

NOISE/NEWS

INTERNATIONAL

Volume 19, Number 3
2011 September

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

■ **Fortieth Anniversary Celebration
of the Founding of INCE/USA**

■ **NOISE-CON 2011 Report**

■ **Buy Quiet Symposium
Paris, France--2011**

■ **MEMBER SOCIETY PROFILE
The Canadian Acoustical Association**



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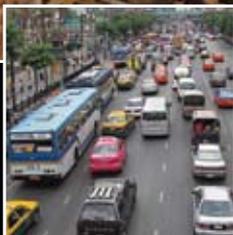
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Portland, Oregon at dusk. Photo courtesy of Robert Lotz

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NOISE/NEWS

INTERNATIONAL

This PDF version of Noise/News International and its Internet supplement are published jointly by the International Institute of Noise Control Engineering (I-INCE) and the Institute of Noise Control Engineering of the USA (INCE/USA). This is the first volume that is being published in PDF format only. The PDF format means that the issues can be read by freely available software such as that published by Adobe and others. It reduces publication time, saves printing costs, and allows links to be inserted in the document for direct access to references and other material. Individuals can sign up for a free subscription to NNI by going to the web site <http://www.noisenewsinternational.net>

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 and its Internet Supplement

www.noisenewsinternational.net

The primary change in this PDF-only volume of *NNI* is the ability to have “hot links” to references, articles, abstracts, advertisers, and other sources of additional information. In some cases, the full URL will be given in the text. In other cases, a light blue highlight of the text will indicate the presence of a link. At the end of each feature or department, a light blue [back to toc](#) will take the reader back to the table of contents of the issue.

- The Internet supplement contains additional information that will be of interest to readers of *NNI*. This includes:
- The current issue of *NNI* available for free download
- *NNI* archives in PDF format beginning in 2003
- A searchable PDF of annual index pages
- A PDF of the current *NNI* conference calendar and a link to conference calendars for worldwide meetings
- Links to I-INCE technical activities and I-INCE Technical Reports

Reflecting on the INCE 40th Anniversary

You are forewarned that this editorial is a little emotional. I have recently gotten home from attending NOISE-CON 2011, and I was thoroughly impressed by the events and the people participating in the anniversary celebration. The opportunity to meet and talk with the "legends" of INCE and noise control was a rare privilege which I will never forget.

One of my duties as INCE President is to run the Board of Directors meeting which was held on the weekend before the conference. I was honored to have Leo Beranek attend the meeting. To see his enthusiasm and interest in noise control at 96 years of age was truly inspiring. This is something that makes the honor of serving as President of INCE even more special.

I should say that I am not usually a fanatic when it comes to celebrities. I do not understand people going to the ends of the earth to get movie star or sports figure autographs. However, to spend a several days with some of the early pioneers in noise control was a great pleasure for me.

In one of the sessions at the conference, The View from the Corner Office, several of the past and the current presidents of INCE talked about the history and the future of INCE. As the current President, I had the honor or burden of being last on the agenda. After listening to the talks of Leo Beranek, George Maling, Bob Bruce, Bill Cavanaugh, Joe Cuschieri, and Patricia Davies, I did my best to provide some useful insight to current issues and opportunities for INCE/USA. I was very pleased when later in the conference some of the people at the session complimented

me on the points that I made. However, the real compliment was simply being on the same panel with these distinguished people who have been so influential in the field in some cases for more than 40 years.

The Sunday evening 40th Anniversary celebration went very well with over 20 founders and pioneers of the Institute attending along with nearly 70 guests. There were many good stories about the early days of INCE and good memories of those who are no longer with us. I think I can safely say it was as much a pleasure for the founders and pioneers as for the hosts and other attendees. All involved including Kerrie Standlee, Eric Wood, Alan Marsh, and Amy Herron, and many more should be congratulated for such an outstanding celebration. There is more on the conference elsewhere in this issue, and many of the photos from our dinner celebration may be downloaded from the Internet.

I want to relate one final event that epitomizes the enthusiasm and spirit I saw in these early founders of INCE. One morning of the conference, I am not sure which one, the Plenary speaker had just finished and I was rushing out of the room to prepare for a session I had organized. As I was going down the center aisle, coming up the aisle is Leo Beranek. He came up to me with an ear to ear smile and said "Hi Jim. Wasn't that a great talk. I want to talk to the speaker about the statistics he was using." I can only wish that all of INCE/USA and anyone working in noise control could have the interest and enthusiasm for noise control that Leo does at age 96.  [back to toc](#)



James K. Thompson

2010-2011 President

A Healthy Vision for Noise Policy



Bernard Berry

European Editor
I-INCE VP for Europe
and Africa

In Europe, environmental noise management is set out in Directive 2002/49/EC, the Environmental Noise Directive (END). Close examination of the END indicates the following underpinning policy theme: *The aim of this Directive shall be to define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise.*

Thus the policy wishes not only to “reduce” the harmful effects of noise but also to “avoid” or “prevent” any harmful effects due to noise.

In the UK this aim has been taken further with the publication of the Noise Policy Statement for England (NPSE): <http://archive.defra.gov.uk/environment/quality/noise/policy/documents/noise-policy.pdf>

This puts forward the following long-term vision: Noise Policy Vision; Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

This vision is supported by the following aims: Noise Policy Aims; Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life

The potential health effects of noise are thus fully recognised. However the intention is that noise policy will also recognise the realities of modern life, including the fact that some noise making activities are essential for society to function, and that we cannot remove all adverse impacts of noise.

A recent paper by the “architects” of the policy, Stephen Turner and Colin Grimwood at the recent

ICBEN 2011 Conference in London [1] provides some insight and background on the philosophy behind the Noise Policy Statement for England. It points out that it is the management of the effects of noise on people (primarily) that is at the heart of noise policy, and that any noise policy should concentrate on the effects of noise rather than simply the level of noise or noise exposure.

Nevertheless objective noise levels still feature in the policy of the Department for Environment, Food, and Rural Affairs (Defra). The NPSE makes use of established concepts from toxicology that are currently being applied to noise impacts by, for example, the World Health Organisation.

They are: NOEL – No Observed Effect Level. This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise. LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected

The NPSE extends these concepts by the introduction of: SOAEL – Significant Observed Adverse Effect Level. The level above which significant adverse effects on health and quality of life occur.

This raises the key issue of how one decides when an observed effect becomes significant. The NPSE itself recognises this and notes: “It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise.”

At the time of writing, Defra is currently inviting bids from consultants for a new research project with the aim of identifying the SOAEL and LOAEL for a number of scenarios, as part of the further development of noise policy. Watch this space !

Reference

S Turner and C Grimwood 2011. The importance of clear policy objectives when managing noise. Proceedings of ICBEN 2011. London July 2011. <http://www.icben2011.org/>  back to toc

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Canadian Acoustical Association

The Canadian Acoustical Association (CAA) is a non-profit charitable organization whose goals are to foster communication among people working in all areas of acoustics in Canada, promote the growth and practical application of knowledge in acoustics, and encourage education, research, protection of the environment and employment in acoustics. It also acts as an umbrella organization through which technical issues in acoustics education, employment and research can be addressed at a national and multidisciplinary level.

The history of the CAA traces back to 1962 when a group of 18 acousticians first met at the National Research Council in Ottawa to coordinate acoustical standards activities in the country. The newly formed "Canadian Committee on Acoustics" met regularly at different locations in Ontario and Quebec, and grew steadily to become a full-fledged incorporated Association in 1977, covering all areas of acoustics and vibration. Currently, the CAA has nearly 400 members, most of them from Canada, but also from the USA and other countries. Membership is open to all individuals, including students, who have an interest in acoustics and vibration. Sustaining membership from manufacturers, suppliers, consultants and other organizations involved in acoustics are also encouraged to support the activities of the Association. Of special note: next year, the organization will celebrate its 50th anniversary!

The CAA is a member society of the International Institute of Noise Control Engineering (I-INCE) and the International Commission for Acoustics (ICA), and an affiliate society of the International Institute of Acoustics and Vibration (IIAV). Through its newly remodelled Acoustical Standards Committee, the CAA coordinates Canadian involvement and collaborates with national and international standards writing bodies such as ISO, IEC,

ASTM, ANSI/ASA, and the Canadian Standards Association (CSA).

The CAA also co-sponsors, co-organizes and promotes national and international acoustical conferences or events of particular relevance to its members. In 1986, the CAA organized the 12th International Congress on Acoustics in Toronto, which was a great success with 954 participants from 36 countries. Recent involvement includes a Joint Meeting with the Acoustical Society of America (ASA) in Vancouver in 2005 and the co-hosting of INTER-NOISE with INCE/USA in Ottawa in 2009. In June 2013, the CAA joins the ASA in co-hosting the 21st International Congress on Acoustics in Montreal.

Each year, in October, the CAA organizes its own annual conference under the banner name *Acoustics Week in Canada*, which is an opportunity for professional, scientific and technical exchange in all areas of acoustics and vibration. This event is held at different locations across the country from the east to the west coast. Recent conferences have been held in Halifax (2006), Montréal (2007), Vancouver (2008), Niagara-on-the-Lake (2009), Victoria (2010) and Quebec City (2011). The next conference will be held on 10-12 October 2012 in beautiful Banff, Alberta, in the Canadian Rockies. Over 125 contributed and plenary papers are expected. The conference will also feature a best student presentation competition, an exhibitor's trade show, a meeting of the CAA Standards Committee, the Annual General Meeting of the Association, the Annual Banquet and Awards ceremony, and other social events. The conference is open to national and international acousticians.

Since 1983, the CAA has published *Canadian Acoustics*, a quarterly journal of refereed articles, technical notes, case studies, book reviews and news items, in English or French, on all aspects of

acoustics and vibration. The Journal reaches out to academics, government researchers and regulators, consulting engineers, manufacturers and suppliers as well as students. It also caters to specialized groups of acousticians by helping them disseminate their results to a wider community. Special issues were published on Detection and Localization of Marine Mammals (June 2004), Wind Turbine Noise (June 2006), Biomedical Applications of Ultrasound (June 2007), Consulting Engineering Case Studies (March 2010), Building Acoustics (March 2011), Hand-Arm Vibration (June 2011), and Marine Acoustics (March 2012).

The CAA actively encourages and supports excellence in students and young professionals. A number of prizes, awards and travel grants are offered annually to high-school, undergraduate and graduate students, postdoctoral fellows and other researchers.

The Association is administered by a Board of Directors, with eight elected directors serving four-year terms, and an Executive Committee presently consisting of President (Christian Giguère), Past President (Stan Dosso), Executive Secretary (Chantal Laroche), Treasurer (Dalila Giusti), and Editor-in-Chief (Ramani Ramakrishnan).

More information may be found on the CAA website, <http://www.caa-aca.ca>. 

This is the 77th in a series of articles on the Member Societies of International INCE. This is an update of the profile that appeared in the 2001 September issue of this magazine.—Ed.

Member Society Profile is a regular feature of *Noise News International*. If you would like to have your society featured, please contact George Maling at incesa@aol.com.



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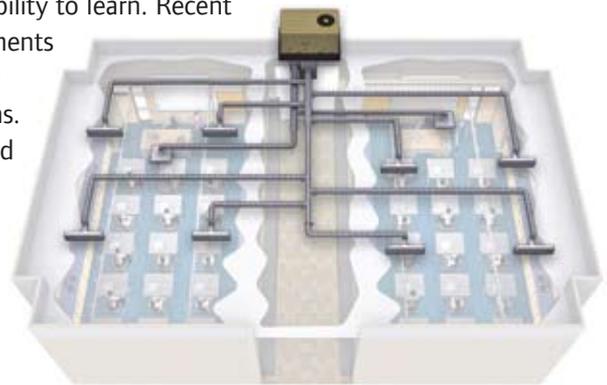
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Dear Colleagues:

We hope you will join us at INTERNOISE 2012 at the Marriott Marquis Hotel in New York City, USA, 19-22 August 2012. This year, ASME's Noise Control and Acoustics Division (NCAD) is joining with the Institute of Noise Control Engineering (INCE) in planning a large congress of over 1000 delegates, including:

- Three days of technical papers spanning many areas of noise and vibration, including our congress theme – “Quieting the World's Cities.”
- A large vendor exposition (60+) of noise and vibration control materials, analysis software and measurement systems and instrumentation.
- Three plenary sessions on City Noise Codes, the Effects of Noise on Children and Airport Noise.
- A series of short courses on noise and vibration control.

We will be issuing our call for abstracts (due 15 February 2012) shortly. In the meantime, visit our website, www.INTERNOISE2012.com, to learn more about what promises to be the premier vibration and acoustics conference in 2012.

Sincerely,

Stephen Hambric, General Chair
Stephen Conlon, Technical Chair
Brent Paul, ASME NCAD Chair
Rich Peppin, Exhibitions Chair
Amy Herron, Conference Secretariat

Fortieth anniversary celebration of the founding of INCE/USA

Leo L. Beranek, Charter president, INCE/USA

(As discussed in the following report on NOISE-CON 2011, the Institute of Noise Control Engineering of the USA celebrated the 40th anniversary of its founding on the Sunday before the opening of the conference. This is the address by Leo L. Beranek on the founding of INCE/USA. Following the presentation, George Maling presented a slide show based on events from 1972-1975. The slides have been converted to PDF format, and are [available on the Internet](#). Following the session, which took place in the hotel, founders and pioneers, and others, boarded a boat, the Portland Spirit for a dinner cruise on the Willamette River. Images from the cruise are also [available on the Internet](#).—Ed.)

It gives me great pleasure to recount the events that resulted in the founding of the Institute of Noise Control Engineering/USA. This Society and the Acoustical Society of America have provided me and many of you with a plethora of friends and colleagues who are and have been devoted to the field of acoustics and of noise, in particular.

Dr. William Lang, then head of the acoustics department of the International Business Machines Co. in Poughkeepsie, New York, had the basic idea. In early 1970, Bill had already scheduled a “Workshop on Noise Control Engineering” to be held in January 1971 at Arden House in Harriman, New York. He also thought about a possible society devoted to this subject, primarily because the Acoustical Society of America had cancelled the publication of *Sound* (which followed the publication *Noise Control*)—Ed.) which was where practical papers on noise control appeared. Bill knew of my strong interest in the subject because of my successful summer courses offered at MIT and he wanted to present his ideas to me. He came to Winchester, Massachusetts on August 1st, 1970, where we met in my living room.

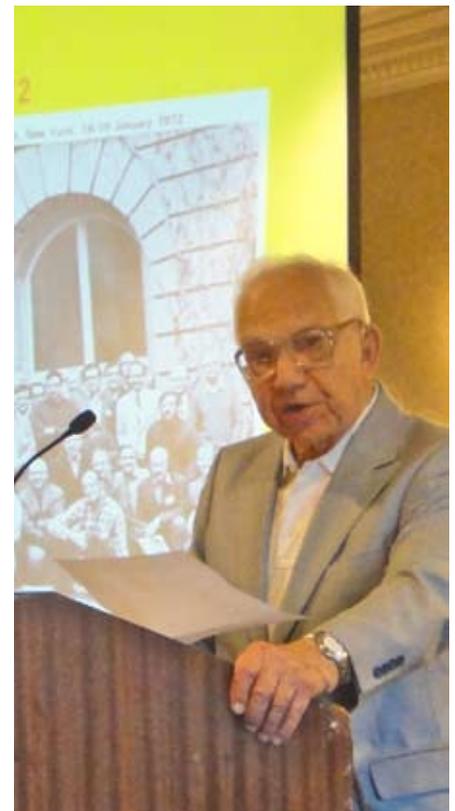
After some preliminaries, we agreed on the need for a Society devoted to noise and its control. Under it, we agreed on an

archival publication on noise control, on a newsletter dealing with current noise matters, and on the possible establishment of a procedure for noise control engineers to become accredited experts in the field. We also agreed that the Society should be free to take an active part in legislative matters at both the Federal and state levels. This would mean that under the rules of the IRS we would have to have a tax status different from that of the Acoustical Society of America. Lang then suggested that I join him in presenting these ideas at the Arden House conference to follow in January.

At the opening of the January Workshop, which was attended by 85 invited persons active in noise and its control, first, Bill presented our ideas. Then, I spoke a day later and urged the establishment of the following:

- First, INCE should be established immediately with appropriate temporary officers and a governing board, with an election to follow.
- Second, a credentials committee should be established to develop criteria for membership in INCE.
- Third, an archival publication, to be called *Noise Control Engineering* should be planned, including editorial policy and a budget.

There was considerable discussion as to whether the name of the society should be Institute of Noise and Vibration Control Engineering. An ad hoc committee was appointed to consider whether the word “vibration” should be included in the name. The ad hoc committee reported back negatively, following which, the Institute of Noise Control Engineering of the United States of America was formally incorporated in the District of Columbia on June 11, 1971. To permit appearances



at legislative groups, the IRS designation 501(c)(6) was solicited.

Then I had a brilliant idea. INCE/USA should apply to the National Science Foundation for funds to underwrite the first three years of publication of a technical magazine tentatively titled *Noise Control Engineering*. My application for substantial funds was approved in mid-1972 and a charge number was issued. I promptly searched for and hired a full-time editor. This man had been a senior editor for the publication *Innovation* and that experience was to have served him well. I worked with him to select authors, and the papers were in hand by early 1973. The first issue of the magazine was dated June 1973 and was to be published quarterly. Incidentally, the number of publications rose to six a year after the first year. Later, the magazine was renamed *Noise Control Engineering Journal*.

But at this point a crisis arose. The new editor had either rewritten some of the papers or had them rewritten by others in the field to make them more user friendly. For one of the papers, the original author's name had been removed by the editor and the rewrite authorship was substituted. The first issue was mailed to the governing board for approval. Great anger followed owing to the author change on the one paper, and a special meeting of the board had to be called to resolve the controversy. Simultaneously, a second problem arose. The NSF informed me that they were cancelling the INCE contract and were withdrawing the charge number. Apparently, an organization representing commercial technical publications had objected to NSF entering into the promotion of publications. It was said that Senator Edward Kennedy had called the NSF and said that if they proceeded with the INCE contract, their entire congressional budget would be cancelled. Because of these two problems, the Board almost voted to destroy the first issue and give up the idea of a Journal. But, the

treasurer strongly argued that this action might result in lawsuits and was an unwise direction to go. It was finally voted to mail the first issue in spite of this objection. It was decided to find a volunteer editor.

Starting with the second issue in 1974, Malcolm J. Crocker became the new volunteer editor and he served faithfully for 25 years.

In my Editorial in the first issue, I wrote, "Clearly, there is a need for better trained noise control engineers... Full Members of INCE are certified engineers who establish and maintain minimum standards of the profession and who recommend accepted educational curricula for noise control education... Noise control engineering deals not only with principles and practices developed out of the hard sciences, but also enters upon the softer ground of dealing with people's perceptions and reactions. Because the effects of noise are not something that can be measured precisely by instruments, it means that noise control engineering is also a form of social engineering practiced in conjunction with other professions... It is imperative that public administrators—and the courts—recognize the necessity of having the noise control aspects handled by competent personnel."

Next, an occurrence happened that had later implications for INCE. In early July 1970 I was asked by President Richard Nixon to chair the Supersonic Aircraft Neighborhood Noise Committee for the United States Department of Transportation. The Committee was to report to William M. Magruder, then director of the Supersonic Aviation Division of DOT. On that committee were acousticians Kenneth Eldred, Harvey Hubbard, and others. We met a number of times with Boeing Aircraft engineers and managed to hammer out changes in the proposed supersonic aircraft design (different engines and addition

of mufflers) that would make the noise generated by the plane during takeoffs and landings acceptable in neighborhoods around airports, but with some sacrifice in the length of flight. The committee's work was roundly praised by DOT. However, the Congress in May 1971 voted not to support the development of the aircraft. Magruder then requested transfer and he became a special assistant to President Nixon in the White House.

Following that experience, I suggested to Malcolm Crocker, the Chairman of the first international INCE conference to be held in Washington, D. C., that he invite Magruder to be the Keynote Speaker at the opening luncheon on October 4, 1972. Magruder accepted and his announced topic was "Technology, National Goals and the Administration's Noise Program."

The Noise Control Act of 1972.

Under pressure from numerous states and cities, the White House in the fall of 1971 had introduced legislative bill HR-11021 into the House of Representatives. That bill did not give the U. S. Environmental Protection Agency (EPA), control over aircraft noise or sonic booms. On February 8, 1972, President Nixon urged the Congress to pass the bill.

On February 29, HR11021 was passed by the House. Amendments that were proposed to give EPA control over civilian aircraft noise and sonic booms were defeated. The bill was then sent to the U.S. Senate.

On March 14, Senator John V. Tunney of California introduced a second bill into the Senate, S-3342. It extended the President's bill to give EPA control over civilian aircraft noise and to forbid commercial supersonic flight over territorial United States. It was also very much stricter on all other types of noise.

Ken Eldred was in touch with Ms. Jane Frank, who was Legislative Assistant to

Senator Tunney. Ken asked Bill Lang and me to go to Washington where the bill was undergoing committee hearings. The job of the three of us was to provide technical backup to various Congressional staffs. We did this over a period of a week or so. I then sent a strong letter to Senator Mike Mansfield supporting the noise bill, and George Maling personally delivered copies of my letter to the offices of all 100 Senators. But, at that point, we were told that there was no assurance that President Nixon would sign the bill if passed.

Now comes the morning of October 4 before the INCE luncheon where William Magruder was to speak. Ken, Bill and I met in a room next to the banquet hall to talk over strategy. We decided to call Magruder and ask him to meet with us at 12 noon, 30 minutes before the start of the meal. He accepted and arrived on the dot. We explained the differences between the two bills. He was sympathetic to our cause. In our presence, he called the White House and spoke with two of the President's close aides. After some discussion he received assurance that Nixon would sign either bill, although he preferred the House Bill. Magruder announced this result at the luncheon. After this event and my letter to Mansfield, we were told that the noise bill might very well pass the Senate.

As we hoped, on October 17, S-3342 was passed by the Senate. There was no time for a House/Senate Conference Committee to act because that was a Presidential election year and the Congress was about to adjourn. Thus, HR-11021 was quickly amended to include the stricter provisions of the Senate bill, except that EPA would be given power only to propose regulations to the FAA on aircraft noise and sonic booms. The amended bill, which was still designated HR-11021, passed both the House and the Senate, one hour before adjournment on the final day of the 92nd Congress.

At an Arden House Workhouse held January 21, 1973, Jane Frank described what ensued: "The key turning point was INTER-NOISE 72. It was there that William M. Magruder announced that the White House would accept either bill although it had favored the House Bill. This meeting set the stage for signals by the Administration that if a noise bill were passed it would be signed by President Nixon. After receiving President Beranek's letter and letters from a number of other organizations, the bill passed the Senate."

The passage of the Noise Control Act of 1972 was termed a "legislative miracle" by Senator Mike Mansfield. Ms. Frank also said that this series of events proved that the legislative process is very "human" and that continued pressure and attention by specialists in the field is essential for passage of legislation and effective implementation of bills such as the noise bill.

The years that have followed this momentous occasion have seen INCE and the INCE Noise Control Engineering Journal grow in national importance. International INCE was formed in late 1974 and meetings under its auspices have been held annually in many countries.

Unfortunately, the Environmental Protection Agency failed to enforce the items in the bill, and financing for noise control was later voted down by the legislature.

It is very important to record that the first issue of *Noise/News* appeared in early 1972, and it has been produced by Editor George Maling ever since. There, both members of INCE/USA and foreign members can learn of the important happenings in the field and of conferences. (*In 1993, the magazine was relaunched as Noise/News International.—Ed.*)

The INCE Foundation

May I conclude by saying that one of the newest activities of INCE is the INCE Foundation which was formed in 1993. It is incorporated in the State of New York, and is organized under Section 501(c)(3) of the Internal Revenue Code so that gifts to the Foundation are tax-deductible.

The purposes of the Foundation are to:

- support, promote, and advance scientific and educational activities directed toward the theory and practice of noise control engineering,
- aid in the progress and development of this field and related arts and sciences,
- promote, and support such scientific and educational activities through grants, funding, and financial assistance to various individuals, institutions, and organizations.

The Foundation currently funds the following awards, some annually and some bi-annually.

- A. Martin Hirschorn IAC Prize. Given in odd-numbered years for a noise-related project by a graduate student and in even-numbered years for best paper on noise control.
- B. Annually, prizes are given to several students for best papers and special projects.
- C. The Leo Beranek Student Medal for *Excellence in the Study of Noise Control* recognizes excellence on this subject by undergraduate and graduate students at academic institutions in North America that have courses in, or related to, noise-control engineering including practical applications.

INCE/USA, INCE/International and the INCE Foundation can be justly proud of their contributions to the field of noise control in all of its forms. 

NOISE-CON 2011 Report

NOISE-CON 2011, The 2011 National Conference and Exposition on Noise Control Engineering, was held jointly with the Transportation Research Board (TRB) ADC40 Committee on Transportation-Related Noise and Vibration on 25-27 July, 2011 at the Marriott Downtown Waterfront Hotel in Portland, Oregon, USA. One hundred forty seven (147) technical presentations were given at the conference and of those, 132 were submitted as written papers that are included on a DVD produced for the conference. Kerrie G. Standlee served as General Chair, Paul Donovan and Hugh Saurenman served as co-chairs, and Richard J. Peppin served as the Exposition Manager. Judith Rochet served as chair for ACD40.

In all, 358 persons registered for the conference and ADC40 meeting. That number included 251 INCE/TRB member registrants, 39 paid accompanying persons, 21 students, 18 Founders/ Pioneers, and 6 of their guests.

Written papers were submitted in nine INCE/USA technical areas. Given the fact that the conference was a joint conference with the TRB ADC40 Committee on Transportation-Related Noise and Vibration, there were more papers presented in the INCE Transportation Noise technical area than any other area (37 papers). However, there was also a strong turn-out in other technical areas such as:

- Building Acoustics – 21 papers
- Industrial Noise – 18 papers
- Passive Noise Control – 17 papers
- Structural Acoustics – 13 papers

The remaining twenty six papers were



Kerrie G. Standlee



Judith Rochet



Leo Beranek (left) and George Maling.

spread out over four of the remaining seven INCE technical areas. In addition to the presentation of the technical papers at the conference, there were two special sessions held that provided meaningful information to those who attended:

- INCE/USA 40th Anniversary Founders and Pioneers session – a celebration of the 40th anniversary of the founding of INCE/USA.
- Technology for a Quieter America session – a panel discussion of the report published by the National Academy of Engineering to address the future of noise and its control in America.

There were also three short courses offered to those who attended the conference:

- Practical Aspects of Acoustical Enclosure Design; taught by Daniel J. Kato.
- Practical Aspects of Muffler Design and Optimization; taught by Andrew Seybert and David Herrin.
- INCE Fundamentals Exam Preparation and Optional Exam; taught by James D. Barnes and Mark Storm.

Two technical tours offered to those who attended the conference:

- Portland International Airport Ground Run-Up Enclosure (GRE) Tour
- Huntair Factory Tour and Air Handling Demonstration

The opening events for the conference were held on Sunday, July 24. Late in the afternoon, Leo Beranek and George Maling welcomed founders and pioneers who set the stage for what INCE/USA is today. Leo presented a very interesting paper, which appears elsewhere in this issue, on the founding of INCE/USA. George Maling presented a [slide show](#) of photographs from the early days of the Institute. The slide show, in PDF format,



Attendees at the 1972 Arden House Workshop on Noise Control Engineering.

may be downloaded from the NNI web site. Following these presentations, the founders and pioneers joined by 83 INCE members and guests boarded a boat, the Portland Spirit for a dinner cruise on the Willamette River. Photographs from the cruise may also be [downloaded](#) from the NNI web site.

A booklet titled Institute of Noise Control Engineering of the United States of America – An Early History, 1963-1891 was prepared by William W. Lang in cooperation with Eric W. Wood. The booklet details the events leading up to the founding of INCE/USA and is a historical summary of the early years in INCE/USA history. The booklet was distributed to all attendees at the meeting. The Founders and Pioneers who attended NOISE-CON were:

- Leo Beranek
- Robert Bruce
- William Cavanaugh
- James Chalupnik
- Lawrence Copley
- Jim Cummins
- Bob Lotz
- David Lubman
- George Maling
- Laymon Miller
- Anthony Nash
- Roy Richards
- Bela Schmidt
- Louis Sutherland
- John Van Houten
- Bruce Walker
- Glenn Warnaka
- George Winzer

On Monday, July 25, Eric Wood chaired a session in which seven former INCE presidents shared their thoughts about the early days when INCE/USA was formed, the challenges that the organization faced over the years, and their thoughts for the future. The speakers included Leo Beranek, George Maling, Robert Bruce, William Cavanaugh, Joseph Cuschieri,



Dr. Bert Frost

Patricia Davies, and Jim Thompson. In addition, John Van Houten, 1992 president, shared his thoughts about the first treasurer of the organization, Kenward S. Oliphant. The plenary speaker on Monday morning was Dr. Bert Frost, Associate Director, National Resource Stewardship and Science, National Park Service. The title of his talk was Monitoring and Managing Acoustical Environments in National Parks. The abstract can be [downloaded](#) from the Internet.

On Tuesday, July 26, a special session on INCE/USA activities was held. Eric Wood spoke on the INCE/USA Fellows Program, and pointed out that photographs and citations are available on the INCE/USA web site. He also described the INCE/USA Distinguished International Members program. Kenneth Kaliski spoke on the board certification program, and Courtney Burroughs described INCE/USA publications. Steve Hambric finished the session with a presentation on the INTER-NOISE 2012 Congress to be held in New York City in August of 2012.



Steve Hambric invites attendees to participate in INTER-NOISE 2012.

The plenary speaker on Tuesday morning was Sanford Fidell of Fidell Associates, Inc. The title of his presentation was A New Method for Predicting the Annoyance of Transportation Noise; the abstract of his presentation is available for [download](#), and will be published in a future issue of this magazine.

An awards session was held in the morning of July 27. A description of the awards given can be found in the INCE Update Department in this issue.

The plenary speaker for Wednesday's session was Jim Laughlin, the Washington State Department of Transportation technical manager for air quality, noise, and energy. The abstract of his presentation, titled Ship Canal Bridge Noise Abatement: Results and Lessons Learned, is [available](#) on the Internet.

Exposition manager Richard J. Peppin organized an excellent equipment exposition with 44 booths filled. Receptions were held in the exhibition area on both July 25 and July 26. After



Jim Laughlin



Sanford Fidell

the Tuesday reception closed, attendees visited the Oregon Museum of Science and Industry where a buffet dinner and drinks were served. Below is the list of NOISE-CON 2011 exhibitors.

- Head acoustics, Inc.
- ESI North America
- Sound Fighter Systems, LC
- NTI Americas Inc/NTi-Audio AG
- ACO Pacific, Inc.
- Scantek, Inc.
- DataKustik GmbH
- Acoustic Systems/ETS-Lindgren
- ViAcoustics
- Commercial Acoustics Div., Metal Form Mfg. Co. Inc.
- Jamison Door Company
- Pliteq Inc.
- OptiNav, Inc.
- G.R.A.S. Sound & Vibration
- International Cellulose Corporation
- Armtec
- TRANE
- Brüel & Kjær

- Eckel Noise Control Technologies - Eckel Industries, inc.
- Navcon Engineering Network
- OROS - Noise & Vibration Analyzers
- Concrete Innovation Services/Whisper Wall
- Tritex/TEAC Data Recorders
- Faddis Concrete Products
- The Atrium Companies Silent-Guard Acoustical Fenestration Systems
- Pryok, Inc.
- Casella CEL Inc.
- ECORE International/QT Sound Insulation
- Empire Acoustical Systems
- Müller-BBM VibroAkustik Systeme, Inc
- Free Field Technologies
- Façade Technologies, LLC/ SOUNDZERO
- Vibro-Acoustics
- Kinetics Noise Control
- PAC International, Inc.
- BASWaphon Seamless Sound Absorbing Plaster System

- Overly Door Company
- Data Physics Corporation
- National Instruments
- Danoline, introduced by Snap-Tex
- NWAA Labs, Inc.
- Soundown/Getzner
- Larson Davis
- Microtech Gefell GmbH

The organizers of the conference would like to acknowledge Courtney Burroughs and George Maling for their efforts in editing the Conference Proceedings, Judy Rochat and Carole Newvine who helped organize the TRB sessions, Ralph Muehleisen who ran the student paper competition, Eric Wood who helped organize the INCE 40th Anniversary celebration activities, and last - but should have been first, Amy Herron of the INCE/USA Business Office (IBO) at Raybourn Group International for her tireless efforts in keeping everything moving in a forward direction toward the successful conference that occurred.

The organizers of the conference would like to acknowledge the generous contributions of the following organizations that helped in making NOISE-CON 2011 a success:

- The National Council of Acoustical Consultants (NCAC) which co-sponsored the Tuesday evening social at the Oregon Museum of Science and Industry (OMSI).
- The Port of Portland, Blast Deflectors, Inc., and Huntair, Inc. for providing funding for the Technical Tours.
- Scantek for their sponsorship of the Exposition.

The conference organizers are grateful to the authors of papers and conference attendees – for making NOISE-CON 2011 a success. The DVD for the conference, contains not only the papers presented this year, but the proceedings of all NOISE-CON conferences held beginning in 1996. An announcement of the availability of the proceedings can be found by following this [link](#). 

Quieting the world by fostering a “Buy-Quiet” attitude among product purchasers - introduction

A symposium with the above title was sponsored by International INCE and others. It was organized by INCE/Europe. The symposium was held in Paris, France on July 5-6, 2011. Below is the text of the opening remarks by symposium president Jean Tourret. Dr. Tourret is president of INCE/Europe. Then follows the keynote paper by Jean Tourret and William W. Lang. The abstracts of the papers presented also appear in this issue together with links to the slide presentations which were prepared by the authors.—Ed.

Dear presidents, dear friends, dear colleagues. It is a great pleasure and honor for me as president of INCE/Europe to welcome delegates from eighteen countries to this symposium dedicated to “Buy-Quiet.” I am grateful to be able to welcome in Paris so many well-known acousticians and noise control specialists with whom we have shared or organized memorable events. Today marks the starting point of the new series of International INCE symposia; and we are proud, as INCE/Europe, of being selected by the Board of I-INCE to initiate this series. In organizing this event, INCE/Europe once again demonstrates its eagerness to increase the profile of noise control engineering in specific areas or new domains of interest which are not significantly covered by other organizations or by broader meetings. Since 2001 INCE/Europe has led or played a key role in the organization of eleven European or international meetings:

- Sound Insulation of Glazings in 2001 in The Hague
- Fan Noise in 2003 and 2007 in Senlis and Lyon
- Observatories for Community Noise in 2004 in Lyon
- Uncertainties in Noise Measurements and Predictions in 2005 in LeMans
- Noise at Work in 2007 in Lille
- Series of bi-annual Wind Turbine Noise Conferences initiated in Berlin in 2005 and followed by Lyon, Aalborg, and Rome this past April.

- And, of course, this “Buy-Quiet” symposium to be held in Paris during the next two days.

The objective of this symposium is to activate or re-activate forces of our noise control community to make the world quieter by promoting and fostering very simple ideas already shared by many of you. Ideas that can be expressed as follows:

- The most efficient and inexpensive approach to making our world quieter is to reduce sound at its source.
- As it is difficult for us, the noise control engineers, to influence the noise produced by human or animal behavior, we can at least contribute to lessening the sources on which we have a hold—vehicles, machines, and products of all types used in all areas of our life.

- This can be done by strongly encouraging the use and demand for low-noise products by the public, which will need a strong development of low-noise design by most manufacturers and ultimately lead to a better availability of quieter products.
- This can only be achieved by a considerable increase in the demand for quieter products among all users and purchasers. That is by the development of a “Buy-Quiet” purchasing attitude.

However, the noise information now available on most products is neither understood by the public nor widely available to them. There is a global lack of understanding by manufacturers, suppliers, and potential users; and we noise control engineers are partly responsible for this situation.



We shall thus envisage a drastic evolution of this information by using simplified labels or ratings and, perhaps, forget decibels—for this purpose at least. Thus the merging of the two ideas into the full title of this symposium: Inducing “Buy-Quiet” Purchasing Attitudes through Simplified Product Noise Ratings.

Those ideas will be developed by Bill Lang in our joint paper and discussed in the ten sessions that follow.

Forty papers will be presented in those sessions which are designed for discussion and followed also by discussion periods; and during those periods we will answer questions, debate on issues, and draw some resolution and initiate further activities.

This symposium program’s attractiveness first lies in its organizing committee members’ involvement. This committee played a decisive role in encouraging authors and participants to join. I thus

would like to thank the following persons.

- Matt Nobile who is the real initiator of this symposium by the ideas he developed as chair of the product noise emissions technical committee of INCE/USA
- Bill Lang who encouraged the process from its very beginning and assisted us so efficiently in multiple tasks
- Jean Jacques and Patrick Kurtz who brought their advice and support to the development of the program
- And also by alphabetical order: Paul Brereton, Patrick Cellard, Michael Ditrich, Sarah Haynes, Bob Hellweg, George Maling, and Hideki Tachibana for their most valuable input

I now want to specifically and warmly thank two ladies:

- Alice Debonnet-Lambert, Director of CIDB (Centre d’Information et de Documentation sur le Bruit), for the most efficient support to the local organization brought with the

assistance of all her team and more specifically through Philippe Strauss who designed and ran so smoothly the web site and Victor Bensason who coped with rooms and catering.

- Cathy MacKenzie, our secretary, who managed so well the administration of the symposium, kept contact with authors and delegates and edited the booklet of abstracts.

But this symposium would not have been possible without the support of several organizations:

- I-INCE, the International Institute of Noise Control Engineering represented by Rajendra Singh and Bill Lang
- BAuA, the German Federal Institute for Occupational Safety and Health, represented by Patrick Kurtz, who brought their financial support
- SNI, Syndicat National de l’Isolation, represented by its Délégué Général, Mr. Poux, who put these beautiful rooms and premises at our disposal
- CAETS, the Council of Academies of Engineering and Technological Sciences, here represented by Prof. Tor Kihlman, which acted as a partner of this symposium.
- Other organizations by alphabetical order: SPS, Belgium Federal Ministry of the Environment, HSE, Health and Safety Executive of the U.K., INRS, Institut National de Recherche et de Sécurité, France, and LNE, the Laboratoire National d’Essais in France.

Thanks to all of the persons mentioned above. You have all made wonderful contributions to what I expect to be a very successful symposium. 



Quieting the world by fostering a “Buy-Quiet” attitude among product purchasers

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Jean Tourret, INCE/Europe, Senlis, France, Jean1tourret@aol.com

BUY QUIET 2011

Paris, 5-6 July 2011

Abstract

An efficient and inexpensive approach to making our world quieter is to reduce sound at its source and to develop simplified labels for the noise level of products which will encourage a demand for and an incentive to manufacture quieter products. Urban noise has a serious impact on the quality of life and the health of the world's citizens, and the situation has not improved in past decades. Current noise policies are ineffective because those based on noise immissions have failed to control the increase in urban noise worldwide, and policies based on noise emissions should be closely linked to noise immission policies, but this has not been achieved. One reason for the failure of noise emission policies is the absence of effective product labeling. New policies are needed to promote the incorporation of quiet components during the design of a new product, a simplified label adapted for each category of product should be used, and an attitude to “buy quiet” must be created in the public and with purchasing agents. Many are involved in the development

of policies to promote quiet machinery and products: national authorities, governmental agencies, design engineers, test laboratories, distributors, consumer associations, and those involved with standardization and regulations. A simple labeling scheme is needed for the consumer which includes technical information for knowledgeable buyers. The need to “buy quiet” is global and must be developed for machinery and products used in all human activities and for all prospective buyers.

Introduction

An efficient and relatively inexpensive solution to quieting the world is by reducing sound at its source and by developing simplified labels for the noise level of products to encourage a demand

for and an incentive to manufacture quieter products. This is what is meant by a “Buy-Quiet” approach to quieting the dominant noise sources worldwide.

The Situation Today

Noise has a serious impact on the quality of life and the health of the world's citizens, and the situation is not improving. During the last three decades significant reductions have been made on some noise sources. Aircraft engine noise levels have been reduced by 20 dB at constant power and automobiles by 10 dB using existing technology. However, the increase in the number of sources in recent years has offset the noise reductions obtained for individual products.

1. Following the opening remarks by Jean Tourret, he and William Lang presented a joint paper. The abstract and link to the slides can be found in the next article in this issue. This is the written version of the paper which was presented at INTER-NOISE 2011 in Osaka, Japan. —Ed.

i-ince
International Institute of Noise Control Engineering

INCEEUROPE

inrs
Institut National de Recherche et de Sécurité

baua:
Bundesanstalt für Arbeitsschutz und Arbeitsmedizin

CIDB
Centre International de Documentation sur le Bruit

If the number of sources is multiplied by ten, each source must be reduced by 10 dB to maintain current noise levels and by at least 15 dB to perceive a noticeable improvement. In Europe an increasing percentage of the population is complaining about noise. In the developing countries the situation is getting worse with an increasing population in urban areas. Not only is the world becoming “global,” but it is also more and more noisy.

Why Are Current Noise Policies Ineffective?

To be effective, noise policies must consider all aspects of the problem—homes, the environment, factories, recreational areas (community noise), work stations (occupational noise), and products (product noise). Numerous policies have been promulgated worldwide, but they have not been enforced or they have only been applied locally. There has been no harmonization between jurisdictions, countries, or globally.

Current policies should cover the noise sources (emissions), the noise receivers (immissions), and the paths of noise transmission between the two. However, these policies now place a priority on limiting the noise at specified positions (immissions) and not on the control of noise emitted by products (emissions).

Policies Are Based on Noise Immissions

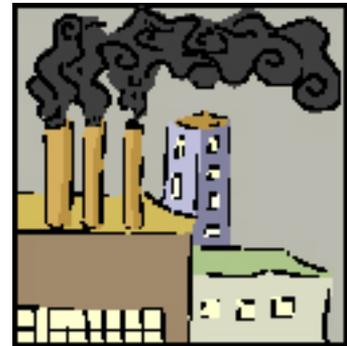
The objective is to reduce the noise in the environment by establishing limit values at specified locations in different areas (transportation routes, park areas,

apartment complexes, offices, workshops, factory yards, discotheques). However, the noise at a specified location depends on the number and location of all the sources in the vicinity and the transmission paths between the sources and the specified locations. This makes it difficult to define responsibilities in order to meet the immission limits. Nonetheless, these are the most widespread policies internationally; and existing immission policies do not impose specific limits on noise source emissions. The effectiveness of immission policies is limited, and they have not succeeded in controlling the increase in urban levels worldwide.

Policies Based on Noise Emissions

Emission policies set noise limits for sound sources—vehicles, machinery, household appliances, industrial equipment, and other products—in order to reduce their noise impact on different populations. The noise emitted by a source depends not only on its design but also on its mounting and operating conditions. Source noise emissions can frequently be reduced with existing technology, and this is generally the most effective and least costly solution. For example, changing the muffler on a very noisy vehicle is less costly than insulating the facades of the buildings in the city where the vehicle is driven. Source emission control has beneficial consequences in places of work, i.e., in industry, on building sites and in offices, and in the community for transportation arteries, inside buildings, and on recreational areas.

Other Pollutants Are Controlled by Their Emissions. Why Not Noise?



Links Between Emissions and Immissions

Noise emission and noise immission policies should be strongly coupled, but this is not the case. For this reason it is not surprising that the public is unaware that a quieter environment can be achieved through the use of quieter equipment and products. Noise emission policies by themselves have failed worldwide. The reasons are varied.

Why Noise Emission Policies Have Failed

Policymakers in general have only a secondary interest in technology. They are often limited in their knowledge of acoustics and noise control, and they often ignore the possibility for the reduction

of the noise emissions of products. Few policymakers have focused their efforts on noise reduction at the source as many are intimidated by the complexity and diversity of source noise control.

Those responsible for reducing product noise at its source, the engineers, are passionate about their techniques, but they make little effort to explain and promote the importance of quieter components in their products. Moreover, they often are uninformed on regulations and have very limited influence on policy decisions.

Those affected by excessive noise levels, the public, are not informed in an understandable manner about product noise and are not educated in the selection of quieter products. They are generally unable to evaluate the regulations and are not involved in policy development. Potentially they could play a key role, but today they continue to suffer or protest.

The absence of effective product labeling has contributed to the failure of noise emission policies. The desirability of a quieter product is infrequently emphasized in its marketing. Noise information when it is supplied for a particular product cannot be compared to that of other similar products. For many products the only noise information presented is a maximum upper limit under the class of products which eliminates any effective competition between manufacturers.

Encouraging Product Noise Reduction

New policies are needed to promote the incorporation by manufacturers of quiet components during the design phase of a new product. These policies should encourage the public and purchasing agents to develop an attitude to “buy quiet.” The adoption of a simplified label for each product category will make it easier to develop this attitude.

Develop Policies to Promote Quiet Machinery and Products

Many are involved in policy development. Noise control engineers must work with policymakers and the media to emphasize the importance of policies based on noise reduction at the source to reduce noise immissions in the community. Design engineers must be qualified to develop quieter products. Manufacturers must be satisfied that low-noise products will have an international market advantage and be encouraged by the success of the “low-energy” campaign that was developed with simplified labeling of energy performance. They are encouraged to adopt a “buy-quiet” attitude and attach accurate noise specifications to new products. Distributors must make available to all users and buyers the noise level information in an understandable manner for each different product.

Standards developers must simplify measurement practices so that they are easy to use and more effective. National authorities should harmonize regulations

on noise emissions of machinery and products internationally, establish realistic limits which can be reduced progressively, enforce regulations, carry out checks by competent laboratories, and implement measures to prevent the importation of noisy products. Governmental agencies should lead by example in promoting “buy-quiet” activity. Laboratories (public and private) must coordinate nationally and manufacturers must agree to assemble noise level information on each product type, monitor products consistently, and create databases by product type.

The media and consumer associations are encouraged to grant awards to manufacturers for outstanding low-noise products.

Product Labeling is Necessary

Information on noise must be provided for the different buyers. For the consumer a simple label without decibels must inform, without ambiguity, the performance expected from the product. The labeling must be clear to allow comparison and

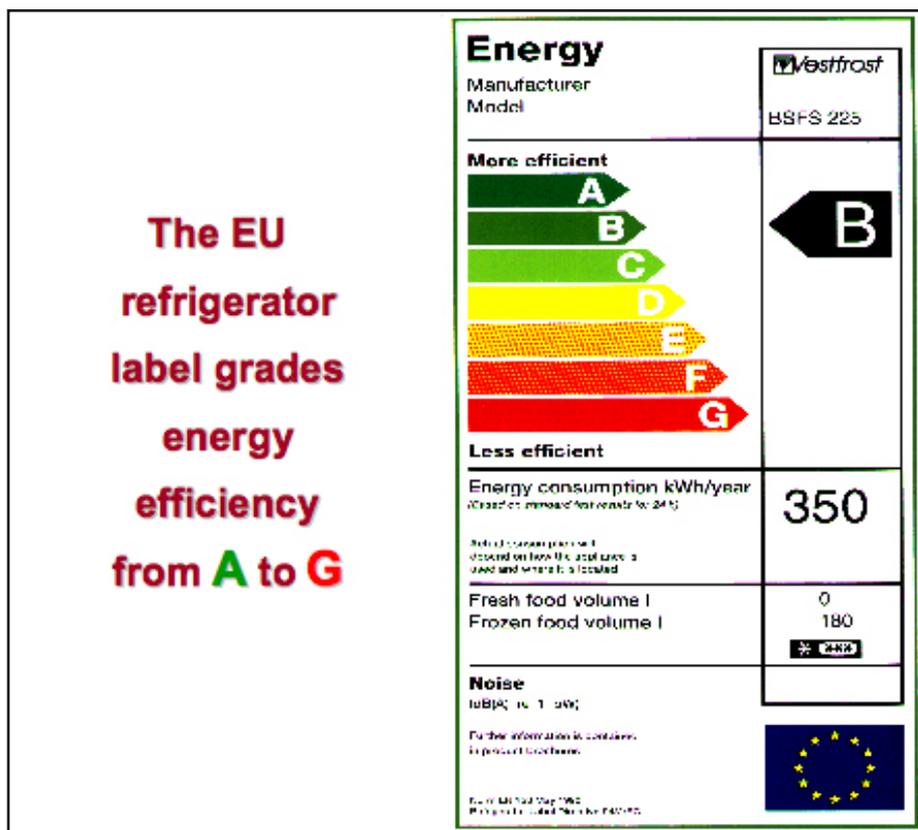


Figure 1. EU energy efficiency label

a choice between various products. Purchasing agents for industry and for municipal services will need labels that include additional information for technical comparisons by knowledgeable buyers.

The various product categories will need labels specific to their characteristics. These categories include heating, ventilating, and air-conditioning equipment; household appliances; lawn mowers and other garden equipment; tooling and production machines; and construction and maintenance equipment.

An example of the effectiveness of labels is seen on the energy labels for domestic refrigerators. Since the early 1990s, energy labels have been required within the EU on domestic appliances. The energy label now used for refrigerators is shown in Figure 1. The impact of the label is shown in Figure 2. It can be seen that between 1992 and 2003 refrigerators available on the EU market have become much more efficient.

Stimulating a Buy Quiet Attitude

The public can be vitalized by emphasizing that it can demand a quieter environment (They do not need to be legislators or engineers.) and demand

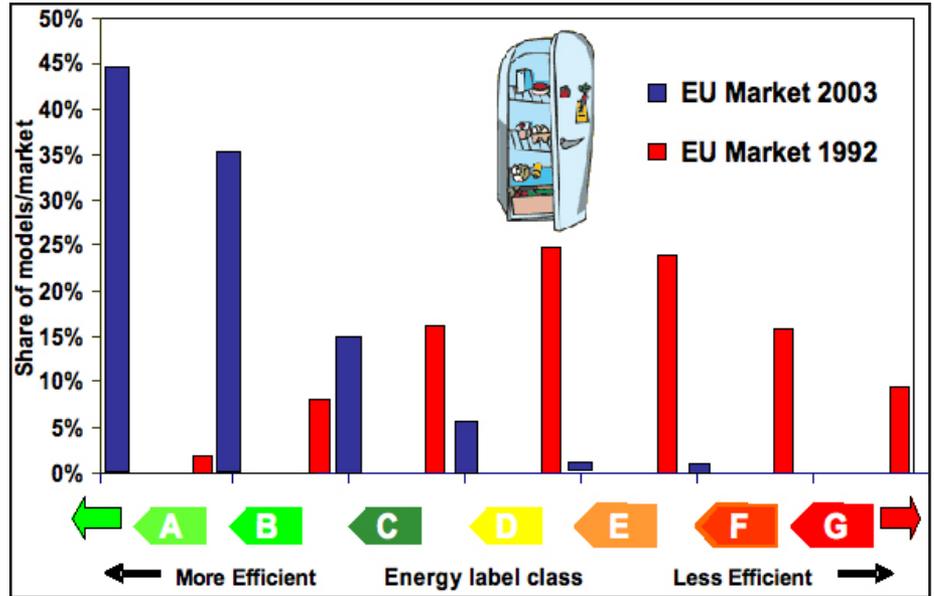


Figure 2. Label impacts on EU refrigerator market

quieter products (Existing quieter products are not necessarily more expensive and they are available.) It is through public pressure that the demand for quieter products will unleash market forces and lead to a wider availability of quieter machinery and products.

The media and associations (Non-Governmental Organizations—NGOs) need to better inform citizens and potential users about the need to use silent products and that they exist, including little-known facts (e.g.,

by using noisy products, the risk of deafness is increased and neighbors may be disturbed)...therefore “buy quiet.” These organizations should educate the associations of professional buyers on the advantages of buying quiet products.

Conclusion

An attitude to “buy quiet” must be developed for products used in all activities (homes, transportation, places of work and recreation, and industry) with all prospective buyers (consumers, professional buyers, decision makers).

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Buy Quiet 2011-abstracts

Below are the abstracts of the 43 presentations at the Buy Quiet Symposium in Paris, France on July 5-6, 2011. After each abstract, there is a link to the slide-show presentation of the paper which has been converted to PDF format.—Ed.

Quieting the world by inducing a “Buy-Quiet” attitude among product purchasers

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An efficient and inexpensive approach to making our world quieter is to reduce sound at its source and to develop simplified labels for the noise level of products which will encourage a demand for and an incentive to manufacture quieter products. Urban noise has a serious impact on the quality of life and the health of the world's citizens, and the situation has not improved in past decades.

Current noise policies are ineffective because those based on noise immissions have failed to control the increase in urban noise worldwide, and policies based on noise emissions should be closely linked to noise immission policies, but this has not been achieved. One reason for the failure of noise emission policies is the absence of effective product labeling. New policies are needed to promote the incorporation of quiet components during the design of a new product, a simplified label adapted for each category of product should be used, and an attitude to “buy quiet” must be created in the public and with purchasing agents. Many are involved in the development of policies to promote quiet machinery and products: national authorities, governmental agencies, design engineers, test laboratories, distributors, consumer associations, and those involved with standardization and regulations.

A simple labeling scheme is needed for the consumer which includes technical information for knowledgeable buyers. The need to “buy quiet” is global and must be developed for machinery and products used in all human activities and for all prospective buyers. [link to a PDF of the slides](#)

Incentives To Develop Better Products: From Energy Labels To Noise Labels

Multi-criteria policy instruments addressing noise

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Integrated Product Policy has reinforced the development of a “kit of tools” which has permitted an improvement of the environmental performances of different products. Those tools have already inspired a “Noise Product Policy”, which begins to be more and more integrated in a more general ecodesign policy. The general concept of pull-push approach and product performance hierarchy can be supported by several tools, like product database, product ranking, labelling, ecodesign, public procurement and ecolabel requirements, but also communicative tools, sectoral agreements, economic incentives or specific taxation. [link to a PDF of the slides](#)

How the EU energy labeling has induced a breakthrough in energy efficiency and product performance of household appliances in less than 2 decades

*Patrick Le Dévéhat
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Article 130 R of the European Community required prudent and rational use of natural resources. The rational use of energy was considered as one of the main ways to achieve this goal and reduce the impact on the environment.

Initiated in 1992 by the European Community through a framework directive (92/75/EC), the regulatory mechanism of the energy label was intended to inform the consumer of energy and other essential resources of household appliances mainly to enable to choose products with the best energy efficiency and also best performances.

Based on that text, several directives were issued from 1994 to 2002 for covering white goods (refrigerators, freezers, washing machines, dryers, washer-dryers, dishwashers and ovens).

The energy efficiency as well as performances depending the type of products are rated in terms of a set of classes from A to G on the label, A being the most efficient, G the least one.

European manufacturers invested some billion of to voluntarily reduce energy consumption of their products and to propose high levels of performance. It has a huge impact: between 1995 and 2006, 34 TWh were saving.

In 2003, based on a proposal from the European household appliances industry, a new directive was issued for cold appliances in order to introduce two new upper energy efficiency classes: A+, and A++.

Considered as a success story by Member States as well by the European household appliances industry, Directive 92/75/EC was replaced In 2010 by a new framework directive (2010/30/EU) for enlarging the energy labeling regulation to all products which can have a direct or indirect impact on energy consumption and on other essential resources.

This new framework directive introduced an extension of the current A to G scale to three upper energy efficiency classes A +, A + and A + + + for all products. [link to a PDF of the slides](#)

How Developing And Promoting Low-Noise Products Can Boost Market Share And Profitability For Manufacturers

Leaf blowers

Fabian Gwosdz

STIHL, Germany

Low noise products – a success story?

In 1995 STIHL started to develop a “low-noise” chainsaw. Thanks to a package of technical measures such as reduced engine speed, additional covers and resonators, with the MS 023L the sound pressure measured at the ear could be reduced from 100 dB(A) to 92 dB(A). Weight increased by 200g and power was reduced from 1,9kW to 1,1kW. Shortly after introduction to the market the sales had to be stopped because of very low sales figures. This example shows that noise reduction conflicts with other technical objectives and finally noise reduction did not outperform lower performance-weight ratio.

Later a similar project was started with a new leaf blower series 4282. Similar to the chain saw, noise could be reduced at the price of reduced performance and higher weight. The market shows constantly decreasing sales compared to the other models of this series. On the contrary in California the machine is a great market success, as the machine is subject to the so called „leaf blower exchange program“, by which the state supports financially the market transformation process (Sales price \$200 instead of \$470).

All in all it can be stated, that noise is a trade off to factors like safety, performance, weight and costs. Therefore, intelligent ways are needed to meet both customer demands and environmental needs. [link to a PDF of the slides](#)

Silensys, the success story of quiet condensing unit

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Tecumseh Europe is a leading manufacturer in the cold industry. Product ranges are for compressors and condensing units. These units are used for small commercial cold storage and food cabinet showcase. Most of the time, these units are outside small shops in urban area. Noise is an issue in such context and indeed 50% of claims on these products concern noise.

That the reason why in 1999 Tecumseh Europe decided to develop a complete range of quiet condensing units : the Silensys. This new product reduces the acoustic power by 7 to 12 dB. Silensys has been really well received by the market. Production increases each year. Silensys is a lively product: we work continuously on the improvement of the design. At the end of the year we will launch the Silensys version 3.

Condensing unit noise reduction needs a great amount of work. All the company divisions were involved in the project. We have worked on the design: pipe shape to limit vibration transmission, compressor cabinet design to limit noise radiation, test and selection of best fan. But certainly one key of project success is that Tecumseh Europe is committed since a long time to noise reduction of its product. This means that lab has already all the facilities and knowledge to measure precisely the noise. Process people are well awarded of noise

importance for ours customers. Quality control integrates vibration test at the end of compressor assembly line. Regular sample are done on compressors and condensing units production line to verify the acoustic level.

All the cultural background on noise helps the design of silent condensing unit. Reduction of noise is not an easy task. It is mainly technical but needs also the sharing of a common knowledge and practice in all departments of the company. This culture of noise may take time to build up but is for sure worth the investment. [link to a PDF of the slides](#)

GreenMech Wood Chippers – HUSH-CHIP

*Tony Turner
GreenMech (UK)*

Wood Chippers are one of the ‘NOISEST’ machines that operates in an Urban Environment.

In 2002 we modified a standard Wood Chipper, registered the name “HUSH-CHIP” and exhibited the concept at the UK’s most important show.

At 111.6 L_{WA} it was the quietest chipper on the market, we had no interest.

The comments from potential Customers were” why should we pay about 10% more, ear defenders for our operators are much cheaper.

In 2006 we began designing a totally new range of Wood Chippers, the first of which had to have :

- a. A chipping capacity of 15cm with a 34hp.
- b. A maximum weight of 750kg.
- c. A significant reduction in noise level.

Introduced in late 2009 as the ‘QUAD-CHIP’ (a) & (b) have been achieved, however due to the weight restriction of 750kg (c) is limited to 114.1 L_{WA} .

We are currently developing larger Wood Chippers that without the weight restriction of 750kg noise levels will be reduced to less than 110 L_{WA} . [link to a PDF of the slides](#)

Latest development of low-noise household appliances in China

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In China, the household appliance noise is significant because of urban housing shortage. At the beginning of this century, the concept of low noise, ultra-low noise and sound quality became the hotspot for appliance sales promotion. Since China joined WTO, improving product quality became more urgent for the appliance industry. Related standards and regulations have been developed or undergoing, and are facilitating the development of low noise appliances.

Corresponding to international standards, there are some special noise test standards or performance test codes. It should be noted that, in spite of no international standards, GB 19606-2004 was issued in China. It is mandatory, prescribes the noise limit values for 6 major classes and requires the noise level must be marked on the nameplates or instruction manuals with +3 dB deviation.

Recently, the drafts for 6 small appliances are in publicity as 19606 series. Besides that, the noise limit draft of heater, oral hygiene appliances, and electric shaver are undergoing, will join in 19606 series.

Most major appliance manufacturers have the latest laboratory facilities, instrument, and software; and they cooperated with research institutes or consulting organizations for noise control research.

The China Energy Label applying to all household appliances became mandatory since 2005. However no noise information is currently required on this Label. An appliance recycling policy is in effect when household appliances are replaced. The government and the manufacturers pay the bill for the recycling.

A market survey for some common household appliance noise was completed in last year in Beijing. The named noise of all surveyed products was equal to or below the limit prescribed by GB 19606-2004 standard.

Finally, the problems and solutions are presented. [link to a PDF of the slides](#)

Collaborative quiet delivery schemes encouraging manufacturers to produce low-noise vehicles and equipment

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The NAS initiative Silent Approach™ quiet out-of-hours delivery scheme sought to address the growing problem of urban congestion and emissions exacerbated by delivery movement.

Moving delivery patterns out of peak times to evening or night time would need a paradigm shift in delivery culture thinking, a new collaborative way of working and all stakeholders taking a step into the middle: thus the first successful pilot trial by NAS of Silent Approach™ took place in London in 2007 which was to be the template for the Department of Transport/Noise Abatement Society/ Freight Transport Association consortium Quiet Delivery Demonstration Scheme trials which have just been completed around the UK.



The major components for success of out of hours delivery without causing noise disturbance is commitment from all stakeholders, firm management plans for staff training, on-going monitoring and of course, the use of quiet equipment and vehicles.

One of the main objectives of the Silent Approach™ scheme was to help create a market to encourage manufacturers to invest in low-noise vehicles and equipment. Many of them have certainly risen to the challenge. [link to a PDF of the slides](#)

Providing Information On Product Noise Emission: Existing Practices And Their Limits

The different types of information available to characterise the noise of products

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The presentation gives an overview on the available noise information given for some products put on the European market. Other presentations will give more precise information on each relevant case. The presentation is structured on the answers to these questions:

Why the manufacturers have to declare the noise ?

If it exist some voluntary declarations, due to certification (like the “blue angel” mark required by some German local authorities) or widespread practice (use of ISO 7779 and ISO 9296 for noise emitted by information technology and telecommunications equipment), the noise declarations are generally required by the European regulations.

For each European directives, “Machinery,” “Outdoor,” “Household appliances” and “Vehicles,” the presentation gives the history, the intended public (the general public or the professional purchasers) and if the equipment is subjected to a noise limit, or not.

How to declare the noise ?

This question leads to answer to more precise questions, treated for each directives:

What noise levels must be declared?

The main responses are pressure or power levels and guaranteed or measured values. This declaration is not so easy and it is the subject of another presentation in the Buy-quiet Symposium.

How to measure the emitted noise levels ?

The measurement are defined by a well known batch of international standards. The list will be done.

Where to declare them ?

According to the applied regulation, the noise declaration can be made in the operator instruction manual, in the EC declaration of conformity or on a label. [link to a PDF of the slides](#)

Comprehensive product noise declarations for noise planning and commerce

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The product noise information required for noise planning and commerce, which is primarily corporate and government users and buyers, can be different than the noise information required by consumers. Commercial users include corporate and government procurements

for product used in offices, commercial establishments, schools, construction, factories and other industrial workplaces. Commercial users may have some of the same requirements as consumers; however, the needs of the needs of commercial purchasers may vary depending on the type of product and its location. For example schools and business offices are concerned about noise levels in classrooms and offices that affect performance, whereas industrial facilities may be primarily concerned with noises that can create hearing loss.

These noise information requirements for noise planning and commerce are discussed – noting the differences where applicable from the different users. Some of the required noise information is readily available and others are not. “Product noise declarations” is the term used in ISO 4871 when noise information is based on international standards and verifiable. [link to a PDF of the slides](#)

Recommendations are made to improve the product noise declarations for noise planning and commerce.

Product noise emission information in Europe under the Machinery Directive – Purpose, requirements and the current practice

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For more than 20 years, a specific global strategy based on regulation has been set up in the European Union to enforce the effective use in industry of less

noisy machines and equipment with the purpose, by reducing noise emission, to reduce noise exposure at the workplace.

This strategy is based on two legal essential requirements that must be met by machine manufacturers. The first one is the requirement to reduce noise at source during the design process with the aim to reach the lowest noise emission values. The second one is the requirement to accompany the machines and equipment the manufacturer puts on the European market with quantitative information about noise emission.

Finally, and this is mandatory, employers i.e. purchasers of machines and equipment have to consider the less noisy ones available on the market before purchasing. This strategy relies on the use of European (and more and more often International) standards and on the action of market forces. The effectiveness of this strategy however turns out to be poor so highlighting the urgent need for extra actions. The strategy is described together with the likely reasons why the result is not up to the expectation. Actions to make progress and trigger efficiently “buy quiet” purchasing attitudes among buyers/users are put forward. [link to a PDF of the slides](#)

The revised Machinery Directive – more information on noise for purchasers / Outdoor machinery – the evolution of the 2000/14 Directive

Bernd Merz

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Many machinery and equipment for use outdoors make noise. Noise irritates. Noise annoys. Noise has an impact on our health. All the more reason to investigate how noise can be reduced.

Further to its 1996 Green Paper, the European Commission developed a new framework for noise policy, based on shared responsibility between the EU, national and local level, and including measures to improve the accuracy and standardisation of data to help improve the coherency of different actions. Nowadays, it can be assumed that the necessary legal framework exists in Europe, laid down in Directives such as the Noise Directive 2000/14/EC. The Noise Directive requires noise marking for 57 types of equipment used outdoors, and additionally, sets noise limit values for 22 of them. For those types of equipment where such limits apply there are two stages of application. Furthermore, the Machinery Directive 2006/42/EC – which aims to ensure a high level of protection of users and other exposed persons against risks - requires manufacturers to reduce noise at the source during the design process and to accompany the machines with appropriate information about noise emission in order to make it possible for buyers to opt for quieter products. The Machinery Directive

does not set noise emission limits, but refers to limits laid down in other legislation, e.g. the aforementioned Noise Directive.

In order to improve the daily life with regard to noise pollution, additional efforts are necessary beside the regulatory approach: Informative advertising of the need and benefits of quieter machinery and equipment. [link to a PDF of the slides](#)

New Concepts For Simplified Noise Rating

PNR: Towards Simplified Product Noise Ratings for the General Public

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A simplified product noise rating method is proposed that provides noise level information to the general public in a manner that is easy-to-understand but includes enough information to allow them to make informed purchasing decisions.

The assumption from the start is that consumer demand for quieter products will be increased by providing them with useful noise emission information, in the same way that consumer demand for more nutritious food has been increased by using nutrition labels, for more efficient appliances by using energy labels, and for more fuel-efficient cars by using mileage labels. Consumers want to know essentially two things: “How loud is this product?” and “How loud is this product compared to other similar products?” As simple as these two questions appear, current noise declarations do not provide the answers.



This talk describes a new method for presenting product noise information to the general public that will answer these questions and do so in a format that will make product noise ratings instantly recognizable and accessible to the public.

The essential elements of the new system are: (1) a product noise rating scale, (2) the Product Noise Rating (PNR), itself, (3) a range-of-levels indication, and (4) a visual icon for presenting the PNR value. The PNR is an emission rating (as opposed to an immission rating), as it should be for describing product noise. The proposal is being developed by the Institute of Noise Control Engineering (INCE-USA), Technical Committee on Product Noise Emissions (TC/PNE). [link to a PDF of the slides](#)

Noise labeling – an integrated approach to noise reduction

*Fabian Gwosdz
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Generally, noise is a very complex and highly context-dependent phenomenon. Not only the many physical sources of noise at a machine have to be looked at, but more important the area of application (e.g. rural area vs. urban area), the usage profile (time, length,...) and also psychological factors. Because of the complexity of the issue, regulation should consider both market push and market pull effect to reduce noise exposition.

Recent studies (e.g. TNO Nomeval study) show that the current approach of the Outdoor Noise Directive (2000/14/EC) needs to be improved significantly. Problems are lack of market surveillance, unclear noise label for consumers and unfair competition. Also national and EU-wide noise labels such as the “Blauer Engel” or the “Ecolabel” show systematic deficits.

The proposed noise label by INCE is a constructive approach to a more

comprehensive noise labeling. However, the transformation of a logarithmic scale into a linear scale can be misinterpreted by non professionals. Furthermore, it is not clear how the “range of similar products” is determined.

A more transparent version of a noise label presented at the symposium shows product-specific noise classes (A, B, C) in combination with the underlying noise test code (including the year of publication). Furthermore, the absolute noise emission is still given on the label. The concept foresees a system, by which additionally to the noise test code the responsible international standards committee (e.g. ISO) also establishes the “state of the art” and the definition of the noise classes A, B, C for each specific product group. However the definition of the noise classes is always the same for all product groups subject to the noise labeling (for example “A” means less noisy than 75% of the market). The noise classes are subject to regular revision (3 to 7 years) which ensures, that with each revision the “state of the art” is re-established. Consequently, the noise classes are also re-defined according to the general principle. [link to a PDF of the slides](#)



The Need For And The Establishment, Update, And Credibility Of “Range Of Level” Databases

The need for range-of-levels information

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Prospective purchasers not only want to know the actual noise level of the products they are considering buying, but in order to make a truly informed decision, they would also like to know how the noise level of a particular product compares with the noise level of a similar product offered by a different manufacturer or supplier. In terms of the potential for a general reduction in product noise levels, this may actually be the most important piece of information needed.

For even if a purchaser knew the sound power level (or PNR, or other noise level rating) for a particular chain saw from a particular manufacturer, the purchaser would not know whether this chain saw was one of the quieter models or one of the noisier models on the market. If they knew that additional piece of information, they would be better able to factor in “noise level” with the other criteria governing their purchasing decision. If it were one of the quieter models, perhaps they might be willing to spend a little more for the product. If it were one of the noisier models, perhaps they would continue shopping to find a quieter offering. Furthermore, if the manufacturers knew that purchasers were making comparative decisions in terms of noise level, there would be an strong incentive for them to lower the noise levels of their products.

The author thus feels that some type of indication of the “range-of-levels” for similar products should be part of the product’s noise declaration or noise label. Having a range-of-levels indication also renders the particular units of the noise level metric less important. That is, if a “big black arrow” indicated immediately on a range of levels scale where the product fell, the purchaser would not need to know whether these are decibels, or bels, or sones, or some other units in order to know whether this is a relatively quiet or a relatively noisy product. This talk will highlight these reasons and others for needing range-of-levels information on product noise declarations. [link to a PDF of the slides](#)

“Range-of levels” databases – example of ISO technical report ISO/TR 22520

*Fabian Gwosdz
STIHL, Germany*

ISO/TR 22520 is an example for the establishment of a “range-of-levels”. It can work as a blueprint for similar

projects and can function as a basis for a more comprehensive noise labelling based on noise classes. It was worked out by ISO/TC 23 SC 17 (Manually portable forest machinery) and published 2004.

Establishment of reliable and representative “range-of-levels” in International standards committees responsible for the elaboration of noise test codes is feasible and ensures maximum integration of noise measurement and noise benchmarking. [link to a PDF of the slides](#)

Past experience in establishing the German VDI ETS guideline

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It is almost 30 years ago that the idea of using market forces for reducing the noise exposure of workers led in Germany to the development of noise emission measurement standards of the series DIN 45635 and in the formulation of a draft for a national ordinance requiring machine manufacturers to provide the major noise emission characteristics emission sound pressure level at the workstation and the sound power level in the sales literature and the instructions.

Owing to the strong opposition of German industry this ordinance didn’t pass the parliamentary discussions successfully. It was then some years later during the discussion on the establishment of a joint European market that discussions on that idea started again on European level. To support this idea the BAuA funded projects providing surveys on the noise emission of machines of the same kind on the market. The results showed that a span of 20 dB for the sound power level or the emission sound pressure level was typical for most of the investigated types of machines.

In order present these results to a broader public the Association of German Engineers (VDI) decided to set up a WG on the emission of technical sound sources (ETS). This WG published a general guideline dealing with methods to compare noise emission values from machines and to establish levels of noise control performance. Moreover machinery specific subgroups drafted more than 20 different so called VDI-ETS-guidelines providing information about the state of the art of noise reduction for specific types of machines both for designers of new machines and potential purchasers. Whereas the general ETS-Guideline finally formed the basis for an ISO standard, the ISO 11689, the machinery specific documents were not transferred into an ISO or EN document as the data was presumed to be not representative in relation to the international machine market.

Although the emission data was used by many people it was not possible to establish a routine to constantly publish this kind of data so that the preparation of ETS-Guidelines finally ceased more than 10 years ago. The reasons will be discussed in the presentation. [link to a PDF of the slides](#)

The NOMEVAL project: evaluation of outdoor machinery noise

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The European Directive 2000/14/EC and its amendment 2005/88/EC on outdoor machinery noise require noise labeling for the sound power level of 57 types of outdoor equipment and specify sound power limits for 22 of these. In 2007 the Directive was evaluated for the European Commission in the NOMEVAL project, resulting in recommendations for an update of the equipment list, the noise limits and the test codes.

Part of the evaluation included the assessment of a European database of declared noise emission data collected by the Commission. The study showed that such data can be used to assess noise emission level ranges, and thereby technical progress. There are however also potential drawbacks due to data errors, incorrect declaration and missing information. Remedies for this are automation of database input, guidelines on measurement and declaration and better market surveillance. Improved marking and an alternative environmental noise indicator were also recommended in the study. It was shown that from a societal point of view, the benefits of low noise machinery far outweigh the costs, but the market demand is not always strong enough. It is however clear that where there is demand, often much lower noise levels are technically achievable, for example for generators, compressors and vehicles and machinery with hybrid and electric drives.

Besides a summary of the NOMEVAL project, some suggestions will also be given in relation to noise information to consumers and purchasers who can only judge the noise after purchasing the product. [link to a PDF of the slides](#)

Outdoor Machinery: The evolution of the 2000/14 Directive

Bernd Merz
European Commission
(no abstract available)

[link to a PDF of the slides](#)

Development of databases in cooperation with U.S. Manufacturers of large construction equipment

Chuck Hayden
National Institute for Occupational Safety and Health, USA
(no abstract available)

[link to a PDF of the slides](#)

Practical experience with the quality of noise emission declarations

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NOMAD (NOise MAchinery Directive) is a European market surveillance operation. It consists in collecting and analyzing instructions manuals of machines used in the European Union.

The purpose is to analyze the contents on noise of the manuals and to check whether they meet the requirements on noise of the Machinery Directive (98/37/EC till end 2009, now 2006/42/EC). One major objective is to determine whether noise emission values required by the regulation are given and whether they are traceable to a full measurement method (preferably a European standard harmonized under the Machinery Directive) so that they can be compared.

Only very preliminary results will be given as the operation is still in progress. Such an operation shows the interest that Member-States in the European Union show regarding the provision by manufacturers of good quality noise emission data. Such data is the corner stone on which buy quiet attitudes can develop. [link to a PDF of the slides](#)

The shared responsibility in providing precise information on noise levels between test laboratories, manufacturers, and authorities

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Everybody wants the declared noise information are reliable and precise but is it possible? More or less, the responsibility is shared between different contributors.

To introduce the subject: it may arrive, more often than wanted, that the declared level is not understood, even by an acoustics specialist ! People may say “this product made XX dB.” What is this level? Is it comparable with the noise level declared for a similar product? Another example can be found in the 2000/14 directive database. Some values for similar machines are so different than they are probably false.

Who has the responsibility of that situation ?

We have a large background of noise measurement standards. But is it sufficient ?

The basic standards, ISO 1120X, ISO 374X and ISO 9614 are correct, written by “acoustical” working groups. Unfortunately, the quality of the specific standards (B or C types) are not so good, written by non-specialists. They may be interpreted and they are not as precise as wanted. Sometimes, we can see confusion between pressure and power level. Another source of error is the bad translation of standards or regulation. One example is the outdoor directive which gives the operating conditions during test. The French translation has replaced idle

(maximum rpm without load) by “ralenti” (slow speed).

Some standards want to be too realistic. On one side, the real use may be very different, so why be realistic, and on the other, a realistic test may be complex, expensive and with a weak reproducibility. The cost is the main brake. If a standard require an expensive test, the manufacturer can only carry up a low number of measurement and it will never do a control of production.

The authorities believe (or want to believe) to the efficiency of some tools like quality assurance and accreditation. It seems it is to save money on necessary controls.

We should not be blind, tests made by the manufacturer, or by the manufacturer’s staff, risk to be biased. Quality assurance and accreditation give only some assurance on the ability to make the measurement.

With a third part, the situation is not so different:

- This third part is ordered and paid by the manufacturer,

- Often, the product cannot be tested without the manufacturer’s help, and its influence.

This shared responsibility must be taken into account to work and to obtain in the future more reliable and credible noise information. [link to a PDF of the slides](#)

Examples Of Current Noise Declarations And How They Are Being Improved

The New EU labels for Household Appliances

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In 1995, an EU energy label was developed for main domestic appliances, focus on energy efficiency/performance criteria, noise levels optional and not standardized.

Big progress with new EU labels 2011 on key appliances where noise matters (washing machine, dishwasher, freezer,

etc) – noise declaration now mandatory and testing method standardized.

Case study washing machines France: appliances often in or close to the living space, noise level critical at day (live quiet) or at night (sleep quiet);

relevance of start delay function/silence program.

Discussion points:

- Noise level evaluations of consumer testing institutes mostly not standardized for cost reasons
- Noise level classes like for dishwashers could be extended in stores to other appliance categories
- Decreasing consumer benefit on noise reduction where noise levels are already very low (like for premium dishwashers).

[link to a PDF of the slides](#)

Examples of current noise declarations and how they are being improved: the Information Technology industry

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Information technology products are high volume products, and components will typically be used in various system configurations. First, the presentation will provide an overview of the current standards that are used in the declarations process. The information technology industry has long history of developing standardized test codes. The basic metric is the emitted sound power level, based on the fundamental ISO sound power standards, supplemented by operator/ bystander sound pressure levels.

Specific information technology test codes, such as ECMA-74 and ISO 7779,



were developed and include specifications for operating conditions and two methods to assess the presence of pure tones. The basis for these metrics will be discussed, including subjective studies that demonstrate the importance of the sound level and tonal content across various geographies. The presentation will also outline the declaration procedure, for example according to ECMA-109 and ISO 9296 standards, to cover lab to lab and system to system variations. Examples will be given of current noise declarations that are provided by manufacturers, including ECMA-370, “the eco declaration,” and links to endorsement labels.

The information technology industry strives for harmonization of standards worldwide. Therefore ECMA, ISO and ANSI equivalent standards are periodically reviewed and updated to ensure one standard worldwide that is current and relevant. The IT working groups ECMA-TC26, ISO TC43/SC1/WG23, ANSI S12/WG3 and the trade association group ITI-TC6 play important roles in this. The presentation will conclude with an overview of current and planned activities in these groups to further improve the noise declaration metrics and procedures. [link to a PDF of the slides](#)

Endorsement Labels And How They Could Be Combined With Noise Declarations Or Noise Labels

Introduction to endorsement labels (White Swan, Blue Angel, EU Flower and others)

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Endorsement labels or voluntary environmental labels, “eco-labels,” are intended to signify “environmental acceptability” of a product. In order to obtain the endorsement a product must meet several criteria that have been established for specific product types.

The criteria may include power consumption, hazardous substances, batteries, safety, consumable materials, packaging materials, environmental design, electromagnetic emissions, and chemical emissions. In addition, the criteria for many endorsement labels include product acoustic noise. The types of products covered that include noise criteria are extensive. More than twenty eco-label or endorsement label programs exist.

The benefits of endorsement labels in providing product noise emission to users of the products are described. Problems and limitations inherent with such programs are also described and recommendations are presented for discussion. [link to a pdf of the slides](#)

The “Blue Angel” history, success, and specific problems

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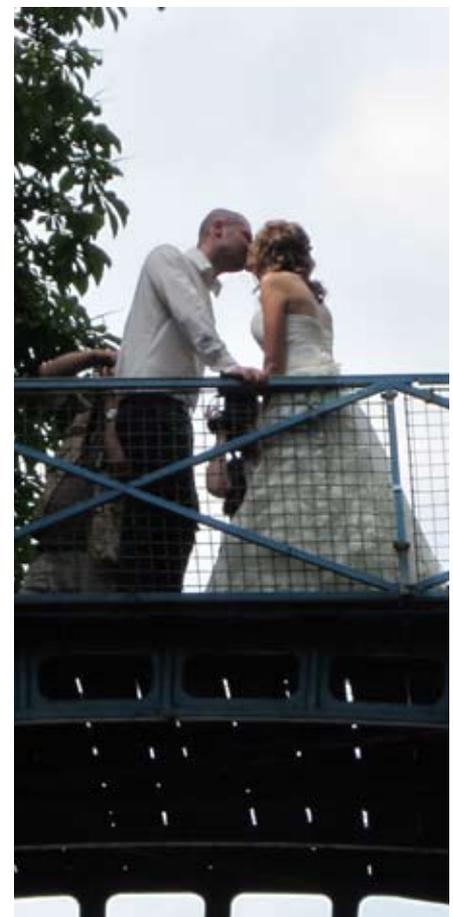
The Blue Angel is the first and oldest environment-related label for products and services in the world. It was created in 1978 on the initiative of the German Federal Minister of the Interior. The label considers itself as a market-conform instrument to encourage the acquisition of different products with positive environmental features on a voluntary basis. There are several Blue Angel environment-related labels for products with specific noise reduction measures.

The Blue Angel is the first and most well-known eco-label worldwide.

According to a study about environmental consciousness in 2010, 76 per cent of the consumers know of the Blue Angel program and 39 per cent strongly consider buying Blue Angel labeled products.

Since 1978 the Blue Angel has set the standard for eco-friendly products and services selected by an independent jury in line with defined criteria. Noise reduction has been one of these criteria from the beginning. There even are some criteria documents for products which only have noise reduction measures.

The Blue Angel is awarded to companies as kind of a reward for their commitment to environmental protection. They use it to professionally promote their eco-friendly products in the market. The Blue Angel is an ecological beacon showing the consumer the way to the ecologically superior product and promotes environmentally conscious consumption. In one product category only 20 to 30 per



cent on the market reach the requirements to carry the Blue Angel. To assure that, the dynamic adjustment of the basic criteria to innovation in each product category is exercised in close collaboration with research and development departments of government, NGOs and industry.

With more than 30 years of experience in state-of-the-art environment-friendly requirements the Blue Angel can also cope with current global claims on climate protection. Due to that fact the goal of the Blue Angel is to transform the protection of Human and Environment by the protection of four main common goods: Health, Climate, Resources and Water. [link](#)

The ssSH Mark and The Quiet Guide

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Everyone needs peace and quiet – even noisy people! But what is peace and quiet and how do we get it? It's not necessarily about total silence, but more about being in a state of stillness, serenity or calm. It can be freeing ourselves from activities, distractions or worries. Being free from emotions such as anger or impatience. It's about freeing ourselves from the stresses of modern life.

There are many ways to get peace and quiet, whether you live in the heart of countryside or the middle of a busy city. So, why is peace and quiet important?

Well, we need peace and quiet to sleep, we need peace and quiet to recuperate from illness and we need peace and quiet to learn.

My little booklet The Quiet Guide outlines ways that people can make their lives more quieter and peaceful. Buying quiet products for use whether at home, whilst out and about, or even in workplace will all contribute to making our lives more pleasant.

In 2007 the Quiet Guide was sponsored by AEG Electrolux who was also the first appliance brand to be awarded the New Quiet Appliance Endorsement by the UK Noise Association. Consumers were able to identify products being awarded the endorsement by a distinctive logo called the “ssSH Mark”.

At the time this was only awarded to washing machines, dishwashers and cooker hoods. The criteria for being awarded the ssSH Mark was based on simple guidelines already identified by the industry itself. [link to a PDF of the slides](#)

Encouraging All Purchasers To Buy Quiet

Guidelines for the Development of “Buy-Quiet” Programs

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In this paper, the rationale behind development of buy-quiet programs in industry is explained, and several steps towards the development of such programs are presented. In the United States, the National Aeronautics and Space Administration (NASA) has developed a comprehensive program applicable to NASA facilities, and the published “Roadmap” can also serve as a model for buy-quiet programs in other government agencies.

Buy-quiet programs are beginning to be developed in private industry, and the NASA roadmap should be applicable to such programs. In many situations, a satisfactory outcome is the result of negotiations between buyer and seller.

This paper outlines the various steps that should be taken. These include the noise specification, the measurement standard used to ensure that the product meets its

specification, the operating conditions for the measurement, and the verification of the results. [link to a PDF of the slides](#)

Why the “Buy-Quiet” approach is promising in the management of occupational noise risks

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The Health and Safety Executive (HSE) recognizes that reduction of risk to hearing from occupational exposure to noise can be achieved through wider integration of established noise controls into work equipment – in particular, through control of noise at source.

HSE has sought better control of occupational exposure to noise since the 1970s. Since 1989 HSE has used Regulations specifically requiring control of occupational exposure to noise across all industry according to Noise Directives 86/188/EEC and later 2003/10/EC. Employers have been encouraged to seek expert advice on retrospective modification of work equipment to reduce noise but, in the absence of preferred control of noise at source, HSE inspectors could enforce acoustic enclosure of many types of noisy machine. The most widely adopted approach by employers has been retrospective acoustic enclosure.

Subsequent visits to premises where acoustic enclosures had been fitted to machines often found them to be in disrepair or disuse; commonly, they reduced access during production, maintenance, cleaning, etc. making them unpopular.

A new opportunity for improved noise control at source arose through the European requirements in respect of free trade under

Machinery Directive 89/392/EEC and more recently 2006/42/EC. Manufacturers of work equipment have a presumption of conformity with the requirements if they work to harmonized standards. For some types of machine, e.g., woodworking, these standards have resulted in considerable reductions in noise emission.

Quieter work equipment can be produced if employers demand it. An HSE campaign concerning the selection of powered hand-held tools has had considerable success as part of the minimisation of exposure to hand-arm vibration. With appropriate guidance, employers and work equipment manufacturers are willing to seek lower noise exposures. [link to a PDF of the slides](#)

The application of legally-required noise emission declarations by purchasers – 20 years of experience with a buying aid for purchasers in Germany

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It was 1989 when the European Machinery Directive was enacted. Since then machine manufacturers are required both to design machines to reach low noise levels and to inform purchasers about the machines noise emission. This so called noise emission declaration is intended to allow potential purchasers of machines to select a quiet machine from others on the market. The quantities provided by the manufacturer are the emission sound pressure level at the workstation or other positions and if this exceeds 80 dB(A) additionally the sound power level. Both quantities are given as dB(A) values causing the problem, that purchasers often mix these values with noise exposure values, for instance noise exposure limit or action values, according to the physical Agents Directive on noise at the workplace 2003/10/EC for workers.

As a result the communication on noise between machine manufacturer and purchaser (employer, user) of a machine is disturbed. This lack of knowledge concerning the difference of emission and immission or even exposure characteristics was the reason why already in 1992 the Federal Institute for Occupational Safety and Health (BAuA) developed in cooperation with large machine buying and acoustic consulting companies a guide on buying quiet machines by using the noise emission declarations from machine manufacturers.

The buying guide explains the different noise emission quantities, relevant standards for their determination, the advantage of buying quiet and finally ends with a template designed to fill one DIN A4 page, thus making it easy to photocopy. This template provides fields to be filled by machine manufacturers in a systematic way, providing all the relevant noise emission values and the measurement standards used, so that a purchaser simply needs to compare the filled noise emission data for comparable machines from different manufacturers.

The presentation will present some experience gained with this guideline.

[link to a PDF of the slides](#)

“Buy Quiet” environmental noise policy for Australia

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This abstract outlines some of the drivers for a national noise labeling system for Australia and experiences with its development to date. Noise labeling is widely seen as assisting consumers to choose quieter products, encouraging suppliers to manufacture or import quieter products, and assisting air conditioning installers to meet noise limits.

The main driver for national action is the Federal Mutual Recognition Act 1992, which limits the effectiveness of the existing noise labeling schemes in NSW and WA. The requirements cannot be enforced for product that is manufactured in or imported via other jurisdictions that do not have these requirements. The Trans-Tasman Mutual Recognition Act 1997 causes similar problems in relation to product manufactured or imported via New Zealand.

There have been calls for a national noise labelling scheme from the Australian enHealth Council and the Australian Consumers Association. A recent survey found around 35% of the population is annoyed by portable gardening equipment. A working group was set up in 2008 under the auspices of the national Environment Protection and Heritage Council (EPHC) (which includes the Federal and State Environment Ministers), to consider a noise labelling and limit scheme to cover lawn mowers (including ride-on mowers), leaf blowers/collectors, line trimmers, brush cutters, lawn edgers, hedge trimmers and chainsaws; and a noise labelling scheme for domestic air conditioners.

The working group considered issues such as whether or not to include noise limits; what data to include on a label; what testing regimes should be adopted, and so on. The group recommended that, in relation to portable equipment, the EU Noise Directive testing regimes and proposed noise limits be adopted. The group's activities have included an industry consultation program; a study into noise testing requirements for domestic air conditioners; and a draft Regulatory Impact Statement (RIS). Sadly, a recent review of the functioning of the NEPC has led to the cessation of the national noise labelling working group, and the future of environmental noise labelling in Australia is now uncertain. [link to a PDF of the slides](#)

The impact of the “Golden Decibel” on the promotion of low noise products in the last 20 years

Alice Debonnet-Lambert & Philippe Strauss
CIDB – France

The Concours du Décibel d’Or (Golden Decibel Award) is a French multi-category competition covering all aspects of noise management. Since 1991, every year, renowned experts in the field of noise management examine hundreds of candidates – innovative products or local practices – and recognize achievements that truly contribute to making our everyday life more quiet. Awards fall into four categories: “products and new technologies,” “cities or transportation,” “acoustic management by companies,” “acoustical materials.” In each category, one winner and several nominees are awarded.

This presentation reports the results of a historical survey conducted upon the twenty-nine products that, since the beginning of the award, have been given an award in the “products and

new technologies” categories. Based on interviews of product managers who received an award in the past, an attempt was made at evaluating the possible business consequences of the Décibel d’Or Award.

If a quantitative figure was not possible to be drawn from the discussions, there is a global agreement among product managers to confirm the positive output of the award. Interesting comments were collected regarding products such as vacuum cleaners, street-sweepers, welding tools, anti-snoring devices and air-cooled condensing units.
[link to a PDF of the slides](#)

Noise Abatement Society Quiet Mark^{CTM} initiative

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This is the launch year of Quiet Mark^{CTM}, the mark of approval awarded to the quietest products currently on the market by the Noise Abatement Society and validated by the Association of Noise Consultants.

The Quiet Mark^{CTM} initiative aims to stimulate the manufacture of low-noise products and the Quiet Mark on-line Directory will, for the first time, provide a new platform to collectively support manufacturers’ innovative quiet design technology.

The use of Quiet Mark^{CTM} at point of sale will give consumers more informed choice and the Quiet Mark Directory will act as a one-stop-shop to source all low-noise goods.

The distinctive purple design of the Quiet Mark^{CTM} will symbolise the consumer’s desire for stress-free living. [link to a PDF of the slides](#)

The practical development of the HSE “Buy-Quiet” project

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HSE began its ‘Buy Quiet’ campaign with a launch event in 2010. Stakeholders with an interest or influence in occupational exposure to noise were invited to join workshops and to share and review their perceptions of workplace noise.

About 100 delegates represented interests including: work equipment and equipment component manufacturers (pumps, motors, etc.); equipment hire companies; employers; employees; consultants including CE marking consultants; insurers; and government departments and their inspectorates.

Noise was not perceived as a priority occupational health risk by either the manufacturers and suppliers of work equipment or the employers who have duties to manage the noise risk presented by that equipment.



In reality, about 1 in 6 people in the UK have some hearing loss – equivalent to about 10 million people. The UK Labour Force Survey in 2009/10 found that 21,000 people reported work-related hearing problems as one of the most important health issues they had.

The workshops at the launch of HSE's Buy Quiet campaign identified 12 recurrent themes. HSE can help with 9 of these themes including: pursuing provision of accurate and consistent global information about occupational noise for duty holders and noise expert intermediaries; development of noise standards that produce information of practical value to its recipients; raising noise as an issue for European market surveillance; and encouraging the development, supply and purchase of work equipment with noise minimised at source.

The consensus of HSE's Buy Quiet launch was that industry can be and should be made to equip factories with quieter machinery. [link to a PDF of the slides](#)

Roles Stakeholders Can Play In Fostering A "Buy Quiet" Attitude

Purchasing low-noise equipment in municipalities, constraints and difficulties

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European citizens are looking for a better quality of life and for a less noisy urban environment. In the city of Paris, inhabitants are complaining about collection of household refuse or about street cleaning, which may start at 6:30 in the morning. When they are visiting gardens to find some quietness, dwellers are also denouncing noise coming from lawnmowers or from leaf blowers, which are currently used to maintain green areas.

Nowadays, municipal employees are also asking for less noisy tools or engines to improve their work conditions and to decrease their tiredness in work. There is therefore a request for purchasing

low-noise equipment in the municipality. However, various constraints and difficulties are opposing the "buy quiet" purchase. First at all, availability of less noisy devices is poor on market. Information about noise efficiency of products may be lacking. Sound power levels of devices may not be comparable due to non-standardized test codes. Volumes of sales related to municipal equipments are too low to show a profit in research and development. Searching to lowering noise emission may lead to increase weight of engines and thus to augment fuel consumption.

Hopefully, the 2000/14/EC "outdoor" directive introduced first steps of obligations and markets for manufacturers. Besides, municipalities can only purchase equipments through public supply procurements. The main rule of a public contract is a search for the lowest price or for the most economically advantageous tender. At this time, environmental (noise) characteristic may weight only a few percent of final awarding notation. Another problem is the place of noise issue among municipal priorities. There are few studies to give



an economical value to noise annoyance. Therefore, it is often more important for decision makers to lower fuel consumption of municipal equipment and therefore to limit gas emission, with greenhouse effect or urban air quality impact. The last difficulty may come from municipal employees. A noisy equipment is sometime regarded as more powerful and thus more efficient at work. Some practical situations of working with manufacturers to improve devices will be presented. Contribution of electric or hybrid motorization and adaptation of driving mode to real needs will also be discussed. [link to a PDF of the slides](#)

How other non-governmental organisations could play a role

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It is surprising that even now, not much thought is given to the harmful effects on health and productivity of excessive noise emissions when introducing new machines into the workplace or onto the consumer market.

The powerful independent voice of NGO groups, working together, could promote Eco-quiet as part of environment protection awareness sharing equal billing alongside other green issues.

This awareness-raising would stimulate public demand for low-noise products, increasing the need for an easily understood universal noise rating. [link to a PDF of the slides](#)

EU “green” public procurement - acoustic noise - a key requirement for IT products

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The objective is to explain the importance of the EU Public Procurement Directive and the integration of product environmental attributes like acoustic noise in public tender specifications.

The IT Industry has responded to this demand in two ways, first by creating an International standard environmental declaration, EC-MA-370, and 2nd by designing products that meet demanding customer acoustic noise requirements which go far beyond legal compliance.

The International EC-MA declaration delivers objective information, allowing customers to make informed purchase decisions. Early recognition and understanding of the EU Procurement Directives is vital for the successful business with the public sector in European countries. [link to a PDF of the slides](#)

Involving the retail sector and setting requirements on product noise levels

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Uneducated consumers rely largely on the advice or information provided by their retailer when purchasing a product. Experience from the tyres market has clearly demonstrated this. This is partly because purchase “decisions” are to a great extent emotion-driven, and it feels good to get relief from an uncertainty.

The retailer is the instance which often advertises the offer and in the end “presents” the product to the customer. While mentioning characteristics and benefits of the product, he fulfills an information task. But the retail sector is also margin and profit driven, which influences the range of offered products on the market.

Actions or measures aiming at involving the retail sector in an attempt to have

in the end consumers purchase quieter machinery has therefore to provide a comprehensive benefit for the retailer himself. This paper presents the actual ongoing attempt of the Swiss federal Environmental Office to better understand the mechanisms and forces at work. The aim is to unlock and use the potential residing in the particular position and characteristics of the retailer in the buying process. It will attempt to make clear, what has to be done and what should not be omitted. The perspective is particularly from the point of view of a federal office.

[link to a PDF of the slides](#)

International standardization as a tool to developing new noise ratings

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Presented on behalf of H. JONASSON and L. NIELSEN, Chairman and Secretary of ISO TC 43/SC 1 “Noise”

International standardization in acoustics has been used for 60 years as a tool to harmonize measurements and instrumentation in the field of technical acoustics. Particularly many standards have been produced in the field of noise emission from machinery and equipment (measurement, declaration, comparison) with the purpose to support the “noise reduction at source” strategy that will be largely described at the Symposium. ISO TC 43/SC 1 “Noise” will welcome new standardization work aiming at establishing an international consensus regarding new, simple and user friendly noise rating schemes. This may consist in drafting new standards and/or revising existing ones. Work can start as soon as many enough countries are prepared to contribute actively. [link to a PDF of the slides](#)

How industry trade associations can play a role in providing product noise declarations to purchasers

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It is generally agreed that the demand for quieter products will increase if useful noise emission information were readily available on the products that were being considered during purchasing decisions. But who would provide this information? Who, or which groups, could first obtain accurate noise level data and then make it available to the public in a uniform fashion so that the prospective purchaser could rely on it to make informed purchasing decisions?

The author feels that industry trade associations are ideally positioned to obtain and provide this information. They are also best suited to creating the “level playing field” needed to instill confidence in the purchasing public that the noise level information is accurate and fair. Why is this the case? For one, they know their products best, the types and varieties, the operating conditions, the best way to measure them. In addition, most manufacturers of a specific product family are already members of one or more industry trade groups; the “infrastructure” of communication and

networking are already set up. There is usually some kind of formal organizational and governing structure with committees and sub-committees.

Finally, virtually all trade associations have web sites and other customer-facing publications and marketing tools that can help get the word out about their noise declaration program, when it becomes available. This brief talk will discuss these and other reasons why industry trade associations should take the lead and how they might go about establishing a formal program for providing product noise level information to the public. [link to a PDF of the slides](#)

How I-INCE and CAETS could be involved in the “Buy-Quiet” campaign

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The key goal of I-INCE is the advancing of technical developments in the engineering control of noise and vibration; and to provide a leadership role in promoting the applications of noise and vibration control technology for the benefit of mankind.

The International Council of Academies of Engineering and Technological Sciences, CAETS, has taken up the noise issue with the purpose of promoting policies leading to a less noisy environment.

The objective is to assist policymakers in improving national and international requirements to reduce noise emissions of dominant noise sources. This can be done by providing independent information about the technological options and barriers to counteract the lobbying from industry. What is needed are well informed policymakers who can challenge the industry, set up stringent limits and find market-driving tools.

Even though each small step towards quieter products is valuable, it is important to point out for the policy-makers that the typical ultimate goal is 10-30 dB and not only 3-5 dB. An enormous challenge.

In the work we must both be well prepared to respond to questions from policy-makers as well as to take initiatives when any noise emission issue gets politically hot. The ground for our work is to have superior access to “best knowledge”. CAETS and I-INCE have therefore established a close cooperation within the noise field with the purpose to evaluate the technology now available as well as the technology needed to suppress the noise emissions of these dominant sources.

To be effective in our work and to live up to the highest standards, we depend upon active support from colleagues around the world who are best informed about the technology frontiers for all kinds of dominant noise sources. [link to a PDF of the slides](#)

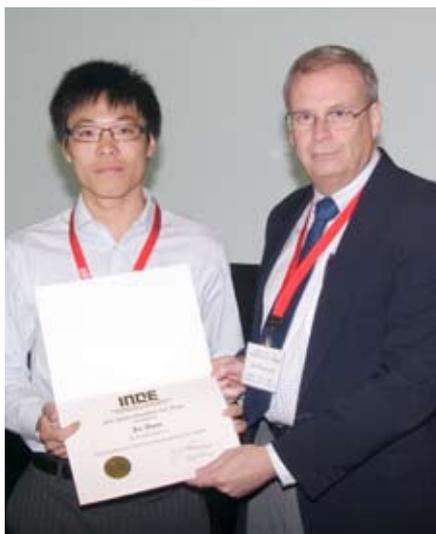
INCE Update

USA

Jie Duan is awarded the 2011 Martin Hirschorn IAC Prize

In odd-numbered years, the \$4000 Martin Hirschorn IAC Prize is given "...as a contribution to the education of a graduate student studying noise control engineering in the United States of America who proposes a project related to an application of noise control engineering and/or acoustical conditioning of architectural spaces."

This year's award went to Jie Duan of the University of Cincinnati for his project Development of a novel active sound quality control System.



Jie Duan, left, receives the 2011 Martin Hirschorn IAC prize from INCE/USA president James Thompson.

A second outstanding student project award of \$2000 was awarded to Nathan Firesheets of the Georgia Institute of Technology for his project Optimizing models of exterior-to-interior sound transmission loss.

The INCE Outstanding Educator award was given to Dr. Mohan Rao of Michigan Tech. An honorarium of \$2000, funded by the INCE Foundation, accompanies the award.



Andrew S. Willemsen, left, accepts the INCE Outstanding Educator award on behalf of Mohan Rao. The award was presented by INCE/USA president James Thompson.

Five Students are Awarded prizes in the 2011 Student Paper Prize Competition

Five students were awarded \$1000 prizes in the 2011 Student Paper Prize Competition. The prizes were awarded at the NOISE-CON Conference in Portland, Oregon on July 22, 2011. The winners are shown below with 2011 INCE/USA James Thompson, INCE/USA president.



Brian Choi, Virginia Polytechnic Institute. Acoustic source localization using matched-field processing-based enhanced MVDR beamforming in a 3d-complex urban environment.



Wael Elwali, University of Cincinnati. Effect of beam boundary condition on sound radiation inside planar acoustic cavity.



Andrew Jessup, Purdue University. Calculation of pressure distribution of the interior acoustical mode of deformed tires.



Christina Naify, University of Southern California. Transmission loss of membrane-type acoustic meta-materials with varying mass configurations.



*Andrew S. Willemsen, Michigan Tech.
Enhanced noise and vibration dissipation
by nanocomposite polyurethane foams
synthesized with dispersed carbon
nanotubes.*

Leo Beranek Student Medals for Excellence in Noise Control Studies are Awarded

In the June issue of this magazine, it was announced that a new student medal is now being awarded: A new student metal for excellence in the study of noise control is now being awarded by INCE/USA. The medal is named for the INCE/USA charter president, Leo L. Beranek. The award is being funded by the INCE Foundation to support education in noise control engineering. This special Medal was established by the Board of Directors of INCE/USA on 2010 October 24 to recognize excellence in the study of noise-control by undergraduate and graduate students at academic institutions in North America that have courses in, or related to, noise-control engineering including practical applications.

The first group of medals has now been awarded, and the awardees are listed below.

From Brigham Young University:
Undergraduate: Daniel R. Hendricks
Graduate: Jeffery M. Fisher

From University of Cincinnati:
Undergraduate: Greg Chatlos
Graduate: Brent W. Rudd

From Georgia Tech
Undergraduate: Patrick McPherson
Graduate: Timothy Hsu

**From U. of Hartford
(Only undergrad student)**
Undergraduate: Clinton R. Fleming

From U. of Nebraska
Undergraduate: Dakota Moses Kelley
Graduate: Caleb Frederick Sieck

From the Ohio State University
Undergraduate: Ron Taulbee
Graduate: Aydin Gunduz

From Purdue University
Undergraduate: Matthew G. Blevins
Graduate: Sarah M. McGuire

**From University of Kentucky (grad
student only)**
Graduate: Jinghao Liu



*Leo Beranek is surrounded by colleagues who were instrumental in the creation of the Beranek Student Medal.
Left to right: Eric Wood, Leo Beranek, Paul Burgé, Ralph Muelheisen, and Bill Cavanaugh.*

Mexico

The 18th Mexican International Congress on Acoustics

The 18th Mexican International Congress on Acoustics will be held in the Convention Center at the Real de Naturales Hotel in Cholula, Puebla, Mexico. The dates for the congress are November 16-16, 2011. There is a special rate for the Congress Registrants. Rooms may be reserved through the Organizing Committee.

Companies or individuals interested in participating as sponsors should contact the coordinators of the event. The minimum fee to participate as sponsors is 7,500 MXN (800 USD). Logos and names of sponsors will be published in the conference proceedings and displayed in the sponsors' wall.

USA

Kanter and Robinson Receive NCAC Student Travel Awards

The National Council of Acoustical Consultants (NCAC) has announced that Shane Kanter of Leawood, Kansas, a student in the University of Kansas' Architecture Master's program is one of the first four recipients of the organization's new Student Travel Award. Kanter received \$500 in travel assistance to present his technical paper, "Architectural Acoustics and Noise: Acoustics of Green Buildings," at the 161st meeting of the Acoustical Society of America (ASA), which took place May 23-27 in Seattle, Washington. A second student, Philip Robinson of Gallup, New Mexico and a student in Rensselaer Polytechnic Institute's Architectural Acoustics undergraduate program, also received a travel grant. He also received \$500 in travel assistance to present his technical paper, "Quantitative and Qualitative Effects of Diffusion in Rooms," at the same ASA meeting.

During a student reception at the ASA

meeting, Kanter and Robinson were presented with the award by Russ Berger, NCAC's immediate past president, who conceived and developed the Student Travel Award program during his two-year term as president. As part of a new initiative for NCAC, the award program focuses on those individuals new to the field or looking to get into the profession

"It is rewarding to see our planning efforts realized in the presentation of these first NCAC Student Travel Awards," said Berger. "The goal of this award program is to further recognize future acoustical professionals. Participating at industry events like ASA and the Institute of Noise Control Engineering (INCE), which are both highly regarded by NCAC, is a great way for students to interact with other professional consultants before they even leave the classroom."

"We are happy to be able to recognize these educational institutions who prepare the next generation of acoustical consultants," says Kenric Van Wyk, NCAC's Vice President of Marketing. "NCAC is about

Warren E. Blazier, Jr. 1924-2011

Warren E. Blazier, Jr., died on the 20th of February, 2011 at VA Hospital, San Francisco. He was an internationally recognized expert in acoustics and vibration of buildings and was professionally active until his death at the age of 87. Born in Sharon Springs, Kansas, he served in the US Air Force in World War II, studied music at Julliard, graduated in Engineering Physics from the University of Kansas, and earned a Master of Science in Acoustics from the University of Wichita. He worked with the Boeing Airplane Company, and later Borg-Warner before joining the acoustics consulting firm of Bolt Beranek and Newman in Cambridge, Los Angeles and San Francisco. In 1978 he founded his own group, Warren Blazier Associates, pioneering work on mechanical systems in the design of concert halls and vibration-sensitive laboratories.

Warren was a Fellow of the Acoustical Society of America and the American Society of Heating, Refrigeration and Air-

Conditioning Engineers and a founding member of the Institute of Noise Control Engineering. He was active in ASHRAE technical committees TC 2.6 Sound & Vibration and TC 2.7 Seismic & Wind Restraint Design. He received a Distinguished 50-year Member Award from ASHRAE in 2008, and four awards for ASHRAE best paper presentations. He was a member of the National Council of Acoustical Consultants.

Both a consultant and mentor to other acoustical consultants, Warren encouraged closer collaboration between engineering disciplines. He contributed to many publications, including eight successive editions of the chapter on Sound & Vibration Control for the ASHRAE Handbook. He was the author of the widely-recognized Room Criteria method for rating ambient noise in rooms and co-author with Chuck Ebbing of Application of Manufacturers' Sound Data.

—Red Wetherill



NCAC Immediate Past President Russ Berger presents Rensselaer Polytechnic Institute Architectural Acoustics undergraduate student Philip Robinson with the one of the organization's first four Student Travel Awards.



RussBerger_Shane Kantor.jpg: NCAC Immediate Past President Russ Berger presents University of Kansas Architecture graduate student Shane Kantor with the one of the organization's first four Student Travel Awards.

educating the public and expanding the knowledge base of those in the field. We were excited to hear the thoughts and perspectives of these students and see how their observations will affect future NCAC member firm projects.”

The eligibility of university and college programs was determined by the NCAC Student Travel Award committee and based on stringent criteria regarding the program's curriculum and faculty. Chosen by lottery from a pool of qualified programs, the winning schools then qualify and select a graduate or undergraduate student from their program to be the recipient of the award. These honors have

been made possible through financial sponsorship by NCAC member firms. Additional student winners are expected to be announced throughout the year.

For more information on NCAC and the Student Travel Award, please visit the NCAC website, www.ncac.com.

NCAC is Association Sponsor for WFX

The National Council of Acoustical Consultants has announced that it will be an Association Sponsor for the Worship Facilities Conference and Expo (WFX) Dallas 2011, taking place November 9-11 at the Dallas Convention Center.

WFX is the leading event equipping church teams with the tools and technology to create meaningful spaces and powerful worship experiences.

“WFX is proud to have the support of NCAC, as they are an important and influential leader in the advancement of sound engineering principles in the houses of worship,” says Jim Wagner, General Manager, EH Events. “This partnership reflects the growing importance of WFX as a national gathering for churches of all sizes and the firms and individuals who service them before and during any type of facility improvement project.”

“NCAC is pleased to be part of WFX and to share information regarding the importance of acoustical design on the success of worship facilities,” says Bennett Brooks, NCAC President. “Connecting with those involved in facility planning, design, construction and improvement is critical to building optimum listening environments, for all types of spaces and styles of worship. Through thoughtful room and audio design, and noise control implementation, we help our clients to achieve their goals. WFX is a great place to make those connections.”

WFX Dallas 2011 will address the needs of sound consultants and engineers with

a Conference track dedicated to Audio, Video and Lighting, featuring sessions including “Acoustics in Worship,” “Live Performance AV&L Check,” and “Creating Compelling Spaces.”

Now in its seventh year, WFX is presented by Church Production and Worship Facilities Magazines and EH Events in conjunction with The American Institute of Architects Interfaith Forum on Religion, Art and Architecture Knowledge Community, and sponsored by Christianity Today International.

“Noise Talk” is a New Online Forum

Noise Free America's new online forum, “Noise Talk,” is now open. The Forum can now be accessed at www.noisefree.org/forum or by clicking the “Forum” link on our homepage www.noisefree.org.

The discussion forums use a message board platform and will replace the existing Yahoo Groups list-serv. The Noise Free America Yahoo group will cease to exist on September 12, 2011 and move permanently to the “Noise Talk” forum. We created the “Noise Talk” forum in response to feedback from group members. Many people have complained of being overwhelmed with too many e-mails in their in-box generated by the Yahoo group. Also, of course, none of the e-mails are organized by topic.

The bulletin board forum will alleviate that problem. In the forum, members will be able to hold conversations in the form of posted messages. Members may participate only in the forums and topics they are interested in.

Members can still choose to have messages e-mailed to them for topics they are interested in. However, e-mails will not automatically be generated. If members wish to be notified via e-mail regarding any topics, they must manually choose to be notified.

Czech Republic Euronoise 2012

The organizing Committee would like to invite you to participate in the Ninth European Conference on Noise Control Euronoise 2012 to be held in Prague, Czech Republic, on June 10-13, 2012. The Euronoise 2012 website is <http://www.euronoise2012.cz>.

The Euronoise congresses are devoted to events in the field of acoustics, noise and vibration control and related topics, and the 2012 meeting will be organized by the Czech Acoustical Society on behalf of the European Acoustical Association. The congress will be accompanied by a major exhibition of acoustical materials, software, and measurement devices.

Europe ENNAH - the European Network on Noise and Health

The ENNAH network is funded by the European Union to establish a research network of experts on noise and health in Europe. The network brings together 33 European research centres to establish future research directions and policy needs for noise and health in Europe.

The network will focus on the study of environmental noise sources, in particular transport noise, as well as emergent sources of noise such as noise from wind farms and low frequency noise.

The network will facilitate high level science communication and encourage productive interdisciplinary discussion and exchange. For more information, go to www.ennah.eu

Implementation of the EU Environmental Noise Directive

On June 1, 2011 the European Commission published COM(2011) 321 final, which is a report from the Commission to the European Parliament and Council on the

implementation of the Environmental Noise Directive in accordance with Article 11 of Directive 2002/49/EC. The report may be found at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0321:FIN:EN:PDF>

A good practice guide, T.R. No. 11/210 has been published by the European Environment Agency which is intended to assist policy makers and competent authorities in understanding and fulfilling the action planning requirements of 2002/49/EC. The guide may be found at <http://www.eea.europa.eu/publications/good-practice-guide-on-noise>

United Kingdom Should Noise be Added to Electric Cars?

Adding to noise from electric and hybrid cars is now written into American law. A point of view from the UK is expressed in an article in the BBC news magazine titled Should electric cars be made to go 'vroom'? The article may be found at www.bbc.co.uk/news/magazine-13416020

Defra Surveys Highlight the Value of Quiet Open Spaces

Defra surveys on public attitudes to the environment have for some time failed to cover noise, leaving an information gap for policy makers. Surveys are, however, now beginning to assess our perception of quiet open space.

Throughout policy the importance of access to good quality open space is increasingly being recognized as a public health asset. The recent survey on Public Attitudes and Behavior towards the Environment, 2007-2011 is now presented to include life satisfaction and other measures of well-being in England. Last year for the first time, respondents were asked whether where they live is a quiet environment. Over 80% of those questioned said yes, with a lower level of satisfaction reported from those assessed as lower social grades. Similarly, the value

of open green spaces was highlighted in the survey, in which 92% said it was fairly important to have open space nearby. This is a similar figure to our Noise Action Week NOP survey of 2009, which found that 91% of people think existing areas of quiet need protecting. On reasons for visiting open spaces, in the Defra survey 71% of respondents said they visited open spaces for fresh air and 26% for tranquility—demonstrating that people do associate open spaces with a healthier environment.

Continued Delays in Research on Wind Turbine Noise Assessment

A number of pieces of work are underway that promise to contribute to unraveling the complexities of wind farm noise assessment. Meanwhile, adherence to the increasingly outdated government approved guidance on wind farm noise assessment (ETSU-R-97) continues to lose credibility in court judgments on wind farm planning applications. However, these research projects are all subject to delay in completion and publication, reflecting both the complexity and political sensitivity of determining a reliable means of deciding where wind farms should go.

Defra-commissioned work looking at supporting the use of the statutory nuisance regime for dealing with wind farm noise complaints is long overdue, and we hope to see it in the next month. Also delayed is research commissioned by the Department of Energy and Climate Change, looking at the consistency of implementation of ETSU – which we hope will go broader than its original remit and include an examination of current practice (i.e. use in more recent applications of an adapted version of ETSU as set out in the Institute of Acoustics Bulletin agreement). This was due to be reported at the end of last year, then this May, but is now not expected for a few more weeks.

The third piece of work awaited, is

research commissioned by industry body Renewable UK, which has commissioned a consortium of consultants to look at amplitude modulation – an acoustic effect that manifests as a “thump.” The industry has recognized that there are issues that need to be resolved beyond simple noise levels, and we look forward to the outcome of this work, which is anticipated to be in the autumn.

Meanwhile uncertainty and planning battles look set to continue for a while yet – at cost to industry, communities, local authorities and the achievement of renewables targets.

Heathrow Launches Community Consultation on Noise Schemes

Heathrow Airport has launched a 12-week public consultation on a review of its mitigation schemes which aim to reduce the impact of aircraft noise on the community.

The mitigation schemes provide financial help towards double glazing and, for a smaller number of residents, help with sale costs for people wishing to move away from the area. Heathrow committed to reviewing the schemes as part of the Noise Action Plan, a five year plan setting

out how noise will be managed at the airport. The new proposals are designed to respond more effectively to community concerns than the current versions.

- Improvements over the existing set of schemes include:
- Widening the area in which people are eligible to apply for assistance
- Introducing a zoning system so that those living nearest the airport receive more funding
- Increasing the range of mitigation options available
- Providing support for an additional 7,500 properties should they wish to move away.

Colin Matthews, chief executive officer of BAA, Heathrow’s owners, said:

“Whilst Heathrow generates many social and economic benefits for the local area, aircraft noise can be disturbing for people who live or work nearby. As part of our commitment to the local community we want to make these schemes simple to understand and effective in lessening the impact of aircraft noise in areas close to the airport. We’re keen to hear views on the proposals from local people and encourage them to get in touch.”

The consultation also explains how changes brought about by the ending of the Cranford Agreement will affect residents and what Heathrow is doing to lessen these impacts. After public consultation, the previous Government decided to end the 60-year-old rule, a position confirmed by the current Government in September 2010. Ending the Agreement will provide benefits to thousands of people living near Heathrow since noise will be spread more evenly around the airport. The decision has been widely welcomed by local communities. There will be some people that will be subject to more aircraft noise, however, and the new schemes are designed to take account of this.

Currently, when the wind blows from the east, planes must take off from the southern runway and land on the northern runway. This means many locals across areas such as Windsor, Datchet, Colnbrook and North Feltham hear aircraft noise all day. The ending of the Agreement means that full runway alternation can be introduced in the same way as the current arrangement when the wind blows from the west, spreading noise more evenly around the airport. For more, go to www.heathrow.com/consultations

Asia-Pacific News

Marion Burgess, Asia-Pacific Editor

Australia

Noise from Wind Farms

Noise from Wind Farms has been a topic of much interest throughout many areas of Australia. In 2011 the Australian Senate inquiry into the Social and Economic Impact of Rural Wind Farms was released. The terms of reference for this inquiry included effects of noise and vibration and adverse effects on health. The

report provides seven recommendations including that the National Acoustics Laboratory should conduct a study and assessment of noise impacts of wind farms, including the impacts of infrasound. The full report can be seen from the links at www.aph.gov.au/senate/committee.

INTER-NOISE 2014

At the board meetings during the time of INTER-NOISE 2011, the Australian Acoustical Society was successful in the bid to host INTER-NOISE 2014 in Melbourne Victoria. The Congress will be held in November at the conference facility in central Melbourne.

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Technology for a Quieter America



In 2006, NAE initiated *Technology for a Quieter America*, a multi-year study to review state-of-the-art noise-control engineering, describe the technological, economic and political climate for noise control, and identify gaps in research. During the past three years, a 14-member umbrella committee, chaired by NAE member George Maling (managing director emeritus of the Institute for Noise Control Engineering of the USA), five subcommittees, and focused working groups have explored three categories of issues related to noise-control engineering and public concerns: applications of current technologies; research and development initiatives; and intra-governmental and public relations programs. The report is now available from the National Academies Press.

Technology for a Quieter America assesses major sources of noise (transportation, machinery and equipment, consumer products, etc.), how they are characterized, efforts to reduce noise emissions, and efforts to reduce noise in work places, schools, recreational environments, and residences. The report reviews regulations that govern noise levels and the roles of federal, state, and local agencies in noise regulation.

It also examines cost-benefit trade-offs between different approaches to noise abatement, the availability of public information on noise mitigation, and noise-control education in U.S. schools of engineering.

Findings of the report focused on several critical areas: Hazardous noise-Occupational noise exposure limits should be reduced and engineering controls should be the primary focus of controlling workplace noise. "Buy-quiet" programs that promote the procurement of low-noise equipment and allow market forces to operate can play an important role.

Cost Benefit analysis: The Federal Aviation Administration has been proactive in cost-benefit analysis of noise reduction at airports; these studies, along with similar research from Europe, could lead to highway noise reduction. The report examines the relative merits of "low noise" highways and the use of noise barriers.

Metrics: Advances in the ability to collect, store, and analyze noise data challenge us to reexamine metrics that were developed in the 1970s. Purchase information: http://www.nap.edu/catalog.php?record_id=12928

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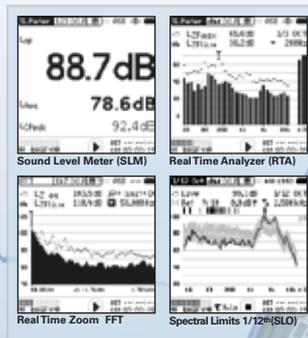
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New Instruments from Soft dB Are Available at Scantek

Scantek, Inc., is pleased to announce the availability of two of the newest instruments from Soft dB, the "Piccolo" and the "Concerto."

The Piccolo is a compact, data logging integrating sound level meter with up to 10 days of continuous measurement and many other features. The introductory price is 345 USD which includes windscreens, USB cable, battery, software, and case.

The Concerto is a sophisticated four-channel, Class 1, hand-held acoustic data logging measurement system with up to 16 GB of internal memory. The four independent channels can do building acoustics, building vibrations, and soon, sound intensity. The unit starts at about 10,000 USD.

Scantek, Inc., is a distributor for multiple sound and vibration lines, including Norsonic, RION, CESVA, Castle Group, KCF Technologies, Soft dB, Metra Vibration Transducers, DataKustik, BSWA Transducers, and Extech Sound and Vibration Instruments. Scantek also has an ISO 17025 NIST/NVLAP accredited Calibration Laboratory. Scantek is committed to providing quality sales, customer repair, service, full instrument rental, and calibration of sound & vibration instrumentation. For more information, visit www.scantekinc.com.

Free Field Technologies Announces New Simulation Software

Free Field Technologies (FFT) recently released version 12.0 of its ACTRAN software suite, said to be the state of the art in numerical acoustic, vibro-acoustic and aero-acoustic simulation, providing its users with many significant new features.

Numerical simulation is an excellent way to test and compare design alternatives early in the development process, typically at a much lower cost and time investment

than building prototypes and testing them. Acoustic simulation allows research and product development engineers to carry out acoustic design studies prior to making prototypes to anticipate acoustic phenomena in order to reduce overall noise levels and optimize acoustic performance.

ACTRAN was launched in 1998 and has been continually improved since then, becoming a solution used by many key players in several industries - automotive (BMW, PSA, Renault, Toyota, Nissan, Honda and others), aeronautic (Airbus, SAFRAN, Snecma, Rolls Royce, Honeywell, Goodrich, Aermachi, and others), aerospace (NASA, JAXA, Astrium, etc.), electronics (Sanyo, Nikon, etc.) and heavy equipment (Volvo, Hitachi, and more).

Free Field Technologies SA is a privately held corporation headquartered in Mont-Saint-Guibert, Belgium with offices in France, Japan and the US, and distributors in Europe, Asia, South America and the US.

Free Field Technologies is focused on three main areas:

- Developing ACTRAN software for acoustic, aero-acoustic and vibro-acoustic simulation;
- Providing technical services to support, train and deliver acoustic engineering projects;
- Researching new technologies and methods of acoustic analysis in order to remain the leader in finite element acoustic modeling.

For more information visit www.fft.be or send an email to info@fft.be.

LMS selects Dalimar Instruments as Main Distributor of LMS Products in Canada

LMS, the leading partner in Test & Mechatronic Simulation announces the selection of Dalimar Instruments as their sole distributor of LMS products and services in Canada. With offices in Quebec,

Ontario and Alberta, Dalimar offers local coverage in key regions and brings a strong technical background in research and development engineering solutions. With the addition of Dalimar, LMS further strengthens its network of sales offices and representatives across the Americas.

Over the past decade, the LMS customer base in the Canadian aerospace, automotive and other advanced manufacturing industries has grown substantially. Through a close collaboration with Dalimar, LMS is well positioned to respond to the growing demand for advanced testing systems, virtual simulation software and mechatronic simulation software and engineering services in the region.

"Our selection of Dalimar will strengthen our sales and customer services activities in Canada in addition to our direct relationships at some strategic accounts. It reflects our long-term commitment towards Canada and the North American market and will allow us to further develop extensive partnerships with the customer community in the region", stated Marc Boonen, President at LMS North America. "This is a further continuation of our customer intimacy initiative at LMS, establishing close partnerships with our customers through strong regional offices and representatives."

About Dalimar

For over 23 years, Dalimar has provided solutions to our customers with cutting edge technology in acoustics & vibration, product testing, data acquisition and transducers. Today, our team continues to strive for better ways to facilitate current research techniques. We are committed to resolving today's most complex research problems and providing our customers with technical expertise and unparalleled services. Our ability to network and partner with world leading suppliers is certainly one of our key success factors. Your desire to improve the modern environment and its increasingly sophisticated concerns drives our quest to help you find better solutions. At Dalimar, our attention, experience, expertise and highly trained technical people are here for, and focused on, our customers.

INCE/USA Liaison Program

ACO Pacific, Inc.	Belmont, California
AVAC Continuing Education	Pittsburgh, Pennsylvania
Colin Gordon and Associates.....	San Bruno, California
Acoustical Solutions.....	Richmond, Virginia
Cavanaugh Tocci Associates.....	Sudbury, Massachusetts
G.R.A.S. Sound and Vibration.....	Vedbaek, Denmark
Harris Miller Miller & Hanson Inc.....	Burlington, Massachusetts
Noise Control Engineering, Inc.....	Billerica, Massachusetts
Overly Door Company.....	Greensburg, Pennsylvania
Scantek, Inc.....	Columbia, Maryland
Vibro-Acoustics.....	Scarborough, Ontario, Canada
Wyle Laboratories.....	Arlington, Virginia

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Brüel & Kjær	Nærum, Denmark
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G.R.A.S.	Vedbaek, Denmark
LMS International, NV Numerical Integration Technologies.....	Heverlee, Belgium
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Portugal	Laboratorio Nacional de Engenharia Civil, Lisboa
Sweden.....	Department of Applied Acoustics, Chalmers University of Technology, Gothenburg

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.

2011 September 4-7

INTER-NOISE 11

Osaka, Japan
 Contact: INCE/Japan
 c/o Kobayasi Institute of Physical Research
 3-20-41 Higashimotomachi, Kokubunji
 Tokyo 185-0022
 Facsimile: +81 42 327 3847
 e-mail: office@ince-j.or.jp
 home page: <http://www.internoise2011.com>

2012 August 19-22

INTER-NOISE 12

New York City, USA
 Contact:
 Institute of Noise Control Engineering-USA
 Amy Herron, Conference Coordinator
 INCE/USA Business Office
 9100 Purdue Road, Suite 200
 Indianapolis, IN 46268-3165
 Telephone: +1 317 735 4063
 E-mail: ibo@inceusa.org
<http://www.internoise2012.com>

2013 August 26-28

NOISE-CON 13

Denver, Colorado, USA
 Contact:
 Institute of Noise Control Engineering-USA
 Amy Herron, Conference Coordinator
 INCE/USA Business Office
 9100 Purdue Road, Suite 200
 Indianapolis, IN 46268-3165
 Telephone: +1 317 735 4063
 E-mail: ibo@inceusa.org
<http://www.inceusa.org/nc13>

Directory of Noise Control Services

Information on listings in the Directory of Noise Control Services is available from the INCE/USA Business Office, 9100 Purdue Road, Suite 200, Indianapolis, IN 46268-3165. Telephone: +1 317 735 4063; e-mail: ibo@inceusa.org. The price is USD 400 for 4 insertions.

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Richard J. Peppin
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Fax: +1 410 290 9167

*Mark your calendar and
plan to participate!*

INTER-NOISE 2012

**New York City, USA
August 19-22**

INTER-NOISE 2012, the 41st International Congress and Exposition on Noise Control Engineering, will be held in New York City, USA, from 19-22 August 2012. The theme of the Congress is Quietening the World's Cities. The congress is being held in conjunction with the American Society of Mechanical Engineers Noise Control and Acoustics Division (ASME NCAD) annual meeting, is sponsored by the International Institute of Noise Control Engineering (I-INCE), and is being organized by the United States Institute of Noise Control Engineering (INCE-USA). The Acoustical Society of America (ASA) and SAE International are also co-sponsoring the event.

We anticipate a large, broad program of sessions on a variety of acoustics, vibration, and noise topics. We plan to hold special workshops highlighting city noise codes, and the New York City noise code in particular.

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The INCE/USA Page at the Atlas Bookstore

www.atlasbooks.com/marktplc/00726.htm

INTER-NOISE 06 Proceedings

This searchable CD-ROM contains the 662 papers presented at INTER-NOISE 06, the 2006 Congress and Exposition on Noise Control Engineering. This, the 35th in a series of international congresses on noise control engineering was held in Honolulu, Hawaii, USA on December 3-6, 2006. The theme of the congress was "Engineering a Quieter World."

The technical topics covered at INTER-NOISE 06 included:

- Aircraft and Airport Noise Control
- Community Noise
- Fan noise and aeroacoustics
- Highway, automobile and heavy vehicle noise
- Machinery noise
- Noise policy
- Product noise emissions
- Sound quality.

The NOISE-CON 05 Proceedings Archive (1996-2005)

This searchable CD-ROM contains 198 papers presented at the joint NOISE-CON 05/ASA 150th meeting as well as 749 papers from the NOISE-CON conferences held in 1996, 1997, 1998, 2000, 2001, 2003, and 2004 as well as the papers from the Sound Quality Symposia held in 1998 and 2002. All papers are PDF files.

Several papers are taken from sessions organized by the Noise, Architectural Acoustics and Structural Acoustics Technical committees for this 150th ASA meeting. The three plenary lectures related to noise and its impact on the environment are included. Also included are papers in one or more organized sessions in the areas of aircraft noise, tire/pavement noise, and hospital noise.

NOISE-CON 11 DVD

NOISE-CON 2011 was held jointly with the Transportation Research Board (TRB) ADC40 Committee on Transportation-Related Noise and Vibration on 25-27 July, 2011 at the Marriott Downtown Waterfront Hotel in Portland, Oregon. One hundred forty seven (147) technical presentations were given at the conference and of those, 132 were submitted as written papers that are included on this DVD.

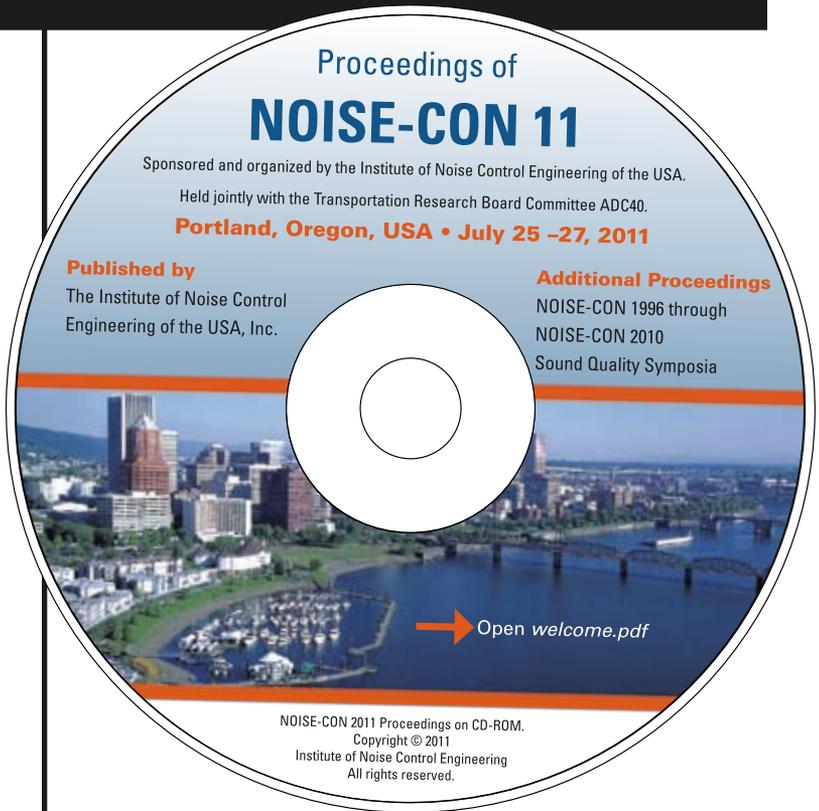
Written papers were submitted in nine INCE/USA technical areas. Given the fact that the conference was a joint conference with the TRB ADC40 Committee on Transportation-Related Noise and Vibration, there were more papers presented in the INCE Transportation Noise technical area than any other area (37 papers). However, there was also a strong turn-out in other technical areas such as:

- Building Acoustics – 21 papers
- Industrial Noise – 18 papers
- Passive Noise Control – 17 papers
- Structural Acoustics – 13 papers

The remaining twenty six papers were spread out over four of the remaining seven INCE technical areas.

This DVD also contains the proceedings of ALL NOISE-CON conferences held since 1996. This includes the years 1996, 1998, 2000, 2001, 2003, 2004, 2005, 2007, 2008, and 2010. Also included are the proceedings of two sound quality symposia, 1998 and 2002. So, including the NOISE-CON 2011 papers, a total of 1621 technical papers are included on this DVD. All papers are in PDF format.

These papers are a valuable source of information on noise control that will be of value to engineers in industry, acoustical consultants, researchers, government workers, and the academic community.



This DVD contains the NOISE-CON 11 Proceedings and 12 additional conference proceedings.

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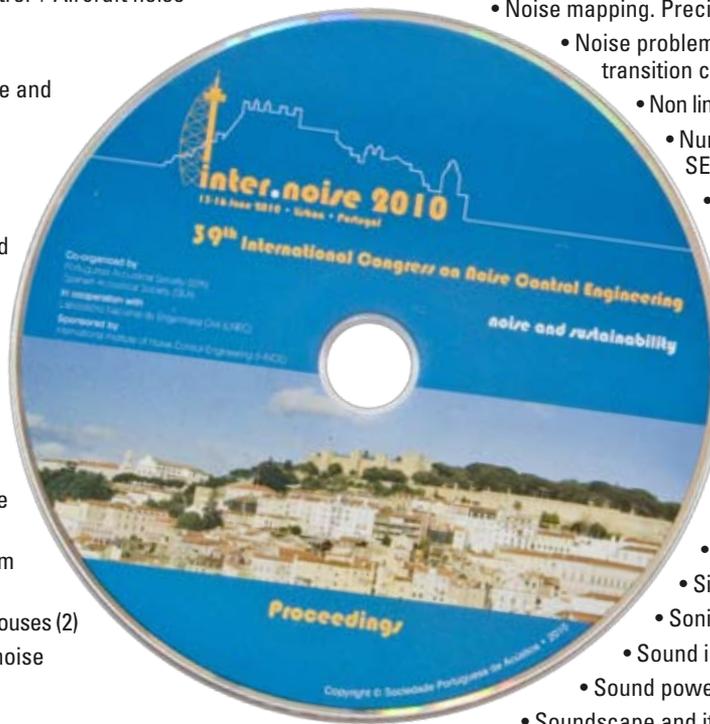
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Parallel Sessions (the number in parentheses is the number of sessions)

- Acoustic and thermal interactions for energy efficient buildings
- Acoustic comfort in buildings
- Acoustical holography, imaging and beam forming (2)
- Acoustical metrology (instruments, measurements, standards, uncertainty) (cont.) + Instrumentation and standards (2)
- Action plans of urban areas: strategies and experiences (2)
- Active noise and vibration control (3)
- Aeroacoustics and fan noise
- Aircraft interior noise and related technology + Aeroacoustics and fan noise
- Aircraft noise modelling and control + Aircraft noise characterization
- Airport noise (2)
- Asphalt rubber pavements - noise and sustainability (2)
- Assessment and strategies for managing noise (2)
- Bioacoustics
- Building acoustics properties and comfort classes
- Characterization of structure-borne sound sources (2)
- Classroom acoustics
- Community noise around airports
- Community noise maps and action plans (2)
- Community response and exposure criteria in environmental situations
- Computational techniques in room and building acoustics
- Concert halls, theaters and opera houses (2)
- Diffraction reducing devices on noise barrier top
- Ducts and mufflers
- Economics of noise for sustainability
- Environmental noise (policy, standards, problems and approaches)
- Environmental vibration and its impacts on buildings and people
- Floor impact noise evaluation and control (2)
- General acoustics and vibration (2)
- Hearing protectors
- Industrial noise and noise at work
- Legislation and noise control policies
- Lightweight partitions and systems (2)
- Longevity of pavements
- Low frequency and airport ground noise
- Measurements in room and building acoustics (3)
- Measurements of surface properties
- Metrics for environmental noise
- Musical acoustics
- New directions in noise and health research (2)
- Noise annoyance
- Noise barriers (2)
- Noise control engineering education
- Noise control materials
- Noise from information technology equipment
- Noise from renewable energy technologies
- Noise in healthcare facilities
- Noise mapping. Precision and uncertainty (2)
- Noise problems and solutions in developing and in transition countries (2)
- Non linear dynamics of acoustic resonators (2)
- Numerical techniques (FEM, BEM, IFEM, SEA) (3)
- Occupational noise (2)
- Outdoor sound propagation in living environment (2)
- Physiological health effects from environmental noise exposure
- Product sound auralization
- Psychoacoustics and sound quality (3)
- Psychological effects of noise (3)
- Public space acoustics for safety + Sustainable quiet buildings
- Recreational noise
- Signal processing and analysis (2)
- Sonic crystal noise barriers
- Sound insulation at low frequency
- Sound power measurements and analysis
- Soundscape and its applications (2)
- Soundscape-metrics (2)
- Speech communication in road vehicles
- Speech privacy
- Tire/road noise (2)
- Transportation noise (air, road, rail, marine vehicles) (3)
- Ultrasound
- Underground noise control
- Underwater acoustics
- Urban noise and its control
- Urban sound propagation and evaluation
- Vibration isolation and damping
- Vibro-acoustic performance of structures and vehicles (2)



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