

# AUDIO engineering society, Inc.

International Headquarters : 60 East 42<sup>nd</sup> Street, New York, NY-10165, USA



## History

### 116th AES Convention in Berlin, May 8-11, 2004 at Messe Berlin

Report on historical activities planned for the 116<sup>th</sup> AES Convention

#### 1. Highlight

The History of Sound and Film in Berlin – Babelsberg from 1912 to today will be a highlight around the Historical Room. Babelsberg was one of the first centers of film-production to use gramophone plates in play-back method. Later, Babelsberg produced one of the first sound-films in Germany with e.g. Marlene Dietrich in “The blue Angel”.

The historical ambiente around the Historical Room at the AES Convention will therefore show Babelsberg with the old huge studios and the old equipments for sound recording.

#### 2. Presentations/Papers

The Historical Room presents special contributions which are related to Babelsberg Studios, such as

- Ingo Kock, Professor at the Hochschule for Film and Fernsehen in Babelsberg  
„Sound and films in Babelsberg from the history to the future”
- Ulrich Illing Sound Engineer at company Babelsberg Studios  
“92 years of Sound Movies from Babelsberg”

The presentations include old films and old equipment and will therefore need some more time for discussions.

#### 3. Historical Display

In the historical room special presentations will take place, presenting an exhibit of selected artifacts from the early days of audio-technology. The motto is “ Hands on old Equipment”. Old microphones and loudspeakers will be shown and used together with direct cutting by an old record cutting machine.

The historical ambiente shows the history of Babelsberg which has been for 90 years a center for film productions.

The Historical Room offers an attractive program of lectures.

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#### 4. Papers and Abstracts

##### Session 1

Saturday, May 8<sup>th</sup>, 2004

|          |  |   |
|----------|--|---|
| 10:00 am | Gerhard Kuper<br><b>Eduard Schueller, Father of Tape Recorder Technology -100<sup>th</sup> anniversary</b> | Consulting Engineer,<br>Wedel                           |
| 12:00 am | Hans-Otto Hoffmann<br><b>Hands on Loudspeakers</b>   | Bayerischer Rundfunk                                    |
| 2:00 pm  | Ingo Kock<br><b>Sound and Films – From the History to the Future</b>                                       | Hochschule für Film und Fernsehen, Babelsberg           |
| 3:30 pm  | Ernst-Jo. Voelker<br><b>To the Acoustics of old Berlin Studios for Film and Radio</b>                      | Institute for Acoustics and Building Physics, Oberursel |
| 4:30 pm  | Hans-Otto Hoffmann<br><b>Hands on Loudspeakers</b>   | Bayerischer Rundfunk                                    |

##### Session 2

Sunday, May 9<sup>th</sup>, 2004

|          |  |                                      |
|----------|--|--------------------------------------|
| 10:00 am | Udo Zoelzer<br><b>History of Audio Effect Units</b>                      | Helmut Schmidt University<br>Hamburg |
| 11:30 am | Udo Zoelzer<br><b>Vintage Guitar Valve Amplifiers</b>                    | Helmut Schmidt University<br>Hamburg |
| 12:30 pm | Hans-Otto Hoffmann<br><b>Hands on Loudspeakers</b>                       | Bayerischer Rundfunk                 |
| 2:00 pm  | Ulrich Illing<br><b>92 years Sound Movies from Babelsberg</b>            | Studio Babelsberg                    |
| 3:00 pm  | Hans-Otto Hoffmann<br><b>Hands on Loudspeakers</b>                       | Bayerischer Rundfunk                 |
| 4:00 pm  | Hans-Otto Hoffmann<br><b>Loudspeakers - the Sound of the beginning</b>   | Bayerischer Rundfunk                 |
| 5:00 pm  | Norbert Pawera<br><b>Golden Microphones in the Old Days of Recording</b> | Com. AKG, Munich                     |

##### Session 3

Monday, May 10<sup>th</sup>, 2004

|          |  |                                      |
|----------|--|--------------------------------------|
| 10:00 am | Pavel Ignatov<br><b>The History of the Tonmeister Technology in Russia</b> | Student member of Russian<br>Section |
|----------|--|--------------------------------------|

|          |   |   |
|----------|---|---|
| 11:00 am | John Mourjopoulos<br><b>Acoustic Reconstruction of Buildings<br/>in the Ancient City of Olympia</b> | University of Patras, Greece                      |
| 2:30 pm  | Werner Hinz<br><b>Were the CD already there?<br/>Older Ideas Under Test</b>                         | Former Chef Engineer of WDR,<br>Bergisch Gladbach |
| 3:30 pm  | Christos Goussios<br><b>The Acoustics of Ancient Greek<br/>Odea</b>                                 | Aristotle University of<br>Thessaloniki, Greece   |
| 4:30 pm  | Hans-Otto Hoffmann<br><b>Hands on Loudspeakers</b>  | Bayerischer Rundfunk                              |

#### Session 4

Tuesday, May 11<sup>th</sup>, 2004

|          |  |                      |
|----------|--|----------------------|
| 10:00 am | Hans-Otto Hoffmann<br><b>Hands on Loudspeakers</b> | Bayerischer Rundfunk |
| 12:00 am | Hans-Otto Hoffmann<br><b>Hands on Loudspeakers</b> | Bayerischer Rundfunk |

#### Abstracts:

Author: Gerhard Kuper

Title: Eduard Schueller, Father of Tape Recorder Technology –  
100<sup>th</sup> anniversary

2004 is the 100<sup>th</sup> anniversary of Eduard Schueller's birthday (2004 01.13.); yet he died 1976 05.19. he applied for nearly 100 patents, several were fundamental for modern technologies, e.g. his 'Ringkopf' (toroid-shaped tape head) of 1933 as a basis for all magnetic storage technologies from tape recorders and video recorders up to computer hard disks. Or his 'Schraegspurpatent' (helical scan for video recording) applied for in 1953; today basic principle for almost every tape recorder all over the world.

This paper deals with Eduard Schueller's life, especially his part in the development of magnetic tape recording technology, - beginning with his diploma, continuing with his meeting with Fritz Pfleumer, the industrial development by AEG under the protection of privy councillor Hermann Buecher, the cooperation with IG Farben, civil and military tape recorder development up to the first low noise stereo tape recordings by the German RRG (Reichs Rundfunk Gesellschaft) in 1943/44. After End of WWII and taking over of the AEG patents by the allies, the German Magnetophon development and production was continued, in the beginning at AEG in Hamburg, later at Telefunken in Wedel – in any case under the management of Eduard Schueller. Report will be about the very successful first tape recorders for private use as well as for broadcasting, TV and film studio applications and later on about technical tape recorders. The last chapter of the paper will deal with Eduard Schueller's activities after retirement, when he brought his know-how into a team developing a TV disk, similar to a phonograph record. This activity was awarded with the German order of merit in 1972.

Author: Ingo Kock

Title: Sound and Films in Babelsberg - from the History to the Future

To the 50-th anniversary of the establishment of the College of Film and Television (Hochschule fuer Film und Fernsehen - HFF) Prof. Ingo Kock describes the over 90 years old history of film sound recordings in Berlin and especially in Babelsberg. The area we now call Studio Babelsberg was founded in 1912. Since this time film recordings always took place together with sound. Film sound with gramophone, optical sound and digital sound were developed here. In connection with the history of the film sound and the location Babelsberg the development of the College of Film and Television is represented.

Author: Ernst-Joachim Voelker

Title: To the Acoustics of old Berlin Studios for Film and Radio

A certain acoustical environment was always necessary when sound in an adequate quality had to reach the audience. That applied both to natural sound and to sound reproduction via loudspeakers by using electrical or mechanical amplification. Long time before microphones, amplifiers and loudspeakers were developed and used, studios in form of "glasshouses" were built e.g. in 1911 in the City of Babelsberg near Berlin, using bright and wide sunlight and for sound recordings huge horns connected with wax-plates or wax-cylinders. Sound had to be absorbed by curtains, carpets and much plush, which was already well known since the first stereophonic transmission during the First Electrical Fair in Paris in 1879. Radio started in the 20's, in Berlin with the Eugin Reiß carbone microphone in an almost overdamped Studio on October 29th, 1923. Some years later a "Haus des Rundfunks" was opened with many studios of different use and quality including a concert hall. Film and radio took their own ways with multichannel reproduction or for long time only with mono transmission. Some acoustical aspects of the first studios will be described.

Author: Udo Zoelzer

Title: History of Audio Effect Units

The presentation will discuss old analogue audio effect devices and their specific development over the past centuries towards complete digital implementations. Audio effects are based on physical phenomena of sound production and transmission but are also created by musicians with their specific playing of a musical instrument. The driving forces for different implementations and the use of different technologies will be explained with several sound examples.

Author: Udo Zoelzer

Title: Vintage Guitar Valve Amplifiers

Guitar tube amplifiers developed in the 50's and 60's still enjoy high popularity. The original sound of different amplifiers will be presented on the basis of video and sound clips. The circuit designs and the development of these valve amplifiers will be discussed. A perspective towards complete digital implementations will be demonstrated.

Author: Ulrich Illing

Title: 92 Years of Movies with Sound from Babelsberg

The Babelsberg Studios have been well-known since 1912, when the first “Glasshouse” was built in order to work with optimal daylight conditions. First productions used handwheel cameras and gramophones with horns for sound reproduction. The gramophones served as a play-back system for the actors.

In Babelsberg huge studios were built 1926, when for instance the silent film Metropolis was produced. In these days many rejections existed against the sound in films. Therefore the Triegon sound film shootings of 1925 on the Ufa terrain was only of little interest. Under impression of the USA sound movie boom Company Ufa built a new Hall complex as room-in-room-construction with higher sound proofing and better acoustical properties. One of the first light sound films which was produced here became very famous: “The Blue Angel”

In the following years in Babelsberg the film production not only increased, there were made a lot of important technical developments for film sound recordings. At the end of the second world war the Babelsberg film area was devastated. East German moviemakers and technicians with many inventiveness created the foundation for the production of nearly 700 DEFA feature films up to 1992. Today the Babelsberg studios are again a Center of Film and Television, for many new and post productions.

Author: Hans-Otto Hoffmann

Title: First Loudspeakers – Some Historical Aspects

Loudspeakers can be seen as devices which irradiate loud sounds. Speech and music were included from the beginning of sound reproduction. In 1881 the first stereo reproduction was provided during the Electrotechniques World Fair in Paris when a transmission took place from the Paris Opera to a demonstration room near the Eifel Tower. For listening, headphones were installed with left and right information on both ears. The door was now open to electromagnetic speaker systems. Meanwhile legendary phonographs invented by Edison and others were used, sometimes parallelly to reach a larger audience in movie theaters. When Lieben invented the amplification tube an important step was accomplished towards larger and more powerful loudspeakers following the same electromagnetic transmission method. With the beginning of radio in the early 20’s, first monitoring speakers appeared for controlling the recorded sound simultaneously with a wireless transmission.

The paper will describe some important inventions and developments which lead to our present high standards in monitoring speakers.

Author: Norbert Pawera

Title: Golden Microphones in the Old Days of Recordings – Why and How?

Neither the contact microphone of Philip Reis in 1861 nor the carbon microphone of Graham Bell became really recording microphones for transmitting speech or music. When Eugen Reiß in the 20’s proposed his carbon microphone it became very famous and could be called a golden microphone. A real break through was the first condenser microphone of Neumann in 1928. The quality was much better.

The carbon microphone was still in use in the 30s. The new high-quality of magnetophones required still much better microphones. The recording technique used only one microphone in front of the orchestra or later a stereophonic microphone on the same place. In 1944 Helmut Krüger made recordings with condenser microphones hanging over the left and the right side of the orchestra for producing a stereophonic sound impression. These tapes were captured by the Russians. But, fortunately, the tapes were still available and could be used for a historical CD in 1983. Another golden microphones followed such as high-directivity microphones and wireless microphones. Many old microphones are still very well known to day. They will be shown and explained.

Author: Pavel Ignatov

Title: The History of the Tonmeister Technology in Russia

The History of the sound recording in Russia dates to the end of the 19th century. Due to this fact it is possible to keep some wax discs with voices of such great Russian writers such as Tolstoy L. N., Chekhov A. P., etc. The creation of first sound recording studios began in the 20-30's. Although the technical facilities, which were used seemed to be quite primitive, the work of such outstanding tonmeisters as Khustov M. G., Grossman A. B., Gakhlin D. G. made it possible to create outstanding recording of classical music and live concerts. The main feature of the 2<sup>nd</sup> period (1950-1980) is the great development of the TV, RB and recording studios. (292 large television centers and radiostudios had been built by the 1980's). Due to the work of tonmeisters the masterpieces of Russian and world musical culture were preserved. Today the new digital technologies and surround sound system are used in tonmeister practice. Such masters as Shugal S. G., Vinogradov V. V., Khondrashin P. K., Dinov V. G. and many others create a new methods of digital sound recording. The main periods of the development of tonmeister technology are investigated in this report.

Author: John Mourjopolous

Title: Acoustic Reconstruction of Buildings in the Ancient City of Olympia

Two famous buildings in the ancient Greek city of Olympia (birthplace of the Olympic games), the Temple of Zeus and the Echo Hall, which are now in ruins, are reconstructed as 3D computer models. Their acoustic properties are analysed via computer-aided prediction and auralisation, so that detailed and in-depth conclusions for their acoustic performance are derived and presented, together with audio demonstrations.

Such a methodology introduces a form of acoustical archaeology, since it presents novel findings for these ritual buildings' acoustic behaviour, especially with respect to the modes of speech communication and general functionality.

Author: Werner Hinz

Title: Were the CD already there? Older Ideas under Test

Sometimes inventions are made twice because their subjects are very present. Several people may have quite the same ideas. Some inventions however are not followed by

practical applications. Instead other scientists achieve the breakthrough and the fiscal success. Such a situation is probably related to the well-known compact disk, the CD. At the beginning of the 80's company Phillips introduced a complete product. In 1983 the production of the CD almost exploded. The so-called black disk became unimportant. Meanwhile the CD is already an old product and is replaced by DVD or Mini Disk. Recently the work of Jim Russel, an American physicist, became known. He already had invented the CD around 1965, long before Phillips in the years between 1980 and 1983. Russel invented the optical track of digital signals on thin disks. The bits were proposed in the size of micrometers. The optical reproduction was included.

At that time Russel worked for the Batelle Institute. The company Batelle had no interest in this optical CD. That is why the revolutionary invention was not really introduced.

In his Paper Werner Hinz will describe the work of Russel and will include the first "Optophone" which already was invented in 1931.

Author: Christos Goussios

Title: The Acoustics of Ancient Greek Odea

Apart from the world famous ancient Greek theaters, whose acoustics often attracted engineers, smaller closed amphitheatric halls -called Odea (plural of the Greek word odeion)- had been constructed and used through the Greek and roman period. The acoustical characteristics for most of them and information concerning their location, use, history and architectural elements are presented. An effort for the modeling and estimation of their acoustics was made. Results of measurements that had been also carried out are discussed.

## **5. Historical Committee**

The Historical Committee will hold their annual meeting in the Historical Room at  
12:30 Hours Meeting of the Historical Committee

Agenda:

1. Opening by the Chairman
2. Geetings by Ernst-Jo Völker on behalf of the Convention Committee
3. Introduction of Members and Guests
4. Report of the Chairman and Discussion
5. New Projects
6. Miscellaneous

## **6. Babelsberg film sound tour**

A historical tour is scheduled to Babelsberg film studios to see the many activities of this small Hollywood next to Berlin. The tour can be a supplement to the Babelsberg presentations in the Historical Room. The participants will see the old studios with the new installations and can as well experience the huge changes after the unification of Germany. The tour will take place on Monday, May 10<sup>th</sup> at 2 pm – 5 pm.