuation along the airway of splitter type attenuators with splitter thicknesses from 4in to 24in and corresponding airways from 2in to 12in. The work was to determine the change of attenuation rate with length. This has been initially limiting to normal (0,0) planewave propagation, although the apparatus is extendable to control cross-road excitation above cut-off. Various types of mineral wool materials have been investigated, together with specialist resonant/reactive diaphragm type facings.

<b>Project Title:</b>																			
Factory Noise																			
<b>Performing Organization Name &amp; Address:</b> Lucas Industries Noise Centre Noise Control Group Lucas-CAV Ltd. PO Box 36, Warple Way, Acton London W3 7SS, United Kingdom	<b>Sponsoring Organization Name &amp; Address:</b>  Lucas Industries																		
<b>Principal Investigator(s):</b> M. F. Russell S. P. May B. L. Fletcher D. Malam P. Wilson	<b>Type of Research Program:</b>  <input checked="" type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																		
<b>Start Date:</b> 1970	<b>Completion Date:</b> Estimated _____ Actual _____																		
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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This is a large and continuing project involving modifications to new and existing plant and machinery.

1. To minimize the risk to hearing of employees in Lucas Factories.
2. To minimize the nuisance to others in the vicinity of Lucas Factories.

The overall approach has been published as "Machinery Noise the Users Viewpoint" in Proceedings of 14th Conference on Research & Design of Machine Tools, University of Birmingham 23 September 1976 and in Machinery and Production Engineering Feb. 1977.

Other Industrial Equipment  
United Kingdom

Project Title: Industrial Noise															
Performing Organization Name & Address: Dept. of Industry London, United Kingdom	Sponsoring Organization Name & Address:														
Principal Investigator(s):	Type of Research Program:  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology														
Start Date: 1977	Completion Date: Estimated _____ Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
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The research supported is mainly in the study of the causes of noise and its elimination by improved design and the use of damping materials. Areas of work covered are pump, cutting tools, engines, presses, textile, foundry, plastic and general engineering equipment.

Transcribed from the original.

<b>Project Title:</b> Calculation of Noise from Vane-Type Compressed Air Motor																			
<b>Performing Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Laboratory of Industrial Acoustics Leningrad, USSR	<b>Sponsoring Organization Name &amp; Address:</b> All Union Central Council All Union Central Scientific Research Institute of Industrial Hygiene Leningrad, USSR																		
<b>Principal Investigator(s):</b>  V. N. Kozhin	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
<b>Start Date:</b>	<b>Completion Date:</b> Estimated _____ Actual _____																		
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The first known attempt is described at determining noise level of a pneumatic rotary engine. The spectrum of sound pressure produced by exhaust gases is formulated assuming that operation of the engine is a periodical process. The result of a mathematical analysis is correct on condition that the factors of expansion series of the Fourier function of exhaust rate are smaller than the sound propagation rate in the air.

Translated and abstracted from the original Russian.

<b>Project Title:</b>		Scientific and Technical Problems of Industrial Noise Abatement; Main Guidelines for Work Standards of Noise																	
<b>Performing Organization Name &amp; Address:</b>		<b>Sponsoring Organization Name &amp; Address:</b>																	
All Union Central Scientific Research Institute of Industrial Hygiene Laboratory of Industrial Acoustics Leningrad, USSR		All Union Central Council All Union Central Scientific Research Institute of Industrial Hygiene Leningrad, USSR																	
<b>Principal Investigator(s):</b>		<b>Type of Research Program:</b>																	
I. I. Bogolepov and D. A. Matelenok		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
<b>Start Date:</b>	<b>Completion Date:</b>	<b>Funding:</b>																	
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<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

Development of standards for industrial noise minimization in the USSR is reviewed briefly. Guidelines for Soviet scientific and practical studies of noise abatement are given. Results are summarized in a study of noise levels in the principal industries. Planning of scientific and practical studies and their implementation are outlined according to the coordinated plan of development of state standards on noise suppression GOST SSBT 12.1.003-76 under the title "Noise. General safety specifications".

Translated and abstracted from the original Russian.

Other Industrial Equipment  
West Germany

Project Title: Increased Damping of Noise Transmitted by Structure Through Friction Between Machine Parts.																	
Performing Organization Name & Address: Institute for Acoustical Technology Berlin 10, Einsteinufer 27 West Germany	Sponsoring Organization Name & Address:  Federal Ministry for Labor and Social Welfare																
Principal Investigator(s): Prof. Dr. Manfred Heckl	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Oct.1,1975	Completion Date: Estimated <u>Sept.30,1977</u> Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="0"> <thead> <tr> <th><u>Year</u></th> <th><u>Amount</u></th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		<u>Year</u>	<u>Amount</u>	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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Aim: To determine the parameters (surface, roughness, contact pressure, type of interface, number of connecting elements) that affect the damping of noise transmitted by the structure by friction. Further, the attainable noise level reduction should be determined for at least one example (such as machine facing).

Translated and transcribed from the original.



Other Industrial Equipment  
West Germany

Project Title: Determination of the Noise Emission Level of the High-Rise Torch in a Refinery as a Function of Operating Condition																	
Performing Organization Name & Address:  Institute for Immission, Work and Radiation protection of the State Office for Environ- mental Protection Karlsruhe, Griesbachstr. 3 <del>West Germany</del>	Sponsoring Organization Name & Address:  Federal Minister for Research and Technology																
Principal Investigator(s):  Dipl. Phys. Gunther Wolff-Zurkuhlen	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: June 1, 1976	Completion Date: Estimated <u>April 30, 1978</u> Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
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The aim of operating a high-rise torch low in pollutants is essentially achieved nowadays with low-smoke consumption due to addition of water steam. But this causes increased noise generation. Therefore, a compromise has to be reached between pollutant and noise emission. Purpose of this project is to determine the noise level as well as the frequency spectra occurring during combustion for the various hydrocarbon mixtures and operating conditions.

Other Industrial Equipment  
West Germany

Project Title: Propagation of Machine Noise in Various Terrain Formations and Industrial Installations and Its Impact on the Working Man.															
Performing Organization Name & Address: Ordinariate for World Forestry Economy Hamburg University Hamburg 80, Leuschnerstr. 1 West Germany	Sponsoring Organization Name & Address:														
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology														
Start Date:	Completion Date: Estimated _____ Actual _____														
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COMMENTS:															

Aim is to study how sound propagates in various terrain formations and industrial installations, in order to deduce efficient noise abatement procedures. It has been shown that there are significant differences between the individual terrain formations in relation to the varying degrees of stress on the machine and to different seasons of the year; also, the distribution of noise levels in individual installations has been determined.

Translated and transcribed from the original.

Other Industrial Equipment  
Abbreviated Listings

East Germany. Study of Emission of Noise of Mechanical and Aerodynamic Origin. Central Institute for Occupational Safety, 8020 Dresden, Gerhart-Hauptmann-Strasse 1, East Germany.

France. Reduction of Noise in the Air by Means of a Filter Screen. National Center for Scientific Research, 31, Chemin Joseph-Aiguier, 13274 Marseille, Cedex 2, France. P. Filippi, G. Corsain.

France. Noise from Pneumatic Machines. MACO-NEUDON. 1977.

Italy. Study of the Effects of Noise and Techniques for Overcoming Noise in Places of Work. National Organization for Accident Prevention, Via Alessandria 220E, 00198 Rome, Italy.

Norway. Noise and Vibration in Machine Constructions. SINTEF, The Laboratory of Acoustics, ELAB, Universitetet I Trondheim, 7034 Trondheim, Norway. Reduction of noise from selected machines. Detailed studies of vibration in panels; excitation response and radiation. Transmission of vibrations through joints and other machine elements.

Poland. Guidelines for Establishment of Anti-noise Protective Zones and their Development for Selected Groups of Factories. Ministry of Administration, Territory Development and Environmental Noise Control, Warsaw, Poland. This project aimed at achieving methods of determining protective zones around factories in relation to the abatement of noise emission into adjacent residential areas.

Sweden. Noise Propagation in the Neighboring Area of an Industry - A Preparatory Study. IFM-Akustikbyran, AB, Box 30021, 400 43, Goeteborg, Sweden. Sponsor: National Swedish Environment Protection Board.

Switzerland. Soundpower Measurement of Oil Burner-Heat Boiler Combination. Federal Metal Testing and Research for Industry, EMPA, Acoustic Department, 600 Dubendorf, Switzerland. Sponsor: Federal Office for Environmental Protection, 3003 Berne, Switzerland. Herrn Professor A. Lauber. Type: Fundamental, Measurement Methodology. 1976-1977. Study results should serve to establish noise level protection technique with burner-boiler combination, and to develop suitable measuring regulations.

Switzerland. Sound Absorption and Noise Screens in Large Industrial Halls. Interkeller AG/SA, 8052 Zurich, Switzerland. W. Stahel, B. Braune.

United Kingdom. Development of Improved Suspended Absorbent Treatments for Industry. Sound Research Laboratories Ltd., Holbrook Hall, Little Waldingfield, Sudbury Suffolk CO10 0TH, United Kingdom. T.P.C. Bramer. Jan 1976 - Dec. 1977.

United Kingdom. Sound and Flow Excited Wall Vibration in Curved Annular Ducts (Theoretical Investigation). Southampton University, Institute of Sound & Vibration Research, Southampton SO9 5NH, United Kingdom.

United Kingdom. Higher Order Mode Acoustic Energy Propagation in Complex Flow Ducts. Southampton University, Institute of Sound & Vibration Research, Southampton SO9 5NH, United Kingdom. P.O.A.L. Davies.

United Kingdom. Noise Reduction in Centrifugal Fans. Southampton University, Institute of Sound & Vibration Research, Southampton SO9 5NH, United Kingdom. C.L. Morfey, P.E. Doak, B.D. Mugridge, R.B.V. Read and W. Neise (DFVLR, Berlin).

United Kingdom. Noise of Centrifugal Fan Systems. Southampton University, Institute of Sound & Vibration Research, Southampton SO9 5NH, United Kingdom. C.L. Morfey, P.E. Doak, B.D. Mugridge, R.B.V. Read, and W. Neise (DFVLR, Berlin).

United Kingdom. Noise Generation by Flow Through Splitter Silencers. Southampton University, Institute of Sound & Vibration Research, Southampton SO9 5NH, United Kingdom. P.E. Doak and P.A. Nelson.

United Kingdom. Engineering Materials. Dept. of Industry, London, United Kingdom. 1977. Composite materials for use in noise control covers.

United Kingdom. Mechanical Engineering and Machine Tools. Dept. of Industry, London, United Kingdom. 1977. Reduction of noise in hydraulic systems. Noise from circular saws. Noise reduction from paper mills. Noise from power presses. Fettling noise. Noise caused by percussive portable tools.

United Kingdom. Technical Aspects of Noise Abatement Zoning in the Control of Pollution Act. Building Research Establishment, Aylesbury, Buckinghamshire, United Kingdom. Investigations are being made of the levels of noise around factories and other fixed industry.

United Kingdom. Design Guidance on Factory Noise. Dept. of Environment, Dept. of Transportation, London, United Kingdom. 1977.

United Kingdom. Noise Generation by Flow Over Perforated Metal Acoustic Duct Linings. Southampton University, Institute of Sound & Vibration Research, Southampton SO9 5NH, United Kingdom. P.E. Doak, P.A. Nelson.

United Kingdom. Laser Doppler Velocimeter Measurements of Sound Excited Wall Vibrations in Curved Annular Ducts. Southampton University, Institute of Sound & Vibration Research, Southampton SO9 5NH, United Kingdom. K. Brod and N.A. Halliwell.

West Germany. Study of Acoustic Fields in Plants and Structures. Federal Institute of Physics and Technology, Acoustics Division, Bundesallee 100, Postfach 345, 3300 Braunschweig, West Germany. P. Dammig, K. Brendel.

West Germany. Noise Reduction in Large Transformers by means of Acoustical Compensation. Burgsteinfurt Section of FH Muenster, Burgsteinfurt, Lindenstr. 59-60, West Germany. Dr. Ing. P. Walisko.

West Germany. Noise Generation by Combustion Fluctuations in Oil Burners - Measurement Techniques for Nozzle Impedance and Turnover Fluctuations. Chair for Applied Thermodynamics, Aachen University, Aachen, Schinkelstr 8, West Germany. Prof. Dr. Franz Pischinger.

West Germany. Effects of Noise Sources and Reduction of Turbines. University of Aachen, Aachen, West Germany. Prof. David. Sponsor: German Research Council. 1976.

ENGINE TECHNOLOGY AND MACHINE PARTS

See Also Pages:

209

213



Project Title:

Reduction of Noise from Small Internal Combustion Engines

Performing Organization Name & Address:

National Research Council of Canada  
Division of Physics  
Acoustical Section  
Ottawa, Canada K1A 0R6

Sponsoring Organization Name & Address:

Principal Investigator(s):

A. J. Brammer  
J. E. Piercy

Type of Research Program:

- ☐ Fundamental  
☐ Development (Component or System)  
☐ Demonstration (Experimental, Prototype, or Production)  
☐ Measurement Methodology

Start Date:

Completion Date:

Estimated \_\_\_\_\_  
Actual \_\_\_\_\_

Funding:

Year	Amount
1976 (actual):	(\$50,000) \$47,140
1977 (budget):	(\$50,000) \$47,140
1978 (forecast):	(\$50,000) \$47,140

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

The theoretical treatment of exhaust mufflers for internal-combustion engines has long been based on linear acoustic theory. Deviations between theory and experiment are ascribed either to non-linear effects associated with the large pressure amplitudes or to the presence of a steady component of gas flow. Moreover, recent work in other laboratories suggests that the inclusion of mean gas flow in muffler theory leads to correct predictions in insertion loss. The purpose of this project is to gain a clear understanding of the physical phenomena which determine the exhaust noise from single cylinder engines as used in chain saws and lawn motors.

An initial experiment employing small, single-cavity mufflers demonstrated that deviations between theory and experiment could exceed 10 dB at 1 kHz and even greater amounts at higher frequency directionality patterns of the source was examined. The results of both experiments indicate that the exhaust gas forms a pulsating jet with the velocity of efflux comparable to the velocity of sound.

Recently a set of six mufflers has been built to cover systematically the transition from non-linear to linear behavior expected as the pulsating jet dissipates. All six have co-linear inlet and outlet pipes and are identical in volume and pipe length, but they differ with respect in inlet-outlet pipe separation. Preliminary results with a four-stroke engine show that the insertion loss increases with increasing pipe separation whereas, according to linear acoustic theory, all six mufflers should produce the same insertion loss.

Or Total Funding Amount: \_\_\_\_\_

COMMENTS:

Transcribed from the original.

Engine Technology and Machine Parts  
West Germany

<b>Project Title:</b> Research on Modern Low-Noise Engines Regarding the Connection Between Noise and the Parameters Affecting the Casing																			
<b>Performing Organization Name &amp; Address:</b> Institute for Combustion Engines Graz/1 Oestereich, Kleiststr, 48A West Germany	<b>Sponsoring Organization Name &amp; Address:</b> Federal Ministry of the Economy																		
<b>Principal Investigator(s):</b>	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
<b>Start Date:</b> Jan. 1, 1975	<b>Completion Date:</b> Estimated _____ Actual <u>Dec. 31, 1976</u>																		
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
<table border="0"> <tr> <td colspan="2"><b>Funding:</b></td> </tr> <tr> <td><u>Year</u></td> <td><u>Amount</u></td> </tr> <tr> <td>1976 (actual)</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><u>Or Total Funding Amount:</u> (232,000 DM) \$98,368</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><b>COMMENTS:</b></td> </tr> </table>		<b>Funding:</b>		<u>Year</u>	<u>Amount</u>	1976 (actual)		1977 (budget):		1978 (forecast):		-----		<u>Or Total Funding Amount:</u> (232,000 DM) \$98,368		-----		<b>COMMENTS:</b>	
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1977 (budget):																			
1978 (forecast):																			
-----																			
<u>Or Total Funding Amount:</u> (232,000 DM) \$98,368																			
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<b>COMMENTS:</b>																			

Point of departure: It is possible to reduce appreciably the engine noise by insulating all outside walls and covers against the inner power-transmitting machine parts. In modern construction this is achieved with self-contained casings; inner motor mounting can be reduced to engine supports.

Research goal: elaboration of generally applicable foundations for reliable and cost-efficient design and choice of material in regard to motor casings and their attachments in modern low-noise engines. Application and significance of the result: basis for the construction and development of low-noise engines. Methodology: on the basis of existing experimental engines or modern low-noise motor specimens, initial investigation of processes involved in noise generation. Then, determine experimentally the effect of the various parameters. Environment and boundary conditions, not applicable.

Factors that affect the outcome: design and choice of materials. Factor that is affected by result: noise emission. Factor of continuing significance: inner engine mounting.

Translated and transcribed from the original.



CONSUMER PRODUCTS

TOOLS

See Also Pages:

107  
109  
111  
117  
121  
205

Tools  
West Germany

Project Title: Reduction of Total Noise Level in Power Chain Saws																	
Performing Organization Name & Address:  Institute for Piston Engines Hannover, Welfengarten 1A West Germany	Sponsoring Organization Name & Address:  Federal Ministry for Research and Technology																
Principal Investigator(s):  Prof. Dr. Ing. Klaus Groth	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Mar.1,1975	Completion Date: Estimated Actual <u>Oct.31,1976</u>																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:(187,000DM) \$79,288</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:(187,000DM) \$79,288		-----		COMMENTS:	
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New possibilities of exhaust gas damping are tested on the saw motors (high rpm 2-stroke engines). Further theoretical and experimental research on the effect of the control periods on noise emission are included. In addition, motor noises are to be measured and level of influence should be determined.

Translated and transcribed from the original.

Tools  
West Germany

Project Title:

Emission Measurements on Compressed-Air Tools

Performing Organization Name & Address: Institute for Geophysics, Vibration and Acoustical Technology of the Westfallian Mine Worker's Union Credit Association Bochum, Herner Strasse 45 West Germany		Sponsoring Organization Name & Address:  Federal Minister of the Int.													
Principal Investigator(s):  Prof. Dr. Heinrich Baule		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology													
Start Date: Nov. 1, 1971	Completion Date: Estimated Actual Dec. 31, 1976	Funding:													
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(103,000 DM) \$43,672</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(103,000 DM) \$43,672
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1977 (budget):															
1978 (forecast):															
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Or Total Funding Amount:	(103,000 DM) \$43,672														
COMMENTS:															

Determination of the actual state of noise emission by compressed-air tools.

Measurement of the emission levels in accordance with general administrative regulations under the federal legislation on emission protection.

Translated and transcribed from the original.

Tools  
West Germany

<b>Project Title:</b> Reduction of the Total Noise Level in Power Chain Saws, With the Aim to Designing a Saw Whose Noise Level is Below 90 dB(A)																	
<b>Performing Organization Name &amp; Address:</b>  Dolmar Maschinen Fabrik Hamburg 70, Jenfelderstr. 38 West Germany	<b>Sponsoring Organization Name &amp; Address:</b>  Society for Space Exploration																
<b>Principal Investigator(s):</b>  Prof. Groth Technical University Hanover, West Germany	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
<b>Start Date:</b> Feb. 15, 1975	<b>Completion Date:</b> Estimated <u>Nov. 30, 1977</u> Actual _____																
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
<b>Funding:</b> <table border="1"><thead><tr><th>Year</th><th>Amount</th></tr></thead><tbody><tr><td>1976 (actual):</td><td></td></tr><tr><td>1977 (budget):</td><td></td></tr><tr><td>1978 (forecast):</td><td></td></tr><tr><td colspan="2">-----</td></tr><tr><td colspan="2">Or Total Funding Amount: (664,000 DM) \$281,536</td></tr><tr><td colspan="2">-----</td></tr><tr><td colspan="2">COMMENTS:</td></tr></tbody></table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (664,000 DM) \$281,536		-----		COMMENTS:	
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COMMENTS:																	

Aim is the design of a portable power saw (e, 5ps) with a mean sound pressure level that measures under 90 db (A) at the ear of the operator. Particular attention must be paid to the ease of handling, the total weight, the motor output, the operating safety as well as the retail price.

Translated and transcribed from the original.

Project Title: Study and Development of High-Speed Low-Noise Tools.

Performing Organization Name & Address: Chair and Institute for Finishing, Technique and Planning Machine Tools, Hannover, Welfengarten 1A, West Germany.		Sponsoring Organization Name & Address:															
Principal Investigator(s):  Prof. Dr. Ing. Hans Kurt Toenshoff.		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
Start Date: Jan. 1, 1975	Completion Date: Estimated _____ Actual Dec. 31, 1977	Funding:															
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  Development of high-speed tools able to meet the requirements for high cutting velocity and for quiet operation as well. Improvement of working conditions. Measurement of mechanical, technological and acoustical parameters.		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>\$106,000</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	\$106,000	-----	
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Or Total Funding Amount:	\$106,000																
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COMMENTS:																	

Translated and transcribed from the original German.

Project Title: Noise Characteristics of Small Two-Stroke Engines [Lawnmowers]																			
Performing Organization Name & Address: Dept. of Mechanical Engineering University of Adelaide Adelaide South Australia 5001	Sponsoring Organization Name & Address: University of Adelaide																		
Principal Investigator(s): Garry L. Brown Adrian David Jones	Type of Research Program: <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
Start Date: May 1973	Completion Date: Estimated <u>Late 1977</u> Actual _____																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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COMMENTS:																			

The investigation was initially aimed at studying the noise sources on a two-stroke rotary lawnmower. Investigations of exhaust noise were aimed out on a two-stroke motorcycle engine as well as on a lawnmower. Lawnmower noise was considered in terms of the component parts: inlet, exhaust, mechanical and blade. The nature of mechanical noise and exhaust noise was found, from both theoretical and experimental considerations. Piston slap was found to be the dominant source of mechanical noise.

A study of the gas dynamics and the associated sound power radiated during the exhausting process of both engines was made. Measurements of far field sound pressure level and pressures inside several exhaust systems agreed well with predictions. The theoretical predictions were obtained by calculations based on the method of characteristics.

Jones, A.D. and Brown, G.L. (1976). Characteristics of the Noise Sources in a Rotary two-Stroke Lawnmower. The Institution of Engineer, Australia, 11-12 October. Preprints of Papers pp95-96 (The Institution of Engineer, Australia, National Conference Publication No. 76/9).

Transcribed from the original.

Project Title: Noise Abatement in Lawnmowers and Combination Tools, e.g. Normalization															
Performing Organization Name & Address:  Institute for Construction Machines and Construction Technology Aachen, Templergraben 55 West Germany	Sponsoring Organization Name & Address:														
Principal Investigator(s):  Dr. Ing. Hubert Frenking	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: Jan.1,1975	Completion Date: Estimated <u>Dec.31,1976</u> Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
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<u>Or Total Funding Amount:</u>															
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COMMENTS:															

Reduction of noise in professional and non-professional installations by establishing objective emission units, graduated in time, under legislative regulations.

Translated and transcribed from the original.

CONSUMER PRODUCTS

APPLIANCES



Project Title:

Model Municipal Noise Control By-Law

Performing Organization Name & Address:  NOISE POLLUTION CONTROL SECTION ONTARIO MINISTRY OF THE ENVIRONMENT 135 St. Clair Ave. West Toronto, Ontario M4V 1P5, Canada		Sponsoring Organization Name & Address:  ONTARIO MINISTRY OF THE ENVIRONMENT 135 St. Clair Ave. West Toronto, Ontario M4V 1P5 Canada											
Principal Investigator(s):  J. Manuel L.G. Kende A.G. Taylor  B. Seshagiri T. Kelsall J.E. Coulter		Type of Research Program:  ____ Fundamental __X__ Development (Component or System) ____ Demonstration (Experimental, Prototype, or Production) __X__ Measurement Methodology											
Start Date:  Jan., 1975	Completion Date: Estimated _____ Actual <u>August, 1977</u>	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (\$50,000) \$47,140</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		Or Total Funding Amount: (\$50,000) \$47,140	
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Or Total Funding Amount: (\$50,000) \$47,140													
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		COMMENTS:											

This model by-law has been developed for use by Ontario municipalities. The model by-law is made up of qualitative and quantitative clauses allowing for comprehensive control of common noise sources such as air conditioners, powered appliances, vehicles etc. It has sections dealing specifically with impulsive and intermittent noises, blasting and construction noises. The Model by-law is supported by a number of technical publications, measurement standards and measurement procedures.

Project Title: Noise Abatement in Ventilators of Special Air Conditioning Installations

Performing Organization Name & Address: Saarbergwerke AG Saarbruecken, Trierer Strasse 1 West Germany		Sponsoring Organization Name & Address: European Coal and Steel Community															
Principal Investigator(s): Dr. Ing. Hans Guido Klinkner		Type of Research Program: ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology															
Start Date: Dec.1,1975	Completion Date: Estimated <u>Dec.31,1977</u> Actual _____	Funding:															
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (206,000DM) \$87,344</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (206,000DM) \$87,344		-----	
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Or Total Funding Amount: (206,000DM) \$87,344																	
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COMMENTS:																	

Aim is to study the effectiveness of sound dampers for ventilators of varying output, and to prepare a catalog listing effective sound damping measures for differing operating conditions.

Expectations: Test bench examination of ventilators and ventilator-sound damper combinations; testing of ventilators under conditions close to actual operational requirements; operational runs; individual measurements on ventilator-sound damper combinations under various operative conditions.

Translated and transcribed from the original.

Project Title:

Domestic Air Conditioners. Noise Prediction and Control

Performing Organization Name & Address:

Public Health Department  
Perth, W. Australia

Sponsoring Organization Name & Address:

Public Health Department  
Perth, W. Australia

Principal Investigator(s):

Committee, Chaired by Dr. Carolyn  
Mather

Type of Research Program:

- ☐ Fundamental  
☐ Development (Component or System)  
☐ Demonstration (Experimental, Prototype, or  
 Production)  
☒ Measurement Methodology

Start Date:

1975

Completion Date:

Estimated Nov. 1977  
Actual

Funding:

Year	Amount
1976 (actual):	
1977 (budget):	No fixed amount
1978 (forecast):	

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

GOALS

To establish:

1. A noise rating system for Domestic Unit Airconditioners.
2. Prediction of airconditioner field sound pressure levels from the units noise rating figure.
3. Methods of reducing noise from domestic airconditioners.

Approach.

Survey of existing methods of rating and prediction, sound power measurements in reverberation chamber of a sample of air conditioners.

Field Testing of these airconditions.

A sound level prediction system has been established that utilises dB(A) (Power), noise rating figure for the airconditioners and calculation of sound level in dB(A) for the fixed installation using nomogram.

Report produced: "Predicting and Controlling the Outdoor Sound Levels of Airconditioning Units" to be published June 1977

Project Title: 10 dB Insertion Loss Cowling for Window Air Conditioner																	
Performing Organization Name & Address:  Ontario Ministry of the Environment 135 St. Clair Avenue West Toronto, Ontario M4V 1P5 Canada	Sponsoring Organization Name & Address:																
Principal Investigator(s):  L. G. Kende	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date:	Completion Date: Estimated _____ Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="0"> <thead> <tr> <th><u>Year</u></th> <th><u>Amount</u></th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><u>Or Total Funding Amount:</u></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		<u>Year</u>	<u>Amount</u>	1976 (actual):		1977 (budget):		1978 (forecast):		-----		<u>Or Total Funding Amount:</u>		-----		COMMENTS:	
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COMMENTS:																	

A residential window air-conditioner was located in between two detached houses, causing annoyance by creating a steady 63 dBA level at the property line. A "home-made" plywood and fibreglass intake/discharge cowling was designed to reduce the sound radiated by the unit. Several versions of the cowling were made with increasing silencing efficiency to a maximum of 10 dB overall insertion loss. This resulted in what was judged to be an acceptable sound level in that particular location.

Transcribed from the original.

Appliances  
Netherlands

Project Title: Noise Requirements For Domestic Appliances																	
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands																
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: est 1976	Completion Date: Estimated _____ Actual _____																
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In this study, the necessary data will be obtained for making executive decisions on the basis of article 2 of the nuisance bill with regard to noise production by domestic appliances. In performing the study, use will be made of data obtained in an earlier study, and if applicable, data used abroad for establishing noise requirements and EG guidelines. The study will concern types or categories of domestic appliances under typical conditions of use and the noise levels occurring then, the measuring methods to be used, and other possible aspects for the establishment of specifications and requirements to be imposed on operating controls.

Translated and transcribed from the original Dutch.

Appliances  
Netherlands

Project Title:

Continued Operations Check on Appliances

Performing Organization Name & Address:

Sponsoring Organization Name & Address:

Ministry of Public Health and Environmental  
Protection  
Ministry of Social Affairs  
Amsterdam, Netherlands

Principal Investigator(s):

Type of Research Program:

\_\_\_ Fundamental  
\_\_\_ Development (Component or System)  
\_\_\_ Demonstration (Experimental, Prototype, or  
Production)  
\_\_\_ Measurement Methodology

Start Date:

Completion Date:

1976

Estimated \_\_\_\_\_

Actual \_\_\_\_\_

Funding:

Year

Amount

1976 (actual):

1977 (budget):

1978 (forecast):

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Or Total Funding Amount:

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COMMENTS:

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

Investigations conducted for this project should lead to conclusions as to how the continued operations check to enforce legal provisions limiting appliance noise can best be organized. Using data obtained from other research projects in this program, optimal procedures for the continued operations check should be developed for the various categories of appliances.

Transcribed from the original.

Appliances  
Netherlands

Project Title: Placement of Appliances in the Home (Domestic Appliances and Stereo Sound Systems)																	
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Ministry of Housing and Physical Planning Ministry of Public Health and Environmental Protection Amsterdam, Netherlands																
Principal Investigator(s):	Type of Research Program:  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology																
Start Date: 1976	Completion Date: Estimated _____ Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table><thead><tr><th>Year</th><th>Amount</th></tr></thead><tbody><tr><td>1976 (actual):</td><td></td></tr><tr><td>1977 (budget):</td><td></td></tr><tr><td>1978 (forecast):</td><td></td></tr><tr><td colspan="2">-----</td></tr><tr><td colspan="2">Or Total Funding Amount:</td></tr><tr><td colspan="2">-----</td></tr><tr><td colspan="2">COMMENTS:</td></tr></tbody></table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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COMMENTS:																	

The purpose of this project is to look into the possibilities for occupants to select, place and use appliances in such a way in the home so as to cause as little noise nuisance as possible. It is known that noise nuisance caused by appliances is a result of the combined influence of the appliance/apparatus itself, its place and use in the dwelling, and the acoustic quality of the dwelling. An inventory of these factors will be made using data available from existing publications and research for the purpose of drawing up operational guidelines.

Transcribed from the original.

Project Title: Defining the Acoustic Attributes of Appliances

Performing Organization Name & Address:		Sponsoring Organization Name & Address: Ministry of Public Health and Environmental Protection Amsterdam, Netherlands																	
Principal Investigator(s):		Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date: 1976	Completion Date: Estimated _____ Actual _____	Funding:																	
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The purpose of this project is to obtain basic information for implementation based on article 8 of the Noise Abatement Bill, concerning the labeling and definition of the acoustic attributes of certain categories of appliances. This project is also concerned with working out the ideas developed in the OECD on product labeling.

Transcribed from the original.



Project Title:

Noise Inspection of Appliances

Performing Organization Name & Address:

Sponsoring Organization Name & Address:

Ministry of Public Health and Environmental  
Protection  
Amsterdam, Netherlands

Principal Investigator(s):

Type of Research Program:

- ☐ Fundamental
- ☐ Development (Component or System)
- ☐ Demonstration (Experimental, Prototype, or Production)
- ☐ Measurement Methodology

Start Date:

Completion Date:

1976

Estimated \_\_\_\_\_

Actual \_\_\_\_\_

Funding:

Year Amount

1976 (actual):

1977 (budget):

1978 (forecast):

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Or Total Funding Amount:

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COMMENTS:

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

This research project serves as preparation for the implementation of article 2 on noise restrictions on appliances, of the Noise Abatement Bill, specifically concerned with setting up inspection procedures on noise emissions. Inspections will be set up both for an appliance type manufactured as a series, and for individual appliances.

The investigation should include an optimal arrangement of inspections for all categories of appliances affected, with the emphasis on the technical and organizational, legal and financial aspects of the inspections.

A distinction will be made between those appliances which are or will be affected by E.E.C. regulations on noise abatement, and those for which noise restrictions will be imposed autonomously by Dutch legislation. The connection between these regulations and other aspects of inspection should be elucidated.

Transcribed from the original.

Project Title: Noise Restrictions on Domestic Installations

Performing Organization Name & Address:		Sponsoring Organization Name & Address: Ministry of Public Health and Environmental Protection Amsterdam, Netherlands																	
Principal Investigator(s):		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date: 1976	Completion Date: Estimated _____ Actual _____	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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This project is designed to amass the information needed to formulate implementation based on article 2 of the Noise Abatement Bill, concerning noise nuisance caused by domestic installations. The project will make use of data obtained from previous research and, if applicable, specifications used abroad in setting noise restrictions, and E.E.C. regulations. Each type or category of domestic installation investigated should be tested under representative working conditions at normal noise levels, using approved methods of noise measurement and observing any other relevant aspects for the regulations to be established, as well as for the noise restrictions to be exacted in the continued operations check.

Transcribed from the original.

Object Title:

Office Equipment Noise Survey

Performing Organization Name & Address: Physics & Eng. Laboratory Dept. of Scientific & Industrial Research Private Bag, Lower Hutt, New Zealand		Sponsoring Organization Name & Address:															
Principal Investigator(s): R.S. Carter C.G. Balachandran		Type of Research Program:  <input type="checkbox"/> <del>Random</del> <input type="checkbox"/> <del>Development (Component or System)</del> <input type="checkbox"/> <del>Demonstration (Experimental, Prototype, or Production)</del> <input type="checkbox"/> Measurement Methodology															
Start Date: July 77	Completion Date: Estimated <u>early 1978</u> Actual _____	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----	
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		COMMENTS: No specific funding															

A survey of the noise levels of office equipment in common use will be performed. These noise levels will be evaluated in the light of international standards and recommendations, and a specification will be formulated which details allowable noise levels in new equipment. This specification will be incorporated in the "Code of Physical Working Conditions" for the N.Z. Public Service, and possibly adopted as a N.Z. Standard. Further recommendations will be made on how to reduce the noise levels of existing equipment.

Appliances  
United Kingdom

Project Title:

Noise From Domestic Appliances

Performing Organization Name & Address:

SOUND RESEARCH LABORATORIES LTD  
HOLEBROOK HALL  
LITTLE WALDINGFIELD  
SUDBURY SUFFOLK CO10 0TH United Kingdom

Principal Investigator(s):

J R COWELL (MR)  
T P C BRAMER(MR)

Sponsoring Organization Name & Address:

Self-sponsored

Type of Research Program:

☐ Fundamental  
☐ Development (Component or System)  
☐ Demonstration (Experimental, Prototype, Production)  
☐ Measurement Methodology

Start Date:

JAN 1977

Completion Date:

Estimated JUNE 1978  
Actual \_\_\_\_\_

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

To examine the particular problems of high speed motors set in very small casings as in domestic appliances

Funding:

Year	Amount
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1976 (actual):

1977 (budget):

1978 (forecast):

Or Total Funding Amount:

COMMENTS:

CONSUMER PRODUCTS

TOYS

See Also Page:

238

Toys  
Netherlands

Project Title: Noise Aspects of Model Planes															
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands														
Principal Investigator(s):	Type of Research Program:  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology														
Start Date: est 1976	Completion Date: Estimated _____ Actual _____														
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This research project has the purpose of obtaining insight into the noise problems of model planes and the possibilities of limiting the noise production of model planes. The study was performed under the auspices of the Royal Dutch Aviation Association and should terminate in guidelines which will be propagated by this association through the model plane clubs connected with it.

Translated and transcribed from the original Dutch.

CONSUMER PRODUCTS

GENERAL

Project Title:		Investigation of Noise Made by Alarm Systems (such as AHOB) and by Signal Horns																	
Performing Organization Name & Address:		Sponsoring Organization Name & Address:																	
		Ministry of Transport and Public Works Amsterdam, Netherlands																	
Principal Investigator(s):		Type of Research Program:																	
		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date:	Completion Date:	Funding:																	
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

For security reasons, one requisite for an acoustic signal is that the sound it produces be sufficiently audible to convey the message intended. Noise abatement entails that annoyance caused to people living nearby be limited as much as possible. This project will endeavour to find solutions for this purpose. One possibility could be to alter the frequencies used for the signal, or to (partly) replace audible signals with optical ones.

Transcribed from the original.



Project Title: Noise Nuisance Aspects of Acoustic Warning Systems															
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amaterdam, Netherlands														
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: est 1976	Completion Date: Estimated _____ Actual _____														
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Year	Amount														
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This project has the purpose of obtaining insight into the noise nuisance that can be caused by acoustic warning systems such as burglar alarms, signalling horns and sirens, as well as the possibilities of limiting noise nuisances by technical interventions, limitations of use, or the application of other warning systems. Regarding safety systems, a study will also be made of the manner whereby these installations can be prevented from being heard for a needlessly long time while maintaining the proper operation of the system.

General Consumer Products  
Netherlands

Project Title: Preliminary Study of Noise-Producing Apparatus															
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. A sterdam, Netherlands														
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: est 1976	Completion Date: Estimated _____ Actual _____														
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1978 (forecast):															
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Or Total Funding Amount:															
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COMMENTS:															

This research project has the purpose of obtaining quantitative data on noise production by a large number of apparatuses such as construction machines, household appliances, gardening and hobby equipment, residence installations and servicing equipment, use being made of already existing measurement results from domestic and foreign cases. The data are also used for establishing priorities with regard to bringing about legal specifications for the noise production by apparatuses and systems and in the preparation of the instructions.

Translated and transcribed from the original Dutch.

General Consumer Products  
Netherlands

Project Title: Noise Requirements for Hobby & Recreation Equipment															
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands														
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: est 1976	Completion Date: Estimated _____ Actual _____														
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COMMENTS:															

In this study, data will be obtained that are required for the making of executive decisions on the basis of article 2 of the noise nuisance bill with respect to noise production by hobby and recreation equipment. In conducting the study, use will be made of data obtained from earlier studies and, if applicable, data used abroad for establishing noise requirements and ECE guidelines. The study will concern types or categories of hobby and recreational equipment under typical conditions of use, the noise levels pertaining to them, the measuring methods used and other possible aspects for establishing specifications as well as requirements imposed for operating control.

Translated and transcribed from the original Dutch.

AGRICULTURAL MACHINERY

Project Title: Tractor and Machinery Noise																			
Performing Organization Name & Address: NIAE Wrest Park Silsoe Beds, United Kingdom	Sponsoring Organization Name & Address: Ministry of Agriculture Fisheries & Food Great Westminster House Horseferry Rd. London SW1P 2AE, England.																		
Principal Investigator(s):  J. D. C. Talamo	Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																		
Start Date: May 1977	Completion Date: Estimated <u>March 1979</u> Actual _____																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
<table border="1"> <thead> <tr> <th colspan="2">Funding:</th> </tr> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>NIL</td> </tr> <tr> <td>1977 (budget):</td> <td>(£26,000) \$44,710.</td> </tr> <tr> <td>1978 (forecast):</td> <td>(£26,000) \$44,710.</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Funding:		Year	Amount	1976 (actual):	NIL	1977 (budget):	(£26,000) \$44,710.	1978 (forecast):	(£26,000) \$44,710.	-----		Or Total Funding Amount:		-----		COMMENTS:	
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COMMENTS:																			

#### Future Work

Now that tractor driver noise exposure has been reduced, attention must be given to reducing the noise of trailed machinery and to protecting the operators of fixed plant.

#### Field Machinery Noise

Two aspects are in need of investigation. Firstly, the sources and levels as they affect the tractor driver and the machine operators. It is proposed that we make measurements of the noise of a range of field machines in operation on local farms. Individual machines which embody basic noise generating mechanisms will be studied in more detail with special emphasis on their treatment potential.

Secondly, the identification and analysis of the audible cues used by drivers with special attention to how these are modified by modern low noise cabs.

#### Noise From Mixed Plant

It is proposed that the data collected in 1969-71 is checked against plant and equipment now available, that the noise exposure of operators be measured using the noise average meter and pocket dose meters in order to predict hearing damage risk, and finally that, if possible, we cooperate with machinery suppliers in the design and commissioning of one or two installations with the object of minimising internal and external buildings noise.

Transcribed from the original.

Project Title:

Tractor Noise Studies

Performing Organization Name & Address: NIAE Wrest Park Silsoe Beds, United Kingdom		Sponsoring Organization Name & Address: M.A.F.E. Great Westminster House Horse Ferry Road London SW1P 2AE United Kingdom																			
Principal Investigator(s):  J.D.C. Talamo		Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																			
Start Date: Sept. 1975	Completion Date: Estimated <u>Dec. 1976</u> Actual <u>Dec. 1976</u>	Funding:																			
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>(£15,000) \$25,794</td> </tr> <tr> <td>1977 (budget):</td> <td>Nil</td> </tr> <tr> <td>1978 (forecast):</td> <td>Nil</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> <td colspan="2"></td> </tr> </tbody> </table>		Year	Amount	1976 (actual):	(£15,000) \$25,794	1977 (budget):	Nil	1978 (forecast):	Nil	-----		Or Total Funding Amount:		-----		COMMENTS:			
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Or Total Funding Amount:																					
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COMMENTS:																					

Noise Reduction of Tractors Not Fitted With Cabs

The goal was to assess the possibility of achieving U.K. driver's ear noise limits without fitting a cab to a tractor.

The approach was to determine the noise reductions needed for the component noise sources and compare those with the noise reductions which are possible using existing technology. Methods included measurement in a noise test chamber (semi-anechoic) and computer prediction of combined sound loads.

The results exceeded expectations: a 43 h.p. tractor was treated and tested to obtain a maximum noise level of 88 dBA with no loss of power (reduced from 10 dBA).

Reference:

Talamo J.D.C. Tractor noise reduction exercises 1976: Reducing the noise level at the driver on a 43 h.p. tractor without a cab. NIAE Dep. Note DN/E/744/1430 (Unpublished) 1976.

Transcribed from the original.

ACOUSTIC PROPERTIES

BUILDING ACOUSTICS

See Also Pages:

132

173

264

272





Project Title: Research on the Mechanism of the Floor Impact Noise Generation															
Performing Organization Name & Address: Research Laboratory, Shimizu Construction Co., Ltd. 2-1, Takara-machi, Chuo-ku Tokyo, Japan	Sponsoring Organization Name & Address:														
Principal Investigator(s):  T. Oribasa K. Kubota	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: 1976	Completion Date: Estimated 1983 Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>(¥6,000,000) \$22,026</td> </tr> <tr> <td>1977 (budget):</td> <td>(¥1,000,000) \$3,671</td> </tr> <tr> <td>1978 (forecast):</td> <td>unknown</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):	(¥6,000,000) \$22,026	1977 (budget):	(¥1,000,000) \$3,671	1978 (forecast):	unknown	-----		Or Total Funding Amount:		-----	
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1978 (forecast):	unknown														
-----															
Or Total Funding Amount:															
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COMMENTS:															

The goals

The effective planning method of the reduction on the floor impact noise.

The approach

By the scale model experiments.

Transcribed from the original.

Project Title: Investigations of Potential for Combining Thermal Insulation and Sound Absorption in Industrial Buildings																	
Performing Organization Name & Address: Sound Research Laboratories Ltd. Holbrook Hall Little Waldingfield Suffolk, United Kingdom	Sponsoring Organization Name & Address:																
Principal Investigator(s): J. R. Cowell	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Nov. 1975	Completion Date: Estimated <u>Summer 1977</u> Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="0"> <thead> <tr> <th><u>Year</u></th> <th><u>Amount</u></th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (under £ 5,000) \$8598.</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		<u>Year</u>	<u>Amount</u>	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (under £ 5,000) \$8598.		-----		COMMENTS:	
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1978 (forecast):																	
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Or Total Funding Amount: (under £ 5,000) \$8598.																	
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COMMENTS:																	

To examine how far thermal insulation (used in industrial building construction) can double as sound absorbing material to reduce industrial noise levels, thereby allowing economy of construction. Tests will be carried out on alternative roof deck constructions to assess the interaction between thermal insulation, acoustic absorption and condensation, within the context of weatherproofing requirements and normal decking constructions, to obtain optimum performance in terms of each variable. The outline plan for the research has been developed and detailed tests procedures being finalised.

Transcribed from the original.

Project Title: Noise and Vibration Transmission in Concrete Structures															
Performing Organization Name & Address: London University, Chelsea College: Department of Physics Magresa Road London, SW3 United Kingdom	Sponsoring Organization Name & Address: Science Research Council														
Principal Investigator(s):  Dr. H.G. Leventhall P.F. Chatterton	Type of Research Program:  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology														
Start Date: Oct. 1973	Completion Date: Estimated <u>Sept. 1976</u> Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding:														
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1977 (budget):															
1978 (forecast):															
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Or Total Funding Amount: (£16,000) \$27,514.															
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COMMENTS:															

To investigate vibration and noise transmission paths in buildings. Equipment is being developed to measure energy transmission between locations in a structure. Large element of field work will be involved.

Project Title: Analysis of Research Results for DIN 4108 and DIN 4109																												
Performing Organization Name & Address: German Commission on Norms Berlin, Reichpietschuffer 72-76 West Germany	Sponsoring Organization Name & Address: Federal Ministry for Land Use, Home Construction and Urban Development																											
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																											
Start Date: June 1, 1975	Completion Date: Estimated Actual May 31, 1976																											
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																												
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The Federal Ministry for Land Use, Home Construction and Urban Development has spent considerable funds to support research in the area of heat and sound insulation. The reports on the results are available. It is now indispensable to adapt the recognized construction principles for sonic and thermal insulation (DIN 4108 and DIN 4109) to these new insights.

- 1) Analysis of the available research reports and selection of the themes which should be considered in developing norm guidelines on heat and sound insulation.
- 2) Proposals for appropriate formulation and justification before the participating organizations.
- 3) Integration of the insights, taking into consideration practical necessities.
- 4) Allowing for experimental results obtained by other nations, insofar as possible and advisable.
- 5) Comprehensive report on the insights which have flown from construction research into norm development.

Translated and transcribed from the original.

Building Acoustics  
West Germany

Project Title: Major Construction Project, Columbus Center in Bremerhaven																	
Performing Organization Name & Address: Institute for Acoustical and Vibration Technology Hamburg 70, Fehmarnstr. 12 West Germany	Sponsoring Organization Name & Address: Neue Heimat Nord Bremen West Germany																
Principal Investigator(s): Manfred Kessler	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Jan.1,1974	Completion Date: Estimated _____ Actual _____																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (200,000DM) \$84,800</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (200,000DM) \$84,800		-----		COMMENTS:	
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COMMENTS:																	

Extensive urban building project with professional installations and homes. Research in the areas of environmental protection (traffic noise, machine noise), building acoustics, space acoustics.

Translated and transcribed from the original.

Building Acoustics  
West Germany

Project Title: Computation of Real Noise Propagation Within Certain Built-Up Conditions

Performing Organization Name & Address:  Technical Monitoring Association Koeln, Konstantin-Wille-STR. 1 West Germany		Sponsoring Organization Name & Address:	
Principal Investigator(s):  Dipl. Phys. W. Gloeckner		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology	
Start Date: May 1, 1976	Completion Date: Estimated _____ Actual <u>Jun 30, 1976</u>	Funding:	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		Year	Amount
		1976 (actual):	(8,000DM) \$3,392
		1977 (budget):	
		1978 (forecast):	
		Or Total Funding Amount: _____	
		COMMENTS:	

Computation is to follow an existing model, using documentation collected by Prof. Roeurer under a commission from MAG (URW). The documentation is entitled "Possible solutions for the close bunching of industry and residences by means of architectural shapes and good planning." This is to be transposed from the perspective of noise levels so as to achieve an optimum solution.

Translated and transcribed from the original.

Project Title: Noise Abatement with Sanitation Planning															
Performing Organization Name & Address: Dr. Gluck, Universitätsdozent Institut Fur Bauingenieurwesen VI Technische Universität München Arcisstrasse 21, D-8000 Munich 2 West Germany	Sponsoring Organization Name & Address: Bundesminister Für Raumordnung Baunwesen und Städtebau Deichmannsane D-5300 Bonn Bad Godesberg West Germany														
Principal Investigator(s):  Dr. Ing. Gluck Dipl.-Ing. Bandmann	Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input checked="" type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology														
Start Date:  1974	Completion Date: Estimated _____ Actual 1977 _____														
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COMMENTS:															

Working out of possibilities with state sanitation planning,  
noise protection aspects to be taken into account, practical testing on 3 case studies.

Publication: Literature series of the Federal Minister for Rural  
Planning, Building Systems and Municipal Construction. Volume 03.052.

Project Title:		Taking Inventory of Possibilities of Acoustically Favorable Territory Divisions of Institutions and Industrial Areas																	
Performing Organization Name & Address:		Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands																	
Principal Investigator(s):		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
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The noise sources on the territory of institutions can be of a wide variety of shapes and sizes. Often by a favorable mutual positioning of these, sources with a high noise level can be shielded by other sources or installations and buildings with respect to noise-sensitive objects in the vicinity. It is also sometimes possible to utilize the radiation properties in certain directions to minimize the noise load at a certain area. The internal division and situation can not only be of importance for noise loading on the environment of the institutions but also for the bordering companies. The study should list the possibilities in this field.

Translated and transcribed from the original Dutch.



Project Title: Experience With Noise-Reducing Devices in the Residential Situation																			
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands																		
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
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COMMENTS:																			

Within the framework of the future noise nuisance law, in certain heavy load situations, a reconstruction program will have to be conducted, the purpose of which will be to reduce the noise load to acceptable proportions. Besides measures at the institutions, in this connection, devices can also be used in residences as well as screening devices between residences and industry. The installation of such devices (on a voluntary basis) can have unfavorable side effects, as a result of which the residents will not feel the situation to have been improved. One may think of the "bunker effect" and maintenance problems in the case of extra noise insulation of residences and the landscape disturbance by screens and walls. The study has the purpose of obtaining by conducting interviews an insight into the opinion of such devices by the residents. The results can also be used for improving insight into the relationship between the noise load and the extent of the nuisance. Relationships should be sought with the corresponding projects in the research programs for traffic noise and aviation noise.

Translated and transcribed from the original Dutch.

Project Title: Domestic Machinery and Appliances (Central Heating and Sanitary)															
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Ministry of Housing and Physical Planning Ministry of Public Health and Environmental Protection Amsterdam, Netherlands														
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
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This project will research standard possibilities for the placement of technical installations and appliances in the home in such a way that noise levels in adjacent "noise sensitive" rooms will be as low as possible. This research should take into account both noise sensitive rooms in the same dwelling and those in the neighboring dwelling(s).

A schematic diagram showing the relations on "rooms and noise levels resulting from domestic machinery & appliances" should be prepared in this project.

Because the concept here is one of spatial arrangement of elements in the home, the rules of modular co-ordination will have to be taken into consideration.

The first phase of this project will be a review of available publications on the subject.

Transcribed from the original.

Project Title: Predicting Sound Levels (a) in Air-Conditioned Rooms (b) the Sound Problems in Landscaped Offices															
Performing Organization Name & Address:  Loughborough University of Technology Leis, England	Sponsoring Organization Name & Address:														
Principal Investigator(s):  D.J. Croome	Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date:	Completion Date: Estimated 1980 Actual														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  (a) Air-conditioning noise is, of course, only one part of the background noise spectrum for a space, but it has become significant over the last decade as more high velocity systems are being installed, and as people have become more sensitive to internal noise sources in buildings well insulated from the external environment. Research has been carried out to investigate the nature and level of sound emitted in rooms served by air-conditioning systems. An initial survey measured the sound spectra in 74 university lecture rooms. Fans, motors, vee-belt drives and an airflow system were then installed to serve one lecture room. It was found that the sound pressure level in the room could be predicted by the equation:															
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$$L=40\left(\frac{v}{17} + 1\right)$$

or

$$L=37.4\left(\frac{N}{2110} + 1\right)$$

where L is the sound pressure level in dB(A), v is the air velocity in the main duct and N is the fan speed (rpm). Further field studies are being undertaken on many systems in buildings to find out if a general formula can be applied in practice.

(b) the aims of the study were:

- a) to establish the suitability of the Articulation Index as an acoustic design criterion for landscaped offices;
- b) to investigate the acoustical environment within a specific office, with particular attention being paid to the problems of privacy;
- c) to form some conclusions as to the effectiveness of modern and classical theory in the prediction of the acoustical environment within landscaped offices.

Transcribed from the original.

<b>Project Title:</b>																			
Testing Sound-Absorbent Linings in Large Work Shops																			
<b>Performing Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Laboratory of Industrial Acoustics Leningrad, USSR	<b>Sponsoring Organization Name &amp; Address:</b> All Union Central Council All Union Central Scientific Research Institute of Industrial Hygiene Leningrad, USSR																		
<b>Principal Investigator(s):</b>  I. M. Vitrinsky and D. Kh. Slobodnik	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
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Testing of various sound-absorbent linings is described in production shops of nails, rubberized fabric shoes and cotton fabrics. Linings of reinforced concrete ceilings and walls were tested for their noise-minimizing effect in large shops, e.g., 150 x 75 m or 150 x 40 m. and 5 to 13.5 m. high. Noise levels and noise frequency spectra were measured at several points in the shops before and after installation of linings. A decrease of noise levels by 4 to 7 dB was observed in several points of the shops.

It is concluded that the sound-absorbent linings are as effective in large shops, with plane dimensions much greater than height, as in small shops.

Translated and abstracted from the original Russian.

<b>Project Title:</b> Sound Absorbent Resonance Grating for Lining of Industrial Premises																									
<b>Performing Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Laboratory of Industrial Acoustics Leningrad, USSR	<b>Sponsoring Organization Name &amp; Address:</b> All Union Central Council All Union Central Scientific Research Institute of Industrial Hygiene Leningrad, USSR																								
<b>Principal Investigator(s):</b> V. F. Lukashevich and A. S. Churilin	<b>Type of Research Program:</b> <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																								
<b>Start Date:</b>	<b>Completion Date:</b> Estimated _____ Actual _____																								
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A new sound-absorbent lining structure for industrial premises was developed and tested by the authors. The lining is described as a network of rectangular sloping plates of metal, heat-resistant reinforced plastics or other sheet material, excluding porous materials. The experiment showed predominance of h.f. resonance effect in total frequency characteristic of the network of vertical sloping plates. Measurement of the coefficient ( $\alpha$ ) of sound absorption by the reverberation method is described. The best results (the best frequency characteristic of  $\alpha$ ) were obtained with 50 cm. large plates, spaced at 20 cm. intervals, with a 10 to 30° slope. An improved model of plates network exhibited  $\alpha = 0.3$  to 0.6 in the 125 to 1000 Hz band and  $\alpha = 0.6$  to 0.8 in the 1000 to 8000 Hz band. Testing was carried out at the Pamfilov Academy of Municipal Services in Leningrad.

Translated and abstracted from the original Russian.

Building Acoustics  
Abbreviated Listings

East Germany. Study of a Technique for Measuring Acoustic Attenuation Caused by the Elements Constituting the Outer Walls (Laboratory and In Situ Measurements). Central Institute for Occupational Safety, 8020 Dresden, Gerhart - Hauptmann - Strasse, East Germany.

France. Reduction of Noise in Pipes by Means of Active Absorbers. National Center for Scientific Research, 31, Chemin Joseph-Aiguier, 13274 Marseille, Cedex 2, France. M. Jessel, T. Angelini.

France. Noise Dissipation in Structures by Visco-Elastic Materials. National Center for Scientific Research, 31 Chemin Joseph-Aiguier, 13274 Marseille, Cedex 2, France. Y. Jullien.

West Germany. Determining the Imprecision of Rapid Measurement of Architectural Acoustics. Federal Institute of Physics and Technology Acoustics Division, Bundesallee 100, Postfach 345, 3300 Braunschweig, West Germany. W. Kallenbach, P. Dammig.

ACOUSTIC PROPERTIES

IMPACT AND VIBRATIONS

See Also Pages:

28  
29  
103  
106  
131  
200  
217  
245  
247  
300  
311

Project Title: Dynamic Behavior of Structural Elements Carrying Elastically Supported Motors and Engines.

Performing Organization Name & Address:

Instituto de Mecanica Aplicada  
Base Naval Puerto Belgrano  
8111 Argentina

Sponsoring Organization Name & Address:

Consejo Nacional De Investigaciones  
Cientificas y Tecnicas  
Rivadavia 1917  
Buenos Aires, Argentina

Principal Investigator(s):

Dr. Patricio A. A. Laura  
Ing. Jose L. Pombo

Type of Research Program:

☒ Fundamental  
☐ Development (Component or System)  
☐ Demonstration (Experimental, Prototype, or Production)  
☐ Measurement Methodology

Start Date:

Jan. 1976

Completion Date:

Estimated Dec. 1978  
Actual 40%

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

Funding:

Year	Amount
1976 (actual):	U.S. 5000 dollars
1977 (budget):	U.S. 10,000 dollars
1978 (forecast):	U.S. 15,000 dollars

Or Total Funding Amount:

COMMENTS:

Naval and mechanical engineers are very often confronted with the problem of mounting different varieties of engines and motors on structural elements. In order to avoid dangerous resonance situations the designer must be able to predict natural frequencies of the overall mechanical system: structure-motor and its elastic mounting. Ultimately he should also determine mode shapes and dynamic stresses induced by any dynamic disturbance generated by the engine. The investigation performed belongs to a broad but detailed long-range research plan aimed at the improvement of dynamic design of structural elements. More specifically, the ultimate goal is to provide the basis for more rational design procedures. Publications resulting from this research program are published in Journal of Sound and Vibration, Applied Acoustics, Journal of Ship Research, etc.

Transcribed from the original.



**Project Title:**  
Vibration Analysis of Electronic Equipment

<b>Performing Organization Name &amp; Address:</b> Instituto de Mecanica Aplicada Base Naval Puerto Belgrano 8111 Argentina		<b>Sponsoring Organization Name &amp; Address:</b> CONICET Rivadavia 1917 Buenos Aires, Argentina														
<b>Principal Investigator(s):</b> Dr. Patricio A. A. Laura Ing. Jose L. Pombo		<b>Type of Research Program:</b> <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
<b>Start Date:</b> Jan. 1976	<b>Completion Date:</b> Estimated Dec. 1978 Actual 55%	<b>Funding:</b> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>U.S. \$2,000 dollars</td> </tr> <tr> <td>1977 (budget):</td> <td>U.S. \$2,500 dollars</td> </tr> <tr> <td>1978 (forecast):</td> <td>U.S. 10,000 dollars</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2"><b>Or Total Funding Amount:</b></td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table> <b>COMMENTS:</b> -----	Year	Amount	1976 (actual):	U.S. \$2,000 dollars	1977 (budget):	U.S. \$2,500 dollars	1978 (forecast):	U.S. 10,000 dollars	-----		<b>Or Total Funding Amount:</b>		-----	
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1977 (budget):	U.S. \$2,500 dollars															
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<b>Or Total Funding Amount:</b>																
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**Project Summary:** (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

When a printed-circuit board (PCB) vibrates especially in coincidence with one of its natural frequencies-connectors work loose, component leads snap, and the board may even crack /1/.

Obviously, any of these conditions lead to malfunction of the electronic system. The design engineer must be able, then, to determine natural frequencies of the mechanical system.

Traditionally, PCB's mostly have been rectangular and supported around the edges, either continuously or at several points. However, growing use of electronics in unusual new applications is bringing new challenges to packaging design /1/.

Cylindrical housings may require a circular PCB; others may need triangular or hexagonal printed circuit boards.

From a mathematical viewpoint, "exotic" boundary shapes generate serious analytical difficulties. Approximate methods such as finite differences, finite elements, variational procedures, etc., must be used. The powerful finite element technique is undoubtedly, today, the most popular method among analysts.

The present research deals with a comparison of results obtained by means of analytical, numerical and experimental methods.

#### References

1. D. S. Steinberg, 1976, Machine Design, May 20, pp. 116-119, "Avoiding Vibration in Odd-Shaped Printed Circuit Boards".
2. P. A. A. Laura, "The Numerical Solution of Eigenvalue Problems in Domains of Complicated Boundaries", Sixth International Congress on Acoustics, Tokyo, Japan, 1968.

Transcribed from the original.

Project Title:

Measurement and Evaluation of Impulse Noise

Performing Organization Name & Address:

National Agency of Environmental  
Protection  
Kampmanusgade 1  
1604 Kobenhaven, Denmark

Sponsoring Organization Name & Address:

Principal Investigator(s):

National Agency of Environmental  
Protection

Type of Research Program:

- ☐ Fundamental  
☐ Development (Component or System)  
☐ Demonstration (Experimental, Prototype,  
Production)  
☐ Measurement Methodology

Start Date:

1977

Completion Date:

Estimated 1978

Actual

Funding:

Year

Amount

1976 (actual):

1977 (budget): (50.000 D.kr.) \$8,245

1978 (forecast):

Or Total Funding Amount:

COMMENTS:

Project Summary: (Briefly describe the  
goals, approach, expected or actual results,  
report(s) generated and the date(s) of  
publication.)

Measurement and Evaluation of Impulse Noise: a study illuminating  
problems in connection with correction for impulse noise.

Impact and Vibration  
West Germany

Project Title: Investigation of Vibration - and Stress Crack Corrosion in Unalloyed or Low-Alloy Steels for Devices Used in Environmental Technology, and Particularly in Dust Removal Installations																			
Performing Organization Name & Address:  Metallgesellschaft Corp. Frankfurt 1, Postfach 3724 West Germany	Sponsoring Organization Name & Address:  German Society for Chemical Instrumentation																		
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
Start Date: Aug. 1, 1974	Completion Date: Estimated <u>July 1, 1977</u> Actual																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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Vibration crack corrosion in elements subjected to alternating mechanical stress can lead to premature fracture. Therefore information on such corrosion and its impact level in chemical installations is of general interest. It is the purpose of this project to gather such data for the most important construction material, steel, under actual practical conditions. Vibration and stress crack corrosion is also to be studied in electrofilters used for dust removal. These filters are well suited for operational tests in which the effect of the material's characteristics, and of the mechanical and chemical components on vibration and stress crack corrosion are tested in both unalloyed and low-alloy steels - Chemical and mechanical parameters are to be studied in laboratory tests and the results are to be compared.

Translated and transcribed from the original.

Impact and Vibration  
Netherlands

Project Title: Taking Inventory of the Occurrence of Vibration Nuisances Caused by Institutions													
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands												
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology												
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An inventory should be taken of the cases where vibration nuisances arise in the vicinity of institutions in order to establish standards and to formulate management measures with respect to vibration nuisances caused by institutions. These can involve vibration nuisances in residential districts and the like and in the adjoining businesses. On the basis of the results of this study, a further study can be planned on the possibilities of eliminating vibration nuisances.

Translated and transcribed from the original Dutch.

**Project Title:** Structural Modelling by the Curve Fitting of Measured Frequency Response Data

<b>Performing Organization Name &amp; Address:</b> Institute of Sound and Vibration Research The University, Southampton 509 5NH Hants United Kingdom		<b>Sponsoring Organization Name &amp; Address:</b>	
<b>Principal Investigator(s):</b>  H. G. D. Goyder		<b>Type of Research Program:</b> <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology	
<b>Start Date:</b>	<b>Completion Date:</b> Estimated _____ Actual _____	<b>Funding:</b>	
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<u>Year</u>	<u>Amount</u>
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<b>COMMENTS:</b>			

This report presents a method for deriving the vibration characteristics of a structure from a set of measured frequency response functions.

A general mathematical model is formulated which makes no assumption concerning the vibrational behaviour of any particular structure. This model is then employed in a curve fitting procedure which enables the parameters employed by the model to be determined from a set of measured data. The model parameters are directly meaningful, being in the form of complex resonance frequencies and mode shapes.

It is shown that once constructed, the model may be used to predict frequency response functions which have not been measured. Consequently only one excitation station need be used when measuring the transfer function of a structure.

Practical measurements taken from a beam are used to demonstrate the capability of the modelling technique to represent a structure.

Transcribed from the original.

<b>Project Title:</b>		Minimizing Total Vibration of Operator Position by Cushioning Foundations of Vibration-Percussion Molding Plant																	
<b>Performing Organization Name &amp; Address:</b>		<b>Sponsoring Organization Name &amp; Address:</b>																	
All Union Central Scientific Research Institute of Industrial Hygiene Laboratory of Industrial Acoustics Leningrad, USSR		All Union Central Council All Union Central Scientific Research Institute of Industrial Hygiene Leningrad, USSR																	
<b>Principal Investigator(s):</b>		<b>Type of Research Program:</b>																	
S. A. Osmakov F. G. Braude Yu. A. Dzhaparidze		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
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<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

Formulas are derived for the parameters of vibration-insulated foundation of a dynamic vibration molding plant. The spring-mounted foundation is supported by a case. Single or double rubber arresters limit displacement of the working plant member on its foundation. An example is given of calculation of case vibrations for the double arrester variant. A block diagram of the spring-mounted foundation is shown. A dynamic vibration plant was constructed at the Leningradorgstroy trust, for molding concrete slabs for sidewalk pavement. Vibration rate of 0.092 cm/sec. was measured at operator's locations. This rate is close to the calculated rate and does not exceed the tolerance equal to 0.2 cm/sec.

Translated and abstracted from the original Russian.

## Project Title:

## Definition and Classification Criteria of Impulse Noise

<b>Performing Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Laboratory of Industrial Acoustics Leningrad, USSR		<b>Sponsoring Organization Name &amp; Address:</b> All Union Central Council All Union Central Scientific Research Institute of Industrial Hygiene Leningrad, USSR																	
<b>Principal Investigator(s):</b>  E. D. Vervekin and V. V. Kuznetsov		<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
<b>Start Date:</b>	<b>Completion Date:</b> Estimated _____ Actual _____	<b>Funding:</b> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

Impulse noise is defined as aural perception of a single or a series of consecutive impacts. The noise classification criteria proposed in the last few years are criticized as physiologically inadequate. The authors propose to use pulse repetition rate of, the pears factor D and pulse front life-time  $t_f$  as the criteria of noise pulsation, which are the most important characteristics of damage inflicted on people by impulse noise. Methods of measuring the cited criteria are briefly outlined. The objective classification criteria of noise pulsations are given as follows:

$$D = \text{Limp. (J)} - L_F(S0) \quad 6 \text{ dBA}$$

$t_f \sim 20 \text{ GHz}$   
 $t_f \sim 200 \text{ msec.}$

(Limp (J) is the quasi-peak sound level,  $L_F$  is background noise level).

Translated and abstracted from the original Russian.

<b>Project Title:</b>		Sources of Mechanical Noise from Machines and Ways of Minimizing Noise																	
<b>Performing Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Laboratory of Industrial Acoustics Leningrad, USSR		<b>Sponsoring Organization Name &amp; Address:</b> All Union Central Council All Union Central Scientific Research Institute of Industrial Hygiene Leningrad, USSR																	
<b>Principal Investigator(s):</b>  I. M. Vitrinsky, N. V. Korchma, and Z. V. Trandina		<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
<b>Start Date:</b>	<b>Completion Date:</b> Estimated _____ Actual _____	<b>Funding:</b>																	
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Shock forces generated by impact of machine elements are cited as the principal sources of machine noise. Several methods are given for minimizing machine noise by controlling shock forces. Simultaneous control of several parameters determining a shock force is recommended to achieve the maximum effect. Such an effect may be obtained by vibration insulation of impacting elements, e.g., a gear rim from its boss or a bearing bush from supporting structure.



<b>Project Title:</b> Calculation of Vibration Insulation of Technical Equipment Mounted on Overhead Covers of Industrial Buildings																			
<b>Performing Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Industrial Acoustics Laboratory Moscow, USSR	<b>Sponsoring Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Moscow, USSR																		
<b>Principal Investigator(s):</b>  Yu. M. Vasil'yev A. S. Knyazev A. N. Rybakov	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
<b>Start Date:</b>	<b>Completion Date:</b> Estimated _____ Actual _____																		
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<b>COMMENTS:</b>																			

A procedure is described for calculating parameters of vibration insulation of equipment mounted on overhead covers of industrial buildings. An example of the calculation is given for an air blower mounted on a spring shock absorber. Wave effects of the overhead cover, e.g. a pivotally supported plate of reinforced concrete, are taken into account.

Translated and abstracted from the original Russian.

<b>Project Title:</b> Practical Standardization of Vibrations of Machines and Equipment																	
<b>Performing Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Industrial Acoustics Laboratory Moscow, USSR	<b>Sponsoring Organization Name &amp; Address:</b> All Union Central Scientific Research Institute of Industrial Hygiene Moscow, USSR																
<b>Principal Investigator(s):</b> Yu. M. Vasil'yev Ya. G. Gotlib	<b>Type of Research Program:</b>  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
<b>Start Date:</b>	<b>Completion Date:</b> Estimated _____ Actual _____																
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
<b>Funding:</b> <table><thead><tr><th>Year</th><th>Amount</th></tr></thead><tbody><tr><td>1976 (actual):</td><td></td></tr><tr><td>1977 (budget):</td><td></td></tr><tr><td>1978 (forecast):</td><td></td></tr><tr><td colspan="2">-----</td></tr><tr><td colspan="2"><u>Or Total Funding Amount:</u></td></tr><tr><td colspan="2">-----</td></tr><tr><td colspan="2">COMMENTS:</td></tr></tbody></table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		<u>Or Total Funding Amount:</u>		-----		COMMENTS:	
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Establishment and control of practical standards for industrial machines and equipment are discussed. The practical standard of vibration is defined as the threshold vibrational characteristic of a machine in contrast to hygienic and sanitary standards. The latter deal exclusively with involving conditions and attempt to insure the safety of the operator. Quantitative evaluation of practical standards for different machine types is examined in detail.

Translated and abstracted from the original Russian.

Impact and Vibration  
Abbreviated Listings

East Germany. Determining the Effect on Buildings of Structural Noises Emitted by Machines. Central Institute for Occupational Safety, 8020 Dresden, Gerhury - Hauptmann - Strasse 1, East Germany. Theoretical study and in situ measurements.

Norway. Vibration Isolation. SINTEF, The Laboratory of Acoustics, ELAB, Universitetet i Trondheim, 7034 Trondheim, Norway. January 1, 1977 - Jan 1, 1978. Survey of shock and vibration isolation techniques. Possibilities and limitations inherent in various isolation methods. Prediction methods.

USSR. Study and Implementation of Effective Methods of Combating Noise and Vibrations. Naucno-Issledovatel 'Skij i Proiknyj Institut Po Gazocistnym Soorusenijam, Tehnike Bezopasnosti i Ochrane Truda V Promyslennosti Stroitel'Nryh Materialov (Nipiotstrom), Anapskoe Sosse 15, Novorossiysk, USSR.

ACOUSTIC PROPERTIES

PHYSICAL ACOUSTICS

See Also Page:

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Project Title: Propagation of Noise from High Chimneys																			
Performing Organization Name & Address: Central Electricity Research Laboratories Kelvin Avenue Heatherhead, Surrey KT22 7SE United Kingdom	Sponsoring Organization Name & Address: Central Electricity Generating Boards																		
Principal Investigator(s):  C.M. Brownsey D.R.A. Christie D.C. Watts	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																		
Start Date: March 1976	Completion Date: Estimated <u>Mar. 1978</u> Actual _____																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
<table border="0"> <tr> <td colspan="2">Funding:</td> </tr> <tr> <td>Year</td> <td>Amount</td> </tr> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">----- \$8,598 = \$17,196. -----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (<del>£5,000.-</del> £10,000.)</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </table>		Funding:		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		----- \$8,598 = \$17,196. -----		Or Total Funding Amount: ( <del>£5,000.-</del> £10,000.)		-----		COMMENTS:	
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Or Total Funding Amount: ( <del>£5,000.-</del> £10,000.)																			
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COMMENTS:																			

To obtain information on the nature and magnitude of the sound pressure level fluctuations in noise received at ground level which has been radiated from high chimneys; and to assess the significance of these fluctuations from the viewpoint of public acceptability.

In the preliminary work, completed in 1973, model tests were undertaken to assess the effects of the temperature of the exhaust gases and wind-induced plume distortion on the directivity of the noise emitted from gas-turbine exhaust stacks. The programme of work now includes model tests of chimney outlet configurations designed to give noise cancellation effects at ground level.

Transcribed from the original.

Project Title: Research on the Transmission Function of Machinery in Regard to Noise Generation.															
Performing Organization Name & Address:  Department for Machine, Elements and Gears, Technological Institute, Darmstadt, Magdalenenstr. 8-10 West Germany	Sponsoring Organization Name & Address:  Working Group of Industrial Research Associations														
Principal Investigator(s):  Dr. Ing. Dieter Foeller	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: Jan. 1, 1975	Completion Date: Estimated Actual Dec. 31, 1976														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(253,000 DM) \$107,272</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(253,000 DM) \$107,272	-----	
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1978 (forecast):															
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COMMENTS:															

Experimental study of the radiation intensity of machine housing, evaluation of radiation intensity (with due regard for the physical laws) for spherical and plane radiation. Investigation of the structural noise behavior of machines with the method of the "finite elements".

Evaluation of the transmission admittance of typical machine structures.  
Elaboration of construction guidelines and calculation bases for the design of lower-noise machines.

Translated and Transcribed from the Original

Project Title:		Research to Determine the Distribution of Noise Levels by <u>Meteorological Influences in the Lower Atmosphere.</u>													
Performing Organization Name & Address:		Sponsoring Organization Name & Address:													
Technical Monitoring Association Rheinland E.V. Koeln, Konstantin-Wille-Str. 1 Western Germany		Ministry for Labor, Health and Welfare, Duesseldorf													
Principal Investigator(s):		Type of Research Program:													
Dr. S.C. Martinez		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology													
Start Date:	Completion Date:	Funding:													
Feb. 1, 1976	Estimated June 30, 1977 Actual _____	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(180,000 DM) \$76,320</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(180,000 DM) \$76,320
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1978 (forecast):															
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Or Total Funding Amount:	(180,000 DM) \$76,320														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		COMMENTS:													

Elaboration of a computer program for computing noise intensity levels at extended distance from a source of sound, using measured aerological data. Comparison and evaluation by means of various existing computation methods. Establishment of an optimum computer program. Application of the program to various point-sources of noise at different levels, under different weather conditions and wind directions. Computation of noise intensity in the vicinity of spread-out industrial installations. Statistical analysis of the results and comparison with measurements.

Translated and transcribed from the original.

Physical Acoustics  
West Germany

Project Title: Determination of the Mechanical Input Impedance in Machine Elements as well as Development of Measures to Achieve Higher Impedance, with Examples.																									
Performing Organization Name & Address: Ingenieurbuero K.P. Schmidt VDI Mettman, West Germany	Sponsoring Organization Name & Address:  Federal Minister for Labor and Social Welfare																								
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, Production) <input type="checkbox"/> Measurement Methodology																								
Start Date: Apr. 1, 1975	Completion Date: Estimated _____ Actual <u>Sept. 30, 1976</u>																								
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																									
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COMMENTS:																									

The resistance (impedance) which counteracts the formation of noise-generating vibrations is to be ascertained by means of experimental investigation. On structural elements of machine construction, a catalog is then to be prepared, listing input impedance for each of the structural elements typically used in machine design. In addition, measures are to be proposed for raising input impedance.

Translated and transcribed from the original.



Physical Acoustics  
West Germany

Project Title: Computation of Noise Dosage Distribution in Factory Hangars.

Performing Organization Name & Address: Institute and Chair for Measurement Technique in Machine Construction Hannover, Nienburger Strasse 17 West Germany		Sponsoring Organization Name & Address:																	
Principal Investigator(s):  Dr. Ing. Walter Ecker		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date:  Jan. 1, 1975	Completion Date: Estimated _____ Actual Jun 30, 1977	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (235,000DM) \$99,640</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (235,000DM) \$99,640		-----		COMMENTS:	
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COMMENTS:																			

Development of a computer program for the advance calculation of immission level in plant hangars. Production of a noise map, accordingly. Basis for the calculations are acoustic and geometric data from which propagation parameters are deduced for both direct and scattered sound. Statistical theory, verification of program by means of measurements in principal points. Further control by construction of an acoustical scale model (scale 1:10); in it, also measurement of occasionally fluctuating sounds and taking into consideration of screening effect in advance computation.

Translated and transcribed from the original.

Project Title:

Study of Barriers and Enclosures

Performing Organization Name & Address:  INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France		Sponsoring Organization Name & Address:																	
Principal Investigator(s):  H. Leblond P. Daniere J. L. Lecoq		Type of Research Program:  ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology																	
Start Date:	Completion Date: Estimated _____ Actual _____	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  1 - <u>REASONS FOR THE STUDY</u> Enclosures, when they are applicable, are after reduction at the source, an excellent means of reducing noise. Unfortunately, many enclosures are still poorly made: the cover is not well dampened, leaks, etc. The results obtained with such devices are deplorable. 2 - <u>CONTENTS OF THE STUDY</u> This study is intended to provide practitioners with a document recalling the general principles and providing information concerning materials to be used: isolation index, internal absorption, inflammability, weight in m, price.  It is documentary above all (bibliography, information indicating manufacturers and specialized laboratories), but could be complemented with essays or a theoretical study.  Examples of realization, above all those in which the entire enclosure could be obtained by modifying the work process slightly, are given.  In addition, certain "light" composite materials and partial enclosures will be tried. 3 - <u>STATE OF PROGRESS</u> A bibliographical study made showed that certain characteristics of acoustic materials currently being used are not sufficiently precise.  Two methods of measurement that make it possible to obtain: - the absorption coefficients under various conditions, and - the transmission or acoustic isolation coefficients have been perfected.  They make it possible to try different types of samples, with the measurement methods used by the INRS.  The attenuation caused by various types of screens that can be used in industry has been studied using a computer, for ideal conditions in an open field. The influence of reverberation in the site is in the process of being studied. 4 - <u>PURSUIT OF THE STUDY</u> The theoretical study of the influence of screens and partial enclosures will be pursued. It will be compared with the results of experiments that will be conducted in a hollow chamber and in an industrial setting.		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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Or Total Funding Amount:																			
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COMMENTS:																			

Project Title:		Experimental Research on the Interaction of Sound, Flow, Bodies subjected Flow Action and Consumption in a flame.																	
Performing Organization Name & Address:		Sponsoring Organization Name & Address:																	
Chair for Applied Mechanics and Fluid Dynamics, Goettingen, Boettingerstr. 6-8 West Germany																			
Principal Investigator(s):		Type of Research Program:																	
Dipl. Phys. P.E.M. Schneider		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date:	Completion Date:	Funding:																	
	Estimated _____ Actual _____	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

Sound generation and noise abatement in flames affected by sound which flow toward bodies; flames and flame turbulence; measurement of sound spectrums; stroboscopic and schlieren optical observations.

Project Title:		Sound Abatement by Condensater.																	
Performing Organization Name & Address:		Sponsoring Organization Name & Address:																	
Chair for Applied Mechanics and the Physics of Fluids, Goettingen University Goettingen, Boettingerstr 6-8 West Germany		German Research Society																	
Principal Investigator(s):		Type of Research Program:																	
Dipl. Phys. Hiller		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
Start Date:	Completion Date:	Funding:																	
July 1, 1973	Estimated _____ Actual _____	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----		COMMENTS:	
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COMMENTS:																			
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

Sound waves propating in a mixture of air and sub-microscopic water droplets is subjected to extraordinarily strong damping. Experimental research aims at determining under what conditions -- if at all -- this effect can be used to reduce noise caused by flow-through.

Translated and transcribed from the original.

Physical Acoustics  
Abbreviated Listings

East Germany. Study on Models of the Acoustical Characteristics of Machine Frames. Central Institute for Occupational Safety, 8020 Dresden, Gerhart-Hauptmann - Strasse 1, East Germany.

France. Study of Noises Produced by Friction. National Center for Scientific Research, 31 Chemin Joseph-Aiguier, 13274 Marseille, Cedex 2, France. W. Bismuth and J. M. Tatraux - Paro.

France. Possible Propagation of Noise. Atomic Energy Commission, Protection and Environmental Study Ser., 85x 38041, Grenoble, France.

West Germany. Effects of the Site Characteristics on the Measurement of Noise. The Rhine-Westphalia Technical School of Aachen, Machine Research Service, Wuellnerstrasse 5, 5100 Aachen, West Germany.

Project Title:

Study of Noise Around Industries. Preliminary Study

<b>Performing Organization Name &amp; Address:</b> IFM-Akustikbyran AB Box 30021 400 43 Goeteborg 30 Sweden		<b>Sponsoring Organization Name &amp; Address:</b> Statens Naturvardsverk Fack 171 20 Solna, Sweden																	
<b>Principal Investigator(s):</b>  Lars Nordlund		<b>Type of Research Program:</b> <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																	
<b>Start Date:</b> July 1, 1976	<b>Completion Date:</b> Estimated _____ Actual <u>June 30, 1977</u>	<b>Funding:</b> <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(55,000 sKr.)</td> </tr> <tr> <td></td> <td>\$12,391</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:	(55,000 sKr.)		\$12,391	-----	
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1978 (forecast):																			
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	\$12,391																		
-----																			
<b>Project Summary:</b> (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  A series of measurements has been carried out with measurements at 15 different points around an industrial plant under varying weather conditions.		<b>COMMENTS:</b>																	

The results indicate that, with a measurement reading at a point relatively close, the noise level at points at a farther distance in the same direction, can be estimated quite accurately. This is the case especially in "tail wind" conditions. The close point, however, must not be selected so close to the industrial plant that it is affected by changes in the operating conditions of the noise sources with a more local effect. The closest measurement point should be selected at a distance about twice as great as the extent of the industrial area. A correction can be made between the noise level during "tail wind" conditions and the average noise level during varying weather conditions.

The spread of the measurement readings increases according to the distance from the noise source if all wind directions are included. On the other hand, the spread does not seem to increase measurably with the distance if only "tail winds" are included. At a distance of 1,000 meters, 21 independent measurings are required if all wind directions are included and a thoroughness with an average of + 2 dB(A) is desired; six measurings are required if the measuring is done only in "tail wind" conditions.

The variations in the occasional octave bands do not seem to be much different from the variations in the A-measured sound level.

Restrictions on the wind velocity, in connection with measuring guidelines, seem to have little effect unless it is also required that measurings be carried out in "tail wind" conditions.

The 24-hour measurements made at one point indicate that readings during periods lasting up to five minutes are unreliable. In order to obtain relevant measurements a type of sampling must be used which extends over a longer period of time.

Publication

Report 13 6050.01 "Noise Spread Around Industries". Preliminary Study, June 1977.

Translated and transcribed from the original Swedish

ACOUSTIC PROPERTIES  
MEASUREMENT AND METHODOLOGY

See Also Pages:

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50  
55  
161  
217  
219  
255  
263  
277  
279  
283

Project Title: Industrial Noise.																			
Performing Organization Name & Address: Institute of Occupational Health Laajaniityntie 1 01620 Vantaa 62 Finland	Sponsoring Organization Name & Address:  Nordforsk																		
Principal Investigator(s):  Jukka Starck	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																		
Start Date: Jan. 5, 1977	Completion Date: Estimated Aug. 1978 Actual _____																		
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			
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COMMENTS:																			

This project is being carried out in co-operation with Lydteknisk Laboratorium, Denmark, Akustisk Laboratorium, Norway and Statens Provvningsanstalt, Sweden.

The aim of the project is the sampling of noise emission in the metal and wood industries. The project has the following three phases:

- I Development of the sampling method in Denmark, Finland, Norway and Sweden. Development of noise measurement methods.
- II Practical control of the measuring method.
- III Establishment of collection system for noise results.

Transcribed from the original.



Project Title: A Study on the Original Unit (Standard amount of Materials, Power and Labor, etc. Required to Produce a Prescribed Amount of Product) in Relation to the Generation of Factory Noise.																	
Performing Organization Name & Address:  Fujitsu Fakoma Limited 11-36-5 Shinbashi Minato-ku, Tokyo Japan	Sponsoring Organization Name & Address:  Air Quality Bureau Environmental Agency 1-1-3 Kasumigaseki, Chiyoda-ku Tokyo, Japan																
Principal Investigator(s):  Ogiso Daisuke	Type of Research Program:  <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Jan. 1977	Completion Date: Estimated _____ Actual <u>March 1977</u>																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	<p>Funding:</p> <table> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td>\$246</td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: _____</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):	\$246	1978 (forecast):		-----		Or Total Funding Amount: _____		-----		COMMENTS:	
Year	Amount																
1976 (actual):																	
1977 (budget):	\$246																
1978 (forecast):																	
-----																	
Or Total Funding Amount: _____																	
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COMMENTS:																	

Based upon the actual measurement of the factory noise, a regression formula of the noise generated in each class and scale of a factory was obtained. However, due to the complexity of the noise distribution, it was confirmed that subsequent study was necessary.

Translated and transcribed from the original Japanese.

Project Title: Microphone array											
Performing Organization Name & Address: Hoogovens IJmuiden BV Afd. Milieuhygiënisch Onderzoek IJmuiden Holland	Sponsoring Organization Name & Address: none (until now)										
Principal Investigator(s): see: performing organisation	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology										
Start Date: Jan. 1977	Completion Date: Estimated 1978 Actual -										
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  It is often difficult to indentify an annoying noise source, especially when this source is one among many others and the distance between these sources and the disturbed residential area is 1 to 2 km. A one-dimensional microphone array possesses a great directivity. This directivity depends mainly upon: <ul style="list-style-type: none"> <li>- the number of microphones</li> <li>- the distances between the microphones</li> <li>- the possibility to oppress electronically the so-called side lobes of the instrument</li> </ul> A first experiment with an array consisting of 10 microphones made us optimistic about the usefulness for pure tones up to 500 Hz. Further experiments have to be made to see what the results are with industrial noise. About the first experiment, only unpublished reports have been done.											
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>-</td> </tr> <tr> <td>1977 (budget):</td> <td>-</td> </tr> <tr> <td>1978 (forecast):</td> <td>-</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: ( f 100.000,-) \$20,240.</td> </tr> </tbody> </table> COMMENTS:		Year	Amount	1976 (actual):	-	1977 (budget):	-	1978 (forecast):	-	Or Total Funding Amount: ( f 100.000,-) \$20,240.	
Year	Amount										
1976 (actual):	-										
1977 (budget):	-										
1978 (forecast):	-										
Or Total Funding Amount: ( f 100.000,-) \$20,240.											

Project Title:

Computerised Noise Measuring System.

Performing Organization Name & Address: Hoogovens IJmuiden BV Afd. Milieuhygiënisch Onderzoek IJmuiden Holland		Sponsoring Organization Name & Address: none																	
Principal Investigator(s): see: performing organisation		Type of Research Program:  <input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																	
Start Date: 1973	Completion Date: Estimated _____ Actual _____	Funding:																	
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)  In 1973 Hoogovens has installed a network of automatic noise measurement equipment around the plant site. This system provides quantitative information on the amount of factory and other noise occurring at the boundaries of the site.  Since that time there is a continuous development for making this system more useful. We have extended it with a measurement of wind direction and velocity so firstly we can distribute the noise levels to the different wind directions and secondly we can eliminate the noise measurements when they are influenced by wind noise.  Furthermore we made a program to eliminate the influence of noise from overflying air aeroplanes.  At this moment we are defining the relations between the measurements made by this network at the border of the site and the noise levels in the surrounding residential areas, also in relation to the wind direction and velocity.  Ultimately we hope to possess a system that will be a great help in our environmental noise control program.  Publ: Noise emission from a Dutch blast furnace an steel works by Frans A. Loos and Jan C. Krijgsman (Proceedings Inter-Noise '76)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td>(f 150.000,-) \$30,360</td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td>(f 30.000,-) \$ 6,072</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):	(f 150.000,-) \$30,360	1977 (budget):		1978 (forecast):	(f 30.000,-) \$ 6,072	-----		Or Total Funding Amount:		-----		COMMENTS:	
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		1976 (actual):	(f 150.000,-) \$30,360																
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1978 (forecast):	(f 30.000,-) \$ 6,072																		
-----																			
Or Total Funding Amount:																			
-----																			
COMMENTS:																			
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Project Title:		Noise & Nuisance at Building & Road Construction Sites.																	
Performing Organization Name & Address:		Sponsoring Organization Name & Address:																	
Building Research Establishment Transportation Research Laboratory Garston, Watford Crowthorne, Berkshire RG 116AU United Kingdom		Joint project																	
Principal Investigator(s):		Type of Research Program:																	
Dr. F. J. Langdon C. J. Baughan		<input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																	
Start Date:	Completion Date:	Funding:																	
Jan. 1977	Estimated <u>Dec. 1979</u> Actual _____	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (approx: <del>£</del> 50,000) \$85,980</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (approx: <del>£</del> 50,000) \$85,980		-----		COMMENTS:	
Year	Amount																		
1976 (actual):																			
1977 (budget):																			
1978 (forecast):																			
-----																			
Or Total Funding Amount: (approx: <del>£</del> 50,000) \$85,980																			
-----																			
COMMENTS:																			
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																			

Longitudinal, monitored study of conditions at road and building construction sites using interviews (repeated) of residents, continuous diary keeping and measurement of noise levels. Aim to produce guideline documents to assist local authorities and contractors to fulfill legislative requirements of pollution-limiting programmes.

Transcribed from the original.

Project Title:

Propagation of Noise from Large Industrial Complexes.

Performing Organization Name & Address:

Acoustic Technology Limited,  
58 The Avenue,  
Southampton.  
SO1 2TA. United Kingdom

Sponsoring Organization Name & Address:

Principal Investigator(s):

B. C. Postlethwaite  
C. J. Manning

Type of Research Program:

☐ Fundamental  
☒ Development (~~Component~~ or System)  
☒ Demonstration (Experimental, Prototype, or  
Production)  
☒ Measurement Methodology

Start Date:

April 1977

Completion Date:

Estimated End 1978  
Actual \_\_\_\_\_

Funding:

Year	Amount
1976 (forecast):	
1977 (budget): (£15,000)	\$25794
1978 (forecast):	Dependent on initial findings
-----	
Or Total Funding Amount:	
-----	
COMMENTS:	

Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)

An initial investigation is planned of the reliability of existing prediction techniques for the propagation of sound away from large industrial complexes. Where necessary, modifications to these existing procedures will be made. These may subsequently be tested by experimental methods at three (initially) large European petroleum sites. The overall aim is to produce a standard prediction technique which considers statistical parameters for meteorological effects, ground impedance barriers etc., in a form suitable for use by industrial personnel, consultants and planners, and to obtain experimental data on the reliability of such a technique.

Measurement and Methodology  
West Germany

Project Title: Development of Uniform Procedures for the Measurement and Evaluation of the Emission and Immission of Noise.													
Performing Organization Name & Address: Federal Institute for Physics and Technology Braunschweig Bundesallee 100 West Germany	Sponsoring Organization Name & Address:												
Principal Investigator(s):  Prof. Dr. Rudolf Martin	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology												
Start Date: Sept. 1, 1973	Completion Date: Estimated Actual June 30, 1976												
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding:												
	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual)</td> <td></td> </tr> <tr> <td>1977 (budget)</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(115,000 DM) \$48,760</td> </tr> </tbody> </table>	Year	Amount	1976 (actual)		1977 (budget)		1978 (forecast):		-----		Or Total Funding Amount:	(115,000 DM) \$48,760
	Year	Amount											
1976 (actual)													
1977 (budget)													
1978 (forecast):													
-----													
Or Total Funding Amount:	(115,000 DM) \$48,760												
COMMENTS:													

Development of uniform measurement and evaluation procedures for effective noise abatement in the framework of the Federal Government's environmental program. Overview of national and international norms. Overview of the usable classes of instruments, including the test and approval procedures.

Translated and transcribed from the original.

Project Title: Research and Sources of Noise in Industry and in Trade.															
Performing Organization Name & Address:  Dornier Corp. Friedrichshafen, Postfach 317 West Germany	Sponsoring Organization Name & Address:  Federal Minister for Research & Technology														
Principal Investigator(s):  Peter Partels	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
Start Date: Jan.1, 1975	Completion Date: Estimated _____ Actual <u>Oct. 31, 1976</u>														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)															
Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual)</td> <td></td> </tr> <tr> <td>1977 (budget)</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td>(125,000 DM) \$53,000</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table> COMMENTS:		Year	Amount	1976 (actual)		1977 (budget)		1978 (forecast):		-----		Or Total Funding Amount:	(125,000 DM) \$53,000	-----	
Year	Amount														
1976 (actual)															
1977 (budget)															
1978 (forecast):															
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Or Total Funding Amount:	(125,000 DM) \$53,000														
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Elaboration of the principle for a supportive program. Collection of data (subjective criteria). Selection and setting of priorities. Testing in depth in selected areas.

Comparison of desired conditions (regulations) and actual conditions. Technical possibilities for improvement.

Translated and transcribed from the original.

Measurement and Methodology  
West Germany

Project Title: Formulation of Technical norms Within National and International Frameworks in the Area of Acoustical and Vibration Technology, Particularly for Noise and Sounds.																	
Performing Organization Name & Address: Committee on Norms for Acoustical and Vibration Technology, German Institute for Normalization, Inc. Berlin 30, Burggrafenstr. 4-7 West Berlin	Sponsoring Organization Name & Address: Federal Ministry of the Interior																
Principal Investigator(s):  Prof., Dr. Diestel	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: Sept. 1, 1974	Completion Date: Estimated Aug. 31, 1977 Actual /																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding: <table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (436,000 DM) \$184,864</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (436,000 DM) \$184,864		-----		COMMENTS:	
Year	Amount																
1976 (actual):																	
1977 (budget):																	
1978 (forecast):																	
-----																	
Or Total Funding Amount: (436,000 DM) \$184,864																	
-----																	
COMMENTS:																	

Formulation and application of normalization projects within national and international frameworks for the scientific and technical preparation of regulations implementing the federal law for emission control. Norms in the domain of acoustics; particularly: terminology, noise and sound level measurements for various sources including measurement instruments and noise evaluation techniques ultrasound and musical acoustics; norms for mechanical vibrations and percussion; particularly: Terminology, measurement and testing installations, evaluation standards for vibrations and percussions on various objects, as well as in regard to the effect on man, preventive measures to reduce vibrations and percussions.

Translated and transcribed from the original.



Measurement and Methodology  
West Germany

Project Title: Search for Partial Noise Sources in Finishing Installations by Means of Short-range Response Density Measurement.																	
Performing Organization Name & Address:  Institute and Chair for Measurement Techniques in Machine Construction Hannover, Nienburger, Strasse. 17 West Germany	Sponsoring Organization Name & Address:  German Research Society																
Principal Investigator(s):  Dr. Ing. Walter Ecker	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: May 1, 1975	Completion Date: Estimated Actual Dec. 31, 1976																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="0"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (130,000-DM) \$55,120</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (130,000-DM) \$55,120		-----		COMMENTS:	
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Or Total Funding Amount: (130,000-DM) \$55,120																	
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COMMENTS:																	

The response measurement is to be made possible under unfavorable conditions (short-range flows, level of interference). A microphone is to be developed and calibrated to this effect. A sonic channel (Kundt tube) is to be set up for the calibration; it presents high responses with considerable reactive components. The microphone should be equal to the particular conditions for the measurements of machine noises.

Translated and transcribed from the original.

Measurement and Methodology  
West Germany

Project Title: Measurement of Sound Waves Transmitted by Structure in Technical Building Installations.																	
Performing Organization Name & Address:  Institute for Acoustical Technology Berlin 10, Einsteinufer 27 West Germany	Sponsoring Organization Name & Address:																
Principal Investigator(s):  Prof. Dr. Manfred Heckl	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
Start Date: May 1, 1975	Completion Date: Estimated _____ Actual May 31, 1977																
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	
Funding: <table border="0"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount: (91,000DM) \$38,584</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">COMMENTS:</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount: (91,000DM) \$38,584		-----		COMMENTS:	
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1977 (budget):																	
1978 (forecast):																	
-----																	
Or Total Funding Amount: (91,000DM) \$38,584																	
-----																	
COMMENTS:																	

Development of a measurement technique for technical building installations with the aim of achieving data for possible normalization and having reliable measured values for the dimensioning noise protection measures. An appropriate electrodynamic frame sound transmitter is to be designed with which measurements can be made in buildings as well as laboratory tests on technical building installations to develop dimensioning guidelines for the insulation of technical building installations.

Measurement and Methodology  
Abbreviated Listings With Funding

Sweden. Testing of Noise Meters and Development of Standards  
for Noise Measurements. Swedish Standards Institute.

85, 412 85 Goeteborg, Sweden. Asst. professor Hans Jonasson.  
July 1, 1975 - June 30, 1976. (116,000 Skr), \$26,135.

Project Title:		Noise Emissions from Large Industrial Operations.															
Performing Organization Name & Address: Ontario Ministry of the Environment 135 St. Clair Avenue West Toronto, Ontario M4V 1P5 Canada		Sponsoring Organization Name & Address:															
Principal Investigator(s):  John Manuel		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology															
Start Date:	Completion Date: Estimated _____ Actual _____	Funding:															
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)		<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td colspan="2">Or Total Funding Amount:</td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>		Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----	
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1977 (budget):																	
1978 (forecast):																	
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Or Total Funding Amount:																	
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COMMENTS:																	

One of the concerns of the Ontario Ministry of the Environment is sound emissions from large industrial operations such as refineries, steel mills, etc. These operations with their multitudinous sound sources may have an impact on significant numbers of nearby residents. In most cases the problem is complicated by the fact that the sound propagation takes place over large distances thus bringing atmospheric effects into play. To cope with problem industries, the Ministry has embarked on a scheme by which such sources will be required to monitor their own sound levels on a continuous basis in order to arrive at meaningful statistical data as well as providing regulatory control. A description of one such monitor and some preliminary results will be presented.

Transcribed from the original.

Project Title: The Technique of Measuring Blasting from Quarry, Construction and Demolition Sites.																									
Performing Organization Name & Address: Ontario Ministry of the Environment 135 St. Clair Avenue West Toronto, Ontario M4V 1P5 Canada	Sponsoring Organization Name & Address:																								
Principal Investigator(s):  W. B. Moore	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																								
Start Date:	Completion Date: Estimated _____ Actual _____																								
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Year	Funding:	Amount																							
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Or Total Funding Amount:																									
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COMMENTS:																									

This audio-visual explains the techniques used by the Ontario Ministry of the Environment to monitor ground borne vibration and overpressure (airblast) at quarry, construction and demolition sites. The audio-visual includes the choice of instrumentation, the preliminary questioning of source and receiver and the interpretation of results.

Transcribed from the original.

Project Title: Evaluation of the Acoustic Force of Machines, Comparative Studies of Methods of Measurement															
Performing Organization Name & Address: INRS 30, Rue Olivier Noyer 75680 Paris Cedex 14 France	Sponsoring Organization Name & Address:														
Principal Investigator(s): H. Leblond P. Daniere J. L. Lecoq	Type of Research Program: ___ Fundamental ___ Development (Component or System) ___ Demonstration (Experimental, Prototype, or Production) ___ Measurement Methodology														
Start Date:	Completion Date: Estimated 1978 Actual _____														
Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)	Funding:														
	<table border="1"> <thead> <tr> <th>Year</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>1976 (actual):</td> <td></td> </tr> <tr> <td>1977 (budget):</td> <td></td> </tr> <tr> <td>1978 (forecast):</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>Or Total Funding Amount:</td> <td></td> </tr> <tr> <td colspan="2">-----</td> </tr> </tbody> </table>	Year	Amount	1976 (actual):		1977 (budget):		1978 (forecast):		-----		Or Total Funding Amount:		-----	
	Year	Amount													
1976 (actual):															
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COMMENTS:															

#### 1 - REASONS FOR THE STUDY

Knowing the acoustic force of machines is of great value. It makes it possible, in the planning of a factory or industrial plant, to estimate the noise level in work areas and to adopt the necessary anti-noise measures at a proper time. In particular, it makes it possible for industrialists and businessmen to choose the least noisy machines from the wide range offered on the market.

Furthermore, for a greater guarantee that builders will measure acoustic force, it would be useful to have available a practical on-site or "in situ" method of evaluation that would also be sufficiently precise. The AFNOR has planned a standard which will make it possible to undertake measurements in a close range and in any location. Currently there have been few verifications of the precision of this method.

#### 2 - CONTENTS OF THE STUDY

The methods currently being used to evaluate acoustic force are based on measurements in an open field or in a reverberating space (AFNOR standards S31 022 to S 31 025).  
Translated and transcribed from the original.

In all cases, a specialized laboratory is required.

The INRS, for its part, uses the method of measurement in an open field on a reflecting plane (semi-anechoic chamber), which is undoubtedly the best adapted to precise measurement of the acoustic force of industrial machines.

For large machines or those for which radiation is anisotropic, or those which emit noises of discrete frequency, errors in the estimates can occur. It would be necessary to define these errors.

Thus, the study consists of:

- a critical examination of the different standardized methods or those in the process of being standardized;

- measurements in a hollow chamber or a semi-reverberating room of the acoustic power of simple sources with known characteristics, and by means of different methods.

If the results of the measurements reveal too great a dispersion or a significant systematic error, it will be necessary to research other means of estimating and evaluating acoustic force, means that will be more precise but still of sufficiently simple application.

### 3 - STATE OF PROGRESS

This study has barely been begun. Only a few measurements of the acoustic force of a dipole of well-known characteristics have been carried out in a hollow chamber, using two different methods.

In a pure frequency, differences of more than 3 dB were found, which confirms the value of this study.

### 4 - PURSUIT OF THE STUDY

This study will continue until 1978. It will also be the subject of a thesis by a member of the INRS personnel. The results of this study will make it possible to prepare the road to a standardization or, even better, regulation demanding that builders furnish the acoustic force of the machines they sell, just as they do the other mechanical or electrical characteristics.

## Measurement and Methodology

Netherlands

Project Title:		Characterizing and Evaluating Industrial Noise.																			
Performing Organization Name & Address:		Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands																			
Principal Investigator(s):		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																			
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In the draft noise nuisance legislation, specific scales and standards for the permissibility of the noise load from industrial areas are used on the basis of preliminary studies and experiences at home and abroad.

The most important source of data here is the ISO recommendation R-1966-1971, "Assessment of noise with respect to community response," which publication is also used as a basis for granting licenses in the framework of the nuisance law. The purpose of the study is to investigate whether and to what extent supplementary guidelines are necessary in order to make the system contained in the ISO/R-1966 better applicable to the situation in the Netherlands. Possible supplements should concern, above all, the evaluation of particular noises such as impulse noises, pure tones, strong low frequency noises. If necessary, in a number of specific Netherlands situations, limited noise interviews should be conducted regarding these aspects. The study should also investigate the extent to which the evaluation of industrial noise is influenced in the case of a significant contribution to the noise load by other noise sources, i.e., road traffic and aircraft.

Translated and transcribed from the original Dutch.



Project Title: For Calculations of the Noise Load Caused by Industrial Areas, Institutions, Installations.															
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands														
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
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Establishing measuring methods for determining the emission of industrial areas, institutions, installations, and parts of installations. Reliable data are necessary concerning the emission (source strength). The study has the purpose of devising standardized measuring procedures with which these emission data can be determined in a reliable and reproducible manner.

The measuring methods should agree as much as possible with the methods recommended by the ISO. Information can also be borrowed from various German and English specifications and publications, among others.

Translated and transcribed from the original Dutch.

Measurement and Methodology  
Netherlands

Project Title: Establishing Guidelines for Determining by Measurement the Noise Load from Institutions.

Performing Organization Name & Address:		Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands																	
Principal Investigator(s):		Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
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Both when establishing noise zones around existing industries and in checking the observance of the instructions of the nuisance law and the licensing of noise nuisances, one should perform standardized noise measurements. This study has the purpose of creating a standardized measuring procedure for the noise load by industry which will prevent the development of conflicts of interpretation. Here, attention should be focused, among other things, at the point in time when measurements must be conducted, the meteorological conditions, the processing and the interpretation of the results of the measurements. Guidelines should also be formulated on the number of repetitions of the measurements. Guidelines should also be established for performing neighborhood measurements to determine the noise emission from noise-dominant installations of institutions. Studies should also be made of the situations in which the application of noise monitoring systems for institution is rational and which systems should be used.

Translated and transcribed from the original Dutch.

Measurement and Methodology  
Netherlands

Project Title: Establishing Instructions for Calculation of the Anticipated Noise Load From Industrial Areas to Their Environment.

Performing Organization Name & Address:		Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands																	
Principal Investigator(s):		Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																	
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With regard to the specifications issued by the government within the framework of the noise nuisance law concerning a mandatory acoustics study at the time of, among other things, the designing of new facilities, a set of calculating instructions should be issued for the noise load within noise zones around industrial areas. Here, among other things, use should be made of the results of the ICG research program, traffic noise, for the effect of noise transmission over large distances. The method of calculation should be made more readily applicable and adapted to the different stages of the zoning procedures.

Translated and transcribed from the original Dutch.

Project Title: Study of Noise Radiation Through Smokestacks and Exhausts and the Establishment of a Method of Calculation.																	
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands																
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
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Because of their often considerable acoustic source strength and rather high position, the mouths of smokestacks and exhausts are often important sources of noise in connection with the noise load on the environment. It is also necessary that a method of calculation be available with which noise radiation from such sources can be predicted with satisfactory accuracy. The study has the purpose of establishing such a method. The applicability in every case should extend to smokestacks from which smoke gases are expelled, whether by fans or not, and to the exhausts of large gas turbines and diesel engines. The method should take into allowance the effect of a hot gas stream on the emission (including the possible guiding effects) and with the effect of a hot gas stream on the source properties (effect on noise pressure and/or particle speed in the mouth, source impedance). In this case, one can continue along the line of Alfredson and Davies, Mechel, Ingard, and Buiten et al. The method should take the meteorological conditions such as wind and temperature distribution into consideration, and in this connection, distinguish between the cases where the mouth of a smokestack is either below or above an inversion layer.

Translated and transcribed from the original Dutch.

Measurement and Methodology  
Netherlands

Project Title: Establishing Guidelines for Determining the Background Noise Level for Regions with New Industrial Areas.															
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands														
Principal Investigator(s):	Type of Research Program: <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology														
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When establishing a new industry, in connection with the preparation of the standards within the framework of licensing, it is often necessary to measure the background noise level of the district in question. Although use can be made here of the recommendations of the International Organization for Standardization, in practice, differences of interpretation tend to arise here, particularly in connection with the effect of the already active significant noise sources in the area. The study has the purpose of establishing a guideline which will contain criteria not only for aspects but also for the time of the measurement, number of repetitions, weather conditions, and the like, and for the way in which recognized noise sources should be expressed in the results.

Translated and transcribed from the original Dutch.

Measurement and Methodology  
Netherlands

Project Title:  Taking Inventory of Noise Emission Devices and Large Industrial Installations.																	
Performing Organization Name & Address:	Sponsoring Organization Name & Address: Public Health and Environmental Hygiene Dept. Amsterdam, Netherlands																
Principal Investigator(s):	Type of Research Program:  <input type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input type="checkbox"/> Measurement Methodology																
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Project Summary: (Briefly describe the goals, approach, expected or actual results, report(s) generated and the date(s) of publication.)																	

In order to set up general predictions of the noise load caused by equipment, data should become available on the general characteristic noise emission of the most important types and categories of installations occurring in the Netherlands. These data should be related to the scope, production capacity, the manner of business management and the state of the art at the time of the construction of the parts of the institutions in question.

First, as much use as possible should be made of data on known cases. If necessary, the inventory should be supplemented with the results of new noise measurements. The inventory taking is of special importance for the establishment of noise zones around industrial areas.

Translated and transcribed from the original Dutch.

Project Title: Research and Development on Instruments and Methods for Noise Measurement.

Performing Organization Name & Address: Laboratory of noise and vibration measurement of Physikalisch-Technische Bundesanstalt, Bundesallee 100, 3300 Braunschweig, Germany		Sponsoring Organization Name & Address: Bundesminister für Wirtschaft (Federal Minister of Economics)																	
Principal Investigator(s):  Prof. Dr. R. Martin Dipl.-Ing. Ho.-O. Finke		Type of Research Program: <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Development (Component or System) <input type="checkbox"/> Demonstration (Experimental, Prototype, or Production) <input checked="" type="checkbox"/> Measurement Methodology																	
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Goals:

- improvement of existing instruments
- specifications for new instruments
- improvement of noise measuring methods
- description and reduction of measuring errors and uncertainties

Approach:

- investigation of measuring procedures by application to special cases, e.g. sound power measurements on bureau machines, noise immission measurements in living quarters
- testing of special properties of noise measuring instruments, e.g. response to impulses, rectifier system, averaging
- participation in standards writing groups, national and international (ISO, IEC, OIML)

Expected:

- improvement of noise measuring techniques and instruments

Publications:

e.g. Annual Reports of PTB

Measurement and Methodology  
Abbreviated Listings

Australia. Perfection of A System of Analysis Making It Possible to Measure All Types of Ambient Noise. National Acoustic Labs., 5. Hickson Road, Millers Point, Sydney, NSW. J. Rose, L. Kenna, E. Burwood.

Australia. Study of a Method Making It Possible to Measure and Record Impulse Noises Precisely. National Acoustic Labs., 5 Hickson Road, Millers Point, Sydney, NSW 2000, Australia. L. Kenna, D. Nemec, T. Smith.

Czechoslovakia. Development of Methods For Calculating Estimated Noise Levels in Closed Industrial Plants. Working Environment Research Service, Jeruzalemska 9, 116 52 Praha 1, Czechoslovakia.

East Germany. Measurement of the Acoustic Power of Fans. Theoretical Study and In Situ Measurements. Central Institute for Occupational Safety., 8020 Dresden, Gerhart-Hauptmann-Strasse 1, East Germany.

East Germany. Determining the Level of Acoustic Pressure in the Area of Machines (Laboratory and In Situ Measurements). Central Institute for Occupational Safety., 8020 Dresden, Gerhart-Hauptmann-Strasse 1, East Germany.

France. Estimating Methods for Calculating Noise Levels in Industrial Plants. Atomic Energy Commission, Protection and Environmental Study Service, 85X 83041 Grenoble, France.

Norway. Databank for Industrial Noise Sources. SINTEF, The Laboratory of Acoustics, Elab, Universitetet i Trondheim, 7034 Trondheim, Norway. June 1, 1976. December 31, 1978. Collection and publication of data. Standardization of measurements.

Norway. Method for Prognosing External Noise from Industry Including Sound Transmission. Laboratory of Acoustics, Norwegian Inst. of Technology, Trondheim, Norway. 1977. 1978.

United Kingdom. Improvement of Noise-Measuring Instruments. Health and Safety Executive Safety in Mines Research Establishment, Red Hill, Sheffield S3 7 HQ, United Kingdom.

USSR. Development of Equipment Making It Possible to Obtain a Noise Level Compatible with Existing Regulations Relating to Places of Work and Industrial Locals. Naucno-Issledovatel 'Skiy i Proiknyj Institut Po Gazocistnym Soorusenijam, Tehnike Bezopasnosti i Ochrane Truda V Promyslennosti Stroitel 'nyh Materialov (Nipiostrom) Anapskoe, Sosse 15, Novorossiysk, USSR.

West Germany. Measurement of Acoustic Radiation of the Machine Elements (Numerical Calculators). The Rhine-Westphalia Technical School of Aachen, Machine Research Service, Wuellnerstrasse 5, 5100 Aachen, West Germany.



Measurement and Methodology  
Abbreviated Listings

West Germany. Improvement of Methods for Calculating Characteristic Values of Fluctuating Noises. Technical Principles of Noise Measurement. Federal Institute of Physics and Technology, Acoustics Division, Bundesallee 100, Postfach 345, 3300 Braunschweig, West Germany.

West Germany. Improvement of Methods for Measuring Noise Emitted by Machines and Vehicles. Federal Institute of Physics and Technology, Acoustics Division, Bundesallee 100, Postfach 345, 3300 Braunschweig, West Germany. R. Martin. Subjective evaluation of noise intensity. Study of methods for identifying sources of Noise and Vibration.

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