NOISE/NEWS INTERNATIONAL

Volume 12, Number 1
2004 March

A quarterly news magazine with an Internet supplement published by I-INCE and INCE/USA

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Volume 12, Number 1 **2004 March**

Features

Departments

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Baltimore Inner Harbor
Courtesy of Baltimore Area Convention and Visitors Association

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I-INCE

The International Institute of Noise Control Engineering (I-INCE) is a worldwide consortium of societies concerned with noise control and acoustics. I-INCE, chartered in Zürich, Switzerland, is the sponsor of the INTER-NOISE Series of International Congresses on Noise Control Engineering, and, with the Institute of Noise Control Engineering of the USA, publishes this quarterly magazine and its Internet supplement. I-INCE has an active program of technical initiatives, which are described in the Internet supplement to NNI. I-INCE currently has 46 Member Societies in 39 countries.

INCE/USA

The Institute of Noise Control Engineering of the USA (INCE/USA) is a non-profit professional organization incorporated in Washington, D.C., USA. The primary purpose of the Institute is to promote engineering solutions to environmental noise problems. INCE/USA publishes the technical journal, *Noise Control Engineering Journal*, and, with I-INCE publishes this quarterly magazine and its Internet supplement. INCE/USA sponsors the NOISE-CON series of national conferences on noise control engineering and the INTER-NOISE Congress when it is held in North America. INCE/USA Members are professionals in the field of noise control engineering, and many offer consulting services in noise control. Any persons interested in noise control may become an Associate of INCE/USA and receive both this magazine and *Noise Control Engineering Journal.*

NNI Internet Supplement

www.noisenewsinternational.net

- Links to the home pages of I-INCE and INCE/USA
- Abstracts of feature articles in the printed version
- Directory of the Member Societies of I-INCE with links, where available, to the Member Society Profiles and home pages
- Links to I-INCE Technical Initiatives
- Calendar of meetings related to noise—worldwide
- Links, where available, to NNI advertisers
- Links to news related to the development of standards
- Link to an article "Surf the 'Net for News on Noise," which contains links to noise-related sites—worldwide

Future Directions for Noise Control Engineering

It is a great honor for me to be elected to the presidency of I-INCE; my term began last January. For the next four years, I will do my best for the management of the Institute—in cooperation with the members of the I-INCE Board of Directors.

Thirty years have passed since the establishment of I-INCE in 1974, and there have been significant changes with regard to noise control. As to the policies regarding noise control engineering in the future, I would like to mention the following three points.

The first point is that the exchange and discussion of technical information on noise and vibration control engineering should be widely accepted as the usual activity of a scientific and engineering society. In the case of I-INCE, we have to determine research subjects from actual problems, and to develop realistic technologies to solve them. Here, it is important not only to deal with respective problems but also to arrange and systematize the knowledge and experiences on noise and vibration control for the future. Fortunately, we have INTER-NOISE congress every year at various countries with many technical presentations. This congress is the most important occasion for the exchange and spread of scientific and technical information on environmental noise and vibration problems, and therefore we have to continue and improve this congress in the future. The past president of I-INCE, Professor Tor Kihlman, proposed "Technical Sections" to facilitate open discussions about the key issues in noise control engineering. This idea will be effective for the organization of attractive sessions in future INTER-NOISE congresses.

The second point is globalization/ internationalization. It is not only for science and technologies but also for policies for noise and vibration control. Although there are differences in the development process and cultures among respective countries, the strategy for the mitigation of environmental noise and vibration problems could be common in the world. In I-INCE, several "Technical Study Groups" (TSGs) have been organized, in which global noise policies are being discussed from various viewpoints. These internationally cooperative activities should be continued and careful attention must be paid to social and cultural differences among the respective regions and countries.

The third point is that the environmental noise and vibration problem has to be considered not only from a technical viewpoint, but also from a sociological viewpoint; the term "social (sociological) acoustics" should be recognized in the research field of acoustics. In the recent movement of environmental administration, such problems as global warming, chemical substances and exhaust gas have been emphasized, and environmental noise problems seems to be disregarded. It is often said that noise is a local phenomenon and has no cumulative effect. However, the psychological effect of noise is a global problem in the world and the ill feeling toward noise can be cumulative. These points should be more considered from a sociological viewpoint. For this aim, we have to develop our strategies to ensure that government authorities, the mass media, and the general public recognize the importance of noise and vibration problems. A "sound environment" is an essential factor of "Quality of Life."

Hideki Tachibana
2004 International INCE President

European Union Enlargement: 15 + 10 = 450 million

Bernard Berry

European News Editor
I-INCE VP-Europe, Africa

I prefer to avoid equations in my Editorial, but have made an exception in this case. There are currently 15 Member States of the European Union:

- Belgium
- Denmark
- Germany
- Greece
- Spain
- France
- Ireland
- Italy
- Luxembourg
- The Netherlands
- Austria
- Portugal
- Finland
- Sweden
- United Kingdom

On 2004 May 01, these will be joined by 10 new States, 8 of these are from Central and Eastern Europe:

- Estonia
- Hungary
- Latvia
- Lithuania
- Poland
- Czech Republic
- Slovakia
- Slovenia

The remaining two are the Mediterranean States of Malta and Cyprus.

All of the new Member States will be working hard to implement a vast range of European legislation. Within this effort, environmental legislation plays a major part, with noise not being forgotten. The size of the effort required should not be underestimated. All Applicant States have negotiated individual transition periods, of between 1 and 14 years, for fully implementing European Directives on environmental issues. For most of the new Member States the priority is implementation of the Directive on assessment and management of environmental noise (END).

There is no doubt that this situation has provided unique business opportunities for consultants and organizations in the existing Member States to provide assistance. For example, the European Academy of the Urban Environment, based in Germany has developed a number of support publications, including "Raising awareness in candidate countries for future EU noise policy." See www.eaue.de/PUBSL.HTM.

A primary objective of this publication is to provide information for candidate countries on integration at national, regional and local level with regard to current and future EU noise policies, and thus to facilitate the implementation process.

M. Berndt described the approach taken by a "typical" accessionary State, Hungary, in a paper at last year's Euro-noise conference in Naples. He noted that the Directive "…can be an effective method of approach to the noise control and noise assessment." In my opinion the most important thing is to understand that this process is a completely new way of managing noise problems. Until now, we have made efforts to force the noisemakers (the upkeeper) with noise limits, authority obligations and penalty to deal with their noisy sources. END gives the possibility to handle our goods as a proprietor: if we take care of our noise situation, the burden of noise reduction will be no longer so heavy."

But while most of the attention has so far been on the challenges of Noise Mapping, we should not ignore other issues raised by this enlargement. For example, the interpretation of noise information from Mapping in terms of effects is currently based on the position paper on "Dose response relationships between transportation noise and annoyance."

We know that community response to noise is a complex problem, with many non-acoustic factors influencing response. With this enlargement to an even more diverse set of countries with national characteristics and differing social expectations, are we confident that the research base on which

existing dose-response relationships for annoyance are based is adequate?

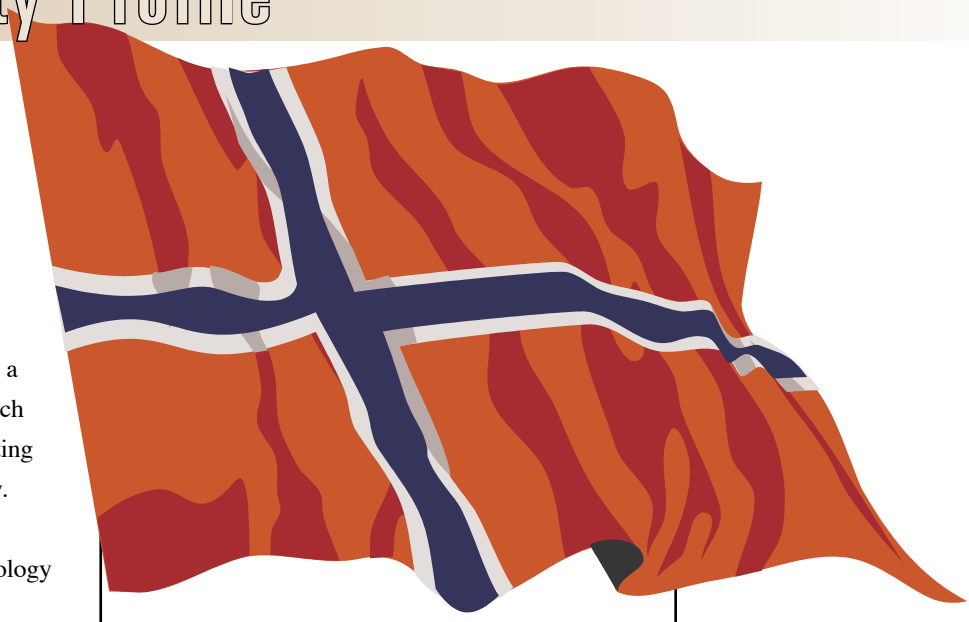
We can look at the enlargement situation from another angle, and regard it as a positive opportunity to expand research – but will the European Commission respond by increasing budgets?

Finally, should there be a greater a role for I-INCE? Acoustical societies in six of the new Member States are members of I-INCE. Are there issues arising from the enlargement on which I-INCE can assist?

At INTER-NOISE 2004 in August in Prague, the national capital of one of the new States, there will be Structured Sessions on Global Noise Policies (arising from the work of I-INCE TSG 5) and also on European Noise Policies.

Perhaps this will provide an opportunity to debate these issues.

The Norwegian Acoustical Society



The Norwegian Acoustical Society (NAS) is a voluntary association for acousticians and others who have a professional interest in acoustics in Norway. NAS was founded in Oslo 28 March 1955 as a branch of the Nordic Acoustical Society, which was founded the year before. A board consisting of five elected members manages the Society. Presently Professor Peter Svensson from the Norwegian University of Science and Technology is chairman.

Experts in the field of acoustics with an academic education from Norway or abroad, or other professionals who have acquired comparable knowledge, are eligible for membership. Persons who are especially qualified to promote the work of the Society through ordinary membership may also be accepted as members. Membership in the Society automatically gives membership in the Nordic Acoustical Society and the European Acoustics Association (EAA). The Board may accept organizations, companies, institutes and personal members who are interested in the goals of the Society, and who wish to support the Society with yearly contributions as supporting members. At the beginning of 2004, the Society consisted of 177 registered members and 11 sustaining members.

The main purpose of the Society is to establish contact between acousticians in Norway, and, through the membership in the Nordic Acoustical Society, with acousticians in the Nordic countries, as well as with other relevant national and international associations. The Society seeks to promote the development of acoustic research and techniques, and to contribute to the spread of information and knowledge within the field of acoustics.

Once a year, a technical NAS Fall Meeting is arranged for members and other interested professionals. Usually the meetings are held in one of the major cities: Oslo, Bergen, Trondheim, Stavanger. In 2005, the Society will have its 50th Anniversary Meeting. Every other year, NAS members participate in the meeting of the Nordic Acoustical Society. The Norwegian Acoustical Society in turn hosts the Nordic Acoustical Society meeting, NAM, approximately every eight years. The Society publishes members' news, *NAS NYTT*, three times a year. It is published electronically at NAS Internet Home Page, www.akustisk-selskap.com.

This is the 45th in a series of articles on the Member Societies of International INCE. This is an update of the profile that appeared in the 1995 September issue of this magazine.—Ed.

NOISE-CON 2004

Conference Information

The 2004 National Conference on Noise Control Engineering (NOISE-CON 04), organized by the Institute of Noise Control Engineering of the USA, will be held jointly with the Summer Meeting of the Transportation-Related Noise Committee of the Transportation Research Board (TRB A1F04). The joint conference will be held in Baltimore MD on 2004 July 12 to14 at the Wyndham Inner Harbor Hotel

Key Dates

Submission of Abstracts
5 March 2004

Submission of Papers
16 April 2004

Reservations for Hotel, Tours, and Short Course
11 June 2004

Late Conference Registration
after 11 June 2004

Conference Overview

Technical sessions on transportation noise, hosted by TRB A1F04, will be held each day during the mornings of the conference. INCE/USA-sponsored technical sessions on noise topics other than transportation noise will be held concurrently with the morning TRB-sponsored technical sessions. TRB-sponsored technical tours on transportation noise facilities will be scheduled for the afternoons of the first two days of the conference. Also, in each of the afternoons of the conference technical sessions will be held on a wide variety of noise topics. The technical program will also include three plenary sessions with distinguished speakers. *The entire spectrum of noise control engineering will be represented in the technical program.* Proceedings of the conference on a CD-ROM will be given to all registered conference attendees.

The conference will include an exposition, dinner cruise of the Inner Harbor, and a one-day short course on transportation noise prior to the conference.

Conference organizers are:
General Chair—Courtney B. Burroughs
+1 814 863 3015, e-mail: cbb2@psu.edu

TRB A1F04 Chair—Ken Polcak
+1 410 545 8601, e-mail: kpolcak@sha.state.md.us

Technical Program Chair—Steve Hambric
+1 814 863 3030, e-mail: sah@wt.arl.psu.edu

Exposition Manager—Rich Peppin
+1 410 290 7726, e-mail: PeppinR@ScantekInc.com

Conference Secretariat—Pam Reinig
+1 515 294 6142, e-mail: ibo@inceusa.org

Social Events

On Tuesday evening, conference attendees and exhibitors will be treated to a dinner cruise of the Inner Harbor. A reception will open the Exposition.

Registration for Conference

A conference registration form is available online at www.inceusa.org. The registration fee for the joint NOISE-CON 04/TRB A1F04 Summer Meeting is USD 350 for INCE and TRB members before 2004 June 11. For non-members and for members after 2004 June 11, the registration fee will be USD 400. For only the TRB A1F04 Summer Meeting, the registration fee will be USD 250 before 11 June 04 and USD 300 after 11 June 04. For non-INCE members, registration for the joint conference includes one year's membership in INCE. Registration confirmation will be sent upon receipt of payment. Registration will be required for those submitting papers for publication in the Proceedings. On-site registration will be available on Sunday, July 11 from 3 to 6 p.m.; Monday, July 12 from 7:30 a.m. to 4: 30 p.m.; Tuesday, July 13 from 8 a.m. to 4:30 p.m.; and Wednesday, July 14 from 8 a.m. to noon.

Technical Program

Technical sessions are currently being organized in the following areas

Transportation Noise

- Materials and treatments for controlling surface transportation noise
- Railroad and urban transit noise
- Community exposure to airport noise
- Aircraft interior noise and airport personnel noise exposure
- Tire-pavement interaction noise - Long-term effects
- Noise metrics for transportation noise
- Active control for transportation noise
- Highway and commercial construction noise
- Isolation of building structures from transportation systems

Analysis and Measurements

- Statistical energy analyses in noise control
- Characterization of structure-borne noise sources
- Fan noise
- Information technology product and component noise - New measurement and design techniques
- Modeling and measurement of noise from sources

Vendor Products

- Noise control products
- Computational capabilities and limitations - General purpose and building acoustics
- Instrumentation capabilities

Policies and Metrics

- Loudness standards and low frequency noise
- Facilitating public input in the community noise decision-making process
- Effectiveness and enforcement of noise policies and regulations
- Standards related to noise exposure and measurements
- Information technology product and component noise - Targets, requirements and labels

Papers are welcome in all areas of noise control and technical sessions will be organized to accommodate papers submissions from all technical areas of interest to noise control engineers.

Short Course

On the Sunday before the conference (2004 July 11), a short course on transportation noise fundamentals will be taught by William Bowlby of Bowlby and Associates, and James Cowan of Acentech Inc. William Bowlby has taught traffic noise courses for thirty years. James Cowan has been teaching acoustics courses for over 15 years and is author of a design guide, interactive educational CD, and handbook on architectural acoustics. Fundamentals of transportation noise will be presented which will serve as an excellent springboard for the special sessions on transportation noise at the conference. The course will also be beneficial to experienced transportation noise professionals who wish to expand their working knowledge in noise control. Topics will include noise generation, propagation, and mitigation of highway, rail, and aviation noise and will address measurement, modeling, and noise policy issues. The fee for this course is USD 395. You may register for this course before 11 June 2004 online at www.inceusa.org.

Hotel Information and Conference Venue

The joint INCE NOISE-CON 04/TRB A1F04 Summer Meeting will be held in the Wyndham Inner Harbor Hotel, which is located in the heart of downtown Baltimore and is a short walk from many restaurants and most of Baltimore's attractions.

Wyndham Inner Harbor Hotel
101 West Fayette Street
Baltimore MD 21201
Telephone: +1 410 752 1100
Fax: +1 410 752 0832

For reservations, call +1 410 752 1100 or register online at www.wyndham.com. Be sure to identify yourself as with INCE or TRB A1F04 and/or NOISE-CON 04. The GROUP CODE is 228-463-IO-IA. The room rate per night is USD 129 for single or double occupancy. To ensure this rate, reservations must be received by 2004 June 11. Parking is available for USD 18 per day.

The Baltimore/Washington International (BWI) Airport serves Baltimore, which is approximately 10 miles from the Wyndham Hotel. Fares to the Wyndham are approximately USD 22 by taxi and USD 11 (by the BWI SuperShuttle; round trip: USD 18). Baltimore is within a five-hour drive of most major northeast cities, such as Pittsburgh, State College, Philadelphia, and New York, and is about 40 miles from Washington, DC. Interstate Route 83 ends a few blocks from the Wyndham. From Interstate 95 South, go through the Fort McHenry Tunnel to 395 North (exit 53) or take the same exit from Interstate 95 North. Then go 1/2 mile to Pratt Street, turn right. Go two blocks to Charles Street and turn left. Go four blocks to Fayette Street, turn left. The Wyndham is one block on the left.

Baltimore is currently undergoing a second renaissance with the city anticipating $1 billion in new development. The Inner Harbor, which is four blocks from the Wyndham, is the home of the National Aquarium, Maryland Science Center, The B&O Railroad Museum, Port Discovery children's museum, and many shops and restaurants. Just minutes away from the Wyndham are Little Italy, historic Fells Point, and the Can Company, a collection of historic buildings featuring a wide variety of shops and restaurants. The Light Rail, which can take you to Oriole Park at Camden Yards and Meyerhoff Symphony Hall is the Cultural Center, is only a few blocks from the Wyndham. For more information on Baltimore, visit the Web site: www.baltimore.org.

Accompanying Persons Program

There will be a dedicated meeting room for accompanying persons to gather, enjoy complementary continental breakfasts, and discuss daily activities. Some of the possible activities that may be arranged are tours of the Inner Harbor, Fells Point, Federal Hill, Fort McHenry, National Aquarium, Maryland Science Center, B&O Railroad Museum, US Constellation, Baltimore Zoo, and Little Italy. Shopping trips to The Gallery at Harborplace and Baltimore's Antique Row, a concert at Meyerhoff Symphony Hall or an Orioles baseball game on Sunday, 11 July at Camden Yards are also possibilities. One- day bus trips to Washington DC and/or a boat trip to Annapolis may also be arranged.

Exposition

An exposition of companies that provide measurement instrumentation, materials and systems for noise control and/or software for noise analyses will be held in conjunction with NOISE-CON 04/TRB A1F04 Summer Meeting. Exhibitors currently committed to participate in the Exposition are:

01dB, Inc.
ACO Pacific, Inc,
Architectural Polymers Inc
Asphalt Institute
Bayer Chemicals
Braaksma Design
Brüel & Kjær
Cambridge Collaborative, Inc.
Casella USA
Commonwealth Industries
CYRO
Data Physics Corp
Dodge-Regupol Inc.
Durisol, Inc.
Eckel Industries Inc, Acoustic Division
Faddis Concrete Products
G.R.A.S. Sound and Vibration.
Hoover Treated Wood
Industrial Acoustics Company
International Cellulose Corporation
Kimberly-Clark
Kinetics Noise Control
LMS North America
m+p international inc.
Navcon Engineering Network
OROS - Noise & Vibration Solutions
Overly Door Company
PCB/Larson Davis, Inc.
Pyrock, Inc.
Scantek, Inc.
Scott Systems
Sound Fighter Systems, L.L.C.
Sound Zero
Soundown Corporation
SoundSorb: L.B. Foster & Concrete Solutions, Inc.
TEAC America
Technicon Industries
ViAcoustics
Vibro-Acoustics

The 33rd International Congress and Exposition on Noise Control Engineering

Faculty of Electrical Engineering of the Czech Technical University

An Invitation to Participate

INTER-NOISE 2004, the 33rd International Congress and Exposition on Noise Control Engineering, will be held from 2004 August 22 to August 25 in Prague, Czech Republic. Sponsored by the International Institute of Noise Control Engineering (I-INCE), it is being organized by the Czech Acoustical Society. The theme for the Congress is as broad as possible to cover all interesting aspects of noise control – "Progress in Noise Control for the 21st Century".

The related technical areas include various topics of noise and vibration control engineering, such as noise and vibration sources, airborne and structure-borne noise paths, noise and vibration control devices, active control techniques, identification techniques, radiation and propagation, modeling and simulation software, numerical techniques, human perception of noise and vibration, sound quality and vibration comfort, mid- and high-frequency range analysis problems, measurement techniques and test facilities, signal processing techniques for noise and vibration analysis, characterization of materials, noise and vibration standards, building acoustics, community and environmental noise, legislation and regulations, effects of noise and vibration, and environmental planning policies.

An exposition of acoustical equipment, materials, software, and other products for noise and vibration control, measurement and diagnosis, will be organized in conjunction with INTER-NOISE 2004. All companies active in the field are welcome to participate in the exposition.

Prague

Prague, the capital city of the Czech Republic, is again assuming its historical role as a cosmopolitan urban crossroads for creative figures of all nations and fields of activity. The explosion of activity released in the return of freedom for the arts, commerce, and even science has shown Prague to be well on its way to matching its past glories with concrete present achievements. With its unmatched legacy of architectural styles, from Romanesque, Gothic, Renaissance, Baroque, and Art Nouveau through Cubism and Functionalism, the urban fabric of Prague is a living architectural guide illustrated with the finest examples of each style. Add to this the exceptional range of museums, galleries, theatrical and concert venues, and one would be tempted never to stray outside the city. Nevertheless, the immediate surroundings of Prague, whether the landscapes of forests and hills or the famous castles are themselves as fascinating as the city itself, and almost as easily accessible.

Invited Speakers/Invited Plenary Lectures:

- **Acoustics, electronics, psychology, and law in noise control**
  Jiri Tichy, The Pennsylvania State University
- **Application of new technologies to sound insulation measurement**
  Hideki Tachibana, Institute of Industrial Science, University of Tokyo
- **Structural partitioning and power flow analysis**
  Jean-Luis Guyader and Nicolas Totaro, Institut National des Sciences Appliquées de Lyon
- **Product sound quality—perception and design**
  Richard H. Lyon, RH Lyon Corp

inter.noise 2004

Prague • Czech Republic • August 22–25

Congress Venue

INTER-NOISE 2004 will take place at the Czech Technical University, Faculty of Electrical Engineering, in Prague. The university campus is situated in the district of Dejvice, in the western part of the city, and close to some of Prague's largest hotels. The congress venue can be reached from the airport within 20 minutes by taxi or by bus. Prague is also easily accessible by car and by train.

Opening Session

On Sunday, August 22, congress registration will be held at the university, and will remain there through August 25. The registration desk will be in the entrance hall of the Faculty of Electrical Engineering building. On August 22, registration will open at 10.00, and will close at 18.00.

The opening session will begin at 16.00 on August 22 at the Rudolfinum, a large building, which includes Dvorak Hall, the best concert hall in Prague. Shuttle bus service will be available from the university. Alternatively, registrants may take metro A from the university to the Rudolfinum (3 stops to Staromestska).

The opening session will consist of welcoming remarks, a concert by a professional chamber orchestra, and a keynote speech by Professor Jiri Tichy of the Pennsylvania State University. A welcome drink for all attendees will follow the opening session.

Abstracts Received and Special Technical Sessions

More than 750 abstracts of technical papers proposed for INTER-NOISE 2004 have been received by the Congress Secretariat. The authors and titles have been posted on our website. A number of special technical sessions have been organized for INTER-NOISE 2004. These include:

- Fan Noise
- Machinery Noise
- Recent Ways to Reduce Transportation Noise
- Automobile Noise and Vibration
- Tire/Road Noise
- Models and Experiments to Characterize Tire/Road Noise
- Quiet Traffic
- Interior Noise in Aircrafts and Cars
- Vibro-Acoustic Sources
- Road Traffic Noise - Prediction Methods
- Low Noise Road Surfaces
- Propagation, Transmission and Scattering of sound
- Outdoor Noise Propagation and Quiet Areas
- Facade Insulation: Regulation, Control and Practice
- Building Structural Isolation
- Virtual Acoustic Prototyping
- Vibration Isolation
- Classification and Regulation of Sound Insulation
- Soundscape and Community Noise
- Soundscape Support to Health
- Acoustic Comfort in Buildings
- Sound Insulation with New Building Materials and Constructions
- Airport Noise
- Product and Sound Design
- Psychoacoustics and Noise Evaluation
- The Critical Issue of Noise at European Airports
- Non-acoustics Factors of Noise Annoyance: Strength and Scope
- Community Responses to Combined Noise Exposures
- Assessment and Management of Environmental Noise
- Sleep Disturbance
- Analysis, Measurement, and Control of Structural Intensity
- Sound Power Measurements
- Sound Power Determination by Sound Intensity
- Laboratory and Field Measurements of Sound Insulation
- Instrumentation and Standards
- Active Noise and Vibration Control
- Array measurement and NAH
- FEM, BEM and SEA
- Signal Processing
- Global Noise Policies - General
- Global Noise Policies - Occupational
- Global Noise Policies - Environmental
- Global Noise Policies - Consumer products
- European Noise Policies - Noise Mitigation Measures and Their Effectiveness

Sponsored by the International Institute of Noise Control Engineering (www.i-ince.org)
Organized by the Czech Acoustical Society (www.czakustika.cz)

General Information

Visa information
Visitors from many countries are invited to the Czech Republic without a visa for tourism.

For more detailed information, see www.czechembassy.org.

Official Invitation
On request, the Secretariat will be happy to send a personal invitation for participation in the Conference. It should be understood that such an invitation is only to help visitors to attend the congress or to obtain a visa (if necessary), and is not a commitment on the part of the organizers to provide any financial support. Please contact the Secretariat for invitation letters.

Climate
Prague has a mild climate. The daytime temperatures in August are usually in the range 25 - 32˚C, and they are about 10˚C cooler in the evenings. Rain is possible.

Time Difference
Relative to Greenwich Mean Time, Prague is GMT+1, the same time as Berlin, Paris, Vienna, Copenhagen, and Rome.

Currencies and Credit Cards
The unit of Czech currency is the Czech Crown (CZK). The approximate exchange rate is:

1 EUR = 32 CZK, 1 USD = 26 CZK

It is possible to exchange foreign currency in hotels or at many Exchange Points. International credit cards are accepted in hotels, most restaurants, and shops.

Conference Secretariat Contacts:
INTER-NOISE 2004, Technicka 2, CZ – 166 27 Praha 6
Telephone./Fax + 420 22435 3708 • Website: http:/www.internoise2004.cz
E-mail: stoss@internoise.cz. For the organizing committee members, see our website.

Transportation
The most convenient way to travel to Prague is by airplane, but Prague has good connections with other capitals within Europe by train and by car. The distance from Prague to other important cities are: Berlin 350 km, Vienna 320 km, Dresden 150 km.

The congress venue can be reached from the international airport Prague Ruzyne within 20 minutes by taxi or bus. The subway station is 2 minutes away by foot, with travel time to the city center a mere 5 minutes.

For more information see website, Prague Transport and City Plans.

Exhibition
Exposition Venue
The INTER-NOISE 2004 exposition will take place at the Czech Technical University, Faculty of Electrical Engineering, the same venue as the Congress itself.

Stand booking
Exhibitors have two options for purchasing space:

Standard Stand
3 x 1.5 m ..... 1200 EUR
Double Space Stand
6 x 1.5 m ..... 2400 EUR
The plan of stands and exhibition registration form are available on the Internet at www.internoise2004.cz

Exposition Schedule
Exposition Setup:
Sunday, August 22
Exposition Days:
Monday, August 23–Wednesday, August 25
Exposition Dismantling:
Wednesday, August 25 (evening)

Accommodations
Prague is well equipped with a large number of hotels suitable for international events.

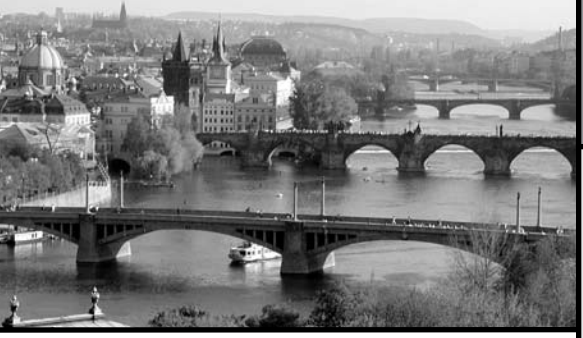
For INTER-NOISE 2004, special offers have been made by the following hotels. More information may be found in the "Accommodations" section of the congress home page.

Hotel	Grade
Diplomat	****
Crowne Plaza	*****
Pariz	*****
Dorint Don Giovanni	****
Pyramida	****
Novotel	****
Ibis City	***

Booking is directly with each hotel.
For more information see our website www.internoise2004.cz. To obtain special hotel rates, be sure and mention the INTER-NOISE Congress when making hotel reservations.

The hotels Diplomat and Crowne Plaza are within walking distance from the Congress Building. Other hotels are reachable within 20 minutes by subway (see Prague Transportation and City Plans on our website). For hotel Pyramida, a special shuttle bus will be organized during the Congress.

Hostels
For low-cost accommodations, plans are being made at the Hostel Masarykova and Hostel Strahov (see map 1 and 2 respectively in City Plans, our web). The Hostel Masarykova is within walking distance from the Congress venue, for the Hostel Strahov, a special shuttle bus will be organized. The number/price of rooms will be announced in 2004 April.



Registration Information

How to Register

On-line registration and a downloadable registration form are available on our website. Please complete the registration form and send it to the conference secretariat.

Registration of participants with paper before April 30, 2004 .....400 EUR

Early registration of participants before May 31, 2004 .....400 EUR

Late registration of participants after May 31, 2004 .....450 EUR

Early student registrations before April 30, 2004.....200 EUR

Late student registration after April 30, 2004.....250 EUR

Exhibition - stand
3x1.5m: .....1200 EUR
6x1.5m: .....2400 EUR

Additional person on the stand.....100 EUR
Additional paper .....100 EUR

Payment

For all participants there are two options to pay the registration fee:

- Credit Card
- Bank Transfer

The forms for both options are on our website.

Cancellation or Refund

A refund of 50% (minus bank costs) of the registration fee will be granted if requested before July 15 (for authors). A refund of 75% (minus bank costs) of the registration fee will be granted if requested before July 15 (for participants).

SIGHTSEEING TOURS

Accompanying Person's Program*

Many tourists agree that the historic city of Prague is a lovely place to visit. The Congress Secretariat has arranged a number of tours that will be very attractive for accompanying persons.

Monday, August 23 • 9:00–15:00

Six hours guided tour by bus and on foot (lunch and entrances fees included).
From the Congress to: Prague castle · S.Vitus gothic cathedral · king's garden · view on Prague · Loretto (baroque pilgrims place) · lunch · Strahov monastery · Congress

Tuesday, August 24, 9:00–12:00

Three hours guided tour by historical tram and walk (coffee break included).
From the Congress to: historical town center (Old Town) · Wenceslas square · Republic square · Municipal House · Old Town square · horologe (14th century) · coffee with a nice view of old Prague · Charles Bridge (14th century) · Lesser Town · Congress

Optional Tours**

Monday, August 23

Three hours evening guided trip by boat on the river **Vltava** (dinner included).

Tuesday, August 24

Three hours guided tour by bus and walk the **Old Town** and former **Jewish Town**.

Wednesday, August 25

Seven hours guided trip by bus to **Pribram** and **Dobris** (lunch included).

Post Congress Trips**

August 26–27

Two-day trip to **Dresden** (Germany), known as Venice of the North.
The price includes: Transport by air-conditioned bus, English speaking guide, breakfast, 2x lunch (one drink included), dinner, entrance fee, three-star hotel in the city center

August 26–28

Three-day trip to Mozart's home town, **Salzburg**, and capital city, **Vienna** (Austria).
The price includes: Transport by air-conditioned bus, English-speaking guide, 2x breakfast, 3x lunch (one drink included.), 2x dinner (in Grinzing 0.25 liter of wine included), entrance fee, 2x hotels , guided tour in Salzburg and Vienna.

August 26

Plzen (Pilsen)—The main goal of our trip to Plzen is the famous Pilsner Brewery. The trip includes lunch and beer tasting. A short walk through the town will give visitors a good impression of the town in its very early days.

August 26

Cesky Krumlov/Ceske Budejovice—Situated in south Bohemia on the banks of the Vltava (Moldau) river, the town was built around a 13th century castle with Gothic, Renaissance and Baroque elements. It is an outstanding example of a small central European medieval town. The town of Ceske Budejovice at the confluence of the rivers Vltava and Malse was founded by King Premysl Otakar II as a step towards his goal to create a firm and structured state.

* *For more details see the "accompanying program" link on our website.*
** *For more details see the "sightseeing tours" link on our website.*

Overview of I-INCE Technical Activities

Alan H. Marsh, I-INCE Vice President — Technical Activities
16072 Santa Barbara Lane, Huntington Beach, CA 92649-2155, USA

Introduction

This overview of I-INCE Technical Activities is an update to the overview prepared by Gilles Daigle and published in the 2002 December issue of *NNI*.

The principal technical activities of I-INCE are currently in two areas, (1) work undertaken by the I-INCE Technical Study Groups authorized by the I-INCE General Assembly on recommendation of the I-INCE Board of Directors, and (2) activities of the recently formed I-INCE Technical Sections. Other technical activities that may be undertaken were described in the 2002 December issue of *NNI*.

The following are reports from the six I-INCE Technical Study Groups that are currently authorized.

I-INCE Technical Study Group 1: Noise of recreational activities in outdoor areas

The objective of I-INCE Technical Study Group 1 (TSG 1) is to prepare an I-INCE Technical Report on the effects of noise from recreational activities in outdoor areas. Recreational activities are those pursuits outside of regular occupations that are usually undertaken for purposes of relaxation, or for the refreshment of a participant's strength and spirits after work. Noise is an unwanted byproduct of many recreational activities. While providers of recreational activities may be uninterested, unwilling, or unable to control the noise, non-participating bystanders are sometimes exposed to relatively high levels of noise, or to noise intrusion that adversely affects their normal life as well as their own leisure or recreational time.

Although some leisure activities are extremely noisy, most are not particularly loud but disrupt the *natural quietness* that others are trying to enjoy. Maintenance of natural quietness in national parks and wilderness areas is considered by many people to be paramount to the survival of these preserves. The incursion of recreational activities in many of the naturally quiet areas has greatly changed, and sometimes totally eliminated, the natural acoustical environment.

Outdoor recreational noise poses many problems. The study group looked into these problems and what has been achieved to limit them, what methods have proven effective, and what have not, what regulations have been drafted or promulgated, and what measurement methods have been prescribed. Some of the health problems that arise – about which most local authorities do not want to know – were also considered.

From the investigations it would appear that unless the recreational activity is seen to adversely affect the general public, particularly in a residential area, little if anything is done to control the noise of recreational activities. On the other hand, reverse sensitivity is becoming an issue in some places, and some recreational activities have had to close down when residential development has invaded their space.

Many countries have now introduced laws to control noise, but often the law applies only to the workplace and would seem to have been introduced to conform to international protocol rather than local issues. Noise produced during leisure time is not considered worthy of law making. In developing countries, protecting people at home from excessive noise generated by industry, travel, and other people rarely is considered of sufficient gravity to warrant control by central government, and a control of noise during leisure activities would be untenable. Even in some developed countries, noise from such activities as racing of cars on local streets is not controlled due to conflicts between different Acts of Parliament. The control of recreational noise is often so difficult as to be deferred until further notice.

The first draft of the final report from TSG 1 is scheduled for presentation at INTER-NOISE 04 in 2004 August.

Convener: *Philip Dickinson (New Zealand)*

Members: *Marion Burgess (Australian Acoustical Society), David Eager (Australian Acoustical Society), Alessandro Cocchi (Associazinoe Italiana di Acoustica), Kozo Hiramatsu (INCE/Japan), Sang Kyu Park (Korean Society for Noise and Vibration Engineering), Willy Passchier-Vermeer (The Netherlands), Malcolm Hunt (New Zealand Acoustical Society), Bo Engdahl (Acoustical Society of Norway), Ferdinand Dezelak (Slovenian Acoustical Society), Adrian Jongens (South African Institute of Acoustics), Ayse E. Aknesil (Turkish Acoustical Society), Andy Watson (Institute of Acoustics, UK), Nicholas Miller (INCE/USA).*

I-INCE Technical Study Group 2: Noise labels for consumer and industrial products

The objective of I-INCE Technical Study Group 2 (TSG 2) is to prepare an I-INCE Technical Report with recommendations for noise labels that may be applied to consumer and industrial

products. Consumer goods are sold at retail to ultimate customers for personal or household use, indoors or outdoors. Industrial products are sold to commercial firms for a wide variety of purposes. In many parts of the world, consumer and industrial goods are sold without any limits on noise emission, and frequently no indication to the purchaser of how noisy the products will be when installed, either to those who operate the products or to those in the vicinity of an operating product.

There is much work in progress to develop international and national standards for measuring the noise characteristics of consumer and industrial products. Testing organizations in many countries carry out appropriate evaluations. However, the noise data available to the typical customer are frequently limited, even in those countries where there is great concern for noise at the workplace, in the home, and in the neighborhood.

The TSG attempted to assemble information from the countries represented by the I-INCE Member Societies that appointed members to the TSG. The ultimate goal is to make the low noise of products an important competitive factor in the sale of such products.

The TSG held its 1st meeting on 2000 August 29 during INTER-NOISE 2000 in Nice, France. The scope of the TSG and a Work Plan were discussed. The Work Plan included, as a first priority, a survey of current methods of labeling, and related measurement methods. A 2nd meeting of the TSG was held prior to INTER-NOISE 01 in Den Haag, The Netherlands. A key part of that meeting was a detailed account of the very interesting approach taken in Brazil to labeling, through the "*Programa silêncio*." Information was provided on basic regulations and standards, testing infrastructure, and labeling procedure. A 3rd meeting was held prior to INTER-NOISE 02 in Dearborn, Michigan to discuss a draft for the I-INCE report.

In 2000 September, the Convener produced a five-item Questionnaire, which was distributed to members by e-mail with the initial target date for completion by 2000 December 31. At the 2nd TSG meeting, it was agreed that, to supplement inputs from participants in the TSG, an e-mail enquiry should be made of all I-INCE Member Societies. The 5 items were as follows

A. What international, national, and local regulations and standards are in use in your country that involve the noise labeling of products of any kind? Please summarize the key parts of any official documents, including details of the test methods used to determine noise output for any labeling, and the details of the actual labeling.

B. Do you think the information given on noise labels could be improved? For example should sound quality indicators such as loudness be considered?

C. If applicable, how effective do you think noise labeling has been in your country? Not effective/ Effective / Very effective.

D. Do you know of any technical or consultancy reports, or any conference papers on this topic?

E. Do you have any other general comments or observations of relevance to this survey?

Responses to the survey questionnaire were received from China, Japan, Norway, Turkey, Russia, South Africa, UK, and the USA. Even though the number of responses was small, a large amount of information was obtained on relevant standards in response to the first survey question. Of particular interest is the "Ecomark" system used in Japan. In the USA, there is progress in developing American National Standard ANSI S12.61-200X as an American version of ISO 4871.

On question B, a significant majority of responses favored labels that contained additional information, such as sound quality, to supplement sound-power and sound-level information. In the USA, some industrial trade organizations have developed product-specific measurement standards, including for example, the Air Movement and Control Association (AMCA). The AMCA Home Ventilation Division (HVI) has administered its sound certification program for more than 30 years. The AMCA program provides a simple, single-number, linear rating that a consumer can use to compare the noise emissions from products. This noise number is on the carton used to ship all home ventilator fans. The rating is determined according to a unique test related to sound power and is reported in sones.

On question C, only in Russia was labeling seen as effective. In Norway it was noted that labeling was effective for industrial equipment, but not for consumer products.

A number of interesting reports were identified from Question D.

Question E elicited this interesting comment from South Africa. "*The other main application, which is of greater importance, is labeling of equipment for industrial purposes. If industrial equipment is supplied with sound power level characteristics in octave bands, these values could be used in environmental planning. At the moment, noise impact investigations are very expensive, because the noise radiation characteristics of equipment are not available, and must be measured at great cost.*"

TSG 2 had no activity during 2003. However, an initiative is underway in 2004 to re-issue the Survey questions to a large number of personal contacts in Spring 2004 and then to present the results in a report at INTER-NOISE 04. An invited paper is also being prepared for presentation at the Structured Session on Global Noise Policies at INTER-NOISE 04.

Convener: *Bernard Berry (UK)*

Members: *Warwick Williams (Australian Acoustical Society), Dominique Pleeck (Belgian Acoustical Association), Samir Gerges (SOBRAC, Brazil), Stephen Keith (Canadian Acoustical Society), Ikuo Kimizuka (INCE/Japan), Doo-Hoon Kim (Acoustical Society of Korea), K. Selvag (Acoustical Society of Norway), Hakan Serafettinoglu (Turkish Acoustical Society), Robert Hellweg (INCE/USA), Joe Pope (Acoustical Society of America)*

Consultants: *Barry Jobling (UK), Sophie Maluski (UK)*

I-INCE Technical Study Group 3: Effectiveness of noise policies and regulations

The objective of I-INCE Technical Study Group 3 (TSG 3) deals with assessments of the effectiveness of noise policies and regulations in countries around the world. During the last half of the 20th century, many countries recognized noise as an environmental and occupational problem, and worked to develop noise exposure policies and noise control technologies.

Considerable time and effort are devoted each year throughout the world to develop noise exposure policies for places where people work, for places where people live, and for outdoor environments devoted to leisure activities. Little is known about how effective various noise policies and regulations have been in controlling the noise exposure (that is, the noise immission) for the individuals and populations that the regulations are intended to protect.

TSG 3 had its first meeting in 2000 August in Nice, France and, as the first phase of the study, decided upon the work plan for assembling and cataloging the noise regulations and standards of each country represented by the expert appointed to TSG 3 by an I-INCE Member Society. After the meeting, a questionnaire survey was prepared to seek information on the following points: (1) the legislative and administrative structures for the enactment and enforcement of noise policies and regulations/standards, (2) enumeration of the major laws and/or ordinances relevant to environmental noise problems, (3) the nature of these laws and ordinance, (4) the subject to which the laws and ordinances are applied, (5) the regulation or standard values specified in the laws and ordinances, and (6) an indication of the effectiveness of the noise laws in the reduction of environmental noise. As the result of this questionnaire survey, data were obtained from the following countries.

Australia (West Australia, New South Wales, Queensland), Austria, Belgium (Flanders, Wallonie, Brussels), Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Luxembourg, Norway, Portugal, Slovenia, Spain, Sweden, The Netherlands, Turkey, UK, and the USA.

The 2nd meeting of TSG 3 was held on 2001 August 28 in Den Haag, The Netherlands. Based on the information gathered from the 1st survey, a 2nd survey was prepared and sent to representatives in the countries from which information had been gathered in the 1st survey. The 2nd survey requested additional information on each regulation, standard, guideline, or other requirement, and asked that the relevant document be characterized as an immission or emission document. It also requested information on building codes, occupational noise regulations, and noise labeling of consumer products.

The 3rd meeting of TSG 3 was held on 2002 August 19 in Dearborn, Michigan, USA, with six members and three observers present. In this meeting, the results of the 2nd questionnaire survey were reported and the following items were noted: the differences between the emission and immission policies, the differences in the policy approaches taken in each country, the character of noise exposure criteria and methods for comparing different standards, the relationships between national and local governments in the major western European countries, and the methods of modeling and describing noise exposure, including noise mapping. Tjeert ten Wolde stated that the criteria described in 99% of the existing directives of the European Union are emission criteria. He noted that it is difficult to compare data on noise policies from different countries because of the differences in noise exposure metrics, assessment time periods, and so on. A draft of the report from TSG 3 was prepared for presentation at INTER-NOISE 03 in Korea.

Co-Conveners: *Hideki Tachibana (Japan) and William W. Lang (USA)*

Members: *Warren Renew (Australian Acoustical Society), Gisela Vindevogel (Belgian Acoustical Association), Josef Novak (Czech Acoustical Society), Pierre-Etienne Gautier (Société Français d'Acoustique), Andrea Franchini (Associazinoe Italiana di Acoustica), Jiro Kaku (INCE/Japan), Soogab Lee (Korean Society for Noise and Vibration Engineering), Sigurd Solberg (Acoustical Society of Norway), Primoz Gspan (Slovenian Acoustical Society), Selma Kurra (Turkish Acoustical Society), Bob Peters (Institute of Acoustics, UK), Paul Schomer (Acoustical Society of America), and Larry Finegold (INCE/USA)*

I-INCE Technical Study Group 4: Noise and Reverberation Control for Schoolrooms

The objective of I-INCE Technical Study Group 4 (TSG 4) is to prepare an I-INCE Technical Report with recommendations for acoustical criteria and noise-control features that may be applied in the design of all types of enclosed learning spaces in order to optimize the learning experience for teachers and students. For TSG 4, the definition of learning spaces includes any enclosed area where students and teachers interact for educational purposes. Principal acoustical criteria are the level of the background noise and the reverberant quality of the learning space.

Recommendations in the Technical Report will apply to existing as well as newly designed facilities. The recommendations

will be aimed at designers and builders of learning spaces and also at those involved in the preparation or revision of national building codes for schoolroom construction. Educational facilities covered by the recommendations range from those used for pre-school or day-care activities, to primary or elementary schools, to secondary or high schools, to colleges or universities, and to facilities used for adult education.

Since the I-INCE General Assembly approved the formation of the Technical Study Group, TSG 4 has held three formal meetings and one informal meeting. To date, the Member Societies of I-INCE have appointed 15 experts representing 16 Member Societies in 14 countries.
To broaden the information database, other I-INCE Member Societies (for example, in Mexico and Argentina) were contacted to encourage them to appoint experts to assist in the work of TSG 4. Additionally, the Convener initiated attempts to obtain relevant information from the World Health Organization (WHO) and from UNESCO. The Internet web site for the International Standards Organization (ISO) was searched for relevant International Standards.

The I-INCE Technical Report from TSG 4 is planned to contain the following seven sections.

1. **Introduction** with scope, solutions, economical aspects, and report objectives
2. **Research** with a discussion of technical knowledge and experience related to the acoustical characteristics of learning spaces
3. **National and international noise policies** with a review of standards, regulations, and guidelines
4. **School and classroom characteristics** with a discussion of physical, operational, and acoustical properties
5. **Recommendations** for acoustical design criteria
6. **Noise and reverberation control measures** with a discussion of architectural and operational acoustical measures including guidance on economic aspects
7. **Conclusions** with recommendations for development of national policies to improve the quality of learning experiences and a discussion of further needs for data collection and research

For Section 2, two basic reviews were initiated:

- Effects of high levels of background noise on children's learning experiences; and
- Technical aspects of the acoustical design of schoolrooms and methods to predict how well the design efforts will achieve the design criteria.

For Section 3, members of TSG 4 collected information on existing regulations, recommendations, guidelines, and standards related to the acoustical characteristics of schoolrooms. Information from 17 countries was identified and partially assembled. The countries included Australia, Belgium, Brazil, France, Germany, Greece, Italy, Japan, The Netherlands, New Zealand, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the USA. Most documents accounted for a core set of acoustical characteristics and included recommendations for specific values of design criteria. Acoustical characteristics included the level of the time-averaged A-frequency-weighted background noise and the reverberation time. Measures to minimize the contribution of airborne and structure-borne sound and vibration to the background noise, and measures to minimize noise from various pieces of equipment, were often mentioned. Measures to improve the isolation of a learning space from noisy activities in an adjacent space were included.

For Section 4, a detailed questionnaire was prepared for the members of TSG 4 to distribute in their country in an attempt to obtain information on the physical, operational, and acoustical characteristics of schools and classrooms. Contributions were received with information about schools in Belgium, Brazil, Germany, Japan, Italy, Sweden, and Turkey. The information was compiled into a summary. Information on conditions in other countries is needed.

Section 5 will cover design guidelines for noise-control measures that may be applied to achieve the recommended levels of background noise and the recommended limit on reverberation time for learning spaces within the scope of TSG 4. The American National Standard, ANSI S12.60-2002, "American National Standard Acoustical Performance Criteria, Design, Requirements, and Guidelines for Schools," the British Guidelines on classroom acoustics (BB 93), and design guidelines used in Japan and Sweden will be important sources for the recommendations in Section 5.

Work related to the information to be included in Section 6 has not yet been initiated.

TSG 4 has organized special sessions at INTER-NOISE Congresses with papers related to material within the scope of the Technical Study Group. While a considerable part of the work planned for I-INCE TSG 4 has been completed, there is still much to do. Particularly challenging will be the development of a matrix of cost-effective noise and reverberation control methods appropriate for the various categories and types of construction and design for school classrooms.

Convener: *Zerhan K. Yuksel (Turkey)*

Members: *Gary Woods (Australian Acoustical Society), Gerrit Vermeir (Belgian Acoustical Association), Elvira Viveiros (Brazilian Acoustical Society), Murray Hodgson (Canadian Acoustical Association), Michel Vallet (Société Française d'Acoustique), Reinhard Neubauer (Deutsche Gesellschaft für Akustik), Luigi Maffei (Associazione Italiana di Acustica), Toshiko Fukuchi (Acoustical*

Society of Japan, INCE/Japan), Joanne Valentine (New Zealand Acoustical Society), Ronny Klaeboe (Acoustical Society of Norway), Carsten Svensson (Swedish Acoustical Society), Nese Akdag (Turkish Acoustical Society), Bridget Shield (Institute of Acoustics, UK), David Lubman (Acoustical Society of America), Lou Sutherland (INCE/USA)

Consultants: *Philip Dickinson (New Zealand), Warwick Williams (Australia), Stuart McLaren (New Zealand)*

I-INCE Technical Study Group 5: Noise as a global policy issue

The objective of I-INCE Technical Study Group 5 (TSG 5) is to prepare an I-INCE Technical Report dealing with noise as a global issue in contrast with noise as a local issue. A major objective of the report is to describe what is needed to create effective global noise-control policies.

There is a tendency in some advanced countries to consider noise, from a policy standpoint, to be a local issue, that is, noise is an issue that should be handled at the local municipality level rather than as a federal matter to be handled at an international level. There are several reasons for this attitude. One is that noise propagates through the air over short distances (rarely more than 10 km), and does not persist after being perceived. Therefore, in the physical sense, noise could be considered to be a local phenomenon. There are, however, other reasons to consider noise problems from a worldwide perspective. The most important is the reduction of noise emission, which, for many sources, can only be successfully done in an international context.

All vehicles, devices, machinery, and equipment that emit audible sound are manufactured products. Most of these products are involved in international trade. Companies with worldwide operations produce many products in two or more countries. Noise emissions of such products are appropriately the subject of international agreements and regulations. Noise immission resulting from the operation of these products is growing in severity as the volume of vehicular traffic and the pace of industrialization increase in many countries.

An important aspect of the task charged to TSG 5 by the I-INCE General Assembly is to study the manner in which global policies have been developed in the past, and to make recommendations for improving current procedures so that future policies may be made more effective in controlling the emission and immission of noise. In the I-INCE Technical Report prepared by TSG 5, the roles of international bodies, national governments and local authorities will be identified and, if necessary, clarified.

The Report from TSG 5 will include definitions of terms, a classification of noise policy areas, a summary of the adverse effects of noise, identification and intentions of the appropriate issuing authorities, emission and immission requirements, international trade and local jurisdictional issues, and analyses of the policy development processes of existing organizations. The report will include recommendations for the international harmonization of noise emission and noise immission indices, as well as methods for their measurement and computation.

Global noise control policies are required in the following three areas: (1) occupational noise, (2) environmental or community noise, and (3) consumer product noise. The TSG Report will have four parts: Part 1, General; Part 2, Occupational Noise; Part 3, Environmental Noise; and Part 4: Consumer Product Noise. A draft of part 1 entitled "A Global Approach to Noise Control Policies" has been prepared, and work is in progress on the other parts.

The 1st meeting of TSG 5 was held in 2001 August in Den Haag, The Netherlands. The 2nd meeting was held in Dearborn, Michigan, USA, in 2002 August. The 3rd meeting of the TSG was held in Korea during 2003 August. A 4th meeting is scheduled for Prague, Czech Republic, during 2004 August.

Co-Conveners: *William Lang (USA) and Tjeert ten Wolde (The Netherlands)*

Members: W. Les Huson (Australian Acoustical Society), Jean-Pierre Clairbois (Belgian Acoustical Association), Kari Pesonen (Acoustical Society of Finland), Pierre-Etienne Gautier (Société Française d'Acoustique), Gerhard Hübner (DEGA, Germany), Hideki Tachibana (INCE/Japan), Truls Gjestland (Acoustical Society of Norway), Hans Jonasson (Swedish Acoustical Society), Bernard Berry (Institute of Acoustics, UK), Eric Wood (Acoustical Society of America), George Maling (INCE/USA)

Consultants: *Tony Embleton (Canada), Jean Jacques (France), Alan Marsh (USA), and Robert Bruce (USA)*

I-INCE Technical Study Group 6: Environmental Noise Impact Assessment and Mitigation

The objective of I-INCE Technical Study Group 6 (TSG 6) is to prepare an I-INCE Technical Report containing practical guidance for policy makers who are involved with regulation and control of community noise, excluding the noise generated by neighbors. The Report will focus on how to perform an environmental impact analysis. It will also provide information on the use of dose-response relationships, land use planning, and other tools available to achieve effective control of exposure to environmental noise. It will advocate a flexible approach to control of exposure to environmental noise in a community through informed choices about the estimated costs of achieving various degrees of noise control versus the benefits to the community and society for the efforts. Areas that need further research and standardization will be indicated.

The emphasis of the report will be on how a well-conceived environmental

impact analysis process (EIAP) can be an integral part of an effective overall strategy for control of community noise, especially the use of land use planning in countries that are still experiencing substantial community development. The Report will address the issues of how noise control policies need to account for national and global regional differences in cultures and expectations about the acceptability of levels of noise exposure, differences in national perceptions of the appropriate role of government, differences in the availability of financing and technical support for effective noise control, and differences in the willingness of populations to accept a long-term commitment to implement required regulations, guidelines and technical noise-control measures.

During 2002 and 2003, the I-INCE General Assembly reviewed and approved a revised scope for the work of TSG 6. The I-INCE Member Societies responded with either confirmation of their original experts or appointment of a new expert. The Convener recruited several Consultants to assist the appointed members of TSG 6. The plan for the work to be accomplished in 2004 is to finalize the conceptual approach to be presented in the I-INCE Technical Report, make assignments for writing various parts of the Report, and begin to collect draft inputs from the members.

Convener: *Larry Finegold (USA)*

Members: *Stephen Samuels (Australian Acoustical Society), Werner Talasch (Österreichischer Arbeitsring für Lärmbekämpfung), Brigitte Schulte-Fortkamp (DEGA, Germany), Dieter Gottlob (NALS, Germany), Maurice Yeung (Hong Kong Institute of Acoustics), Giovanni Brambilla (Associazione Italiana di Acoustica), Hideki Tachibana (INCE/Japan and Acoustical Society of Japan), Soogab Lee (Korean Society for Noise and Vibration Engineering), Ronny Klæboe (Norwegian Acoustical Society), Verster Meij (South African Acoustics Institute), Ferdinand Dezelak (Slovenian Acoustical Society), Nicole Porter (Institute of Acoustics, UK), Henning von Gierke (Acoustical Society of America and INCE/USA)*

Consultants: *Bernard Berry (UK), Philip Dickinson (New Zealand), Ian Flindell (UK), Truls Gjestland (Norway), Andrew Hede (Australia), Juichi Igarashi (Japan), Martin van den Berg (The Netherlands), Michel Vallet (France)*

I-INCE Technical Sections

The concept of Technical Sections within I-INCE was developed by the Board of Directors and approved by the General Assembly at its meeting in Dearborn, Michigan on 2002 August 18. The scopes of the Technical Sections cover all aspects of the broad field of noise control engineering.

Any person interested in a technical area within the I-INCE field of interest may participate in the activities of the Technical Sections. Individuals who wish to participate in the activities of a Technical Section will be enrolled as *Affiliates* of that Section. An individual who wishes to participate in the activities of a Technical Section is not required to be a member of an I-INCE Member Society in order to participate, although he does have to have registered as an attendee at one, or more, INTER-NOISE Congresses.

An individual may affiliate with one, or at most, two, Technical Sections. On the other hand, if an individual wishes to be affiliated with more than two Technical Sections, he may be enrolled as an *Affiliate-at-Large*.

An *Affiliate* participates in the activities of a Technical Section as an individual, not as a representative of an I-INCE Member Society or other organization.

Two of the more-important tasks that Technical Sections may undertake are (1) development of proposals to the I-INCE Next Congress Planning Committee for special technical sessions and symposia and (2) development of structured workshops and discussion groups to be scheduled to occur at an INTER-NOISE Congress or an I-INCE Symposium.

Five Technical Sections were established, with scopes based on technical areas from the I-INCE Classification of Subjects, as follows:

- Technical Section 1: Emission and Noise Control Elements
- Technical Section 2: Vibration and Shock
- Technical Section 3: Immission
- Technical Section 4: Instruments and Analysis
- Technical Section 5: Requirements and Policies

Organizing meetings of the Technical Sections were held during INTER-NOISE 02 in Dearborn, Michigan. Initial meetings of the Technical Sections were held during INTER-NOISE 03 on Jeju Island, South Korea.

Meetings of Technical Sections will occur during INTER-NOISE 04 in Prague, Czech Republic. Meeting locations and start times will be announced on the web site for INTER-NOISE 04 (www.internoise2004.cz). Persons interested in participating in the activities of a Technical Section should enter their names on a sign-up sheet that will be posted in the Registration area and plan to attend.

Acknowledgements

The author is grateful to the Conveners of the Technical Study Groups for supplying information on current activities and to George Maling as Editor of *Noise/News International.*

Report: Second International Symposium on Fan Noise

More than 300 persons from 26 countries attended the FAN NOISE 2003, The Second International Symposium on Fan Noise, which was held in Senlis, France on 2003 September 23-25. The meeting was an International INCE Symposium. Senlis is a small village about 40 km north of Paris, and is known as the birthplace of French royalty. Roman walls built before the birth of Christ still remain in the village, which was an outstanding venue for the symposium. The symposium was held at the Centre Technique des Industries Mécaniques (CETIM), a research center for the French mechanical engineering industry and a sponsor of both the first symposium on fan noise in 1992 and several other symposia on sound intensity and related topics. Jean Tourret and G. Allory from CETIM were two of the symposium organizers. The second organization which organized FAN NOISE 2003 was the Centre Technique des Industries Aérauliques et Thermiques (CETIAT). CETIAT is a French laboratory that provides research services in the air-handling, heating, and acoustics fields. An important part of the work of the laboratory is on the aerodynamic and acoustical performance of axial and centrifugal fans. Alain Guédel and F. Bessac were the symposium organizers from CETIAT.

The Symposium was opened by Jean Tourret, and his welcoming remarks were followed by greetings from several sponsoring organizations—Alain Guédel representing CETIAT, Bill Cory representing the Air Movement and Control Association (AMCA), George Maling representing International INCE, and Philippe de Laclos, Directeur Général of CETIM.

The organizers and sponsors of the Fan Noise Symposium open the meeting on 2003 September 23. Left to right: Alain Guédel, CETIAT, William Cory, representing AMCA, Philippe de Laclos, Directeur Général, CETIM, George Maling, representing International INCE, and Jean Tourret, CETIM.

Then followed single plenary sessions in which 60 papers were presented on all aspects of axial, centrifugal, and cross-flow fan noise, both broadband and narrow band. The titles of the sessions were:

- Axial fans: noise modeling and prediction
- Axial fans: noise analysis and source location
- Axial fans: source identification from from measurement on the blades
- Axial fans: fan design and selection
- Towards broadband noise prediction
- Centrifugal and cross-flow fans: noise modeling and prediction
- Centrifugal fans: influence of geometrical parameters, impeller design
- Tonal noise prediction: numerical approach
- Fan installation effects (I)
- Fan installation effects (II)
- Fan energy consumption
- Optimization of systems with cooling fans
- Active control
- Case studies
- Noise measurement and sound quality

An equipment exhibition was also held in conjunction with the symposium. Twenty exhibitors showed instruments and devices related to fan noise. The exhibitors were:

- ACB Engineering
- ANSYS France
- Brüel & Kjær France
- CAPVIDIA
- CD Adapco France
- CETIAT
- CETIM
- CIDB
- Fluent France SA
- G.R.A.S. Sound and Vibration
- Head Acoustics
- KAIST
- LaVision GmbH
- LMS France
- Metravib RDS
- Microflown Technologies, B.V.
- MTS
- NUMECA International
- Paulstra
- Vibratec

All of the papers presented at the symposium were collected and placed on a CD-ROM, which was available at final registration—together with a booklet of abstracts of the presented papers. The CD-ROM is available for 145 Euro, postage included, by contacting either CETIM or CETIAT at the following e-mail addresses:
elisabeth.garnier@cetim.fr
eveline.julien@cetiat.fr

Overview of INCE/USA Technical Activities

Gerald C. Lauchle, INCE/USA Vice President for Technical Activities
The Pennsylvania State University, State College, PA 16802, USA

Technical Activitity within INCE/USA is organized into twelve Technical Committees (TC's) that cover the field of noise control engineering and assist INCE/USA with various projects. The Chairs of the TC's make up the Technical Activities Board. The main focus for the twelve TC's is 1) to organize special sessions at INCE/USA conferences, and 2) to produce special theme issues of *Noise Control Engineering Journal*, preferably once every three years. Members of INCE/USA who have an interest in one or more of the TC's listed below are encouraged to contact the listed Chair, and volunteer to participate in the committee's activities. The name of the Chair(s), contact information, and the scope of each committee is given below.

Sources and Propagation

Victor Sparrow, vws1@psu.edu

This committee brings together INCE members with interests related to noise sources and how that noise propagates to the listener. Regarding noise sources, the committee promotes characterizing noise sources, understanding their radiation mechanisms, and devising noise control methodologies via source modification. Regarding propagation the committee seeks improved methods for measuring and predicting the propagation of noise through both structures and the air. Source alteration techniques, outdoor and indoor sound propagation, and scattering and diffraction are all within the purview of the sources and propagation technical committee. The committee is committed both to developing new understanding of how the sound from real noise sources is generated and gets to the listener and to applying engineering principles to minimize the noise.

Passive Control

Ahmet Selamet, selamet.1@osu.edu

The objective of the committee is to promote activities and disseminate information in passive control of noise and vibration. Areas of interest include, but are not confined to, analytical, computational, and experimental efforts on: (1) reactive, dissipative, and hybrid mufflers and silencers; (2) flow noise and suppression; (3) flow-acoustic coupling and suppression; (4) flow-structure interaction; and (5) acoustical materials used for sound absorption, damping, vibration isolation, structures, and sound barriers. The foregoing objective is achieved by: (1) organizing technical sessions at the NOISE-CON Conferences and INTER-NOISE Congresses, thereby creating an effective exchange environment between research and application communities; and (2) encouraging participants to publish their works in the *Noise Control Engineering Journal*.

Active Control

Scott Sommerfeldt, scott_sommerfeldt@byu.edu

The purpose of the Active Control Technical Committee is to foster research, applications, unified practice and communication of new techniques in the active control of sound and vibration. Areas of interest to the committee include not only applications involving noise and vibration control, but also sound field reconstruction and other novel applications of active control. Subtopics of interest include physical principles of active control, algorithms, transducers, sensing and actuating techniques, and hardware design. To accomplish these objectives, the Committee seeks to do the following: (1) organize sessions for NOISE-CON and INTER-NOISE meetings; (2) provide continued support for the ACTIVE symposia which have been held on a regular basis; (3) encourage members and others to publish active control research and case histories in the *Noise Control Engineering Journal*; and (4) provide a forum for information exchange as a means of promoting research and unified practice in the field.

Perception and Effects of Noise

Wade Bray, wbray@headacoustics.com

This group has focused on organizing sessions for conferences and one-day symposia associated with INCE/USA and International INCE meetings. Topics of interest to this group include sound quality modeling and metrics, psychoacoustic testing, standardization, binaural sound quality, sound quality of environmental sounds, and designing the sound of products. There is some ongoing effort to interact with the musical acoustics, noise, and physiological and psychological acoustics groups in the Acoustical Society of America, to stimulate broader interest in the challenges of product sound quality, product sound design, and environmental soundscapes of various kinds. One focus of the group is threshold and near-threshold perception and annoyance of low-level noises, and particularly in that context, the effects of tonal or time-variant patterns of various rates and strengths on perception. People involved in this group are also part of an ANSI working group focused on sound quality. This group interacts with a similar DIN committee that deals with the standardization of the binaural head. We have solicited input on this issue from practicing engineers who work in the area of sound quality. The group welcomes participation from other technical fields.

Instrumentation and

Measurement Techniques

Teik C. Lim, teik.lim@uc.com

The committee acts as a forum for the dissemination of information and research results on new instrumentation and experimental methods in the fields of noise and vibration control, and acoustics. This forum is established through periodic meetings at NOISE-CON and INTER-NOISE conferences, sessions organized at these conferences, and the organization of seminars or short courses in conjunction with these same conferences. From these conferences the committee will work with the Editorial Board of *Noise Control Engineering Journal* to identify papers of special merit for inclusion in the Journal. In addition, the committee strives to provide an interface to international and national groups standardizing measurement procedures. Finally, the committee facilitates the coalition of divergent approaches to the same measurement problem and acts as a resource for those seeking information on current measurement developments. The primary subject classifications for the work of this committee include: 71, Instruments for noise and vibration measurements; 72, Measurement techniques; 73, Test facilities (design and qualification); 74, Signal processing; and 81, Standards.

Transportation Noise

Nicholas P. Miller, nmiller@hmmh.com

Transportation systems are responsible for the most pervasive noise in our environments. Many organizations in both the U.S. and in other countries address the issues of transportation noise – in terms of technical analysis and solutions, effects and planning. The Transportation Noise Committee will work to bring together these different organizations in future INCE conferences and other forums to encourage information exchange and creative approaches to transportation noise control and planning.

Industrial Noise

Michael Lucas, mike_lucas@irco.com

This committee provides a forum for the exchange of technical and regulatory information on topics relating to machinery and industrial noise. The committee encourages participation of engineers working in the manufacturing industry. Our goal is to have an open technical exchange on product noise problems, the use of technology in identifying and controlling these problems, and regulatory aspects as they pertain to product noise. The technical exchange will include case studies, discussions on measurement techniques, and discussions on commercial and in-house software developed specifically for acoustic noise prediction. A sample of the topics of interest to this committee are acoustical enclosure design, silencer design, sound absorbing materials, fan noise, reciprocating and turbo machinery noise, noise source identification, modeling and predicting product noise, occupational exposure to noise, and European noise regulations.

In particular, the Committee seeks to do the following: (1) organize sessions for NOISE-CON and INTER-NOISE meetings; (2) sponsor specialized workshops and seminars in conjunction with NOISE-CON conferences or INTER-NOISE congresses; (3) invite guest speakers to talk about new products used in noise measurement and prediction; (4) encourage INCE members and others to publish, in *Noise News International* and the *Noise Control Engineering Journal*, case histories as well as accounts of successful programs and approaches related to the management of industrial noise; (5) serve as an information exchange and clearinghouse for members and others interested in the management of industrial noise; and (6) form alliances with other professional and trade organizations whose charters overlap or complement those of the Committee.

Community Noise

Larry Finegold, LSFinegold@earthlink.net

The Community Noise Technical Committee is formed for the purpose of promoting the use of noise control engineering technologies to reduce noise exposure in communities across America to levels that adequately protect the health and welfare of the US population. We will pursue the following general priorities:

1. Promote the development and use of state-of-the-art noise control technologies.
2. Support the development of modern national and local government noise management and land use policies, including increased cooperation between industry and government on noise control issues.
3. Support programs to educate the public on the adverse effects of community and environmental noise exposure.
4. Support the continued professional development of the noise control engineering community and promotion of their services to communities.
5. Coordinate INCE/USA community noise activities with those of other national and international professional acoustics organizations and government agencies.

Information Technology Equipment

Matt Nobile, nobile@us.ibm.com

The mission of the Information Technology Equipment Technical Committee is noise control engineering relating to information technology equipment (ITE), with a primary focus on acoustical measurement technology, methodology, and standardization. In addition to organizing special sessions at INCE conferences and soliciting technical papers for *NCEJ*, the principal activities of the Committee are to monitor, elucidate, and continually reevaluate the technical underpinnings of the acoustical standards and test codes pertinent to the ITE industry. Given that our members are volunteers with limited time and resources, the activities undertaken by the committee should meet the following practical criteria: (i) can be reasonably handled by the resources available; (ii) are directly related to the mission of the TC/ITE; (iii) are important to the IT industry as a whole; (iv) are timely, in terms of work being done by

other committees allied to the IT industry (such as standards writing groups); (v) are of strong interest to a majority of the TC members or potential TC members; (vi) are within the realm of expertise of the TC members or potential TC members; and (vii) are of a non-proprietary nature to allow competing firms to cooperate freely. The results of TC/ITE activities should benefit either INCE members in general or members of working groups developing standards and test codes for the ITTE industry.

Prediction and Modeling Techniques

Satha Raveendra, Satha.Raveendra@colaik.com
Nolan Dickey, nsd@leopard6.eng.ohio-state.edu

This committee will provide a forum for the dissemination and clarification of information related to the direct application of large scale computer analysis codes or software to noise control and acoustic problems. Analysis methods or codes of interest include finite and boundary element methods, statistical energy analysis, ray tracing, transfer matrix and other computational techniques for addressing interior and exterior sound propagation and radiation issues including interactions with vibrating structures and other media. An attempt will be made to establish a clear forum on the applicability of existing or new codes and numerical techniques to contemporary noise control problems in industry or society. To facilitate this important task, the committee will organize special technical sessions for NOISE-CON and INTER-NOISE meetings, solicit authoritative papers for *Noise Control Engineering Journal*, and provide a forum for its members in maintaining and developing the science and art of computer modeling. Other activities may include the formulation of benchmark noise control problems for analysis verification, organizing round robin modeling exercises, and liaison with other technical committees or professional societies.

Building Acoustics

Kenric VanWyk, kvanwyk@acousticsbydesign.com
Greg Tocci, gtocci@cavtocci.com

The objective of the Building Acoustics Technical Committee is to advance the understanding of acoustical performance of building components, materials, and systems, with the ultimate goal of improving the acoustical quality for buildings of all types. This is done by organizing technical sessions at INCE conferences, encouraging the publication of papers on related topics, and disseminating relevant information to the Noise Control Engineering community, American Institute of Architects, American Society of Heating, Refrigeration, and Air Conditioning Engineers, other professional groups, and the public. Primary topics include criteria for sound quality in buildings, acoustical performance of building materials including standard construction materials as well as special acoustical products, prediction of sound levels in buildings, sound propagation through building structures and sound produced by HVAC, electrical and plumbing systems. The committee seeks to identify building noise control topics of interest to the building development, design, and owner sectors through two means: 1) the consulting practice of acoustical consultants on the committee and 2) standards activities in the building acoustics areas. Once identified, NOISE-CON and INTER-NOISE sessions would be developed that address these areas of interest. Persons who are working in these areas and known by committee members would be invited to give papers at these sessions. These would be individuals known to committee members directly or indirectly through contacts with other members. The invited papers would form the basis of a session to which a general solicitation of papers would be made. The next, and most critical step, is to encourage presenters to prepare manuscripts for submission to *NCEJ* for consideration for publication. Of immediate interest to the committee is the current interest in classroom acoustics resulting from the publication of ANSI S12.60 "Acoustical performance criteria, design requirements, and guidelines for schools."

Standards

Brandon Tinianov, Tinianov@JM.com

This technical activity represents the technical interests of INCE as a voting member in the American National Standards Institute (ANSI) Committee S12 on Noise. The Acoustical Society of America (ASA) provides the Secretariat for the committee. Its mission is the development of standards, specifications, and terminology in the field of acoustical noise pertaining to methods of measurement, evaluation, and control of as related to the areas of environmental and occupational noise.

Recent standards activity is highlighted by the adoption of ANSI S12.60-2002 "Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools." The standard represents a significant change in the focus school design with room acoustics and intruding noise as key elements in the success of learning environments.

There has also been work surrounding the evaluation of sound power in both reverberant and free field environments. Standards recently re-approved include ANSI S12.12 and ANSI S12.30 several related ANSI standards have been replaced as Nationally Adopted International Standard (NAIS) documents. They include S12.51, S12.53/1, S12.53/2, S12.45 and S12.56.

Books

The Science of Sound, Third Edition

Thomas D. Rossing, F. Richard Moore, Paul A. Wheeler
Pearson Education, Inc. publishing as Addison Wesley
1301 Sansome St.
San Francisco, CA 94111, USA
Hardcover, xvi + 783 pp., 2002, 84 USD
ISBN 0-8053-8565-7

This is an introductory text that covers a very wide variety of topics in acoustics, and has three final chapters devoted to noise.

The first four chapters constitute Part I are devoted to the physical principles of the generation and propagation of sound, vibrating systems, the general concepts of wave motion, reflection, and interference, and a broad treatment of various resonant systems—including mass-spring vibrators, Helmholz resonators, resonance in pipes, and resonant structures.

Part II generally deals with perception of sound, and introduces such psychoacoustical concepts as loudness, pitch, etc. There is a description of the mechanics of hearing and the structure of the ear, and an introduction of physical quantities such as sound pressure, sound pressure level, sound power, and sound power level. Pitch and timbre are discussed—as is the relationship between various tones and the concept of harmony. This part also contains an introduction to musical acoustics and musical scales.

Part III is devoted to the characteristics of a very wide variety of musical instruments. This includes string, brass, woodwind, percussion, and keyboard instruments, and is the longest part in the book. Part IV is devoted to the human voice, and includes both speech and singing.

The discussion then turns to electroacoustics and includes descriptions of electronic circuits, loudspeakers, microphones, amplifiers, and tuners, digital computers, and sound recording techniques. This material is in Part V. Part VII also covers electroacoustical topics, but with an emphasis on electronic music, digital audio signal processing, and computer music.

The material in Parts VI and VIII will be of most interest to noise control engineers. In Part VI, room acoustics is emphasized. This includes the fundamentals of sound propagation in rooms, the properties of concert halls, churches, and classrooms, electronic reinforcement of sound, and recording studios. The subject of Part VIII is environmental noise. An overview of various noise sources in the environment is given, information on the effects of noise on people is presented, and the final chapter is devoted to the control of noise.

In each chapter, there are references for further reading, review questions, problems (exercises) to be solved, and suggested laboratory demonstrations. At the end of the book, the answers to odd-numbered exercises are given. The book is not written on a high mathematical level.

Hearing Conservation Manual, Fourth Edition

Alice H. Suter; Edited by Elliott H. Berger
Council for Accreditation in Hearing Conservation
611 Wells Street, Milwaukee, WI 53202, USA
8 1/2 x 11 inches, 312 pp., softcover, 50 USD (quantity discounts available)
ISBN 0-9723143-0-X, 2002

This fourth edition of the Hearing Conservation Manual was written by Alice H. Suter and edited by Elliott H. Berger. While the manual is said to be for use by course directors of the Council for Accreditation in Occupational Hearing Conservation (CAOHC) for teaching courses, it will be useful to a wide audience of engineers and hearing conservation specialists.

The subjects of the 12 chapters are:

1. Occupational Hearing Conservationists: Their Mission, Training and Role
2. The Effects of Noise and the Conservation of Hearing
3. Anatomy and Physiolgy of the Human Ear
4. Hearing Disorders: Their Causes and Management
5. Introduction to Sound
6. Standards and Regulations
7. The Audiometric Testing Program
8. Understanding the Audiogram and Follow-up Procedures
9. Noise Measurement and Control
10. Hearing Protectors
11. Training and Motivation
12. Record Keeping and Program Evaluation

The chapter on standards and regulations contains useful information on United States noise policies as they relate to occupational noise. The chapter on noise measurement and control emphasizes techniques for measurement and the use of sound-measuring equipment.

There are 17 appendices that cover to government regulations, American National Standards related to hearing conservation, engineering noise control, useful web sites, and other topics. Appendix M on Engineering Noise Control was written by Beth Cooper, INCE.Bd. Cert. as a series of articles in a CAOHC publication, *CAHOC Update*, in 2000 and 2001.

INCE Update

New officers and directors for I-INCE and INCE/USA

INTERNATIONAL INCE

International INCE Elects New Officers and Directors

At its meetings in 2003 August during the INTER-NOISE Congress on Jeju Island, Korea, the International INCE Board of Directors elected new officers and directors.

Hideki Tachibana of the University of Tokyo, Japan, was elected president of I-INCE for a four-year term. All new terms began on 2004 January 01. Gilles Daigle of the National Research Council of Canada was elected president-elect for the same four-year term. Tor Kihlman of the Chalmers University of Technology becomes the immediate past president, replacing William Lang, who was elected vice president for global noise policy for a three-year term.

Other officers elected for three-year terms were Masaru Koyasu, vice president for the Asia-Pacific region, Bernard Berry vice president for Europe, Paul Donavan, vice president for the Pan-American region, Gilles Daigle, vice president for development, and Alan Marsh, vice president for technical activities.

George Maling was elected vice president for publications and editor-in chief for a one-year term, and Hee Joon Eun was elected to six-year term as the director representing INTER-NOISE 2003.

Individuals continuing as officers are Robert Bernhard, secretary general, and Gerrit Vermeir, treasurer. Directors as INTER-NOISE representatives are Harold Marshall (I-N 98), Joseph Cuschieri (I-N 99), Michel Vallet (I-N 00), Tjeert ten Wolde (I-N 01), and Rajendra Singh (I-N 02). Per Brüel continues as a distinguished board member.

INCE/USA

INCE/USA Elects 2004 Officers and New Directors

The Annual Meeting of the INCE/USA Board of Directors was held on 2004 January 24-25, and the Annual Meeting of INCE/USA was held on 2004 January 25 in Fort Lauderdale, Florida. The Board elected Gerald C. Lauchle of the Pennsylvania State University as president-elect of the Institute. He will serve in 2004 as president-elect and executive vice president, and will serve as president in 2005. Joseph Cuschieri of Perry Technologies—Lockheed Martin Corporation served as president-elect in 2003, and is now president of INCE/USA.

Gordon L. Ebbitt of Carcoustics, USA was elected vice president - publications, and John C. Freytag of Charles M. Salter Associates, Inc. was elected vice president - public relations. Richard A. Kolano of Kolano & Saha Engineers was elected vice president - board certification, and David Towers of Harris Miller Miller and Hanson, Inc. was elected vice president - membership. He serves until a sucessor is elected by the Board. Gerald C. Lauchle of the Pennsylvania State University was elected vice president - technical activities. Daniel J. Kato of Cummins Power Generation was elected secretary (until a successor is elected by the Board), and Steven E. Marshall of Bristol Compressor was elected treasurer. Paul Schomer of Schomer and Associates continues as executive director, and George Maling is managing director - emeritus.

At the Annual Meeting of INCE/USA, the result of the election of new directors by the voting members was accepted. John C. Freytag of Charles Sauter Associates, Inc., Nicholas P. Miller of Harris Miller Miller and Hanson Inc., and Eric W. Wood of Acentech, Inc. were certified as directors elected by the voting members.

Key committee assignments are: Steven E. Roth, Roth Acoustical Associates, Long Range Planning, Paul R. Donavan, Illingworth & Rodkin, Inc., Finance Committee, Robert D. Hellweg, Nominations Committee, Gregory C. Tocci, Cavanaugh Tocci Associates, Policies and Procedures, Richard J. Peppin, Scantek, Inc., Meetings/Exhibits, Arno S. Bommer, Collaboration in Science and Technology, Inc., Awards.

European News

Bernard Berry, European Editor

GERMANY

2004 Roadshow is Planned

The European Academy of the Urban Environment (EAUE) is planning a 2004 roadshow on the assessment and management of environmental noise. The purpose of the Academy is to encourage exchange of experiences amongst local government decision makers in all spheres of sustainable urban development.

The roadshow is titled "Roadshow on EU Directive 2002/49/EG relating to the assessment and management of environmental noise - a challenge for towns and cities in future EU member states (accession countries)."

The EU-Directive on Environmental Noise aims to establish a common approach by means of which harmful effects, including annoyance, as a result of environmental noise, may be restrained, prevented or mitigated on the basis of priorities. With this in mind the following measures are to be introduced in a progressive or step by step approach:

- noise maps,
- action plans,
- public information related to environmental noise and action plans.

The project is designed to mitigate against deficits with regard to the environmental noise directive and transposing the directive into national legislation, and to make an early start on preparing towns and cities for the demands which will quite soon confront them. In addition to technical and financial questions, primarily aspects and methods of public participation will be communicated.

As part of the project it is proposed to organize an initial conference in Berlin and three workshops in different accession countries (and/or regions): the Baltic States, Hungary, and the Czech Republic.

More information can be found at www.eaue.de. Publications lists can be found at www.eaue.de/PUBSL.HTM. Links to some EAUE activites related to noise can be found by using the *Google* search engine to search on eaue noise.

UNITED KINGDOM

Future of Air Transport in the UK: Darling Publishes 30-Year Strategy. A framework for the future of air transport in the UK over the next 30 years was published on 2003 December 16 by UK Transport Secretary Alistair Darling.

The White Paper, The Future of Air Transport, sets out the framework for the future development of air transport in the regions of England, as well as Scotland, Wales and Northern Ireland. It balances the economic benefits that development offers against the environmental impact and follows an extensive public consultation, which generated half a million responses.

Mr Darling said that "There has been a five-fold increase in air travel since the 1970's; half the population now flies at least once a year, and many fly far more often than that. Forecasts suggest demand could be two and a half times current levels by 2030. Airfreight has doubled in the last 10 years; one third by value of all goods we export go by air.

"Air travel is essential to the United Kingdom's economy and to our continued prosperity. The aviation industry directly employs 200,000 people with a further 600,000 jobs supported indirectly.

"We need to plan ahead so we can continue to benefit from the economic and social advantages of air travel, but at the same time deal with the impacts of increasing air transport for the environment. The policies set out in this White Paper achieve this."

The Government's objectives are to limit and, where possible, reduce noise impacts over time, to ensure air quality and other environmental standards are met, and to minimize other local environmental impacts. Where noise impacts cannot practically be limited, the White Paper sets out new measures which it expects airport operators to take to help those affected, by offering to insulate or, in more severe cases, purchase properties.

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"Air travel is essential to the United Kingdom's economy and to our continued prosperity."

Asia-Pacific News

Marion Burgess, Asia-Pacific Editor

A new Japanese prediction model for road traffic noise

AUSTRALIA

Music Entertainment Noise

A revised version of the Western Australia Code of Practice for Control of Noise in the Music Entertainment Industry is now available. This Code, developed by the WorkSafe Western Australia Commission, replaces the 1999 edition. The revision was needed to incorporate references to the current principal code - Managing Noise at Workplaces, and to the C-weighted peak noise level exposure standard. The code provides practical guidance on ways to assess and reduce noise exposure in entertainment venues.

The document is available as a download from http://www.safetyline.wa.gov.au/pagebin/codewswa0230.htm or purchase from (08) 9327 8775.

Acoustics 2004

The AAS Annual Conference, Acoustics 2004, will be held at the Gold Coast International Hotel in the heart of Surfers Paradise on 2004 November 3- 5. The conference will provide a forum for the presentation of a wide range of papers on all aspects of fundamental and applied acoustics and vibrations. Papers from all areas of acoustics are welcomed including Transportation Noise and Vibration, Environmental Noise, Occupational Noise, Architectural Acoustics, Underwater Acoustics, Industrial Noise & Vibration Control, Noise Legislation, Sound Measurement Techniques. Submitted papers will be peer reviewed, where requested, under the coordination of a scientific advisory panel. A series of workshops will focus on aspects of transportation noise.

Information: Acoustics 2004, aas2004@acran.com.au, www.acoustics.asn.au

Wespac8

Wespac8 Conference, held in Melbourne in April 2003 was most successful in spite of work events which reduced somewhat the attendance. Close to 200 high quality papers were presented. The proceedings are available on CD from GeneralSecretary@acoustics.asn.au for AUD100+ $10GST (incl postage & handling). Wespac 9 will be held in Korea in 2006.

AAS Educational Grant, 2003

The successful winners were announced at the Annual conference of the society,: A grant of AUD 3,000 to Joe Wolfe, University of New South Wales (UNSW), will be used to support the doctoral research project of a distance-education student who is an amateur violin maker. A grant of AUD 2,000 to Nicole Kessissoglou will be used to offer scholarships to final year students in the School of Mechanical and Manufacturing Engineering at the UNSW. The Society considers the educational grant scheme is a worthy activity and will continue with annual awards.

Vale Suszanne Thwaites

The Australian acoustical community was saddened to learn of the death of, one of Australia's leading acoustical scientists. At only 51 years, she died quietly and unexpectedly in her sleep in Ottawa, Canada on 2003 October 07. She was on the second day of a journey which was to involve an audit of acoustical calibration facilities in Canada plus project meetings at Boeing in the US, and Farnborough in the UK. She was in the prime of her career and had much still to contribute, but most of all she will be missed for herself — as confidant, counsellor, mentor and friend to all those who knew her.

JAPAN

ASJ RTN-Model 2003. A new prediction model for road traffic noise was issued by the Acoustical Society of Japan on 2004 April 01. The model is an upgrade version of previous method called ASJ Model 1998 and is renamed ASJ RTN-Model 2003. In developing the model, latest knowledge and new experimental data were collected to solve previous problems that were pointed out by acoustical engineers. As for the sound source description, directivity of vehicle noise is well modeled by regression analysis and included in the prediction model. It is applied only to a case for noise prediction at high residential buildings located close to roads.

Correction terms for vehicle noise at drainage asphalt concrete pavement are modified with a consideration of durability of the acoustical property of the road surface. The acoustical durability is based on the fact that noise control ability of drainage asphalt decreases by 0.5 dB/year at expressways For the calculation procedures of sound propagation, correction terms for diffraction and reflection are improved. The new

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Pan-American News

George Maling, Pan-American Editor

USA

ASA 75 to be Held in New York

The Acoustical Society of America will celebrate its 75th anniversary at its 147th meeting, which will be held in New York City May 24-28. Over 1200 papers have been submitted for presentation the meeting covering topics in all fields of acoustics. Leo Beranek will present a tutorial lecture titled "Listening to the acoustics in concert halls." Distinguished lectures will be given by Jens Blauert on "Communication Acoustics" and by Laymon Miller on "Noise-My 62 years of it." There will be 137 posters on various performance theaters, and many sessions on noise and architectural acoustics.

The celebration will begin on Tuesday night with a 75th "celebratory banquet" which will feature a video with recollections by past presidents covering highlights from the Society's 75 years. This will be followed by a number of events on Wednesday. In the morning there will be a "celebratory look" to the future of the Society held at City Center followed by a reception for Fellows of the Society. A number of special tours have been scheduled for the afternoon, and in the evening there will be an organ concert at St. Thomas Church.

Further details may be found in the Meeting Announcement and Call for Papers. For further up-to-date information about the technical program, please refer to the "Meetings Section" on the ASA Home page at <http://asa.aip.org/meetings.html>. Also you may register for the meeting online at <http://asa.aip.org>.

Ralph K. Hillquist is Named SAE Fellow

Ralph K. Hillquist of Benzonia, Michigan, a Board-certified member of INCE/USA, has been elected as a SAE Fellow by the Society of Automotive Engineers (SAE International). He is a technical consultant and vice president with RKH Consults.

SAE Fellowship status is the highest grade of membership bestowed by Society of Automotive Engineers. It recognizes outstanding engineering and scientific accomplishments by an individual that have resulted in meaningful advances in automotive, aerospace, and commercial vehicle technology. The program, established in 1975, recognizes an average of only 20 worldwide recipients for this honor each year.

Hillquist has made significant contributions to mobility engineering, particularly in the area of automotive acoustics and standards. His work in developing sound level measurement procedures are well known in the automotive industry, and have led to numerous national and international vehicle sound level measurement standards. He is the founder of the SAE Noise and Vibration Conference (started in 1985), and has chaired a total of six SAE Sound Measurement Workshops since 1974. In 2001, SAE International and the SAE Foundation established an educational scholarship award in his honor.

As is the tradition, he and the 2003-04 class of SAE Fellows received public recognition among their peers in ceremonies at the 2004 SAE World Congress on 2004, March 8-11, in Detroit, Michigan.

Joint Venture Provides Rail Noise and Vibration Test Services for Railroad Equipment

Harris, Miller, Miller & Hanson, Inc. (HMMH) and Transportation Technology Center, Inc. (TTCI), a subsidiary of the Association of American Railroads, have combined services for their customers here and around the world. The joint venture will provide comprehensive noise and vibration measurement, testing, analysis, and abatement services for railroad equipment.

"Customers find that adding noise and vibration testing to other planned performance evaluations is convenient and very cost effective," said Robert Swearingen, Manager of Business Development at TTCI. "Problems identified can be resolved and retested quickly and economically," he added.

Measurements of noise and vibration inside passenger cars provide information on passenger comfort and ride quality and compliance with procurement specifications. External noise

continued on page 32

Happy 75th for the Acoustical Society of America!

Pan-American News *continued from page 31*

measurement is useful in determining compliance with Federal rail noise standards

Both firms have extensive experience with rail equipment testing and evaluation. TTCI has performed testing on most of the urban transit equipment installed in cities around the country during the past three decades. TTCI also helps transit agencies solve difficult noise and vibration problems.

HMMH routinely evaluates new and existing equipment for equipment builders and operators of urban, intercity, and high speed rail systems, and has developed noise and vibration guidance manuals for the Federal Railroad Administration and the Federal Transit Administration.

For further information, contact Bob Swearingen at TTCI, Telephone: +1 719 584 0638, E-Mail: Robert_sweringen@aar.com or Carl Hanson at HMMH, Telephone +1 781 229 0707, E-Mail: chanson@hmmh.com.

INCE/USA members to lead in aircraft noise mitigation

Purdue Part of New FAA Center for Noise and Emissions

On 2003 September 3, the U. S. Department of Transportation's Federal Aviation Administration (FAA) announced that is has created a new Air Transportation Center of Excellence for Aircraft Noise and Aviation Emission Mitigation. The Center of Excellence (CoE) is a world-class partnership of academia, industry, and government created to identify solutions for existing and anticipated aircraft noise and emissions-related problems. The center will conduct basic research and engineering development and will develop prototype solutions.

The Center research and development efforts will concentrate on a broad spectrum of noise and emissions mitigation issues, including socio-economic effects, noise abatement flight procedures, compatible land-use management, airport operational controls, and atmospheric and health effects.

The Center of Excellence will be led by Massachusetts Institute of Technology (MIT). The other members from academia are Boise State University, Florida International University, Pennsylvania State University, Purdue University, Stanford University, University of Central Florida, and University of Missouri at Rolla.

At Purdue, the overall Center-of-Excellence effort is being led by Bob Bernhard. The effort on human response and health effects for the entire CoE is being led by Patricia Davies. The effort to study the effectiveness of home insulation programs is being led by Luc Mongeau. The Purdue effort includes participation from the School of Aeronautical and Astronautical Engineering , the School of Health Sciences, and the Department of Aviation Technology. The CoE will use the acoustics facilities at the Herrick Labs, the airport laboratory, simulators, and engine test facilities of the Department of Aviation Technology and the physiological test facilities of the School of Health Science. The effort is expected to address a range of issues related to the unacceptability of aviation noise in communities as well as the health effects and potential mitigation of aviation emissions.

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Asia-Pacific News *continued from page 30*

model includes corrections to multi-edge diffraction by a bank and and parallel barriers.

It also includes general estimation method for the insertion loss by edge-modified noise barriers that are coming into use nowadays at highways in Japan. For sound reflection, scattered reflection is included in addition to specular reflection. The treatment is derived from Lambert's cosine law. It is applied to non-flat surfaces such as road viaducts supported by I-girders.

The modeling for structure borne noise of viaduct is revised by data from field experiments. The A-weighted sound power level of the structure noise as an emission is represented by the speed of running heavy trucks on the road bridge and the types of viaducts.

The accuracy of the ASJ RTN-Model 2003 is checked by comparing the measured and predicted values of road traffic noise. The average difference is shown to be within 2 dB for expressways and national highways.

The outline of this model was presented at ICA 2004 in Kyoto.

IAC

Industrial Acoustics Company Announces Two Senior Appointments

Industrial Acoustics Company Group (IAC), has made two senior appointments in a move to spearhead a program of expansion in the USA. Founded in 1949, IAC is a world leader in the manufacture of acoustic products and systems.

Michael Mancuso, BSCE, MBA, formerly VP Operations with Speedline Technologies, has been appointed to the joint role of Director for the Americas Acoustic Division and General Manager of the USA Companies. Mancuso, who has an engineering background, has over 25 years senior management experience at an international level - Europe, Asia, the Caribbean and Mexico. In addition to broad-based management skills, Mancuso brings to the role extensive knowledge of modern manufacturing techniques, performance improvement and new product development. Mancuso's chief objective will be to increase market share across all target sectors by improving IAC manufacturing methods, productivity, and customer service.

Robert (Bob) Schmitt, mem.INCE, has been appointed to the joint role of Group Chief Marketing Officer and Chief Technical Officer. Schmitt has been with IAC for 35 years and was formerly President, Americas Acoustic Division.

Schmitt's responsibilities will include the expansion of the US Sales Representative network and the global co-ordination of the Group's image and marketing strategy. He will also oversee the global Research and Development strategy for IAC where 50 years of innovation has sustained the company's world leading position in noise control products and systems. IAC has companies in the Americas, the United Kingdom, Denmark, Germany, France, Spain and Italy.

Founded in 1949, IAC is a world leader in the manufacture of acoustical products and systems. IAC is headquartered in New York at 1160 Commerce Avenue, Bronx, NY 10462-5599. Tel: +1 718 931 8000; Fax: +1 718 863-1138. Internet: www.Industrialacoustics.com.

Brüel & Kjær

Brüel & Kjær Hand-held Analyzer – Type 2250

A world leader in sound and vibration, Brüel & Kjær, presents its innovative 4th generation of hand-held instruments for sound and vibration measurement. Development of this latest generation – the Type 2250 – was inspired entirely by the sound level analyzer users participating in in-depth workshops around the world. The color touch screen display and user interface is first of its kind in a precision sound meter. A 120 dB measurement range ensures error free measurements, and its three application programs cover everything from community and workplace noise to product evaluation and quality control. Built for use outdoors and in difficult environmental conditions, Type 2250's robustness, lightness, and ergonomic design make it easy to grip, hold, and operate. The high-resolution touch screen has different color schemes optimized for viewing outdoors and indoors, both day and night, and a bright red, yellow or green light gives you an across the room indication of your measurement's status. Tired of writing notes describing your measurements? The 2250 will automatically attach your recorded comments before, during or after your measurement. All your measurement tasks are intuitively organized and, with extra documentation added in the form of comments, you will never be in doubt of the exact on-site happenings. Type 2250 is designed for single-handed operation. With a choice between using hard keys or touch screen, it provides you with everything from a personal login and measurement, data and display setups to a personal checklist. It also holds a calibration history, allowing you to document your measurement's validity. Built-in electronic filters detect and correct for windscreen effects. The quality and status of your measurement parameters are clearly displayed on your screen as icons and there's always the on-line Help. Back at the office, your data can be quickly transferred to your PC for storing, viewing and reporting, using the provided software.

For further information, contact Karen Zwick, Sr. Marketing Coordinator, Brüel & Kjær North America Inc. 2815 Colonnades Court, Norcross, GA 30071. Tel: +1 800 332 2040; Fax: +1 770 448 3246. E-mail: karen.zwick@bksv.com; Internet: www.bkhome.com

Universal Silencer

A Full-Line Catalog is Available from Universal Silencer

Universal Silencer, a leader in noise control and air filtration solutions, has released its new 2004 full-line catalog. The industrial products catalog is an easy-to-use selection tool for the bulk handling, power generation, marine, oil and gas, and emissions markets served by Universal Silencer.

The new USI catalog includes the broadest selection of silencer and air filtration products in the industry.

New appointments at IAC

A new sound level meter from Brüel and Kjær

A new silencer catalog from Universal Silencer

New prediction software from 01 dB and Navcon

USI engineers and manufactures both standard and custom-designed silencing and filtration solutions for blowers, gas and diesel engines, pumps, compressors, fans and vents. The newest catalog contains complete technical product information, and will be continually updated in 2004 to ensure the most current information available on new products and applications.

The new catalog is available immediately by contacting the company at +1 888 300 4272. E-mail: kenneth.l.murray@universal-silencer.com.

01 dB

Industrial noise prediction from 01 dB

PlantNoise is a hardware and software system for predicting, visualizing and, with the sound module, auralizing industrial noise during simulated computer walk-through. It is designed to be a simple, fast, accurate and user friendly tool for evaluating workplace noise and noise-control measures in typical industrial workrooms both objectively and subjectively.

Using PlantNoise, you can define the physical and acoustical characteristics of an industrial workroom and its up to 300 noise sources. PlantNoise takes into account the effect of fittings - the numerous small scattering obstacles (machines, stockpiles, benches etc.) in a workroom ; this is crucial to the accurate prediction of industrial noise. You can 'walk-through' the workroom visualized on the monitor at will by moving the receiver icon. At every walk-through position, in real time, noise levels in octave bands from 125 to 4000 Hz, as well as total sound levels in are calculated, displayed and, with the sound module, auralized. Noise-contour maps can be plotted. At any time, the workroom data can be edited - for example, to introduce noise-control measures. The workroom floor-plan display can be printed along with the input data, in the form of a one-page prediction report. The octave- band and total noise levels at the receiver-grid positions can be exported to a file for further processing. PlantNoise includes a comprehensive Help file that can be accessed at any time.

For further information contact 01 dB-Stell, MVI Technologies Group, 565, rue de Sans-Souci, F - 69760 Limonest, France. Tel. +33 4 72 20 91 00; Fax. +33 4 72 20 91 01. In the USA, contact +1 315 685 3141 (Tel.). Internet: www.01db.com.

Marshall Day Acoustics

Sound Insulation Prediction Software is Available.

At the end of 2003 Marshall Day Acoustics released Version 5.5 of the Sound Insulation Prediction Software INSUL. The new software has been posted to the Navcon web site. To download a INSUL 5.5 - 30 day trial version please go to www.navcon.com/insulsoftware.htm.

Below is a summary of the latest changes, fixes and developments. INSUL 5.5 has now the capability of Network Licensing (Note: only Microsoft Network.

- Significant improvements to the calculation algorithms for the mass-air-mass resonance dip. Based on research by National Research Canada as published in *Noise Control Engineering Journal*. Improves prediction of drywall lining on masonry walls.
- Improved algorithms for point and line connections above the critical frequency.
- Addition of steel studs plus resilient rail as a wall option.
- Improved display of cavity infill, the thickness of the infill on the drawing is linked to the thickness input.
- The index DnTw is now calculated and displayed.
- The STC/Rw rating of the reference and comparison spectra is calculated and displayed in the legend of the graph.
- Improvements made to saving and recalling of the cavity absorption.
- Function for previewing the printout.
- Ability to generate a PDF file of the printout. This can be useful for emailing results to others.
- Absorption blanket thickness can now be 200mm thick.
- Blank lines are permitted in the main materials file to separate different groups of materials.
- The thickness of the absorptive infill can be changed by entering the thickness in an edit box on either the wall or ceiling page.
- One can change the background color of the picture of the partition
- Additional coloring for materials (eg glass is now light blue, pine is brown, aluminum is gray, concrete is light gray, brick is red etc)
- There is now an external text file to put in glazing materials for the double glazing feature.
- The information copied to the clip board now includes Ctr and C or OITC as appropriate.
- New feature on the graph so that you can turn of auto scaling. This is useful if you want to compare several printouts on the same scale. Fixed scale is 0-80dB.
- Added feature so that you can click on a point on the graph to see what the value of TL is at that point.
- Added dimensioning of the overall thickness of walls and floors.

For further information, contact Hans Forschner, Navcon Engineering Network, Noise & Vibration Consultants & Products, 701 West Las Palmas Drive, Fullerton, CA 92835. Tel. +1 714 441 3488; Fax: +1 714 441 3487. Internet: www.navcon.com. Additional URLs of interest: www.navcon.com/insul.htm, www.navcon.com/soundplan.htm, www.navcon.com/femtools.com.

LMS

Goodrich Selects LMS Test.Lab For Spacecraft and Launch Vehicle Electronics Testing

LMS International has announced that Goodrich Corporation's Space Flight Systems (SFS), Albuquerque, NM, has selected LMS Test.Lab to perform vibration qualification testing and analysis on spacecraft and launch vehicle electronics. Goodrich subjects its electronic systems and actuator products to specific vibration loads that they will experience during real missions. LMS Test.Lab software combined with LMS SCADAS III data acquisition hardware is said to enable Goodrich to accurately and efficiently test, analyze and optimize the structural integrity and the vibration resistance of its products.

Goodrich bases its LMS Test.Lab systems on laboratory and mobile LMS SCADAS III mainframes, offering maximum flexibility to perform tests in its labs and in the field.

For further information, contact LMS. Europe: Bruno Massa, LMS International, Tel: +32 16 384 200, e-mail: bruno.massa@lms.be. United States: Sarah Zajas, LMS North America, Tel: +1 248 952 5664, e-mail: sarah.zajas@lmsna.com.

Larson Davis, Inc.

ICP® Microphone Preamplifiers and Filter

Larson Davis, Inc., has introduced two microphone preamplifiers. Models PRM426 and PRM422 are low noise, general purpose prepolarized microphone preamplifiers powered by any constant current (2 to 20 mA) IPC® sensor power supply.

The PRM426 and PRM422 accept ½ inch and ¼ inch microphones respectively, and both models are compatible with TEDS standard IEEE P1451.4 as a microphone preamplifier, or as an integrated microphone/preamplifier when paired with a precision microphone. In-Line ICP® A-Weighting filter is available for filtering the output signal from Model PRM426. All models feature small size and rugged, stainless steel construction, and have a wide frequency bandwidth and large dynamic range.

Larson Davis, Inc., Digital Sensor System (DSS) Extends DSIT Technology to Address Acoustic and High-frequency Vibration Measurements

The Larson Davis, Inc., DSS multi-channel, multi-drop, high-speed data acquisition system utilizes DSIT (Digital Sensor Interface Transmitter) technology to greatly simplify cable routing and substantially reduce cabling costs associated with multi-channel measurements. This is accomplished by performing 24-bit A/D conversion, using DSITs placed near the transducers and low-cost ribbon cables to carry the digital signals to the DSS chassis. For modal analysis measurements, setup/tear-down time can be reduced by as much as 75 percent.

Up until now, application of the DSIT technology has been limited to low-frequency applications such as structural dynamic measurements due to the 2 kHz upper frequency limits of the DSIT-I1A (single axis) and the DSIT-13A (three channel) DSITs.

With the release of the wide-band DSIT-12A (dual channel) DSIT, featuring a selectable sample rate up to 102.4 kHz and an upper frequency range up to 46 kHz, this technology can now be used for acoustic and high-frequency vibration measurements. The DSIT-12A supplies the 2.5 mA current to power two ICP® powered microphone preamplifiers or accelerometers.

This new addition to the Larson Davis, Inc., family of DSITs will allow DSS users to implement the measurements associated with applications such as acoustic holography and sound power determination based on sound pressure level measurements, and benefit from the resulting cost savings and cabling simplifications.

For more information, contact John Carey, Acoustic Test Products Division of Larson Davis, Inc., toll free at 888-258-3222 (U.S. and Canada) or +1 801 375 0177; fax at +1 801 375 0182; e-mail: marketing@larsondavis.com. Internet: www.LarsonDavis.com.

PCB Piezotronics

PCB Piezotronics and The Modal Shop, Inc. Supply Spectrum Astro

Aerospace prime contractor and systems integrator, Spectrum Astro (Gilbert, AZ) has selected PCB Group companies PCB Piezotronics, Inc. (Depew, NY) and The Modal Shop, Inc. (Cincinnati, OH) as single source suppliers of various types of vibration and signal conditioning instrumentation for modal testing of satellite structures and components.

The Vibration Division of PCB Piezotronics, Inc., is supplying Spectrum Astro with single axis and triaxial

LMS and Goodrich to cooperate

New hardware from Larson Davis, Inc.

New products from PCB Piezontronics

Technical information from Endevco

accelerometers,TEDS-compliant sensors (featuring a Transducer Electronic Data Sheet embedded in the sensor for self-identification and self-description), Modally Tuned ICP® Impact Hammers, ICP® Mechanical Impedance Sensors, vibration meter kits, hand-held calibrators, cables and mounting accessories. Spectrum Astro has also purchased PCB's new Model 400A75 TEDS PDA, which allows the user to read and write to TEDS "smart" sensors using a Palm™ Personal Digital Assistant. PCB Group company, The Modal Shop, Inc., is supplying Spectrum Astro with signal conditioning featuring automated bank switching, TEDS sensors and support products and a variety of test accessories, including shakers and lateral excitation stands.

High Amplitude Triaxial ICP® Accelerometers

The Vibration Division of PCB Piezotronics, Inc., has introduced Model 350B50 high-amplitude triaxial ICP® accelerometer that combines three, 10,000 g sensing elements in one housing. The 350B50 features a built-in, 2nd order, low-pass filter between the sensor element and the amplifier, which reduces the risk of saturation at high frequencies.

The sensor contains built-in signal conditioning circuitry that can be powered by a 2-20 mA constant current, regulated DC voltage of 18-20 VDS. The sensor is said to be ideally suited for high-amplitude, random vibration testing, qualification of aerospace component and shock measurements.

Industrial Pressure Sensors

The Pressure Division of PCB Piezotronics, Inc., announces a series of industrial-grade dynamic pressure sensors. The Series 121A20/30 industrial, dynamic ICP® pressure sensors are offered in a variety of full-scale ranges from 100 psi to 5000 psi and feature all-welded, stainless-steel construction and a ¼ NPT pressure fitting (straight metric M14 thread is optional). The units contain built-in microelectronic circuitry to deliver a clean, voltage output signal. Electrical case isolation provides shielding from electromagnetic fields and eliminates ground loop problems. All units conform to CE directives.

The series is available with either a 2-pin military connector or an integral, molded, submersible cable assembly. The hermetically-sealed, stainless-steel construction protects against contamination and permits use in harsh industrial applications. The devices offer the unique ability to detect very small pressure fluctuations in the presence of high static background pressures. Typical applications include detection of dynamic pulsations, surges, water hammer, cavitations, and spikes in liquid delivery systems, paper slurry systems, pumps, and compressors.

Dynamic Strain Sensors Monitor Machinery Forces

The Force/Torque Division of PCB Piezotronics, Inc., has announced the release of the Series M240 Dynamic ICP® Strain Sensors. These devices use piezoelectric sensing elements to measure dynamic and quasi-static stress on stationary and moving machinery and offer a simple technique for monitoring processes and detecting inconsistencies or upsets. A single screw easily installs these units in a non-invasive manner on machinery surfaces, including mechanical presses, machine tools, fast-running production machinery, and automatic assembly machines.

Series M240 strain sensors feature integrated microelectronic signal conditioning, solid-state design, and perform in harsh industrial environments.

For additional information on all PCB products, contact Andrea Mohn, Marketing Assistant, PCB Piezotronics, Inc., 3425 Walden Avenue, Depew, NY 14043-2495. Phone: 800 828-8840; Fax: 716 684-0987; e-Mail: amohn@pcb.com

Endevco

Papers Available from Endevco

Endevco' s library of 119 Technical Papers now available for download to registered users. www.endevco.com/main/literature/technical-papers.php

A sample of interesting products is below.

Low g Accelerometer for Aerospace and Automotive Environments
www.endevco.com/main/news/7290A-accelerometer.php

Piezoresistive Accelerometers Offer Mechanical Filters for High Frequency Shock Measurement
www.endevco.com/main/news/7270AM6-accelerometer.php

Pressure Transducer Now Offers Protection Against High Intensity Light and Particle Impingement
www.endevco.com/main/news/8515C-B-option.php

International Reps *continued from Cover 3*

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info@foretekin.com

Italy: Spectra s.r.l.
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spectra@spectra.it

Indoneisa: SHAMA Technologies (S) Pte Ltd
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European News *continued from page 29*

Airports are particularly important for the development of regional and local economies, to provide passengers with greater choice, and reduce pressures on more over-crowded airports in the South East. Proposals to establish Centers of Excellence for aircraft maintenance and aviation-related business at or around regional airports could also contribute to these aims.

Airports are an important part of our national transport infrastructure, and their development needs to be planned within that context. Ensuring easy and reliable access to airports, which minimizes environmental, congestion and other local impacts, is a key factor in considering any proposal for new airport capacity. Airport operators will be expected to develop appropriate access plans, and to contribute to the costs of the additional infrastructure or services needed.

The White Paper, summary document, press notices and fact sheets can be found at www.dft.gov.uk/aviation/whitepaper.

Conference Calendar

Below is a list of congresses and conferences sponsored by International INCE and INCE/USA. A list of all known conferences related to noise can be found by going to the International INCE page on the Internet, www.i-ince.org.

2004 July 12-14

NOISE-CON 2004, The 2004 National Conference and Exposition on Noise Control Engineering

Baltimore, MD, USA. Contact: Institute of Noise Control Engineering, INCE/USA Business Office, 210 Marston, Iowa State University, Ames, IA 50011-2153. Tel. +1 515 294 6142; Fax: +1 515 294 3528; e-mail: IBO@inceusa.org. Internet: http://www.inceusa.org.

2004 August 22-25

INTER-NOISE 2004, The 2004 International Congress and Exposition on Noise Control Engineering

Prague, Czech Republic. Contact: INTER-NOISE 2004 Congress Secretariat, Technicá 2, 166 27 Praha 6, Czech Republic. Tel. +420 224 352 310; Fax: +420 224 355 433; e-mail: internoise2004@fel.cvut.cz. Internet: http://www.internoise2004.cz.

2004 September 20-22

ACTIVE 2004, The 2004 International Symposium on Active Control of Sound and Vibration

Williamsburg, Virginia, USA. Contact: Richard J. Silcox, Mail Stop 463, NASA Langley Research Center, Hampton, VA 23681. Tel. +1 757 864 3590; Fax: +21 757 864 8823; e-mail: r.j.Silcox@larc.nasa.gov.

2005 August 06-10

INTER-NOISE 2005, The 2005 International Congress and Exposition on Noise Control Engineering

Rio De Janiero, Brazil. Contact: Prof. Samir N.Y. Gerges, Mechanical Engineering Department, Acoustics and Vibration Laboratory, University Campus - Trindade, Florianopolis, SC - CEP 88040-900, BRAZIL. Tel. +55 48 2344074; Fax: +55 48 2320826: e-mail: samir@emc.ufsc.br.

2006 December 03-06

INTER-NOISE 2006, The 2006 International Congress and Exposition on Noise Control Engineering

Honolulu, Hawaii, USA. Contact: Institute of Noise Control Engineering, INCE/USA Business Office, 210 Marston, Iowa State University, Ames, IA 50011-2153. Tel. +1 515 294 6142; Fax: +1 515 294 3528; e-mail: IBO@inceusa.org. Internet: http://www.inceusa.org.

Acknowledgements

INCE/USA Liaison Program

ACO Pacific, Inc. ..... Belmont, California
Brüel and Kjær North America, Inc. ..... Decatur, Georgia
Cavanaugh Tocci Associates..... Sudbury, Massachusetts
G.R.A.S. Sound and Vibration..... Vedbaek, Denmark
Colin Gordon and Associates..... San Mateo, California
Harris Miller Miller and Hanson, Inc. ..... Burlington, Massachusetts
Industrial Acoustics Company..... Bronx, New York
IBM Corporation..... Armonk, New York
Iowa State University..... Ames, Iowa
Larson Davis, Inc..... Provo, Utah
Noise Control Engineering, Inc..... Billerica, Massachusetts
Overly Door Company..... Greensburg, Pennsylvania
The Pennsylvania State University ..... State College, Pennsylvania
Purdue University..... West Lafayette, Indiana
Quest Technologies, Inc. ..... Oconomowoc, Wisconsin
Scantek, Inc. ..... Columbia, Maryland
Vibro-Acoustics..... Scarborough, Ontario, Canada
Wyle Laboratories..... Arlington, Virginia

Sustaining Members of International INCE

Brüel & Kjær ..... Nærum, Denmark
Ecophon..... Hyllinge, Sweden
G.R.A.S. ..... Vedbaek, Denmark
LMS International, NV Numerical Integration Technologies..... Heverlee, Belgium
Norsonic AS..... Tranby, Norway
Rion Company, Ltd. ..... Tokyo, Japan

Institutional Members of International INCE

Argentina..... Centro de Investigacion en Acustica, Buenos Aires
Belgium..... Laboratorium voor Akoestiek en Thermische Fysica, Leuven
France..... Centre Technique des Industries Méchanique, Senlis
Korea..... Center for Noise and Vibration Control Engineering, Korean Institute for Science and Technology, Science Town, Taejon-Chi
New Zealand..... Centre for Sound Studies
Portugal ..... Laboratorio Nacional de Engenharia Civil, Lisboa
Sweden..... Department of Applied Acoustics, Chalmers University of Technology, Gothenburg
USA..... Graduate Program in Acoustics, The Pennsylvania State University, State College, Pennsylvania

Directory of Noise Control Services

Information on listings in the Directory of Noise Control Services is available from the INCE/USA Business Office, 210 Marston, Iowa State University, Ames, IA 50011-2153; +1 515 294 6142; Fax: +1 515 294 3528; IBO@inceusa.org. The price is USD 400 for 4 insertions.

CAVANAUGH TOCCI ASSOCIATES, INC.

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