126th
www.aes.org

Audio Engineering Society

MAKE THE RIGHT CONNECTIONS

AES CONVENTION

MOC Center • Munich, Germany

Thousands of audio professionals and students enjoyed a four-day festival of audio learning May 7–10 in Munich at the 126th Convention of the Audio Engineering Society. It had been seven years since AES had last been held in Munich. The indefatigable Martin Wöhr, convention chair, and his dedicated committee had prepared a wide-ranging event showcasing the most advanced audio research, products, and services.

OPENING CEREMONY

Welcoming delegates to the 126th Convention, with the theme *Make the Right Connections*, Roger Furness, executive director, was gratified to note that so many delegates had decided to attend despite the challenging economic situation. He introduced Jim Anderson who opened his speech with the observation that "a professional is someone who makes things look easy." Such a person, he said, is Martin Wöhr, who had surrounded himself with excellent colleagues to organize this convention. Accepting this compliment with pleasure, Wöhr offered thanks to all those good people on the convention committee and all the volunteers who worked so hard to prepare a stellar event. Munich, he said, offered its culture and joy of life, and he explained that the tasty Bavarian Schmankerl (delicacy; anything tasty) could be enjoyed at the forthcoming banquet to be held on Friday evening.

The same ceremony provided an opportunity for delegates to congratulate the recipients of AES awards, which were presented on this occasion by Wieslaw Woszczyk, chair of the Awards Committee. The majority of these were Board of Governors Awards, traditionally presented to those that have chaired major events for the Society, including conferences and conventions: Jan Berg, Klaus Blasquiz (Mike Williams accepted for him), Kimio Hamasaki, Shinji Koyano, Tapio Lokki, Jiri Ocenasek, John Oh, (twice), Jan Abildgaard Pedersen, and Josh Reiss. The Fellowship Award was given to Martin Wöhr for his outstanding contributions to audio recording and broadcasting of Wagner operas, and for pioneering work introducing surround sound broadcasting services. The Bronze Medal, given to a person who has helped significantly in the advancement of the Society, went to Ivan Stamac for promoting and stimulating interest in the AES and for his work within the Southern Europe region, of which he was vice president for a number of years. (Stamac was unable to attend the convention; Ivan Djurek accepted for him.)

Following the awards presentation Gerhard Thoma, who has been in charge of acoustic engineering projects for the car maker BMW for over 20 years, gave a fascinating talk on the evolution of acoustic design in cars. He remembered the "wonderful trumpet sound" of the exhaust pipes of the original BMW 507. Now, he said, one would never get approval for this because of the external noise legislation! The lovely whistling sound favored by those who liked the 502 had been a mystery for years, but in 1968 it had been eventually tracked down to the wind in the radiator grille. These things had been more accident than design, but it shows how sonic factors affect the way that people appreciate cars. He showed a (now hilarious) old cartoon promoting the future of auto-piloted gas-turbine cars, with commands from a control tower being communicated to an obedient driver, which amused the audience considerably. The beginning of conscious sound design in cars had been with the BMW 850, where they found that the car was too quiet and didn't make the sound that the driver wanted. Thoma showed different frequency analyses of cars perceived to be comfortable and sporty, showing the importance of odd harmonic components in sporty engine ➡

Opening Ceremonies and Awards

**Roger Furness,
AES executive director**

**Jim Anderson,
AES president**

**Martin Wöhr,
convention chair**

**Wieslaw Woszczyk,
Awards Committee chair**

Gerhard Thoma of BMW gave the keynote presentation to an enthusiastic crowd at the opening ceremonies.

sounds. There has been an evolution, he explained, from technical measurements to measuring the reactions and perceptions of users: "Attributes have taken the place of dB."

EXHIBITION

Exemplifying the latest in audio equipment on the exhibition floor were offerings from a wide range of manufacturers. Among them was a prominent stand of the German R&D organization Fraunhofer, showing the latest coding systems including MPEG Unified Speech and Audio Coding and Spatial Audio Object Coding. The latter is said to be particularly suited to teleconferencing and interactive remixing applications, where individual source objects can be

clearly identified. Also on the coding front, APT made the European debut of its WorldCast broadcast codec range, designed to operate over both ISDN and IP links. This was complemented by the latest in the Mayah range of compact audio codecs, designed to fit into half of a 19-inch rackmount slot. The C11 range is silent and has very low power consumption, as well as offering audio transmission over IP according to the latest EBU standards.

Merging Technology was promoting the latest version of its Pyramix DAW system, said to be greatly enhanced by the recently introduced MassCore processing engine. New features include the possibility to perform sampling frequency conversion in real time, as well as a bridge to ASIO

Ivan Stamac won the Sliver Medal but was unable to attend; Ivan Djurek, left, accepts his award.

Martin Wöhr, right, receives Fellowship Award, from Jim Anderson, AES president

Receiving Board of Governors Awards: from left, top row, Jan Berg, Klaus Blasquiz (Mike Williams accepting), Kimio Hamasaki; middle row, Tapio Lokki, Jiri Ocenasek, John Oh; bottom row, Jan Abildgaard Pedersen, and Josh Reiss.

mics from MicW Audio, which have nickel diaphragms in all-metal structures. Included in the offering were examples ranging from large diaphragm units down to quarter-inch systems capable of responses up to 70 kHz. Wireless mics also received a shot in the arm from Sennheiser with an entry level, easy-to-use range known as the 2000 Series, intended for stage, broadcast, and live applications. The RF band of these systems is directly switchable over a range of up to 75 MHz, with up to 64 compatible preset frequencies for microphones and 32 for monitoring systems. Joining the microphone innovations were those in the loudspeaker domain, with the first production model of the Grimm Audio LS1 being shown. Made for mixing and mastering, it is a wide-baffle, two-way DSP-controlled monitor, with controlled dispersion down to 250 Hz and a minimum phases response across the entire audio range. Another new loudspeaker on the block was from DSLab, known as the Dolomon Saga, and incorporating a novel dynamic push-pull drive that is supposed to increase the bass response while lowering the overall volume. To avoid any doubt about the intention to construct a vibration-free cabinet, the construction is of 2.5-cm-thick granite panels.

Taking digital interfacing to the next stage, Lynx introduced AES50 technology to its PCI Express card, enabling the transmission of 32 digital channels over Cat5e or Cat6 cables with low latency and low clock jitter. This complements the existing 16 channels of 192-kHz sampling-frequency audio over AES/EBU on D-sub connectors.

applications and zero-latency overdubbing. Adding to the DAW line-up was Sonic Studio, with its updated SoundBlade 2.0 editor and PreMaster CD 3.1 package. One of the advantages claimed for the secure DDP player in this system is that the master file is encrypted, so finished masters can only be opened by the intended recipient, thereby protecting valuable assets during transfer over the Internet.

On the transducer front, German manufacturer Schoeps introduced delegates to its new MK22 microphone capsule, which has an "open cardioid" response somewhere between the existing MK4 and MK21 capsules in style. Chinese microphones have risen in prominence in recent years, and this was exemplified in Munich with a range of recording

TECHNICAL PROGRAM

An expansive technical program offered something for everyone, with many events having capacity audiences. Geoff Martin and Günther Theile, papers cochairs, assembled a comprehensive program of papers on cutting-edge research in the audio field, spanning themes from telecommunications to psychoacoustics, as well as familiar topics in audio coding and signal processing. Delegates packed the aisles to hear David Griesinger talk about the importance of direct-to-reverberant ratio in the perception of distance, localization, clarity, and envelopment (paper 7724). Large audiences were also drawn to many of the papers on spatial audio and perceptual themes. A session on audio for ➥

AUTHORS

Among the authors presenting papers in lecture sessions were:

1. Florian Wicklemaier
2. Kha Le Dihn
3. Andreas Silzle
4. Seigfried Linkwitz
5. John Vanderkooy
6. Matthew O'Donnell
7. Stephan Mauer
8. Ian Dash
9. Soledad Torres-Guijarro
10. Dan Hemingson
11. Eddy Brixen
12. Isabel Barbancho
13. Elena Prokofieva
14. Markus Mehnert
15. Jens-Oliver Fischer
16. Florian Völk
17. Juha Backman
18. Wan-Ho Cho
19. Hanna Lukashevich
20. Ronald Aarts
21. Franz Zotter

telecommunications, chaired by Damian Murphy, dealt with the issues surrounding the transfer of audio over IP networks, including "20 Things You Should Know Before Migrating Your Audio Network to IP" (paper 7651), by Simon Daniels, and "Deploying Large Scale Audio IP Networks" (paper 7652). Many authors presented papers in poster sessions in the foyer area outside the papers rooms, enabling authors to discuss their work with interested visitors in a more informal setting.

Coordinated by Ben Kok, the range of workshops and tutorial topics on offer was wide, giving attendees a chance to learn from the leaders in many fields. Particularly popular was a tutorial on digital audio effects, chaired on the first morning of the convention by Christoph Musialik, with contributions from Josh Reiss and Udo Zölzer. They introduced the various ways in which signal processing techniques can be used to produce effects acting on audio signals. Sound examples were given and various different effects were created from scratch in an attempt to show the audience how to construct basic algorithms. Students and professionals alike packed the hall to learn about this important subject. A fascinating tutorial on microphone history was later given ➡

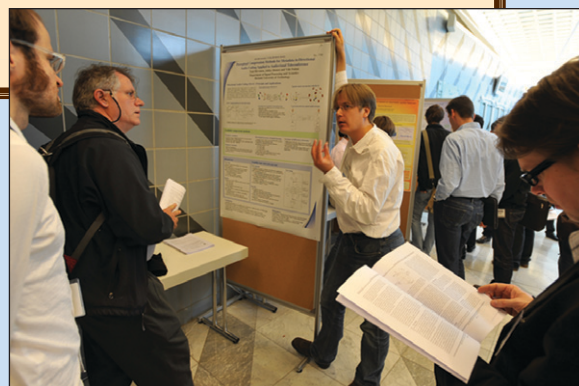## WORKSHOPS

❶ Intelligent Digital Audio Effects

❷ Microphones, What to Listen For, What Specs to Look For

❸ We Have You Surrounded—Mastering For Multichannel

Florian Camerer's *Loudness—Light at the End of the Tunnel* was one of ten well-attended tutorials at the 126th.

Ville Pulkki was one of the authors who presented papers in poster sessions.

by an eminent group, which included Jörg Wuttke (chair), Ulrich Apel, Sean Davies, and Stephan Peus. They discussed a wealth of material on RF susceptibility, capsule noise, and distortion measurement, as well as vacuum tube designs and specific landmarks in the history of micro-phone development. (This tutorial, along with a number of others from the Munich convention, will be released in the coming months as part of the AES online tutorials series for members.)

Providing an excellent resource for those working in ➡

Martin Wöhr (right), convention chair, with Gerhard Thoma, keynote speaker

Günther Theile (left), papers cochair, with David Lux, who assisted with the posters.

Geoff Martin, papers cochair

Ben Kok, tutorials and workshops chair

Ulrike Schwarz, recording events chair, and Roger Furness, executive director

Axel Dehler, technical tours chair

Nadja Wallaszkovits, facilities chair, and Mike Williams, Publication Sales

the design and analysis of listening tests, Sylvain Choisel led a panel of experts including Thomas Sporer and Florian Wickelmaier to talk about "Lies, Damn Lies, and Statistics," in an attempt to educate the broader community about the importance of good experimental design and analysis. Choisel reminded the audience of Fisher's quip that in many cases inviting a statistician along to sort out the results of a badly designed experiment is like conducting a postmortem examination to determine what the experiment died of.

The threat to high-quality recorded music was highlighted by Thomas Lund in an illuminating workshop entitled "War on Music," during which he suggested that music is currently under fire from two directions: hyperlevel and data reduction. This, he proposed, is a lethal combination leading modern recordings in many cases to sound worse than 16-bit recordings made 20 years ago. Perhaps one solution to some of these problems lies in the adoption of a consumer audio format capable of carrying many channels of audio at very high quality. To this end

Johannes Müller and Ronald Prent presented another workshop entitled "Blu-ray—The Next (And Only?) Chance For High Resolution Music Media," in which they introduced the concept of using Blu-ray as a pure audio format. Müller and Prent suggested that Blu-ray is a natural successor to SACD and DVD-A and that it can be used both with and without video.

LIVE SOUND SEMINARS

In a series of Live Sound Seminars, with facilities assistance provided by Neumann & Müller, key players in the field introduced aspects of technology and operation. Neumann & Müller and D&B hosted a seminar on sound system design and commissioning in critical environments, while Sennheiser and Yamaha sponsored a workshop on aspects of PA such as digital mixing and rockband sound checking. Yamaha and D&B hosted a session on line sources and IT-compatible networks, and on Sunday afternoon Sennheiser presented a session on the loss of spectrum for wireless production tools.

Florian Camerer, broadcast events chair

John Krivit, Education Committee vice chair, with Misato Yamada and Teri Grossheim, student events cochairs

We thank…126ᵗʰ Committee

Martin Wöhr
chair

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Geoff Martin and **Günther Theile**
papers cochairs

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Ben Kok
tutorials and workshops chair

•

Florian Camerer
broadcast events chair

•

Ulrike Scwarz
recording events chair

•

Teri Grossheim and **Misato Yamado**
student events cochairs

•

Nadja Wallaszkovits
facilities chair

•

Axel Dehler
technical tours chair

•

Armand Klenk
student volunteers coordinator

Armand Klenk (standing, center) student volunteers coordinator, with group of volunteers

STUDENT EVENTS

Activities related to students and education form a large component of AES conventions. Munich was no exception in this respect, with student events chairs Teri Grossheim and Misato Yamada coordinating a substantial program of activities. Among these were the now traditional recording competitions for stereo and surround entries in categories such as jazz, folk/world, classical, and pop/rock, judged by well-known engineers such as Ronald Prent, Darcy Proper, Jim Anderson, Akira Fukada, and Andres Mayo. Students could also sign up for mentoring sessions with distinguished mentors from the industry as well as attend a careers fair to boost their employment options after graduation. In the main concourse the student section from Technical University Graz (Austria) hosted a Student Science Spot, at which non-commercial projects and prototypes could be displayed and discussed alongside posters.

An Education Forum panel was chaired by John Krivit, and an Education Fair took place on Saturday morning to promote the various courses available to students wanting to study audio-related subjects. Bracketing the student convention program were two meetings of the student delegate assembly (SDA) at which Veit Winkler was elected the new vice chair for the Europe & International Regions and plans were made for future student activities at the local, regional, and international levels.

A considerable vote of thanks must also go to the large number of student volunteers who manned the facilities during the four days of the convention. Coordinated by Armand Klenk, this small army of workers helped greatly to keep events moving smoothly.

TECHNICAL TOURS

A strong program of technical tours was staged by Axel Dehler, providing a chance for visitors to see the inner workings of many of the key audio-related sites in and around Munich. Exceptionally popular with convention delegates was the tour to the BMW Acoustics Department, during which methods for evaluating noise and vibration sources were demonstrated and participants could experi- ➡

ence the driving simulator used to evaluate different acoustical setups for controlling engine noise. BMW's philosophy concerning its psychoacoustic approach to achieve optimum customer satisfaction was outlined in a short lecture.

The IRT hosted a group of visitors on Friday who wanted to discover more about the latest in broadcasting technology research, including new methods for recording football sound and developments in interactive and high-definition TV. Visits were also arranged to compare micro-

Gunnar Rasmussen (center), Heyser Memorial Lecturer, receives certificate from Bob Schulein (left), Technical Council chair, and Jürgen Herre, vice chair.

phone setups for a symphonic concert, by Bavarian Radio, and a number of tours visited BR's television and radio broadcasting facilities. Bavarian Film Studios, Munich's mini-Hollywood, allowed visitors into the cinema postproduction sound department, which undertook the first Dolby Digital mix in Europe for the film *Stalingrad*.

HEYSER LECTURE

Since its inception ten years ago, the Richard C. Heyser Memorial Lecture series has been privileged to benefit from the wisdom of distinguished speakers such as Manfred Schroeder and Ray Dolby. At the 126th Convention, the presentation was by Gunnar Rasmussen, a pioneer in the

construction of acoustic instrumentation, particularly of microphones, transducers, and vibration-related devices. He started his career at B&K in Denmark and went on to start his own company, G.R.A.S. Sound and Vibration, in 1994.

Beginning his talk by considering early condenser microphones such as the Western Electric 640AA, he went on to describe the development of measuring microphones. In the area of artificial ear-based measurements, he pointed out, there seems to be two schools of thought concerning the coupling between pinna and ear. In tests, the type of artificial ear can make quite a big difference in the HF region, and the choice of pinna should therefore always be included in measurement data. In Rasmussen's opinion the intensity microphone array is probably the most important measuring setup.

SOCIAL EVENTS

For those with a taste for Bavarian beer and Schmankerl (the local word used to describe tasty delicacies), the convention banquet held in an old railway station converted now into the Isar restaurant and microbrewery was a delight. In times gone by the railway took passengers from Munich to the alpine regions to the south. Diners had a chance to meet old and new

The four Live Sound seminars at the 126th were presented by Neumann & Muller and d&b, Sennheiser and Yamaha, Yamaha and d&b, and Sennheiser. The band Rauschenberger performed.
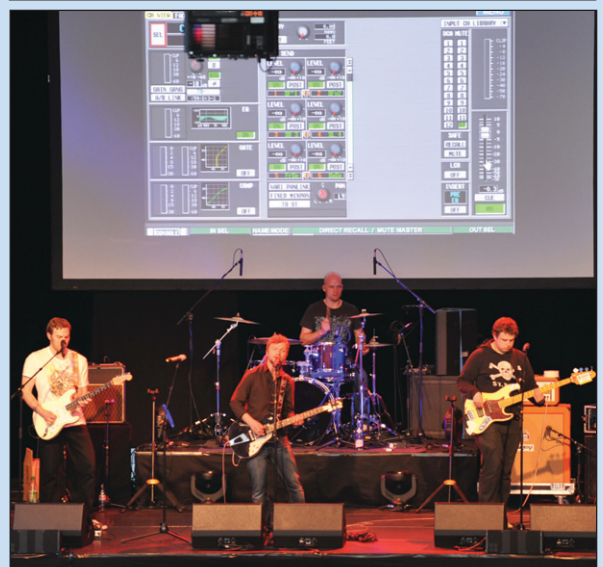
EDUCATION EVENTS

1 Career/Job Fair

2 **Student Paper Award:** Günther Theile (left), papers cochair, presents certificate to Marko Hiipakka for his winning paper, "Modeling of External Ear Acoustics for Insert Headphone Usage"

3 **Mentoring Sessions:** Don Puluse (top) and Theresa Leonard were among the professionals who offered career advice to students.

4 **Recording Competition:** Andreas Mayo (left) and Ronald Prent were just two of the audio pros who judged student recordings and offered constructive criticism.

5 Education Fair

friends in pleasant surroundings, making a fine diversion after a long day at the convention.

On Saturday evening a mixer party took place in the convention center, enabling visitors to relax and talk with colleagues from the field of audio. Music by the band Rauschenberger was presented nearby in the Live Sound atrium.

ORGAN RECITAL

Anyone who wanted to understand the meaning of the term reverberation needed only to attend the organ recital given by Graham Blyth at the Liebfrauendom in central Munich. This cavernous space, with an estimated reverberation time of some eight seconds, resounded to the music of Bach, Buxtehude, and Mendelssohn, finishing up with the whole of Vierne's 1st Symphony splendidly performed by Graham. While the precise figurations of Bach's Partita on Sei gegrüsset struggled to cut through the reverberant mush, the more languid phrases and evolving harmonies of Vierne proved better suited to the setting. Building to a thrilling climax at the end of the symphony, Blyth added a demonstra-

tion of the meaning of dynamic range to his implicit tutorial on reverberation. A recording of the event, coupled with Bob Schulein's tutorial on binaural audio technology, will be posted on the AES tutorials page (www.aes.org/tutorials) in the coming months.

TECHNICAL COUNCIL AND STANDARDS MEETINGS

Throughout the convention were held numerous meetings of the AES technical committees, whose job it is to track trends in audio so as to recommend to the Society special papers sessions, standards projects, publications, and awards in their fields. Coordinated by Bob Schulein, Jürgen Herre, and Jim Kaiser, these committees cover such diverse topics as audio for games, human factors in audio systems, and fiber optics. Complementing the Technical Council meetings was a full program of Standards Committee meetings led by Richard Chalmers and Mark Yonge. Over 65 working groups and task groups with a fully international membership are currently involved in writing standards that cover fields such as digi-

AES COMMITTEE MEETINGS

1 Awards: led by Wieslaw Woszczyk (second from left), chair

2 Conference Policy: led by Jan Pedersen (third from left), chair

3 Regions and Sections: led by Francis Rumsey (left), chair

4 Technical Council: led by Bob Schulein (bottom, right), chair, and Jürgen Herre (bottom, left), vice chair

5 Publications Policy: led by Nick Zacharov (right), cochair

6 Education: led by John Krivit (bottom, right), vice chair

7 Standards: led by Mark Yonge (bottom, right), manager

tal audio, preservation and restoration, acoustics, interconnections, networking, and file transfer. The Board of Governors met on the last day of the convention (see next page) to plan future activities.

BEHIND THE SCENES

In addition to the committee members already mentioned who worked tirelessly for the success of the 126th Convention, we also need to mention Florian Camerer who coordinated events within the program designed to appeal to broadcasters. The hard work of Nadja Wallaszkovits, facili-

ties chair, ensured a smooth-running convention. Ulrike Schwarz did a great job organizing the recording events. The entire team deserves hearty congratulation for its efforts to stage such a rewarding and wide ranging event for the Society.

For a complete postconvention listing of events, go to www.aes.org/events/126/126thWrapUp.pdf. Inserted into this issue is a form to purchase individual copies of the 126th technical papers. A CD-ROM with all the papers can be purchased at www.aes.org/publications/conventions. The list of 126th exhibitors begins on page 570.

Board of Governors Meets

**The AES Board of Governors met on May 10
to hear reports from AES officials and standing committees:**

1 David Murphy, International Region vice president; David Bowles, governor

2 Antonio de Oliveira, Europe Southern Region vice president; Jay Fouts, legal counsel

3 Roger Furness, executive director

4 Jan Abildgaard Pedersen, Europe Northern Region vice president and Conference Policy Committee chair; Ewald Kerschbaum, Europe Central Region vice president

5 Peter Cook, USA/Canada Eastern Region vice president; Francis Rumsey, Regions and Sections Committee chair

6 Karlheinz Brandenburg, governor; Richard Chalmers, Standards Committee chair

7 Ron Streicher, governor and Laws and Resolutions Committee cochair

8 Michael Fleming, governor; Steve Johnson, webmaster

9 Jim Anderson, president and Convention Policy Committee chair; Bob Lee, secretary

10 Diemer de Vries, president-elect and Laws and Resolutions Committee cochair; Bob Moses, past president and Nominations Committee chair

11 Louis Fielder, treasurer and Finance Committee chair

12 Theresa Leonard, Membership Committee chair; Andres Mayo, Latin America Region vice president

13 Neil Gilchrist, governor; John Vanderkooy, editor

14 Nick Zacharov, Publications Policy Committee cochair; Garry Margolis, treasurer-elect

15 Bob Schulein, Technical Council chair; Wieslaw Woszczyk, governor and Awards Committee chair

16 Han Tendeloo, Strategic Advisory Group chair

17 Durand Begault, governor; Sean Olive, USA/Canada Western Region vice president

18 Bozena Kostek, governor

19 Miroslav Jakovljevic, student representative; John Krivit, Education Committee vice chair; Teri Grossheim, student representative