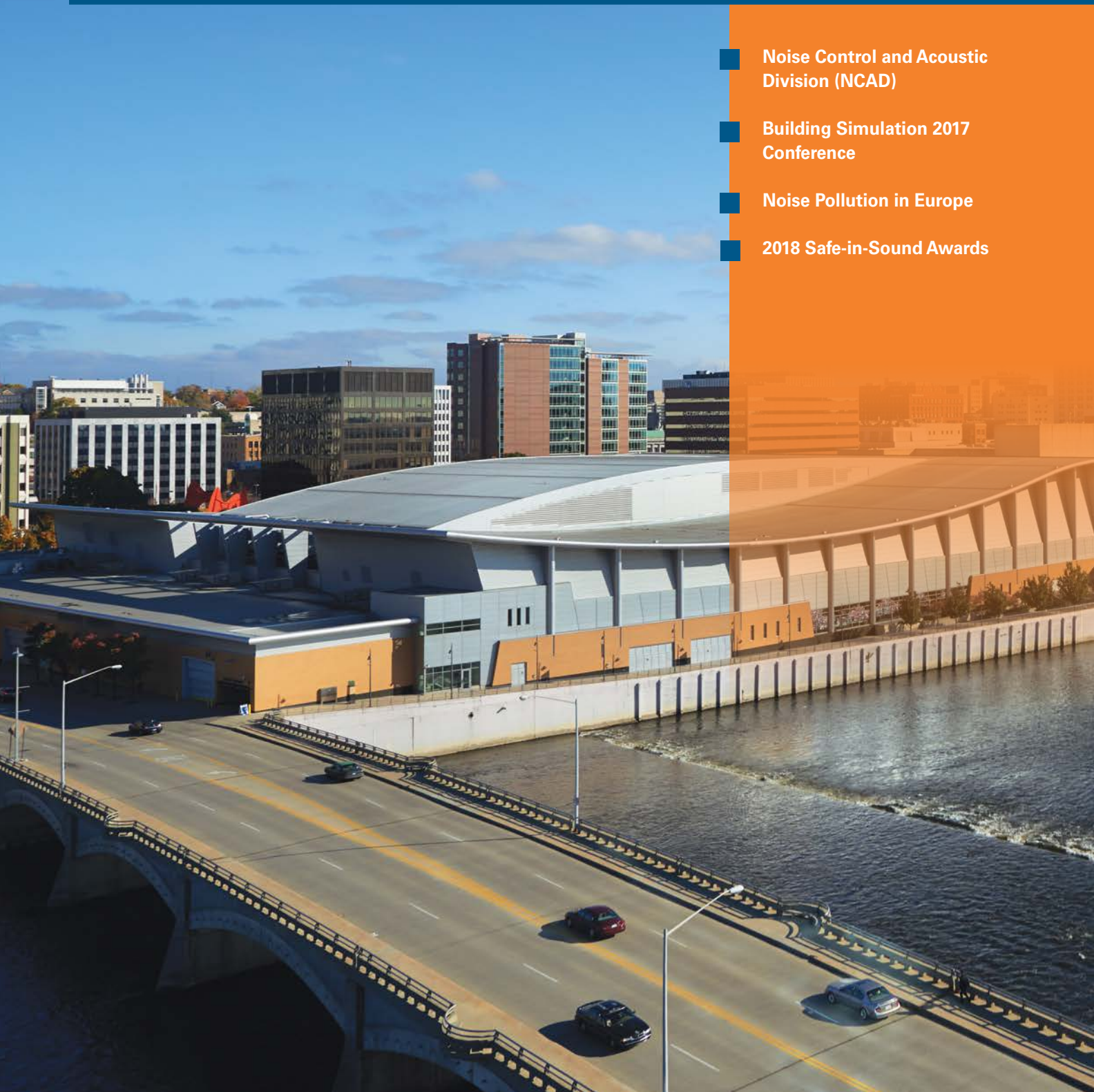
NOISE/NEWS INTERNATIONAL

Volume 25, Number 2
2017 June

A quarterly news magazine and online digital blog published by I-INCE and INCE-USA

- Noise Control and Acoustic Division (NCAD)
- Building Simulation 2017 Conference
- Noise Pollution in Europe
- 2018 Safe-in-Sound Awards



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ADVERTISING: For information about advertising, contact Cathy Vail, INCE Business Office +1.703.437.4073; e-mail: cathy@inceusa.org

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 third 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 fifty-one member societies in forty-six 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 1993
- 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

Editor's View

This will be the last issue of *Noise/News International* (NNI) for which I will serve as Managing Editor. On July 1 I will take on a new role as Managing Editor of the *Noise Control Engineering Journal*. I want to take this opportunity to thank all those who have contributed to this publication during my tenure. A number of people have contributed greatly to NNI and their hard work is much appreciated.

NNI has gone through substantial changes. We now have a functioning blog and the ability to quickly publish noise news and information. This new format provides a much better means to provide timely information to the worldwide community. I sincerely hope that it grows to become the "go to" site to get news and information about noise control for the global community.

I hope that I have done credit to the outstanding publication established by George Maling. When I took this position, I noted that I had big shoes to fill. I have done my best in the time I have had. I can say now, with seven years' perspective, that George's contributions through NNI have been immense. I hope that I have made at least a small addition to his legacy.

The next step for NNI is to move from a quarterly publication to a continuously updated source of information for noise control professionals around the world. In the future, it is hoped that those in noise control will regularly watch NNI for regular news and information critical to the profession. Through social media and a less rigid structure, NNI can become even more useful and timely.

We continue to welcome news and information from anyone in the noise control community. Topics of interest range from conferences to publications, product news, and all other aspects of the profession. All input is welcome and, when appropriate, it will be posted immediately on the blog.

I want to take this opportunity to welcome the new managing editor. At the time I am writing this column, that person has not yet been selected. We have a few outstanding candidates and I am sure they will carry on the tradition of outstanding service to the community by NNI. I wish them well and look forward to the innovations yet to come.

Jim Thompson, PhD, PE, INCE Bd. Cert.
nnieditor@inceusa.org

Noise Control and Acoustic Division (NCAD)

NCAD Information

Founded in 1979 and established as a division in 1981, the Noise Control and Acoustics Division meets yearly, usually at the American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition (ASME IMECE). Starting in 2008, when NCAD had a joint session with INCE (Institute of Noise Control Engineering), NCAD has attended INTER-NOISE every three years since 2012. Our next joint session will be INTER-NOISE 2018. Our division works in noise and vibration control, using computational techniques, analytical methods, and measurements to study complex aero-acoustic, hydro-acoustic, and structural-acoustic systems. The application of active and passive control systems is of consideration as well. Our symposia usually include sessions on flow-induced vibration and sound, structural acoustics, phonic structures, and active control.

NCAD reaches its members through the ASME Community website: https://community.asme.org/noise_control_acoustics_division/default.aspx. The website has a wealth of information and includes past newsletters, along with selected Rayleigh lecture and tutorial presentations from past conferences. NCAD also has a Facebook page: https://www.facebook.com/pages/NCAD-Noise-Control-and-Acoustics-Division/211722612197712. We will update this page with news and notes throughout the year. Please "Like" the page to follow our updates.

Report from the Chair, *Charlie Zheng*

This year we progressed further to fulfill NCAD's goals to promote the development and application of noise control and acoustic principles, to encourage the interchange of ideas through technical meetings and publications, and to acknowledge exceptional engineering achievement within the field. The biggest event for NCAD in 2016 was a successful track sponsored by NCAD on Vibration, Acoustics, and Wave Propagation at the annual ASME International Mechanical Engineering Congress and Exposition (IMECE) held in Phoenix, AZ. Dr. Sue Sung was the NCAD track organizer. NCAD had a total of 18 technical sessions, with approximately 90 presentations. Good job, Sue!

At IMECE 2016, Dr. Victor W. Sparrow, Professor and Director of Graduate Program in Acoustics at Penn State University, received the 2016 Rayleigh Lecture Award. He gave a fantastic speech on "Two Approaches to Reduce the Noise Impact of Overland Civilian Supersonic Flight." His speech provided a basis to understand sonic booms and the ongoing work to enable overland supersonic flight for civilian aircraft. We also organized the NCAD tutorial workshop as the track plenary session, and Professor Miao Yu from the University of Maryland was the tutorial speaker on "Acoustic Sensing Technology." Acoustic sensors play an important role in many areas. In her tutorial, Professor Yu reviewed different acoustic sensor technologies and recent efforts by her group on the development of acoustic sensing technologies. A plenary talk was given by Bahram Djafari-Rouhani of the University of Lille entitled, "Presentation: Phonon Tunneling Through Vacuum Cavity in Finite Piezoelectric Superlattice." Past tutorials and Rayleigh Lectures sponsored by NCAD are also available at: https://community.asme.org/noise_control_acoustics_division/m/default.aspx.

The NCAD student paper competition was organized at IMECE 2016. This time, as a new improvement decided by the NCAD leadership group, we recognized three student papers to receive the awards in order to increase the impact of ASME on the incoming professional generation. The student papers were judged based on the quality of both the written paper and the oral presentation at IMECE 2016. Mr. Plinio Ferreira Pinto from Memorial University in St. Johns, Canada; Mr. Dante Tufano from Rensselaer Polytechnic Institute in Troy, NY, USA; and Mr. Junjian Zhang from University of Kansas in Lawrence, KS, USA, won the 1st, 2nd, and 3rd places, respectively, for this year's ASME NCAD student paper competition. I would also like to thank the student paper competition committee, headed by Ab Kirwan, for its diligent work in reviewing the papers and attending the students' presentations.

Per Bruel Gold Medal Recipient: Patricia Davies

Patricia Davies received the 2016 Per Bruel Gold Medal for Noise Control and Acoustics from ASME. She was recognized "for exceptional leadership and educational mentorship in the field of noise control and acoustics; and for outstanding contributions to noise control engineering in the areas of signal processing, nonlinear dynamic modeling, product sound quality, and human response to noise and vibration." Davies has served as the director of Purdue's Herrick Labs since 2005, overseeing an acoustics laboratory, among several other areas of research. (Reprinted from Purdue University Mechanical Engineering Department)

Future NCAD Meetings, *Ab Kirwan*

The Noise Control and Acoustics Division (NCAD) of ASME is excited to be sponsoring a technical track on Acoustics, Vibration, and Phononics at IMECE 2017 in Tampa, FL, USA. This year's conference takes place November 3–9. Note this year's conference is a week earlier than previous IMECE conferences. Authors are invited to contribute manuscripts, extended abstracts, abstracts, presentations, or posters. Studies may be experimental, theoretical, or numerical in nature. Industrial experiences related to these areas are of particular interest. Additional information regarding IMECE 2017 is available at the conference website: https://www.asme.org/events/imece.

NCAD Leadership

Group Leadership Team Members

The activities of the division are directed by the Group Leadership Team (GLT, formerly the Executive Committee), which establishes the Division's policy and goals. The GLT is supported by other committees as needed. Members of the GLT serve for five years, spending one year in each of the roles. The committee members for 2016–2017 are:

Charlie Zheng, University of Kansas, Chair
Kristin Cody, Naval Nuclear Laboratory, Vice Chair
Sue Sung, Retired, Secretary/Treasurer
Ab Kirwan, Electric Boat Corporation, Program Chair
Weidong Zhu, University of Maryland, Member
Brent Paul, Alion Science and Technology, Group Page Administrator

Technical Committees

Phononic Crystals and Metamaterials Committee
Chair: Mahmoud I. Hussein, mih@colorado.edu

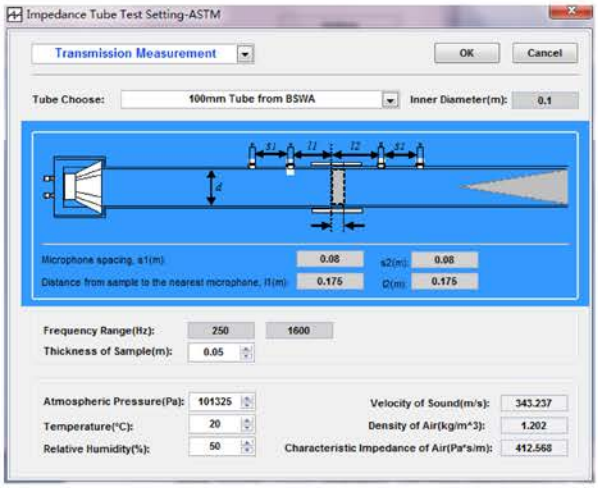
Structural Acoustics and Noise Control Committee
Chair (acting): Albert (Ab) Kirwan, aekirwan@yahoo.com

Aero/Hydro Acoustics Committee
Chair: Bob Tomko, tomkorp@yahoo.com

BSWA TECH

BSWA Impedance Tube Solutions

(Meet both ISO and ASTM Standards)



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BSWA Company Introduction

Established in 1998, BSWA Technology Co., Ltd. is becoming the preferred supplier for acoustical measurements. With headquarter located in Beijing, BSWA currently employs 100 staffs with branch offices in Shanghai, Guangzhou, and Chengdu. BSWA's products are distributed in over 40 countries through our sales partners.

BSWA Products cover a full range of acoustic measurement devices. The products are sorted into easy-to-follow sections:

- Microphones
- Sound level meter
- Measuring systems
- Material testing
- Audio testing
- Outdoor monitoring systems
- Sound sources
- Cable and accessories

Impedance Tubes

BSWA SW series Impedance Tubes can accurately measure sound absorption coefficients and impedance according to both ISO and ASTM standards. They also support the sound transmission loss measurements based on the Transfer Function Method. The Transfer Function Method separates the incident and reflected energy from the measured transfer function, and then estimates the acoustic properties of the tested sample installed in the tube.

The SW series Impedance Tubes are specially designed not only to work with the cut samples, but also for direct use in the field. The small size and durable aluminum construction make it easy to be transported and used for estimating the properties of walls, ceilings, installed building materials, road surfaces, different ground surfaces, interiors of vehicles, and etc. BSWA offers the complete set of Impedance Tube system, which includes: the tubes, microphones; DAQ hardware and measurement software.

BSWA 1/4'' microphones MPA416, which have excellent phase matches, are ideal for impedance applications. The microphones are directly connected to optional 2-channel MC3522 or 4-channel MC3242 data acquisition hardware. PA50 power amplifier is used to drive the loud speaker in the impedance tube. The BSWA VA-Lab software provides all measurement functions for sound absorption and transmission loss testing.

Building Simulation 2017 Conference Open for Registration

SAN FRANCISCO, California (March 1, 2017) – For the first time since 1995, the international Building Simulation conference will be held in the United States this year. Registration is now open for Building Simulation 2017, which will take place in downtown San Francisco, CA, August 7–9.

Building Simulation 2017 will include presentations on leading-edge research and on best practices. Sessions will cover all types of simulation—airflow, light, moisture, acoustics, egress, and energy—at scales from components to buildings to cities. Other activities will include pre-conference software training workshops, optional tours of Lawrence Berkeley National Laboratory and Stanford University, and an exhibition of simulation software vendors.

The conference will bring together simulation practitioners, building designers, researchers, software developers, and policy makers from around the world. Practitioners will be able to learn how firms around the world use simulation for building design and code compliance and will find out which tools they are using. Researchers, software developers, and practitioners will have the opportunity to exchange ideas about the future of simulation and building science. Conference chair Philip Haves of Lawrence Berkeley National Laboratory says, "I'm excited about the blend of research and practice coming together at this conference, and I hope that everyone involved in building performance analysis takes advantage of this special learning opportunity."

BUILDING SIMULATION 2017
AUGUST 7-9 • SAN FRANCISCO
www.buildingsimulation2017.org

The downtown waterfront conference venue is the Hyatt Regency Embarcadero hotel, which offers walking access to shops, restaurants, and attractions and is conveniently accessed by public transportation. Registration is open for discounted rooms via the conference website.

Building performance simulation is gaining a unique position at the center of the push for high performance buildings, zero-energy buildings, and smart cities. Simulation plays a central and increasingly vital role in integrated design and optimized operation. As a design tool, simulation allows practitioners to make informed decisions when they seek to optimize building performance in areas such as energy efficiency, comfort, and health and safety. As a research tool, simulation is used in development of new building technologies and techniques. Simulation is also widely used to develop and evaluate policy options, such as building energy codes.

According to keynote speaker Anica Landreneau, Director of Sustainable Design at the architecture firm HOK, "Energy modeling is a no-brainer for HOK, and we believe for our clients. It's like reading the MPG (miles per gallon) rating before you buy a car. It's basic performance information every building investor should know."

The International Building Performance Simulation Association (IBPSA) is a nonprofit organization devoted to advancing and promoting the science of building simulation in order to improve the design, construction, operation, and maintenance of new and existing buildings and urban developments.

IBPSA-USA, the U.S. regional affiliate of IBPSA, is the host of Building Simulation 2017.

Contact:
Mike Wilson, Executive Director, IBPSA-USA
mike@ibpsa.us
Oakland, CA, USA
(510) 333-2957

European News

Future Brief: Noise Abatement Approaches

Science for Environmental Policy has just issued a comprehensive document summarizing noise issues and measures to mitigate in the European Community. A PDF of this document can be found at: http://ec.europa.eu/environment/integration/research/newsalert/pdf/noise_abatement_approaches_FB17_en.pdf.

This 28-page document provides a comprehensive overview of noise issues and controls. It provides instructional segments on decibels and shows examples of noise controls and their implementation.

Noise Pollution Continues to Constitute a Major Environmental Health Problem in Europe

The EU Environmental Noise Directive provides for an implementation report to be prepared by the European Commission every five years. In addition to addressing the implementation, the Directive requires that this report should also include a review of the acoustic environment and the goals and measures for the reduction of environmental noise (legislation at source), and assess the need for further community actions.

The second implementation report has been just published recently (March 3, 2017) and it is a useful document for several stakeholders. All related documents are available at http://ec.europa.eu/environment/noise/evaluation_en.htm. At this site there are several reports available, including the "Report from the Commission to the European Parliament and the Council: On the Implementation of the Environmental Noise Directive in Accordance with Article 11 of Directive 2002/49/EC."

Noise in Europe Conference

On April 24, 2017, the Noise in Europe Conference, organized by the European Commission, was held in Brussels, Belgium. You can see the conference program and webcasts (on the Watch Live page) here.

International Noise Awareness Day

On Wednesday, April 26, 2017, the International Noise Awareness Day was marked in Europe. Details can be found here.

Pan-American News

Call for Nominations for the 2018 Safe-in-Sound Awards

Do you work with or for a company that has adopted noise control or developed innovative approaches toward hearing loss prevention? Or maybe you know of such a company? If so, help us recognize it and give others a chance to learn from its experience by nominating it for a Safe-in-Sound Award!

The **Safe-in-Sound Excellence in Hearing Loss Prevention Award™** honors excellent hearing loss prevention practices in the work environment. Applicants are evaluated against key performance indicators in a review process designed to evaluate hearing loss prevention programs. In addition, an award for **Innovation in Hearing Loss Prevention** recognizes individuals and/or business entities (e.g., companies or individuals whose work, at least in part, epitomizes innovation in hearing loss prevention, but who are not necessarily a hearing loss prevention program).

Nominations are now being accepted for the 2018 Safe-in-Sound™ awards. The awards are given by the National Institute for Occupational Safety and Health (NIOSH) in partnership with the National Hearing Conservation Association (NHCA) to recognize excellence in hearing loss prevention. The 2018 awards will be presented at the at the NHCA Annual Conference, on February 16, 2018, in Orlando, FL.

The deadlines for nominations are June 2, 2017, for third-party nominations and July 15, 2017, for self-nominations. Additional information is available at www.safeinsound.us.

Follow Safe-in-Sound on Twitter at www.twitter.com/SafeInSoundUS. #wewanttohear

Asia-Pacific News

China

1. The 2017 China Conference on Acoustics Design and Noise and Vibration Control Engineering was held May 16–18 in Changsha, Hunan Province, China (http://www.nvct.org.cn). The theme of the conference was strengthening architectural acoustics and noise vibration control research and creating a better sound environment. Topics discussed included architectural acoustics, noise and vibration control theory and method, performance spaces acoustic and innovations, transportation noise and vibration, acoustic barrier acoustic design and test methods, acoustic measurement and environmental impact assessment, noise pollution control regulations and revisions of the technical guidelines for noise impact assessment, and development and application of new acoustic materials.

2. The 2017 Chongqing Automotive Acoustic Summit was held April 27–28. The Chongqing Automotive Acoustic Summit is hosted by the China Automotive Engineering Research Institute Co., Ltd (CAERI), Chongqing University, and the French Society of Automotive Engineers. It is organized by the State Key Laboratory of Vehicle NVH and Safety Technology. Top NVH experts from Europe, Japan, the United States, and China addressed the summit on the latest achievements and innovative technologies in sensitive areas such as new energy vehicle NVH, light weight conception, new power train technologies, and the future trends of global market and technology evolution. Key interest points of the summit included noise diagnostic and prediction, light weight concept of sound package, active vibration and noise control in mass production cars, and future evolution.

3. Revision drafts of two Chinese standards, GB/T 50355 Standard of limit and measurement method of vibration in the room of residential buildings, and HJ 453 Technical guidelines for environment impact—Assessment of urban rail transit, are published for consultation.

4. The 2017 Annual Conference of the Acoustical Society of China will be held in Harbin, China in September 2017 (http://asc2017.csp.escience.cn). It will be organized in a new form to improve the high-level communication on research of acoustics and to broaden the platform to promote a rapid growth of more new-rising researchers. Therefore, much more plenary speakers will be present in this conference and a special forum and excellent paper awards for young scholars will be set up. Sixteen sessions will be held consisting of invited lectures from important fields of acoustical researches (e.g., environmental acoustics, noise and vibration control, structural and architectural acoustics, and mechanical vibration and shock).

5. Researchers at the Institute of Acoustics (IOA) of the Chinese Academy of Sciences have designed and fabricated an underwater acoustic carpet cloak using transformation acoustics—a scientific first. It is reported by several media such as Chinese Academy of Sciences (http://english.cas.cn/newsroom/news/201705/t20170503_176610.shtml), Eurekalert! (https://www.eurekalert.org/pub_releases/2017-05/caos-fuc050417.php), Asian Scientist Magazine (http://www.asianscientist.com/2017/05/tech/underwater-acoustic-cloak-demonstration/), Phys.org (https://phys.org/print413452191.html), and Science Newsline (http://www.sciencenewsline.com/news/2017050516290005.html). The photograph for its fabricated sample is shown in Figure 1. More information: Yafeng Bi et al., Design and Demonstration of an Underwater Acoustic Carpet Cloak, Scientific Reports (2017). DOI: 10.1038/s41598-017-00779-4.

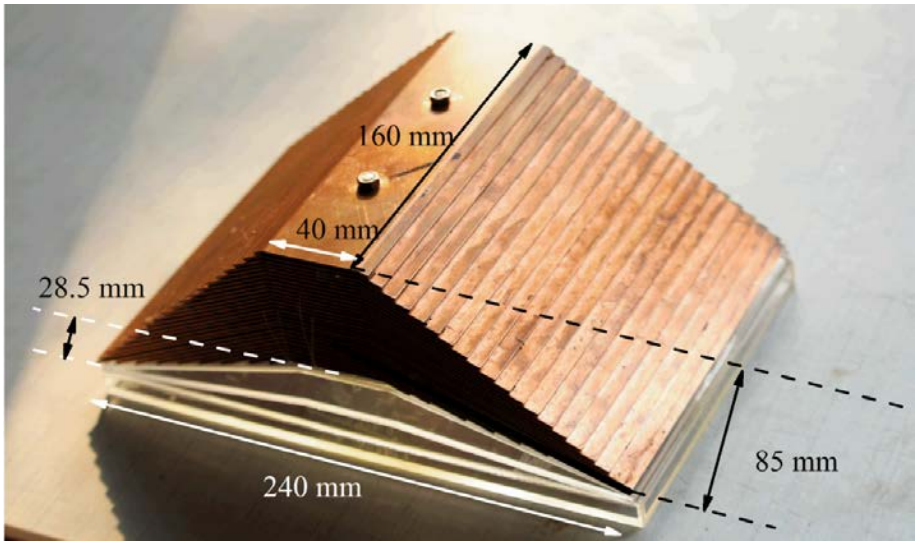


Figure 1. Carpet Cloak

Japan

Announcement of 'Noise Guidelines for Wind Power Generation Facilities'

The Japan Ministry of the Environment announced new noise guidelines for wind power generation facilities as advice based on the Local Autonomy Act to all prefecture governors, mayors, and heads of special wards on Friday May 26, 2017 (http://www.env.go.jp/air/noise/wpg/shishin_H2905.pdf in Japanese). Simultaneously, the ministry published a guidance manual for the measurement of wind turbine noise (http://www.env.go.jp/air/noise/wpg/sokuteimanual/manual_H2905.pdf in Japanese). The guidelines and manual were established based on the results of an investigation that the ministry carried out to examine the way to evaluate wind turbine noise appropriately for four years from fiscal 2013. The noise evaluation index is based on A-weighted sound pressure level. As wind power generation facilities are often constructed in extremely quiet regions, such as mountainous areas, the level of environmental noise changes dependent on the occurrence of transient sounds such as a car passing by. Thus, as shown in Figure 1 (bottom), the guideline value was set to be a level of '5 dB higher than the level of residual background sound.' However, the level of residual background sound can be too low compared to the level of usual living sound environment, and a lower bound was introduced on the guideline value as shown in Figure 1 (top). The lower bound is set to 35 dB when the level of residual background sound is lower than 30 dB and when quiet must be preserved, such as schools, hospitals, and places where soundscape should be kept. Otherwise, it is set to 40 dB.

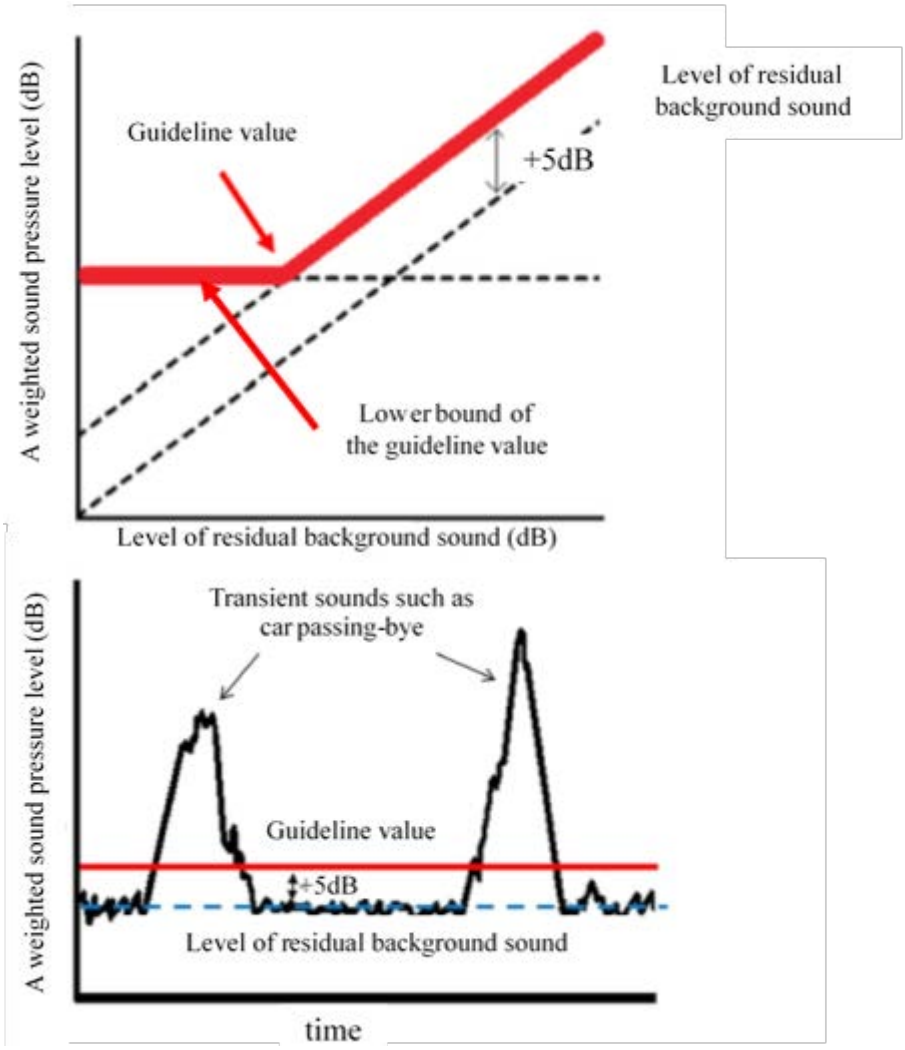


Figure 1. Relationship of guideline value with the level of residual background sound (bottom)*, and lower bound of the guideline value* (top).

The 2017 Annual Assembly Meetings of INCE/J and ASJ

1. The assembly meeting of INCE/J was held on Tuesday May 30, 2017, at the Institute of Industrial Science, the University of Tokyo. According to the annual report of INCE/J activities, the total membership is 882 members and 290 organizations as of the end of March 2017. The total of paper presentations and participants at the latest two technical meetings were 83/213 (November 19–20, 2016) and 17/122 (April 21, 2017), respectively.

In fiscal 2016, INCE-J performed social activities three times: participation in three events hosted by the Ministry of the Environment, Chiyoda-Ward, and Sumida-Ward of Tokyo Metropolis to increase social awareness on environmental preservation as social contribution. In addition, INCE/J held a workshop on the control of noise, vibration, and odor nuisance for administrative officers in local governments under the cosponsorship with Japan Association on Odor Environment on Monday October 31, 2016, in Tokyo.

INCE/J carried out two contract research works commissioned by the Ministry of the Environment. In one contract, INCE/J compiled a draft guidance manual for the measurement of wind turbine noise,

prepared a plan of noise measurement and social survey for high-speed railway noise, and created a brochure for the dissemination of basic knowledge and noise control policy of Noise Control Act. The other was an investigation on the method of measurement and evaluation of aircraft noise toward the revision of the guidance manual for airport noise.

INCE/J awarded Junichi YOSHIMURA, Kobayasi Institute of Physical Research for his distinguished research works on building acoustics and sound insulation performance of architectural materials (Research Achievement Award); Ryu TOMITAKA and Kiyoshi MASUDA, TAISEI Corporation (Morita Sakae Paper Award); Shinya HYODO, Meijo University (Young Researcher Award); and The ZENITAKA Corporation and INC Engineering for the development of a silent tube to reduce low frequency noise (Environment Design Award).

After the assembly meeting, two plenary lectures were addressed: "The Trend of the National Noise Policy" by Mimi NAMEKI, Ministry of the Environment, and "Health Effects of Noise and Low Frequency Sound on Man—What We Know, What We Don't Know and What You Should Study" by Toshihiko SATO (Aoyama Gakuin University).

The first issue of the bimonthly INCE-J Journal this year, Vol. 41 No. 1 (2017.2), focused on "Toward the Utilization of Numerical Analysis in Practice" with a general review and four commentary articles. The second issue of the Journal, Vol. 41 No. 2 (2017.4), focused on "Aerodynamic Sound and Fluidic Sound" with a general review and six technical materials. The third issue, Vol. 41 No. 3 (2017.6), focuses on "Sound Technology to Prepare for Natural Disasters" with a general review, four commentary articles, and three technical materials.

2. The assembly meeting of ASJ was held on May 29, 2017, in Tokyo. At the meeting, 20 members of the Board of Directors and 2 inspectors, appointed in member election, were approved for the next two-year term. The new President is Akio ANDO (Toyama University) and two vice presidents are Yoichi HANEDA (University of Electro-Communications) and Kazuya TAKEDA (Nagoya University). According to the annual report of ASJ fiscal 2016 activities, the total membership is 4003 members and 291 organizations as of the end of March 2017. The total of paper presentations and participants at the latest two research meetings were 512/926 (September 14–16, 2016) and 583/1336 (April 15–17, 2017), respectively.

The assembly nominated Youichi Ito, Nihon University, for an honorary member. The society awarded three members—Shigemi SAITO, Michihito TERAO, and Ichiro Yamada—for their distinguished services on research works in the fields of ultrasonic sound, noise and numerical analysis, and their contributions to the society (Achievement Award). The society also awarded two supporting organizations: OYO Electric Co., Ltd.; and ONO Sokki Co., Ltd. (Technology Development Award). In addition, at the 2017 spring research meeting, ASJ awarded two papers the "SATO Paper Prize," one researcher the "Environmental Acoustics Award," two young researchers the "ITAKURA Memorial Original Research Award," two young researchers the "AWAYA Kiyoshi Young Researcher Award," 21 students the "Student Excellent Presentation Award," and 8 members the "Award for Contribution to the Activities of the Society."

After the meeting, a plenary lecture was addressed: "Speech Recognition and AI Research Prospect" by Sadaoki FURUI (Toyota Technological Institute at Chicago).

The 2017 Autumn Research Meetings of INCE/J and ASJ

1. The ASJ autumn meeting will be held September 25–27, 2017, at Ehime University, Matsuyama Japan (http://www.asj.gr.jp/annualmeeting/ASJ2017autumnCFP(E).html). Abstract submission: Friday June 2–Monday June 19. Paper submission: Friday July 7–Friday July 21. The URL of online submission will soon be available on the webpages of ASJ (http://www.asj.gr.jp). The meeting is planned to have 10 special sessions including: (1) Information Disclosure and Symbiosis with Local Communities on Noise: From Transportation Noises to Nimby Problems, (2) Dynamic Aspects in Sound Design, (3) Measurements and Musical Acoustics, (4) Innovative Activities of Acoustical Techniques for Sports, (6) Current Trends and Issues of Hearing Assistive Technology, (7) ASJ Technical Guideline for Mass Notification Sound Systems and the Future, and (8) Handicrafts on Sounds and Acoustics that Can Be Constructed by Junior High School Students and School Children. In addition, it is planned to hold a joint special session "ASJ-ASK Joint Session" under the cosponsorship of the ASJ and ASK (Acoustical Society of Korea). The joint session will be a one-room/one-day session consisting of invited lectures mainly from the research fields of architectural acoustics, noise and vibration, speech.
2. The INCE/J 2017 autumn meeting will be held November 16–17, 2017, at Tokyo Denki University in Tokyo. The meeting is planned to include two structured sessions: (1) Application of Numerical Analysis to the Blocking of Sound and Vibration, and (2) Simple Introduction of New Technology by INCE/J Supporting Members.

Recent Trial on Sound Branding Strategy in Japan

Kyoto Tango Railway, a local train company near Kyoto, renewed signal sound melodies notifying train arrival and departure and background music in a special train "Tango Kuromatsu" and in the station building on Saturday April 1, 2017 (http://www.dreamnews.jp/press/0000150119/ in Japanese). Comfort and good impression in traveling and train waiting are intended to increase by sound design and branding strategy. The new sounds were designed featuring the images of regional characteristics of the three branch lines under the cooperation with Masafumi Komatsu, who is an environment music player as well as a research professor at Kyoto Seika University studying sound design in public space such as hospital, museum and planetarium.

(News sources) Japan Ministry of the Environment, Secretariats of INCE-J and ASJ, and Ichiro Yamada

Korea

2017 Joint Conference by KSNVE, ASK and KSME(DC)

The Joint Conference of the Korean Society of Noise and Vibration Engineering (President: Semyung Wang), the Acoustical Society of Korea (President: Wan-Sup Cheung), and the Korean Society of Mechanical Engineers (Division of Dynamics and Control, President Sungho Hwang) was held April 26–28, 2017, at Kim Dae-Jung Convention Center in Gwangju. Under the conference theme of "A Leap Forward Together with Motion and Sound," more than 380 papers, along with 2 plenary lectures, 6 invited talks, 4 tutorials, and many exhibitors' sessions were presented. The conference was attended by more than 800 participants, and sights and sounds offered by 42 corporate exhibitors and the traditional Korean folk music band added to the excitement.

Book Reviews

Listening in the Ocean

Whitlow W. L. Au and
Marc O. Lammers, Editors
Springer, New York, NY (2016)
Hardbound, 149.00 USD
ISBN: 978-1-4939-3175-0

Listening in the Ocean provides a series of articles in the nascent field of marine acoustics dealing with the development of autonomous passive acoustic recorders and contains insights on the fascinating soundscape emerging before us in the oceans. Marine passive recorders originated from the need to detect nuclear detonations and evolved from the research on long-term monitoring system of bottom-mounted, low-frequency seismic sensors. Since these sensors can detect underwater acoustic signals from the infrasonic to ultrasonic range, they have opened up a new vista of ocean filled with sounds from a wide array of biotic, abiotic, and anthropogenic sources leading to the realization that sound is fundamental to many biological processes in the sea. However, the most intense activities have been directed to the effect of rapidly increasing levels of human-generated noise in the ocean and its impact on communication, sensing, navigation, and orientation of marine mammals. These articles mark the current state of research in developing new tools to record marine habitats throughout the world.

The first article (Chapter 1) introduces the history as well as the state of the art of the recording systems, both stationary and mounted, on animals. The last article (Chapter 15) reviews the development of software needed to overcome the challenge of detecting and classifying sounds in presence of noise while managing very large datasets. In between there are thirteen articles focusing on the results of observations and identifying the roles and challenges of the distinctive signal analysis method or the recording system used.

Chapter 2 discusses the use of HARUphones (single hydrophone autonomous recording packages) on the Pacific blue whales while Chapter 3 discusses the use of HARP (high-frequency acoustic recording packages) of baleen and beaked whales and high-frequency dolphins. These studies were pioneering ones establishing passive acoustic monitoring as a valuable tool for determining habitat ranges, species signal characterization, population density, and abundance estimates, etc. Chapter 4 analyzes the soundscape in remote coral reef ecosystems from 2006 to 2009 at French Frigate Shoals in the Northwestern Hawaiian Islands using ecological acoustic recorders (EARs) establishing the use of passive acoustic monitoring (PAM) to study the behavior of fish habitats. Chapter 5 studies the use of EAR in observing foraging behavior of deep-toothed whales at the Western Pacific including Hawaii focusing on echolocation of bisonar signals. Chapter 6 studies the employment of Environmental Acoustic Recording System (EARS) by the Littoral Acoustic Demonstration Center (LADC) in the Gulf of Mexico pioneering the use of buoys and focusing on click structure analysis for click-train demarcation and identification of individual whale species.

Chapter 7 then introduces the static acoustic monitors (SAM)—such as T-PODs, or their successor C-PODs (an omnidirectional hydrophone, a digital processor and timing system, battery pack and analysis software)—that are designed to detect echolocation clicks with an adjustable band-passed frequency range and thus differ in the working principle from EARs used in Chapters 2 to 6. T-PODs, which require a priori knowledge of the click patterns used, were used to study Hector's Dolphin in New Zealand and river dolphins in the Amazon River, while the C-PODs, which overcomes the problem of having a priori knowledge, were used to report the results from Vaquita population in the Gulf of Mexico and porpoises in the German Baltic. While these studies are the most important cited there are references to other studies in a variety of marine ecosystems.

The following Chapters 8 to 10 describe the establishment of cabled acoustic observatories open to analysis by civilian scientists. Chapter 8 describes the Perennial Acoustic Observatory in the Antarctic Ocean (PALAOA) developed to study the underwater behavior of cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions). This is a cabled system with a radio link to a base station at which batches of data are transmitted to a home station in Germany via satellite link. Chapter 9 describes the ALOHA Cabled Observatory, an ocean-bottom observatory at Hawaii linked to the shore by a fiber optic cable primarily studying baleen whales. Chapter 10 discusses the results obtained from the instrumented ranges of the US Navy using either single hydrophones or recording buoys.

Chapter 11 focuses on the pinniped sounds in the polar oceans, both Arctic and Antarctic, describing specific improvements necessary in the PAM systems for the polar environment. Chapter 12 covers the sounds produced by deep dwelling fishes followed by sounds recorded from benthic shrimps in Chapter 13. Chapter 14 then focuses on the information gathered by the use of acoustic tags—another class of acoustic recording devices that are small and light enough to attach to animals in the field using support structures that are connected to suction cups.

This book will prove very valuable to beginning engineers, researchers, and graduate students to survey the field of marine acoustics open to them and deciding on which fields to pursue.

Each chapter includes a detailed list of references that the investigator can use to gain detailed knowledge of either the results or the techniques used. The articles are succinct and comprehensible to persons having no detailed knowledge of the marine acoustics field. Taken together, the chapters convey both the challenges of the future research in the field and the knowledge of the marine soundscape of the world at this point of time. The book also opens us up to the responsibility that we must ensure the continuance of marine life unhindered by sound generated by human activities and the respect due to the role of sound in the life of the marine animals.

Arindam Ghosh
KBR
Houston, TX, USA
arindam.ghosh@kbr.com

Sound of Our Times

Robert T. Beyer
AIP Press, Imprint of Springer-Verlag New York Inc., (1999)
444 pp., softcover, 99.00 USD; hardcover, 129.00 USD
ISBN: 978-0-387-98435-3

Everyone in the acoustics community knows names like Bell, Chladni, Edison, Helmholtz, Hertz, Lagrange, Kirchhoff, Laplace, and Tyndall (in alphabetical order), and Mr. Strutt, better known as Lord Rayleigh. But, who of us knows, in detail, what each of those people has achieved during their time in acoustics? Robert T. Beyer's book gives the answer, not just by presenting their life dates, some notes, and a picture, but by presenting their experiments, their measurement setups, and their results. This approach provides a detailed in-depth view not only about the achievements in acoustics during the last 200 years (starting from 1800), but even more, it gives insight into the community of physicists exchanging opinions by letters (no Twitter, Donald, no!), discussing ideas back and forth, and—in the end—coming up with a common agreement about a solution or an explanation. Wouldn't this be a kind of model for present-day international politics?

The book has 10 chapters, two of them dealing with distinct persons, the others referring to time periods:

- Chapter 1: The State of Acoustics in 1800
- Chapter 2: Acoustics 1800–1850
- Chapter 3: von Helmholtz and Tyndall
- Chapter 4: Lord Rayleigh and His Book
- Chapter 5: Investors in the Fore!
- Chapter 6: The Last Half of the Nineteenth Century
- Chapter 7: The Twentieth Century: The First Quarter
- Chapter 8: The Second Quarter of the Twentieth Century
- Chapter 9: The Third Quarter: 1950–1975
- Chapter 10: Acoustics 1975–1995

Chapter 1 starts with the works by the German lawyer and physicist E. F. F. Chladni (known for his modal patterns) and the English ophthalmologist and physicist Thomas Young (giving name to the modulus of elasticity). The following sections treat the contemporary knowledge on sound propagation, sound production, and sound reception. The author not only discusses the achievements of both persons but also draws a line through the entire scenery of physics and physicists (called "natural philosophers" at that time) contributing to clarify—for example—propagation phenomena like velocity of sound in air, liquids, and solids, diffraction and refraction, and echoes. The extensive reference list at the end of this and all other chapters refers to the respective original literature or to translations to the English language as far as available.

In Chapter 2, the sections propagation, production, and reception are kept and updated to that time. Due to the lack of apparatus for generating and measuring sounds (like in other fields of physics, e.g., electricity, magnetism, optics, and thermodynamics), it was hard to obtain "neutral" experimental data, not being affected by the experiment's setup and influencing the result, complicating the task to study and to extract the fundamental physical phenomenon.

Chapter 3 pays tribute to the famous Hermann von Helmholtz and John Tyndall. Von Helmholtz's book "On Sensations of Tone" got translated by himself into English in 1862 already, in the same year of the original German edition. Tyndall's book "On Sound" published in 1867 had a similar effect on the acoustics community as the former one. Both became friends, based on an extensive exchange of letters. Julius Robert Mayer—the "discoverer" of the law of conservation of energy—became known to Tyndall by von Helmholtz showing that "natural philosophers" at that time had not a single field of interest, but were working in several areas in parallel.

Of even larger impact was Lord Rayleigh with his book "The Theory of Sound," covering the entire Chapter 4 in Beyer's book. Rayleigh got interested in acoustics by reading von Helmholtz's book and was also in contact with Tyndall. Those of you not having found the time to read "The Theory of Sound" could also go for reading the review von Helmholtz wrote about Rayleigh's book (also reprinted in an annex of Beyer's book).

Chapter 5 is on the technical achievements to bring acoustical devices to the society in the whole. Telegraph and telephone are closely associated with the names Joseph Henry, from Albany, NY, Philip Reis, Alexander Graham Bell, and Thomas Alva Edison. The latter is also the inventor of the so-called "phonograph," the first recording device reproducing sound "stored" on an engraved and rotating cylinder. The chapter describes the developments in detail and uses several contemporary illustrations (this holds also for all other chapters in the book).

In Chapter 6, the new devices for making sounds visible are discussed. Formerly, only the modal patterns by Chladni making use of sand or some organic particles were known. Blake used a photographic plate to store oscillations reflected by a mirror from the microphone of a telephone, enabling to judge the time structure of vowels and syllables. The German August Toepler invented a stroboscope technique to study the so-called "singing flames." Later he invented the "Schlierenpictures"—named after him till today—enabling to show waves being reflected or refracted at obstacles based on differences in optical refraction of the propagation medium. All this also led to the study of shock waves, mainly driven by the interest of generals about projectile sound/noise.

Besides ballistics topics also "blast noise" (euphemistic for explosions) came into view. But, real battles in the second half of the nineteenth century drained the river of international scientific contacts, exchange, and cooperation. The work of Ernst Mach (also by making use of "Schlierenpictures") is closely related to that period. For something less military: J. B. Upham from Boston discovered that pleasantness/unpleasantness of rooms is related on how the sound persists (the term "reverberation" yet not been defined) to which Wallace Clement Sabine gave birth in 1868. Chapter 7 covers all sorts of devices being developed based on the widespread availability and use of electricity: microphones, loudspeakers, and amplifiers using the new vacuum tubes. The discovery of oscillators led to the invention of the radio based on the works of Heinrich Hertz. The oscilloscope—forming the basis of the later invented television—is linked to the work of Ferdinand Braun, inventor of "Brown's tube" (in proper English-German). This is also the period of W. C. Sabine's systematic work on room acoustics and reverberation culminating in his empirical formula to calculate reverberation time. Later he applied Toepler's method to visualize sound waves and reflections in vertical planes of an auditorium model. Further topics in this chapter are the beginning of ultrasonics, underwater sound, and substantial progress in structural vibrations (joined to the names Timoshenko, Airey, Lamb, and Love). The term "noise" may be firstly used in Harvey Fletcher's book "Speech and Hearing" from 1928.

Hearing and speech became of closer interest by studying the structure of the inner ear and cochlea, also evaluating the relevance of phase in binaural hearing, thus updating Rayleigh's assumption that directional perception is based on intensity differences. And, moreover, from this period the "decibel" results, linked here to Knudsen and Fletcher—not mentioning the work by Heinrich Barkhausen in Dresden, Germany.

With the last three, Chapters 8 to 10, it becomes clear that acoustics—in the same way as other fields in physics—had then developed to such a wide range of topics and with so many researchers being involved that single names became less and less relevant—and known. For this reason, the details presented in these chapters will not be discussed here, but it is worth mentioning that the author strictly follows the approach used in the preceding chapters. Finally, stating an honest compliment: Everyone who has ever done such a kind of huge historical review knows how hard this is. Before being able to write a single paragraph, you must have read all relevant literature to make a fair judgment on what is relevant, so what to keep and what to skip. Robert T. Beyer has done a marvelous job with his book, which is, up to the present, an outstanding work and which has so far not been surpassed. It is certainly not a book to read from the first to the last page in a single run. But, you could read chapter by chapter you are interested in occasionally.

Heinrich Metzen
DataKustik
Gilching, Germany
h.metzen@datakustik.com

Traffic Flow Dynamics: Data, Models and Simulation

Martin Treiber and Arne Kesting
Springer, NY (2013)
503 pp., 39.99 USD
ISBN: 978-3-642-32459-8

This edition is the English translation of the original 2011 German textbook *Verkehrsdynamik und simulation* by Martin Treiber and Christian Thiemann. The contents of the book are exactly as its title suggests, written by authors currently working at the forefront of traffic flow dynamics research and development.

Arne Kesting is a physicist member of the Live Traffic Team at TomTom Development in Berlin. His thesis, "Microscopic Modeling of Human and Automated Driving: Towards Traffic-Adaptive Cruise Control," was awarded the Friedrich-List-Preis prize for best Ph.D. dissertation at the Faculty of Transportation and Traffic Sciences of the TU Dresden in 2008 and the Best Dissertation Award of the IEEE ITS Society in 2009. His work at TomTom advances the company's state-of-the-art, real-time traffic information and navigation software services and maintains it as a key partner for the development of advanced driver assistance systems (ADAS) and autonomous driving.

Martin Treiber is a senior research scientist and permanent faculty member at Institut fur Wirtschaft und Verkehr (Institute of Transport and Economics in Dresden). He has 100 publications and 200 citations in the field of transportation and traffic sciences. His research includes work on projects SANDY, VASIS, INVENT, AKTIV, KOLINE, COOL, MOVSIM and others related to traffic flow, intelligent traffic, adaptive cruise control, autonomous driving, trajectories, and eco-routing for partners such as Volkswagen, TomTom, Teledyne Inc., and the German authorities for inland waterways. MOVSIM is a JAVA-based, open-source program used in many of the book's examples and made available

to the reader for download at the companion website: http://www.traffic-flow-dynamics.org and companion open source simulator website: www.movsim.org.

As is to be expected in a German-to-English textbook translation, instead of being rephrased in English, some sentences are direct, compound-word translations resulting in several long, tortured chains of adjective–noun pairings that need to be mentally parsed to decipher. Even so, one cannot argue with the preciseness.

End-of-the-chapter problems are real thought producers, with 70 pages of fully developed solutions given in the appendix.

Although a majority of the graphs and illustrations are professionally done and informative, there remain a few low-quality cartoon sketches that seem out of place and add little or nothing to content and understanding.

As outlined in the book's subtitle, the text is divided into three sections: Part I—Traffic Data, Part II—Traffic Flow Modeling, and Part III—Applications of Traffic Flow Theory.

The Traffic Data section limits itself to incomplete data sets produced either from a relatively small set of instrumented vehicles within the traffic flow (floating car data) or from stationary sensors sparsely distributed within the traffic ways (cross-sectional data). It demonstrates how incomplete data can lead to conflicting interpretations and shows which reconstructions are most likely.

The Traffic Flow Modeling section introduces the various types and specific derivations of computer models presently used to model traffic flow. Model types are either (1) macroscopic, solving for fluid-like relationships between traffic density, velocity, and pressure with equations based on hydrodynamics; (2) microscopic, prescribing equations governing position, velocity, and acceleration of each individual vehicle relative to immediately adjacent vehicles; or (3) mesoscopic, combining aspects of both macro and micro models.

Various models are presented and exercised in their ability to accurately predict the results of bottlenecks, on-off ramps, and human operators. Model stability, calibration, and validation are discussed.

Section III, Applications of Traffic Flow Theory, includes examples ranging from determining traffic states and estimating travel times to determining fuel consumption and vehicle emissions to control theory design for optimization of traffic flow.

I recommend *Traffic Flow Dynamics: Data, Models and Simulation* as a very thorough textbook and reference for those in the transportation sciences field. I especially appreciate the long lists of references and recommended readings as well as the companion, open-source, traffic simulation software, videos, and examples.

Jon W. Mooney
KJWW Engineering Consultants/IMEG Corp.
Rock Island, IL, 61201, USA
acoustics@jwmooney.com

Engineering Vibrations, Second Edition

William J. Bottega
CRC Press, Boca Raton, FL (2015)
927 pp., hardcover, 160.00 USD
ISBN: 978-1-4398-3035-2

This book is an outgrowth of the author's notes for his engineering vibration courses at Rutgers University. In the preface to the first edition, the author explains that he perceived a need for a middle ground between two categories of textbooks in this field. On the one hand, some texts were found to "*emphasize mathematics but generally fall short on physical interpretation and demonstrative examples*." On the other hand, "*others emphasize methodology and application but tend to oversimplify the mathematical development and fail to stress the fundamental principles*."

This comprehensive book probably falls more into the first category than the second. Although the book contains a number of very interesting problems, a 21-year-old undergraduate student of engineering might silently wonder why the material is presented in a way where rigor triumphs over insight.

This book is divided into 14 chapters, the first of which is named "Preliminaries." This chapter discusses basic concepts including statics and kinematics of particles plus connected discrete elements. The scope of the first chapter is similar to what one might find in a general college physics course. This second chapter covers free vibration and damping mechanisms for single degree-of-freedom dynamic systems. The second chapter is well developed and is liberally sprinkled with a number of interesting example problems.

The third and fourth chapters discuss single degree-of-freedom systems excited with periodic and nonperiodic signals, respectively. The fifth chapter is named "Operational Methods" and is mainly concerned with Laplace transforms as a simplified means to help solve the linear (ordinary or partial) differential equations of motion. The sixth chapter addresses the dynamics and damping of multi degree-of-freedom systems. The seventh and eighth chapters explore free and forced vibration of these same multi degree-of-freedom systems.

The eighth chapter introduces the concept of a dynamic system's natural modes and then proceeds to mathematically describe the modal behavior using matrices. This chapter also contains a section on proportional (viscous) damping. The presentation of the material focuses on the phenomenon from a mathematical perspective but is devoid of insight regarding the subtle implications of

damping within vibrating systems. Here the student will need to gain a more intuitive understanding of damping by reading Chapter 2 of the classic 1934/1956 book *Mechanical Vibrations* by Jacob Pieter Den Hartog. Alas, this beautifully written and lucid reference is not cited by Bottega.

The ninth chapter addresses continuous dynamic systems that are not amenable to models having a finite number of connected rigid elements (a beam vibrating transversely is one example of such a distributed system). Three historical mathematical developments of vibrating beam theory are presented in this chapter; it also discusses advances in mathematical treatments beginning with Euler–Bernoulli in the eighteenth century, then to Rayleigh in the nineteenth century, and finishing with Timoshenko in the twentieth century. Unfortunately, the book does not mention the ingenious Rayleigh–Ritz solution for computing the eigenfrequency of (an assumed) beam vibration mode shape (although Bottega does cite Leonard Meirovitch, who discusses the Rayleigh–Ritz solution in his book *Fundamentals of Vibrations*).

The train of these earlier mathematical developments is completed by the so-called "beam-column" mathematical model in which axial loads are imposed on a vibrating beam.

Chapter 10 discusses free vibration in continuous one-dimensional systems such as a suspended cable or a beam that rests on a continuous elastic foundation. Chapter 11 goes on to address forced vibration in these same continuous one-dimensional systems.

Similarly, Chapter 12 deals with the dynamics of two-dimensional continuous systems such as (thin) sheets and (thick) plates. Finally, the free and forced vibrations of these two-dimensional continuous systems are covered in Chapters 13 and 14, respectively.

The cited references in each chapter's bibliography are rather limited. At the end of several chapters, Bottega repeatedly cites Leonard Meirovitch and his three books: *Fundamentals of Vibrations* (2001), *Elements of Vibration Analysis* (1986), and *Analytical Methods in Vibrations* (1967). Another reference cited several times is *Theory of Vibration with Applications* by William T. Thomson. Several other classic books are also listed in various chapter bibliographies including: *A Treatise on the Mathematical Theory of Elasticity* by Augustus Edward Hough Love, *Engineering Vibrations and Theory of Plates and Shells* by Stephen Prokopovych Timoshenko et al., plus *The Theory of Sound* by John William Strutt (Lord Rayleigh).

It is reasonable for a reader of such an extensive book to expect a longer list of other references for further study. Unfortunately, the subject book does not contain such a list.

With respect to this list, many authoritative books in the field come to mind. One is the *Shock and Vibration Handbook* edited by Cyril Manton Harris. Others include the collection of mathematical solutions summarized by Arthur W. Leissa in his books, *Vibration of Plates* and *Vibration of Shells*, and also by Robert D. Blevins in his book *Formulas for Natural Frequency and Mode Shape*. Another is the 1994/2001 book by Daniel J. Inman, *Engineering Vibration*. Finally, the fine 1976/1996 book by Andrew Dimarogonas, *Vibration for Engineers*, should also be included on the list as it contains unique historical sidebars about the pioneers who advanced the mathematics of mechanical vibration.

In the field of vibration analysis, it is useful to observe many points of view and also gain insight as various experts approach a problem and then go about solving it. I would certainly recommend Bottega's *Engineering Vibrations* as a companion to some of the classical references mentioned above.

Tony Nash
Charles M. Salter Associates, Inc.
San Francisco, CA, USA
anthony.nash@cmsalter.com

Acoustical Design of Music Education Facilities

Edward R. McCue and Richard H. Talaske, Editors
Acoustical Society of America, Melville, NY (1990)
236 pp., softcover, 23.00 USD
ISBN: 978-088-318810-1

The material in this book is in part a result of the compilation of various papers presented at an Acoustical Society of America (ASA) meeting special session, organized by its Technical Committee on Architectural Acoustics. It is uncommon for a book to provide this level of acoustical engineering in combination with the required steps of taking a music facility from design concept to the final stage of construction, inclusive of construction cost analysis. As with most books that are a collection of papers from the ASA, this book is well organized in a format intended to convey the content to a multitude of professions. In this case, the book is intended for those whose goal is to have the design and construction of a dedicated music facility succeed. Thus, this book's appeal includes architects, music educators, administrators, designers, contractors, and acousticians. Even the index makes it easy to find information in the book on related topics, audio equipment, and construction material, etc.

The book begins with 11 essays that describe the basic considerations that should be applied in the planning and design stages, from defining the design team roles, cost control guidelines, as well as the acoustical requirements from acoustical separation to acoustical environment. With the process defined,

case studies are then presented. The case studies, or projects, are from around the world and are presented by numerous notable acousticians. The subtle differences of the various design and acoustic outcomes, from reverberation time to noise criteria, are an interesting and easy read. The projects are organized to show not only the architectural drawings but also the acoustical values that were included in, or resulted from, the design of the music facility. This detailed perspective on the flow of design to build, along with the budget, is a good guideline that will hopefully prevent the reduction or alteration of the specified acoustical material. This can occur if the budget begins to exceed the original planned funds, which often is the demise of any beautifully engineered space.

As music students overcome the purely technical limitations of their instruments, they begin to develop an awareness of their acoustical environment. Unfortunately, an incorrect acoustical environment can distort the musical notes and thus the intended meaning of the music tone and phrase. Thus, the understanding of the acoustical outcomes of the space is critical for a better understanding of the design and construction goals even to those that do not have an acoustical background. The acoustical limitations of a music education facility can seriously detract from the educational process. Instructors may love a room for one musical activity but possibly not for another. Although a recent trend is to design "tunable rooms" to deal with this dilemma, without a strong foundation of the basics, it is not possible to know the range that the design should consider. Although the essays are from 1989, the acoustical concepts are timeless and set the foundation of this book.

Bonnie Schnitta
SoundSense, LLC
Wainscott, NY, USA
bonnie@soundsense.com

Noise Control—A Guide for Workers and Employers

US Department of Labor
Occupational Safety and Health Administration
Washington DC (1980)
119 pp., 15.99 USD

As they say on TV, "This book is not available in stores." It is 37 years old! But it is available in many local libraries and is now available from the Noise Pollution Clearinghouse online. (http://www.nonoise.org/hearing/noisecon/noisecon.htm)

This review is to remind and inform younger readers, maybe who started work in the 1990s or so, of a book that might be of interest.

Noise Control—A Guide for Workers and Employers was edited and adopted by Matt Witt, a director of the American Labor Education Center, based on a publication of the Swedish Work Environment Fund. The material is now in the public domain.

The book consists of five chapters after an Introduction, each briefly discussed below.

1. Noise: Its Effect on Health

This two-page chapter, as one would expect, is not a complete treatise on health issues, but, in clear terms, it discusses effects of loud noise on hearing and other possible adverse effects.

2. Noise Control: Basic Concepts and Terms

The six pages, which are a primer for the next two chapters, discuss, in a few paragraphs, "definitions" of sound, frequency, noise, and infra- and ultra-sound, and present concepts of the different noise spectra of common sources, decibels (without any of that fancy logarithm stuff), noise level measurements, addition of decibels (just graphically so anyone can understand it), octave bands, sound transmission and absorption, and propagation (in a free field).

3. Application of Noise Control Principles

The 83 pages consist of eight sections: sound behavior, sound from vibrating plates, sound production in gases, sound production in liquids, sound movement (a good way of describing propagation, which sounds a bit biblical, to the layperson) indoors, sound movement in ducts, sound from vibration machines, and sound reduction in enclosure walls. These sections include discussions of silencers, resonance surface radiation, changes, and vibration isolation, just a few of the many concepts. Each of the sections provides clear, nontechnical discussions and illustrations of the concepts.

4. Noise Control Measures

This eight-page section discusses general basics: change the equipment from noisy to quiet, improved material handling (do not drop stuff), enclose machines, vibration isolation and damping, sound insulation, good maintenance and designing for noise control before implementation of noise producers.

5. How OSHA Can Help Employers and Employees

What to say here? In the beginning of this chapter, it presents the original OSHA 90 dBA limit and the 5-dB tradeoff. It does not refer to CFR 1910.95 specifically. It is interesting reading at least to get somewhat familiar with what the Occupational Safety and Health Administration's noise issues are. But lots have changed since 1980. It lists probably old and outdated OSHA offices and other information. And assuming the current administration in the US government does not abolish OSHA, it is probably best to find a more current reference.

I must confess that I am not an engineer and pretty new to noise and noise control, but this book (I have a hard copy)

really helped me a lot in understanding principles and concepts. The discussions are easy to grasp and at least 50 percent of each of the book's pages is filled with easy-to-understand and explanative black and white figures. I bet most "older" NCEJ readers in the United States have or have seen this book. For most readers of this journal, I suspect this book is pedestrian, but to have it available for spouses, partners, or those who want to know about what you do or who want to try to solve problems, this can't be beat. And even better, it is available for free at many libraries or, even better, at the link above.

Marilyn Westropp
Acoustiblok, Inc.
Tampa, FL, USA
mwestropp@acoustiblok.com

ROCKFON North America Facility Construction on Schedule to Begin Production in Mid-2017

* News release – *view online – Image available* – ROCKFON exhibiting at INTEX in booth #1119 and at AIA in booth #1223 *

Chicago—Construction remains on schedule for the first ROCKFON North America manufacturing facility to begin producing stone wool acoustic ceiling products by midyear. A grand opening celebration will be planned once the new facility is operational.

Located in Marshall County, Mississippi, the ROCKFON facility broke ground in March 2016. The completed building spans 130,000 square feet (12,000 square meters) with room for future expansion. Equipment installation and interior build-out are being finalized. Helping launch production this year, approximately 100 people will initially be employed at the facility.

The ROCKFON business is a subsidiary of Denmark-based ROCKWOOL International A/S. The new facility represents an investment of approximately $40 million US dollars by ROCKWOOL.

"We are excited that the first US-based, stone wool ceiling product manufacturing facility will help meet the growing demand for our products in North America, and extend our capacity across the globe," said ROCKFON President—Americas John Medio. "The investment by ROCKWOOL and the guidance provided by our worldwide network of associates to our North American teams has helped us move forward exactly as planned to ensure the same high quality and performance products as offered by our other facilities."

When it opens, it will be the fifth ROCKFON manufacturing facility in the world. The ROCKFON business will continue to manufacture its specialty metal ceiling panels and Chicago Metallic suspension systems in its Chicago and Baltimore facilities. Chicago Metallic suspension systems also are manufactured in Belgium, Malaysia, and China. Other ROCKFON stone wool manufacturing facilities are located in the Netherlands, Poland, France, and Russia.

About the ROCKFON Business

The ROCKFON business is a leading provider of acoustic stone wool and metallic ceiling solutions and suspension systems.

With the acquisition of Chicago Metallic Corporation Inc., the ROCKFON business provides customers a complete ceiling system offering combining stone wool and specialty metal ceiling panels with Chicago Metallic suspension systems.

ROCKFON complete ceiling systems are a fast and simple way to create beautiful,

comfortable spaces. Easy to install and durable, they protect people from noise and the spread of fire, while making a constructive contribution toward a sustainable future.

The ROCKFON business is a subsidiary of Denmark-based ROCKWOOL International A/S, the world's largest producer of stone wool products. ROCKWOOL International A/S is listed on the NasdaqCopenhagen stock exchange. More than 10,000 people in 37 countries are employed within the ROCKWOOL Group.

In North America, the ROCKWOOL Group operates under the name ROXUL Inc, ROCKWOOL®, ROXUL® and ROCKFON® are all registered trademarks of ROCKWOOL International A/S.

For more information, visit www.rockfon.com.

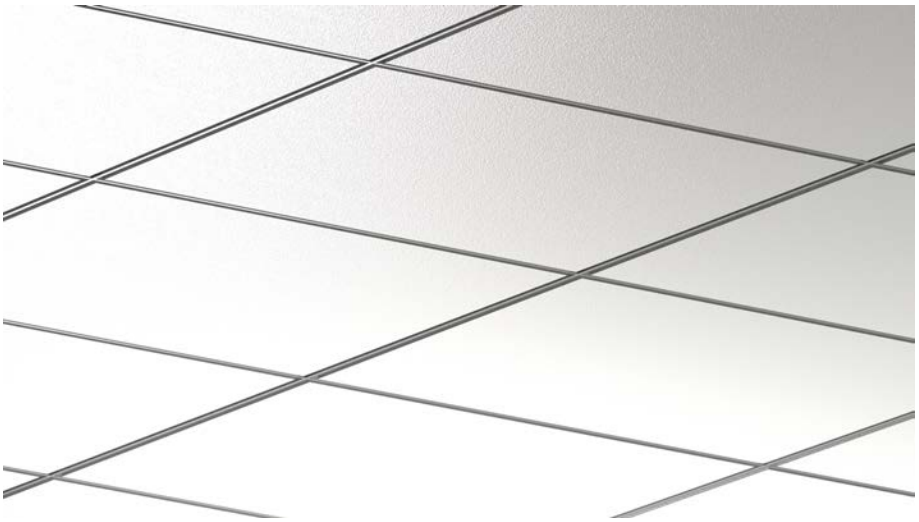
Media Contact: Heather West, 612-724-8760, heather@heatherwestpr.com

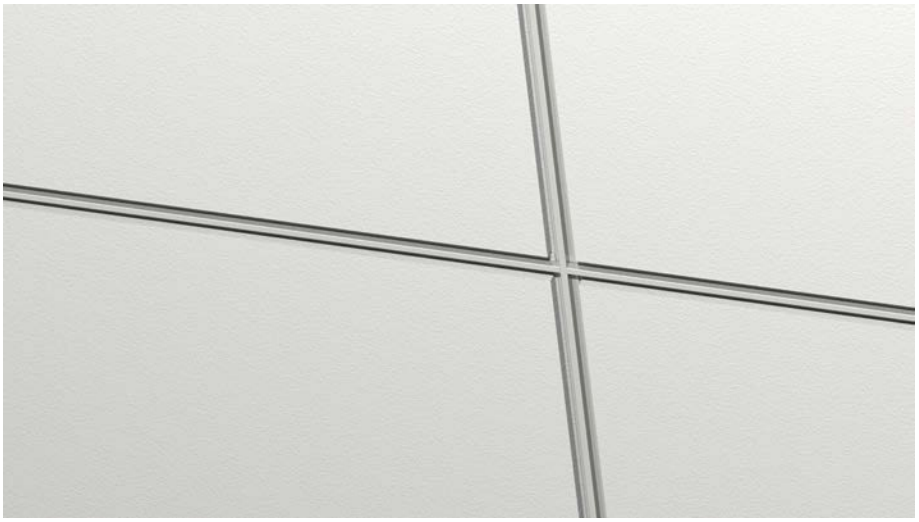
New Rockfon Integrity Double Reveal Ceiling System

* New product release - *view online - Photo available* *

Chicago—Available in one complete ceiling system, Rockfon® Chicago Metallic™ Integrity™ 4200 double reveal ceiling system offers a high-end look with the smooth, white surface of Rockfon acoustic stone wool panels. The new suspension system is ideal for museums, art galleries, hotels, event spaces, hospital lounges, office lobbies, retail centers, airports, and other high-profile interiors.

"The double reveal is perfect for highly visible areas where appearances matter. Architects and designers can create the premium look they want, with the performance they need, to enrich modern living with our complete ceiling system," says Mark Taylor, Rockfon manager—product management.





Taylor continues, "Our new Integrity system provides the recognized reliability of our other Chicago Metallic grids with enhanced flexibility and easier installation. The system delivers both functional durability and inspiring beauty when combined with our Rockfon stone wool tiles."

Rockfon acoustic stone wool ceiling panels with a square tegular narrow (SLN) edge are mounted in the new Integrity 4200 Series 9/16-inch exposed suspension system. The SLN panels rest flush with the center bar of the grid profile to produce the double reveal.

The suspension system's stab-end cross-tees save labor and time during installation. The staked-on ends provide secure connections and meet the requirements of Seismic Design Categories D, E and F. Coupled with Rockfon stone ceiling panels' key performance features, the complete ceiling system provides superior fire safety and humidity resistance, optimum light reflection, and acoustic control.

To learn more about Rockfon stone wool ceiling panels, metal ceiling panels, and suspension systems,

please visit www.rockfon.com. For additional support, please call 800-323-7164 or email cs@rockfon.com.

About Rockfon

Rockfon is part of the ROCKWOOL Group and is offering advanced acoustic ceilings to create beautiful, comfortable spaces.

At the ROCKWOOL Group, we are committed to enriching the lives of everyone who comes into contact with our solutions. Our expertise is perfectly suited to tackle many of today's biggest sustainability and development challenges, from energy consumption and noise pollution to fire resilience, water scarcity and flooding. Our range of products reflects the diversity of the world's needs, supporting our stakeholders in reducing their own carbon footprint along the way.

Stone wool is a versatile material and forms the basis of all our businesses. With approximately 10,500 passionate colleagues in more than 35 countries, we are the world leader in stone wool solutions, from building insulation to acoustic ceilings, external cladding systems to horticultural solutions, engineered fibers for industrial use to insulation for the process industry and marine and offshore.

For more information, visit www.rockfon.com.

Media Contact: Heather West, 612-724-8760, heather@heatherwestpr.com

ROCKWOOL® Unveils New Global Brand Identity to Be Adopted Throughout North America

** News release – PDF – Logo available – ROCKFON exhibiting at AIA in booth #1223 **

(April 4, 2017) ROCKWOOL, the world's largest producer of stone wool insulation, has officially announced the latest evolution of its brand identity, introducing a new ROCKWOOL symbol and purpose statement that will be adopted by its subsidiary brands in North America. The brand evolution ensures a cohesive look and messaging across all brands, while supporting future geographic growth across all business units.

Brands under the ROCKWOOL umbrella in North America include Roxul®, offering high-performing insulation solutions for building and industrial applications; Grodan®, a leader in progressive and sustainable substrate solutions for professional growers; and Rockfon®, trusted provider of acoustic stone wool and metal ceiling solutions and suspension systems.

Reflecting their synergy in offering advanced stone wool innovations that address local and global issues surrounding sustainability and development, Roxul, Grodan, and Rockfon will collectively adopt the new ROCKWOOL symbol—a graphic representation of a volcano that demonstrates to stakeholders and customers how ROCKWOOL brands use the natural power of volcanic stone to enrich and transform modern living, while providing solutions with far-reaching benefits.

The new brand identity will be complemented by a revamped purpose statement, "release the natural power of stone to enrich modern living," which underscores that all businesses within the ROCKWOOL Group have one overarching goal: to enhance modern living by improving the lives of everyone who comes into contact with ROCKWOOL products.

To view ROCKWOOL's corporate video featuring the new branding, click here.

"We fully embrace the new branding," says Harold Van Gool, Business Director, Grodan North America. "We are proud

to convey that all brands belonging to the ROCKWOOL family are connected and steadfast in our shared benefits and values."

"We want our customers to see us as more than manufacturers," says John Medio, Managing Director, Rockfon, North America. "Our brand refresh and new purpose statement places greater emphasis on why our products exist—to provide solutions that not only change our world for the better, but that also improve daily living for people everywhere."

"We feel strongly that a more sustainable future is possible, and we want to inspire current and future generations through our leadership," says Trent Ogilvie, North American President, Roxul Inc. "Whether its insulating, irrigating, purifying, improving safety, energy efficiency or acoustic comfort, our products and processes help people in all corners of the globe to have a more sustainable footprint and combat challenges related to increasing levels of urbanization."

The new ROCKWOOL symbol will soon be integrated into all Roxul, Grodan, and Rockfon products, marketing materials, digital and social channels throughout North America. The new brand identity provides greater information to consumers about the services and solutions they choose, how they are made, and the company that makes them. It underscores a long-held commitment to sustainability, highlighting that all companies under the ROCKWOOL umbrella produce products that come from nature and give back to nature. The brand evolution is more reflective of each company's shared belief in responsibility to the environment and to society overall.

"The updated brand identity marks an important evolution in the way we talk about our company, conveying a consistent vision and shared heritage across our diverse product portfolio's full range," says Mirella Vitale, ROCKWOOL Senior Vice President, Group Marketing, Communications, & Public Affairs.

About the ROCKWOOL Group

At the ROCKWOOL Group, we are committed to enriching the lives of everyone who comes into contact with our products. Our expertise is perfectly suited to tackle many of today's biggest sustainability and development challenges, from energy consumption to noise pollution and water scarcity to flooding. Our range of products reflects the diversity of the world's needs, supporting our stakeholders in reducing their own carbon footprint along the way.

Stone wool is a versatile material and forms the basis of all our businesses. With more than 10,500 passionate colleagues in 38 countries, we are the world leader in stone wool solutions, from fire-resistant, high-performing building insulations to acoustic ceilings, forward-designed external cladding systems to horticultural solutions, engineered mineral fibers for industrial use to insulation for the process industry, marine and offshore. For more information, visit: http://www.rockwool.com.

Media contact for ROCKFON North America: Heather West, 612-724-8760, heather@heatherwestpr.com

New Sound Intensity and Field Building Acoustics Testing Solutions from Norsonic

Sound Intensity and Building Acoustics Measurements Now Possible Using the Nor150 Sound Analyzer

Sound intensity measurement capability is now available as an option on the Nor150 Sound Analyzer from Norsonic.

The remote control handle of the Nor1290 sound intensity probe kit uses a Smartphone as an optional measurement control interface allowing the user to perform all measurements with a single hand operation. The Smartphone communicates via WiFi using the internal web server running in the Nor150. The system may also be used with the sound

intensity probe directly attached to the Nor150.

Features include:

- Compliant to IEC 61043 Class 1
- Full on-board support for ISO 9614-2
- Measurement-based suggestions for improving results
- Full measurement edit support (segment exclusion, resize, retake)
- NorRemote app for smartphone remote control
- Automatic measurement sequence

For more information, please visit our website or view the Nor150 Sound Intensity brochure.

The Nor150 analyzer now features onboard building acoustics testing in accordance with ASTM E336, E1007 and ISO-16283 and ratings calculations according to ASTM E413, E989 and ISO-717. Source and receiver room levels, background levels and reverberation times can be measured and ratings, such as the ASTC, FSTC, NNIC, NIC or AIIC, ISR and NISR, can be calculated directly on the meter without any outboard post-processing.

Please visit our website or contact us for more information.

ASTM Building Acoustics Measurements Now Available with the Nor140 Analyser

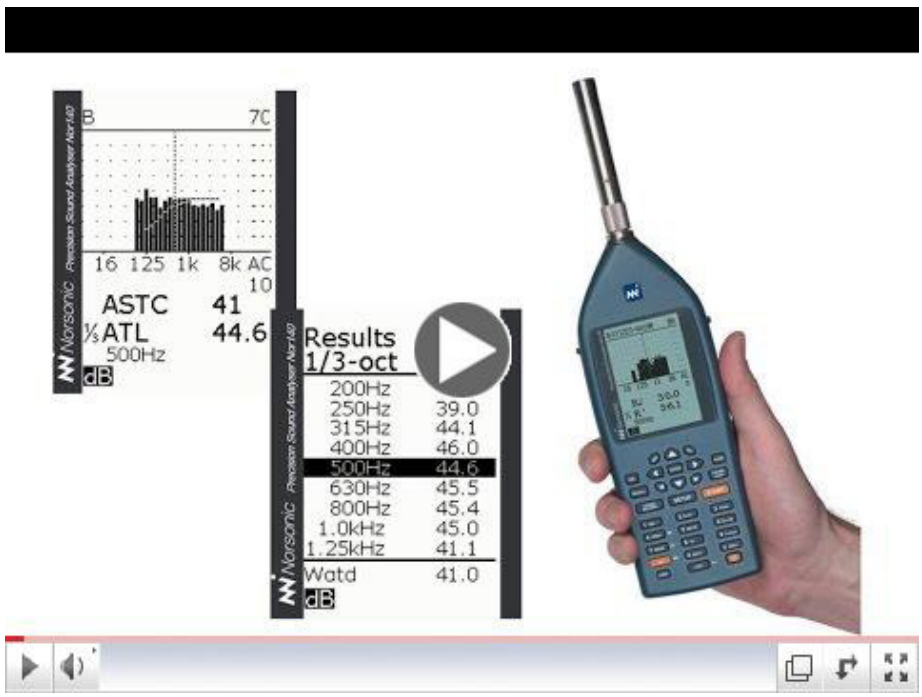
The Nor140 sound analyzer from Norsonic now offers the additional capability to conduct field airborne and impact sound insulation testing according to the ASTM E336 and ASTM E1007 standards.

This new capability is available as a part of the Building Acoustics Measurement option, therefor expanding the list of already available building acoustics standards and turning the Nor140 into a powerful building acoustics analyzer.

Please view the video or contact us for more information.

About Scantek

Scantek, Inc. is a worldwide leader in sound and vibration instrumentation sales, service, rental and calibration. Scantek sells, services, and rents the finest products and provides expert support on their use. The Scantek Calibration Laboratory is accredited for microphones, calibrators, sound level meters, dosimeters, sound and vibration FFT and real-time analyzers, preamplifiers and signal conditioners, accelerometers, velocity sensors, vibration meters and vibration exciters. Scantek, Inc is a wholly owned subsidiary of Norsonic AS.



International Representatives

Below is a list of international contacts for the advertisers in this issue. The telephone number is followed by the fax number where available. In cases where there are two or more telephone numbers per location, or several locations within a country, a semicolon (;) separates the telephone number(s) from the respective fax number. Advertisers are asked to send updated information by e-mail to cathy@inceusa.org.

BSWA

Australia: KINGDOM PTY LTD
+61 2 9975 3272
kingdom@kingdom.com.au

Australia: Noise Measurement Services
+61 7 3217 2850
bob@noisemeasurement.com.au

Austria: Ing. Wolfgang Fellner GmbH
+43 1 282 53 43
wf@shallmessung.com

Belgium: ABC International Trading B.V.
+31 162520447
nl@abctradings.com

Canada: Soft dB
+1 418 686 0993
contact@softdb.com

Egypt: Elnady Engineering and Agencies
+20 2 23425763
info@elnadycompany.com

Finland: APL Systems Ltd.
+358(0)442199940
Ville.ilves@apl.fi

France: ViaXys
+33 2 38 87 45 35
oliver.blazere@viaxys.com

Germany: ROGA Instruments
+49 (0) 6721 98 44 54
roga@roga-messtechnik.de

India: Welan Technologies
+91 20 25393126
info@welantechnologies.com

Ireland: Sonitus Systems
+353 01 2542560/+44 020 81236009
enquiries@sonitussystens.com

Israel: Emproco Ltd.
+972 (0) 8 6718187
sales@emproco.com

Italy: Spectra Sri
+39 613321
ecaglio@spectra.it

Korea: SM Instruments Co., Ltd.
+82 42 861 7004
youngkey@smins.co.kr

Serbia: NORTH Point Ltd.
+381 24 62 62 72
gajins@north.rs

Singapore: ACOUSTI-TEQ ASIA PTE LTD
+65 6694 4421
sales@acousti-teq.net

South Africa: ESTEQ Test & Measurement (Pty)
+27 12 809 9500
e.murison@esteq.com

South America: SMART Tech
+55 11 3168 3388
marcelo@smarttech.com.br

Spain: Anotec Consulting S.L.
+34 916 897 540
nico@anotec.com

Spain: PROTOS Euroconsultores de Ingeneria S.L.
+34 91 747 5891
Kimono.alexiou@protos-eci.es

Spain: Uros Ingenieria
+34 91 3329621
Jalon_id@uros.es

Sweden: Acoutronic AB
+46 87 650 280
toby@acoutronic.se

Sweden: Arotate-Consulting AB
+46 708 955150
janos@arotate.com

Sweden: Sound View Instruments
+46 (0) 70 681 79 89
Anders.norborg@soundviewinstr.com

Taiwan: OE SCIENTECH CO., LTD.
+886 -2 25115747
terry@oe.com.tw

Taiwan: Tops Technologies, Inc.
+886 932 068 059
kenlee@topstech.com.tw

Thailand: LEGA Corporation Co., Ltd.
+66 2 746 9933
maya@legaeng.com

The Netherlands: ABC International Trading B.V.
+31 162520447
nl@abctradings.com

Turkey: DTA Ltd Sti.
+90 224 280 84 44A
kif.goksa@dta.com.tr

Turkey: VibraTek
+90 0312 479 0302
Ibrahim.Caglayan@vibratek.com.tr

United Kingdom: NTi Audio AG
+44 1438 870632
uk@nti-audio.com

USA: Scantek, Inc.
+1 410 290 7726
PeppinR@scantekinc.com

Campanella Associates

USA: Campanella Associates
+1 6140 876 5108
a.campanella@att.net

NTi

Australia: Amber Technology Pty Ltd
+61 2 9452 8600
lhart@ambertech.com.au

Austria: Studiokonzept Medientechnik GmbH
+43 1 815 2624
info@studiokonzept.at

Bahrain: Focus Middle East FZCO
+971 4 609 1600
amin@focus-me.ae

Belgium: Belram sa/nv
+32 2 672 95 90
info@belram.com

Brazil: NTI Americas Inc.
+1 503 684 7050
ntisales@ntiam.com

Bulgaria: ATC Ltd.
+35 988 9528 649
hlebarovg@dir.bg

Canada: NTI Americas Inc.
+1 503 684 7050
ntisales@ntiam.com

Chile: NTI Americas Inc.
+1 503 684 7050
ntisales@ntiam.com

China: NTI CHINA CO., LTD.
+86 10 5791 0038
china@nti-audio.com

Czech Republic: NTi Audio Praha
+420 2209 99992
info@ntipraha.cz

Denmark: Kinovox Pro ApS
+45 44 53 3011
ck@kinovox.dk

Estonia: EW Sound & Light Vaarmann OÜ
+372 6612 768
ewsound@ewsound.ee

Finland: Noretron Communications Ltd.
+358 10 525 8070
timo.kunnas@noretron.fi

France: SCV AUDIO
+33 1 486 322 11
f.voiffray@scv.fr

Germany: Schalltechnik Süd & Nord GmbH
+49 201 5456 980
besselmann@akustiktest.de

Greece: Bon Studio S.A.
+30 210 380 9605 8
bon@bonstudio.gr

Hungary: Elimex Kft
+36 1 239 8270
zsofi@elimex.hu

India: AVF Distributors (I) Pvt. Ltd.
+91 22 2405 1686
info@avfindia.com

India: AVF Distributors (New Dehli)
+91-11-2 874 11 31
info@avfindia.com

Indonesia: Santika Multi Jaya
+62 21 6583 3535
andre@cbn.net.id

Iraq: Focus Middle East FZCO
+971 4 609 1600
amin@focus-me.ae

Israel: Sontronics Electr. Equipm. Ltd
+972 3 570 5223
sales@sontronics.co.il

Italy: Spectra SRL
+39 039613321
info@spectra.it

Japan: NTI Japan Limited
+81 3 3634 6110
okayasu@nti-japan.com

South Korea: NTi Audio Korea
+82 2 6404 4978
korea@nti-audio.com

Latvia: Audio AE Ltd.
+371 67807310
audioae@audioae.lv

Lithuania: Midiaudio Ltd.
+370-37-223288
sales@midiaudio.com

Malaysia: TekMark Broadcast Sdn Bhd
+603 9057 8999
gs.wong@tekmarkgroup.com

Mexico: NTI Americas Inc.
+1 503 684 7050
ntisales@ntiam.com

Netherlands: Ampco Flashlight Sales BV
+31 30 2414070
sales@ampco-flashlight.nl

New Zealand: Amber Technology (NZ) Ltd.
+64 9 443 0753
ross@amber.co.nz

Norway: Benum siv. ing. AS
+47 2213 9900
post@benum.com

Poland: Konsbud Audio Sp. Z O.O.
+48 226 44 3038
info@konsbud-audio.com.pl

Portugal: Arestel S.A.
+351 213 030 850
audiovideo@arestel.pt

Romania: db Technolight
+40 268 331 410
dan@dbt.ro

Russia: Audio Solutions
+7 495-730-5368
info@audiosolutions.ru

Singapore: d&b Audiotechnik S.E.Asia Pte
+65 67952268
info.asia@dbaudio.com.sg

Slovakia: NTi Audio Praha
+420 2209 99992
info@ntipraha.cz

Slovenia: AVC Slovenia
+386-1-530 78 70
jani.medic@avc-group.si

South Africa: Wild & Marr (Johannesburg)
+27 11 974 0633
info@wildandmarr.co.za

Spain: Neotécnica, S.A.
+34 91 542 09 00
neotecnica@neotecnica.es

Sweden: Sennberg AB
+46 8 566 16400
stephan.segermark@sennberg.se

Switzerland: Contrik AG
+41 44 736 50 10
contrik@contrik.ch

Taiwan: NTI CHINA CO., LTD.
+86 512 6802 0075
china@nti-audio.com

Thailand: Vichai Trading Co., R.O.P.
+662 559 0956 8
victorco@truemail.co.th

Turkey: SF SES VE Isik Sistemleri Ltd
+90 212 227 6800
samimm@sf.com.tr

Ukraine: Real Music Ltd.
+380-482 347382
realmusic@realmusic.ua

United Kingdom: Neutrik (UK) Ltd.
+44-1983-811 441
sales@neutrik.co.uk

USA: NTI Americas Inc.
+1 503 684 7050
ntisales@ntiam.com

Odeon

Denmark: Odeon A/S
+45 8870 8845
info@odeon.dk

Rion

Algeria/France/Morocco/Tunisia:
ViaXys
+33 2 38 87 45 35
info@viaxys.com

Argentina: HIKARI S. A.
+54 11 4811 5767, +54 11 4815 2968
cientifica@opticagriensu.com

Australia: Acoustic Research Labs Pty Ltd
+61 2 9484 0800
reception@acousticresearch.com

Austria/Czech/Slovakia/Slovenia:
LB-acoustics Messgeraete GmbH
+43 (0)1 270 77 00
Office@LB-acoustics.at

Belgium/Luxembourg: Sysmex Belgium N.V.
+32 (0)2 7697474
info@sysmex.be

Bosnia and Herzegovina/Croatia/Serbia: CERIUM d.o.o.
+385 (0)1 580 59 21
info@cerium.hr

Brazil: TST-Instrumentos de Medição Ltda.
+55 11 4221-6110
marcos.piai@tstm.com.br

Chile: Sociedad Acustical S.A.
+56 2 892 0380
laboratorio@acustical.cl

China: RION SCIENCE & TECHNOLOGY SHANGHAI LTD
+86-21-5423-5082
info-china@rionchina.com

Colombia/Ecuador/Perú: Alava Ingenieros S.A., Sucursal del Perú
+511 447 50 27
alava@grupoalava.com

Cyprus: Panacoustics Ltd
+357 25 822816
info@panacoustics.com

Denmark/Norway: Lesanco ApS
+45 3961 1206
lesanco@lesanco.dk

Finland: MIP Electronics Oy
+358 10 3222 631
info@mip.fi

Germany: ZINS Ziegler-Instruments GmbH
+49 (0)2166-1898-500
zins@ziegler-instruments.de

Greece: G.CHRALAMPOPOULOS-S. MOUZAKITIS G.P./GROUP SCIENCE
+30 210 8053121, +30 213 0311028
info@groupscience.gr

Hong Kong: Che Scientific Co (Hong Kong) Ltd (Distributor for Viscotester)
+852 2481 1323
sales@chescientific.com

Hong Kong: Science International Corporation
+852 2 543 7442
ehs@scienceintel.com

Hungary: ENTEL Engineering Research & Consulting Ltd
+36 (1) 336-0400
rion@entel.hu

India: Mecord Systems and Services Pvt Ltd
+91 22 2500 8128 / 2500 7552
info@mecord.com, sales@mecord.com

Indonesia: PT Transindotama Sinar Perkasa
+62 21 4584 0670 / 4584 0671 / 4584 0672
transindotama@transindotama.com, transindotama@gmail.com

Ireland/United Kingdom: ANV Measurement Systems
+44 1908 64 28 46
info@noise-and-vibration.co.uk

Ireland: Industrial Acoustics Company Ltd
+353 1 2828043
info@iacl.ie

Italy: ntek s.r.l.
+39 334 16 66 958
info@ntek.it, amministrazione@ntek.it, commerciale@ntek.it

Italy: VIBRO-ACOUSTIC
+39 049 9200 975
info@scs-controlsys.com

Korea: SR Tech Co, Ltd
+82-31-754-8481
sunilrion@sunilrion.co.kr

Malaysia: O'Connor's Engineering Sdn Bhd
+60 3 7953 8400
oconnor@oce.com.my

Malaysia: Active Acoustic Engineering Sdn Bhd
+603-6151 8717
enquiry@active-acoustic.com

Netherlands: Sysmex Nederland B.V.
+31 (0)76 5086000
info@sysmex.nl

New Zealand: Machinery Monitoring Systems LTD
+64 9 623 3147
mamos@xtra.co.nz

Poland: EKOHIGIENA APARATURA Sp. zo. o.
+48 71 31 76 850
biuro@ekohigiena.com.pl

Portugal: M.R.A. Instrumentacao S.A.
+351 21 421 74 72
mra@mra.pt

Romania: Spectromas SRL
+40 21 310 10 95
info@spectromas.ro

Russia: Eurotest Ltd
+7 (812) 703-05-55
sales@rion-russia.ru

Singapore: O'Connor's Singapore Pte Ltd
+65 6470 4712 (DID)
enquiries@oconnors.wbl.com.sg

Singapore: Salient Technologies Pte Ltd
+65 6659 2411
sales@salient-tech.com.sg

South Africa: Environmental Instruments International cc
+27 21 914-4408
info@envinst.co.za

Spain: ALAVA Ingenieros S.A.
+34 91 567 97 00
alava@alava-ing.es

Sweden: Acoutronic AB
+46 8 765 02 80
info@acoutronic.se

Switzerland: A - TECH testing GmbH
+41 56 634 26 26
info@a-tech.ch

Taiwan: Ring-In Trading Development Co., LTD
+886 2 2381 6767
ringin@ms6.hinet.net

Thailand: Sithiporn Associates Co., LTD
+66 2 433 8331
sa-epd@sithiphorn.com

Turkey: Cev-Tek Ltd Sti
+90 312 394 15 50
bilgi@cevtek.com.tr

UAE: Enviro Engineering General Trading LLC
+971 44201188
info@enviroegt.com

USA/Canada/Mexico
Sage Technologies – Arizona
+1 480 732 9848
coconnor@sagetechnologies.com

Sage Technologies – Michigan
+1 734 525 8100
dsulisz@sagetechnologies.com

Sage Technologies – S. California
+1 310 779 7873
mweesit@sagetechnologies.com

Sage Technologies – N. California
+1 310 503 7890
eweesit@sagetechnologies.com

Sage Technologies – Washington
+1 425 454 9680
tnorsworthy@sagetechnologies.com

Scantek Inc. - HQ
+1 410 290 7726
info@scantekinc.com

Scantek Inc. - West
+1 410 384 4221
infowest@scantekinc.com

Vietnam (Hanoi): Technical Instrument & Consultant Technology (TECOTEC)
(+84-4) 35763500 / 35763501
hanoi@tecotec.com.vn

Vietnam (Ho Chi Minh): MT Scientific Equipment Co., LTD
(+84 8) 3 86 460 51
mtse@hcm.vnn.vn

Scantek, Inc.

Mexico and South America: CIAAMSA División Acústica
+55 1054 3209/+55 1054 3210
nbenitez@ciaamsa-acustica.com

SoundPLAN International LLC

Argentina: Dakar ingenieria acustica Argentina,
+54 (11) 4865 79 84; +54 (11) 4 865 79 84;
email: soundplan@dakar-acustica.com.ar

Australia: Marshall Day Acoustics,
+612 9282 9422; +612 9281 3611;
email: soundplan@marshallday.com

Bangladesh: RECL,
+8801713066403;
email: h.ahsan@yahoo.com

Brazil: GROM Acustica & Automacao,
+55 212516 0077; +55 21 2516 0308;
email: comercial@grom.com.br

Canada: Navcon Engineering Network,
+1 714 441 3488; +1 714 441 3487;
email: Forschner@navcon.com

China: Misheng Group Ltd,
+85221654143;
email: info@mi-sheng.com

Chile: Sinruido,
+562 2398736;
email: Ing.mora@gmail.com

Colombia: High Tec Environmental Ltda,
+5716713700; +5716713700x110;
email: soporte@hteltda.com

Czech Republic: SYMOS s.r.o.,
+42 220 999 977; +42 257 225 679;
email: symos@symos.cz

Denmark: SoundPLAN Nord,
+45 (39) 46 12 00; +45 (39) 46 12 02;
email: jkl@soundplan.dk

Egypt: Elnady Engineering and Agencies,
+20 2 23420896; +20 2 23421791;
email: info@elnadycompany.com

International Representatives

France: Euphonia,
+33 (0) 1 42 21 16 05; +33 (0) 9 56 70 71 49;
email: Arnault.damien@euphonia.fr

Germany: Braunstein + Berndt GmbH,
+49 7191 91 44 0; +49 7191 91 44 24;
email: bbgmbh@soundplan.de

Greece: I Acoustics Hellas,
+30210 6630 333; +30210 6630 334;
email: dpramas@acoustics.gr

Hong Kong: Takabama Ltd,
+852 2868 0990; +852 3007 8648;
email: Takabama@gmail.com

Hungary: VIBROCOMP GmbH,
+36 1 3107292; +36 1 3196303;
email: bitep@vibrocomp.hu

India: Adams Engineering Projects Pvt. Ltd. India;
+9144 28173711; +9144 28172676;
email: sales@adams-tech.net

Indonesia: PT.DANANWINGUS SAKTI,
+628161812871; +62215674507;
email: Antonius.wira@ptdws.com

Ireland: Marshall Day Acoustics,
+442830898009; +44788540661;
email: shane.carr@marshallday.co.uk

India: Adams Engineering Project Pvt. Ltd, India,
+9144 28173711; +9144 28172676;
email ganeshhv@adams-tech.net

Israel: RTA Engineering Ltd,
+972 (0) 77 5503994; +972 (0) 77 6499964;
email: Ronen@rtaeng.com

Italy: Spectra s.r.l.,
+39 039 613321; +39 039 6133235;
email: spectra@spectra.it

Japan: Ontek R&D Co., Ltd,
+81 45 935 3818; +81 45 935 3806;
email: Watanan@onosokki.co.jp

Kenya: Machoy cc;
+27 214245719;
email: marketing@soundplan.co.za

Korea (South): ABC TRADING,
+82 2 2226 3161, +82 2 2226 7383;
email: abc@abctrd.com

Kuwait: Elnady Engineering and Agencies,
+20 2 23420896; +20 2 23421791;
email: info@elnadycompany.com

Malaysia: Acoustic & Environmental Solutions Pte Ltd,
+6567762212; +65 6776 2770;
email: Kenny@aes-aes.com

Mexico: Ingenieria Acustica Spectrum Sa Cv,
+52 55 55 67 08 78; +52 55 53 68 61 80;
email: acusticaspectrum@prodigy.net.mx

Netherlands: AV Consulting B.V.;
+31 182 352311; +31 182 354711;
email: info@av-consulting.nl

New Zealand: Marshall Day Associates,
+64 9 379 7822; +64 9 309 3540;
email: siiri.wilkening@marshallday.co.nz

Norway: SoundPLAN Nord,
+45 (39) 46 12 00; +45 (39) 46 12 02;
email: jkl@soundplan.dk

Peru: Global Group S.A.,
+51 1 4464627;
email: globalgroupsa@gamil.com

Poland: PC++ Software Studio S.C.,
+48 606 110 270;
email: support@pcplusplus.com.pl

Portugal: AAC Centro de Acustica Aplicada SL,
+34 45 29 82 33; +34 45 29 82 61;
email: aac@aacacustica.com

Romania: Vibrocomp Kft,
+40 723 614 524; +36 1 3196303;
email: bitep@vibrocomp.hu

Russia: Baltic State Technical University,
+7 812 5338907; +7 812 5338907;
email: marina_butorina@inbox.ru

Serbia: Dirigent Acoustics D.O.O.,
+381 11 763 887; +381 11 763 887;
email: dgtdejan@yahoo.com

Singapore: Acoustic & Environmental Solutions Pte Ltd,
+6567762212; +65 6776 2770;
email: Kenny@aes-aes.com

South Africa: Machoy cc;
+27 214245719;
email: marketing@soundplan.co.za

Spain: AAC Centro de Acustica Aplicada SL,
+34 45 29 82 33; +34 45 29 82 61;
email: aac@aacacustica.com

Sweden: SoundPLAN Nord,
+45 (39) 46 12 00; +45 (39) 46 12 02;
email: jkl@soundplan.dk

Thailand: Geonoise Thailand Co., Ltd.,
+66200235904;
email: contact@geonoise.com

Taiwan: AEC Team,
+886 2 2713 2882;
email: dave@aecteam.com

Turkey: Hidrotek Mimarlik Muhendislik Ltd.Sti,
+90 216 372 20 27; +90 216 384 72 51;
email: aakdag@hidro-tek.com

United Arab Emirates: Vibrocomp Me Fzc;
+971 52 7937216;
me@vibrocomp.com

United Kingdom: SoundPLAN UK&I,
+44 1751 417055; +44 1787 478498;
email: david@soundplanuk.co.uk

USA: Navcon Engineering Network,
+1 714 441 3488; +1 714 441 3487;
email: Forschner@navcon.com

Vietnam: Mr. Hoang The Anh,
+84904326005;
email: vietnam@soundplan.asia

Zero International

Australia: Hafele Australia Pty. Ltd.
+61 3 9212 2061
djones@hafele.com.ua

Canada: Les Agences Real Demers, Inc.
+1 514 387 7515
realdemers@ard.ca

Hong Kong: Zero Asia Pacific
+81 45 567 4117
zeroasiapacific@gmail.com

Australia: Hafele Australia Pty. Ltd.
+61 3 9212 2061
djones@hafele.com.ua

Indonesia: Zero Asia Pacific
+81 45 567 4117
zeroasiapacific@gmail.com

Japan: Zero Tokyoman & Co. Ltd.
+048 866-8660
henmi@tokyoman.co.jp

Korea: Zero Asia Pacific
+81 45 567 4117
zeroasiapacific@gmail.com

Malaysia: Zero Asia Pacific
+81 45 567 4117
zeroasiapacific@gmail.com

The Netherlands: Alprokon Aluminum
+31 180 643962
henk.vanherpen@alprokon.com

New Zealand: F.L Bone & Son Limited
+64 873 0282
ian.h@flbone.co.nz

Philippines: Zero Asia Pacific
+81 45 567 4117
zeroasiapacific@gmail.com

Singapore: Zero Asia Pacific
+81 45 567 4117
zeroasiapacific@gmail.com

Taiwan: Zero Asia Pacific
+81 45 567 4117
zeroasiapacific@gmail.com

Thailand: Zero Asia Pacific
+81 45 567 4117
zeroasiapacific@gmail.com

United Arab Emirates: Zero East
+052 152 7406
kazi@zerollc.com

United Kingdom: Zero Seal Systems Ltd.
+44 1785 282910
sales@zeroplus.co.uk

Venezuela: Jose' Miguel Herrera O.
+58 212 514 7541

Vietnam: Zero Asia Pacific
+81 45 567 4117
zeroasiapacific@gmail.com

Acknowledgments

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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 website on the Internet (www.i-ince.org).

August 27–30, 2017
INTER-NOISE 2017
2017 International Congress on Noise Control
Hong Kong, China
http://www.internoise2017.org/

August 26–30, 2018
INTER-NOISE 2018
2018 International Congress on Noise Control
Chicago, Illinois, USA
https://inceusa.org/conferences/internoise-2018-chicago-il/

June 16-19, 2019
INTER-NOISE 2019
2019 International Congress on Noise Control
Madrid, Spain
http://internoise2019.org/

August 25-28, 2019
NOISE-CON 2019
San Diego, CA, USA
http://inceusa.org

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Information on listings in the Directory of Noise Control Services is available from the INCE-USA Business Office, 11130 Sunrise Valley Dr., Suite 350, Reston, VA 20191-4371 Telephone: +1.703.437.4073 e-mail: ibo@inceusa.org.

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