

A NEW DIMENSION IN AUDIO

3D SOUND BY FOHNN®



3D SOUND – EXPERIENCING IT, NOT JUST HEARING IT

Wind blows through the meadows, while a bee buzzes on the ground. In a wood, leaves rustle all around and birds twitter – above, below, left and right. The number of multi-dimensional sound experiences that can be created by modern audio systems is more or less infinite. Today's so-called 3D sound systems offer the listener an opportunity to become completely immersed in "real live" soundscapes: Worlds, in which sound can be perceived from a number of different directions and precisely located – regardless of where you are standing. Worlds, in which both ambient sounds and their movements can be realistically reproduced.

With standard stereo and surround sound systems, sound elements can only be represented two-dimensionally. However, the addition of extra loudspeaker levels to give depth, width and height, i.e. to create a 3rd dimension, enables the creation of almost perfect spatial sound awareness.

While still relatively new in the audio technology arena, 3D sound has nevertheless become highly sought after: In cinemas and theatres. In museums with multimedia exhibitions. In cultural experiences or commercial theme parks. In state-of-the-art showrooms and presentation venues. In clubs and discotheques. It can even be found in driving simulators and in artistic live performances. In short – any application that enables audiences to be immersed in natural soundscapes and dynamic sound effects. Its creative potential therefore knows no bounds.

The visitor centre in the regional parliament building in Düsseldorf: Ambient sound with **FOHNN'S AIREA** System



3D SOUND PIONEERS: BARCO (IOSONO) AND FOHNN®

The subject of 3D audio is by no means new to **FOHNN**. For several years, **FOHNN** developers have been working with surround sound – or rather, surround sound systems for cinemas. What's more, in researching and manufacturing loudspeakers with 3D sound capability, the south German company has been involved in some truly pioneering work: Various **FOHNN** products (e.g. **AIREA**) are already predestined for use in surround- and 3D sound systems.

This was illustrated several years ago during a live comparison test in which **FOHNN** was involved. IOSONO – a leader in 3D audio and part of BARCO AUDIO TECHNOLOGIES – was searching for the perfect loudspeaker systems to use in a large-scale installation project in Switzerland.

After comparing a number of systems from different audio manufacturers, **FOHNN'S LINEA LX-100** loudspeakers were finally selected. The line source speaker had proved entirely convincing on account of its high levels of stability, slim appearance and precise beam dispersion: Compared with other conventional loudspeakers, its beam characteristics are broader in the horizontal axis and narrower in the vertical axis. This enables a 3D installation to be created using relatively few systems.

It was during this joint project that the idea arose for **FOHNN** to have its own permanent installation for demo purposes ...

Ideal for surround- and 3D sound installations: **LINEA LX-100** line source speaker



A NEW SPACE FOR EXPERIENCING SOUND:

THE FOHNN® SOUNDLAB

In February 2013, the idea became a reality: In cooperation with IOSONO, Europe's largest 3D audio demo system was installed in the **FOHNN SoundLab** in Nürtingen.

The system offers a spectacular three-dimensional audio experience in which the listener is at the heart of the action. Using several different loudspeaker levels enables sound sources to freely move throughout the height, breadth and depth of the room, with different characteristics emphasized as required: For example, the distant sound of an approaching thunderstorm, together with individual raindrops which can be heard falling directly over the heads of listeners.

Compared with conventional surround systems, the IOSONO 3D system offers more than simply a two-dimensional speaker system with effects. Each **FOHNN** loudspeaker in the IOSONO 3D audio system is capable of reproducing a full dynamic range. So, rather than simply transmitting effect signals, the loudspeakers can recreate an actual 3-dimensional sound image. This enables particular sounds to occur in specific places, exactly as they do in real life.

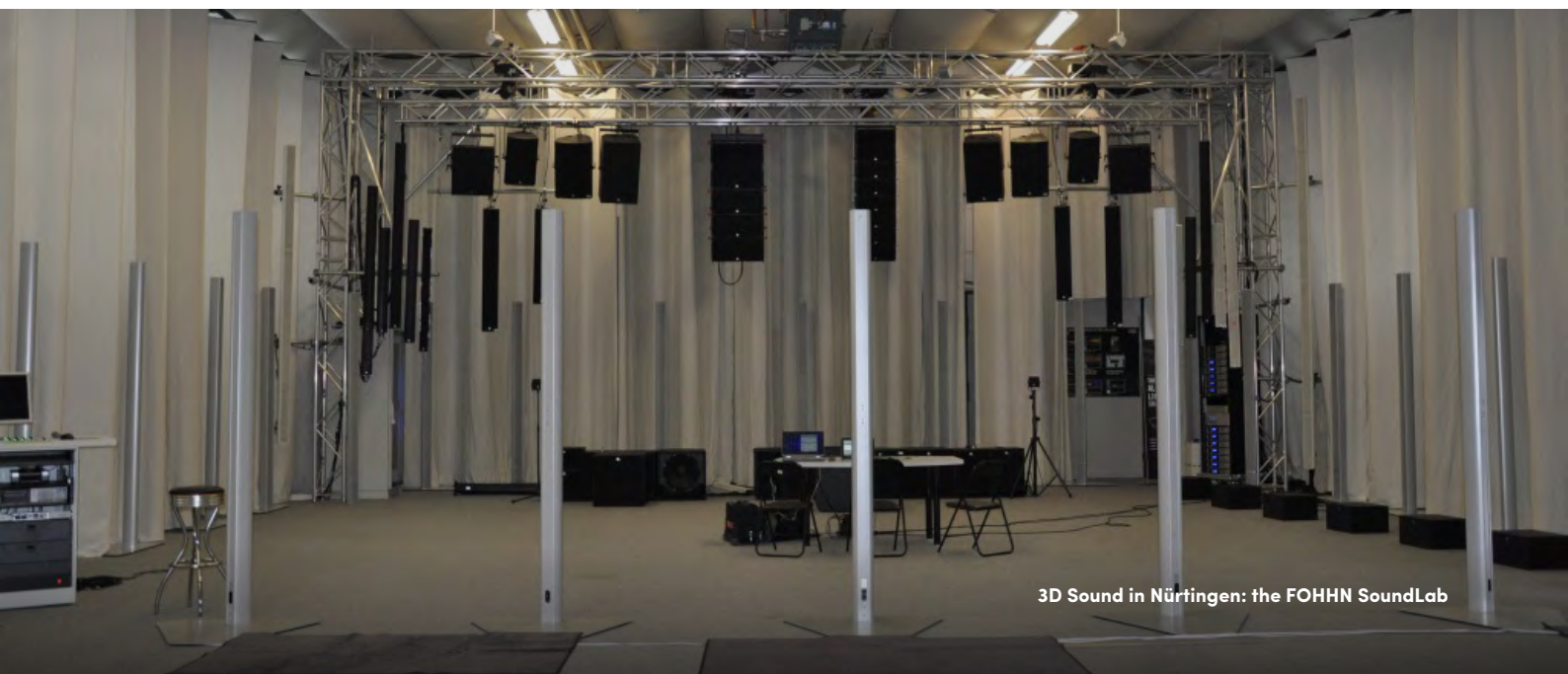
The installation currently includes 24 **LINEA LX-100** line source speakers with specially developed freestanding housing, four **ARC AS-40** subwoofers and 18 **LINEA LX-10** nearfield speakers mounted from the ceiling at a height of 5.10 metres. Since 2016, low frequency coverage has been extended with the installation of four "hidden" **AIREA AS-06 ASX** subwoofers, while four new **AIREA LX-10 ASX** nearfield speakers provide an additional sound source location at floor level.

Behind this "sound backdrop" are 12 **FOHNN** DSP amplifiers with a total of 46 channels, an **AM-50 AIREA MASTER** module, an ANDIAMO XT MADI to AES/EBU converter, an IOSONO CORE processor, an IOSONO Spatial Audio Workstation (SAW), plus a Nuendo Digital Audio Workstation.

In 2015 the **FOHNN SoundLab** was enriched by a further innovation - a Yamaha AFC-3 system. This brand new acoustic enhancement system, which required the installation of eight microphones on the ceiling, was added to the 3D sound system's existing loudspeakers and amplifiers. This has made the **SoundLab** the first demo facility in which the Yamaha artificial room acoustic system and IOSONO 3D sound are used in combination.

The acoustic enhancement system has two components: One deals with reflections, while the other is responsible for the room reverberation. "Direct sound" from the room is captured using four cardioid microphones, hung from the ceiling and delayed by up to seven consecutive reflections coming from various loudspeakers. The diffused sound in the room is then captured by omnidirectional microphones, modified and subsequently reproduced by the loudspeakers as reverberation.

A range of presets representing different room acoustics can be recalled via remote control. This enables the acoustic conditions of a reverberant church to be created, for example. It also enables **FOHNN's** state-of-the-art Beam Steering Technology to be realistically demonstrated and experienced within the **SoundLab**.



3D Sound in Nürtingen: the FOHNN SoundLab

PERFECT SOUND FROM EVERY DIRECTION

FOHNN loudspeaker systems offer solutions for a whole range of rooms and applications. As well as combining state-of-the-art digital-, network- and amplifier technology, the systems can be invisibly integrated so as not to spoil the immersive audio experience. All **FOHNN** loudspeaker systems undergo continual development in order to maintain their leading-edge technological status. The aim is to be able to provide visitors and audiences with true 3D audio experiences in all places and at all times.

Collaborating with BARCO (IOSONO) has paved the way for further successful projects in the fields of 3D- and surround sound.

CINEMA 8 IN SCHÖFTLAND (SWITZERLAND)

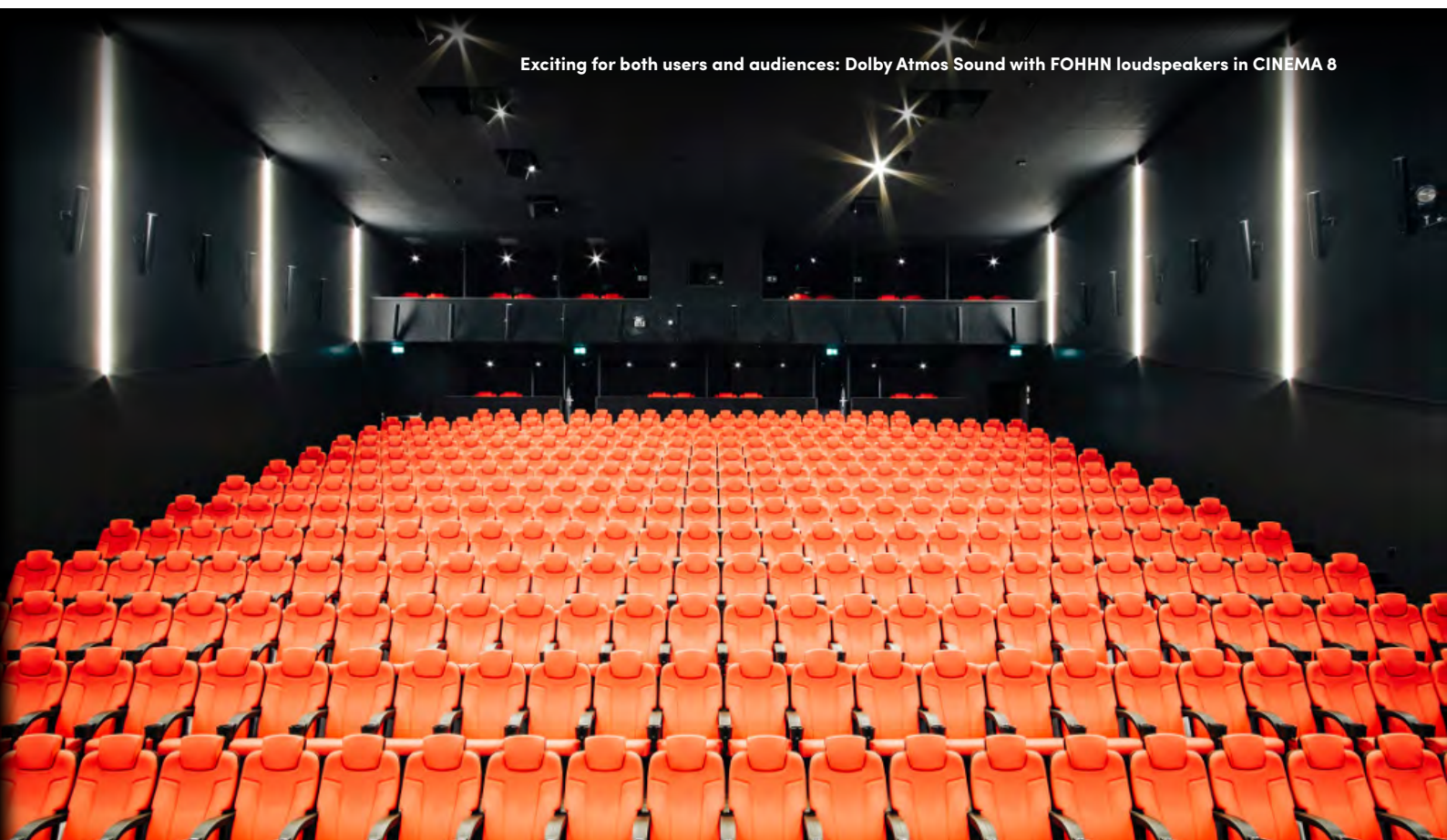
2014 saw the opening of the CINEMA 8 cinema complex – four movie theatres with Dolby Atmos Surround Sound, which were equipped with **FOHNN** loudspeakers by AUDIO-SONIC GmbH. Over 130 **LINEA LX-100** line source systems have been installed along with a number of **ARC-SERIES** loudspeakers (including 30 **AT-50** and 24 **AT-35** full range systems and 12 **AS-40** subwoofers), six **PERFORM PS-9** active subwoofers, around 60 digital amplifiers (20 **D-4.1200** and 40 **D-4.750**) and 44 ceiling and wall speakers. All loudspeakers comply with the high Dolby standards.



3D sound on wheels: B&R Medientechnik's Audio 3D Mobile

B&R 3D AUDIO MOBILE

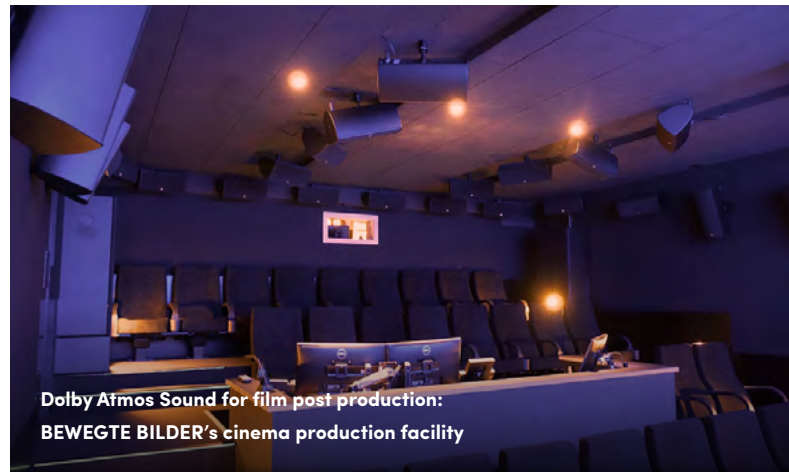
At Tonmeistertagung 2014, Bernd and Benjamin Kugler from B&R Medientechnik presented their new mobile 3D sound facility. Inspired by the IOSONO system in the Nürtingen **SoundLab** – and working in cooperation with **FOHNN** and IOSONO – the Kuglers found an opportunity to bring the 3D audio technology experience to potential customers directly in front of the venue. Their mobile demo facility has a digital **AIREA** system consisting of two **AM-40 AIREA MASTER** modules (from which 32 separate routings can be controlled), 23 **LX-10 ASX** two-way loudspeakers (spread over two levels and the ceiling), plus an **XS-22** active subwoofer.



Exciting for both users and audiences: Dolby Atmos Sound with FOHNN loudspeakers in CINEMA 8

DOLBY ATMOS STUDIO IN TÜBINGEN

In 2015, BEWEGTE BILDER Medien GmbH put the first Dolby Atmos cinema post production facility into operation. The Dolby licensed studio has been equipped with high quality **FOHNN** loudspeaker systems. As a pioneer in digitization, BEWEGTE BILDER can look back on 25 years of experience in the German film and cinema markets. The new facility enables Tübingen-based post production and event service providers to handle the whole creative and technical process associated with film production from within a single post production environment.



Dolby Atmos Sound for film post production:
BEWEGTE BILDER's cinema production facility



Infinite sound possibilities:
the Kazakhstan EXPO Pavilion in Milan © Martin Miseré

ENERGY, EDUCATION AND EXPERIENCE CENTRE (EEZ), AURICH

Since the summer of 2015, EEZ Aurich has hosted the interactive ENERGIE.ZUKUNFT exhibition. A highlight of this is the 10-metre high "Energy Tower" in which an IOSONO sound system enables surround sound to interact with 360° projections. In addition to an IOSONO CORE AUDIO PROCESSOR, the system – installed by FUNA – also includes 30 compact **AIREA LX-10 ASX** two-way loudspeakers, two **AS-10 ASX** subwoofers and three **AIREA MASTER** Modules (two **AM-40** and one **AM-10**). In addition to BARCO (IOSONO) and FUNA, credit for this highly successful installation also goes to ULTRAMAR LABS (sound design) and IMPULS-DESIGN (general concept).



Sound and image interact:
the "Energy Tower" in EEZ Aurich © Barco Audio Technologies



A model of "One Campus": Barco's new headquarters

BARCO'S "ONE CAMPUS" HQ IN KORTRIJK (BELGIUM)

"One Campus" – the new central headquarters of BARCO AUDIO TECHNOLOGIES – was officially opened during 2016. The complex comprises "The Circle" (including company restaurant, visitor centre with lecture theatre, training facility, conference-, work- and production areas), "The Lab" (a research and development laboratory), "The Pulse" (an office building) and "The Engine" (containing additional production space). To provide "Campus" visitors with an immersive audio experience of the highest possible quality, **FOHNN** loudspeakers have been installed. These have been specially developed for IOSONO 3D sound.



For more information on our loudspeaker systems and our **FOHNN IOSONO 3D SoundLab**, please visit our website, or contact us directly:

FOHNN® AUDIO AG

Hohes Gestade 3-8
72622 Nürtingen
Germany

Tel. +49 7022 93323-0
Fax +49 7022 93324-0

www.fohnn.com
info@fohnn.com

FOHNN® on Social Media

