AES SWISS SECTION NEWSLETTER

75th Issue

INFORMATION ON NEXT MEETING

THE USE OF DIGITAL SIGNAL PROCESSING IN LOUDSPEAKER TECHNOLOGY

Thursday 14th of June 2001, 18h00 at Studer Professional Audio AG, Althardstrasse 30, 8105 Regensdorf (2 minutes from railway station Regensdorf-Watt)

SPEAKERS: Alain Roux, Relec SA
            Dr. Ulrich Horbach, Studer Professional Audio AG
ORGANIZER: Attila Karamustafaoglu, Studer Prof. Audio AG   LANGUAGE: French/German

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Despite being over 100 years old, the loudspeaker is not yet at the end of its development cycle. The question about the properties of an ideal loudspeaker is still not answered and compromises seem to form today's spectrum of available devices. As digital signal processing is becoming very cheap and most of commercial audio media are digital, it is not a big step to take to introduce the idea of applying digital algorithms to pre-modify signals for improved loudspeaker output. Linear and nonlinear filtering, considering time- and frequency-domain designs simultaneously, can be used to improve transducers and techniques of all sorts. Former technologies with unacceptable disturbing properties can be readressed since digital processing allows those unwanted properties to be eliminated.

Alain Roux, Loudspeaker Researcher and Manufacturer will start the evening with a talk about studio monitors and the advantages of digital signal processing can bring to them. He will categorize the unwanted effects according to how much digital signal processing is required to avoid them.

Dr. Ulrich Horbach has also many years of experience in loudspeaker technology and is presenting his most recent theories, studies and prototypes. It will be explained how the combination of numerical simulation of a horn speaker and digital equalization can lead to results which were not achieved before. Another technology discussed is the distributed mode loudspeaker which uses flat panels to emit its

acoustical energy. Digital signal processing also helps here to get the desired behaviour.

After the two short speeches, there will be time to listen and compare some of the ideas discussed.An optional dinner will be held at the Trend Hotel in Regensdorf after the meeting (around 20h15).

Biographical Notes

Since finishing his studies at EPFL in 1975, **Alain Roux** has been developing and manufacturing loudspeakers under the label P.S.I. This activity became commercial in 1977 with the founding of a one-man business called Roux Electroacoustique and kept growing during the following decade. In 1988 his company was converted to today's corporation Relec SA located in Yverdon.

Dr. Ulrich Horbach worked for 6 years at the University of Erlangen, Germany, as a research assistant. His main research topics were mobile communications and digital signal processing in general. He received a Ph.D. in 1991, studying sigma-delta modulation techniques and high-resolution A/D-conversion for audio applications.

From 1992-1996 Dr. Horbach worked at LAWO Geraetebau, Rastatt, Germany, designing the DSP core hardware and the software algorithms for a new large digital mixing console. Since 1996 he has been with Studer Professional Audio AG, Switzerland, where his main tasks include DSP research and development, auralization and virtual reality tools in particular. He is a member and has been actively contributing to the new international MPEG-4 multimedia standard.

REPORT ON PREVIOUS MEETING

AUDIO & SDI

Thursday 29th of March 2001, at 18h30 at the Hotel Alfa, Bern

SPEAKERS: Markus Gaechter, Sony Broadcast
　　　　　　Patrick Boehm, TVSR
REPORTER: Patrick Boehm, TVSR

About 20 participants from the Swiss Section gathered at the Hotel Alfa in Bern for the meeting on "Audio & SDI".

Markus Gaechter from Sony Overseas, started off with a reminder of some of the basics concerning the different formats in the video field. He then gave a brief overview of the sampling and quantification frequencies as well as the various bit rates according to the luminance and chromaticity. All this leading inevitably to the well known value of 270 megabits/second.

An explanation of the various interfaces followed, with particular attention to the Ancillary Data space in which it is possible to insert different signals such as audio information. Markus also gave us information concerning the timing of SDI signals (so as to know where to insert these different signals), as well as information on the standards stipulating the number of audio channels and sampling frequencies. Different aspects were shown relating to the serialisation and de-serialisation . The last issue to be taken up by Markus Gaechter was SDTI, which allows transfers to be made at four times real speed

The second presentation was given by Patrick Boehm of the French-speaking Swiss National Television (TVSR), who gave a summary of the television news project ACTU 2000 being developed in the Geneva. This studio, which is entirely equipped with SDI type signals will be operational at the end of August 2001.

In the first part of his presentation, Patrick explained the overall integrated system which allows all the incoming signals on the various lines to be recorded onto hard disks and then edited on dedicated workstations. MPEG1 mirroring on another server enables the images edited on the PC workstations to be visualised. This system is also linked to the different press agencies that supply the various news items. The second part of Patrick Boehm's presentation was devoted to an overview of the block diagram of the studio along with a projection of photographs of the various studios.

Several themes were taken up following these presentations including serialisation techniques, advantages and drawbacks of SDI cabling and separate audio and video cabling.

NEXT SWISS SECTION MEETING

Sound Reinforcement Going Digital ? Pierre-André Aebischer, Hyperson, 6th of September 2001
(date to be confirmed)

APOLOGIES for May Meeting

It was sadly not possible to organise the *"Evening with George Massenburg"* as he was not able to come to the AES Convention in Amsterdam.