



THE FUTURE OF AUDIO

Sennheiser Presents AMBEO 3D Audio Technology

Early in 2016, audio specialist Sennheiser unveiled a strategic focus on 3D immersive audio, a groundbreaking technology that promises the ultimate in audio capture and reproduction. “3D audio is the new frontier of excellence, set to transform the listening experience for users across a broad range of applications, from virtual reality gaming to audio recording and broadcasting,” said co-CEOs Daniel Sennheiser and Dr. Andreas Sennheiser, speaking at CES 2016. “We have been active in this area for some time with 9.1 mixing and recording and the audio design for high-profile exhibitions. We are now increasing our efforts considerably to introduce this amazing sound quality into new products and applications, enabling users to experience and shape the future of audio.” Sennheiser’s 3D immersive audio products and activities bear the AMBEO trademark. AMBEO products are consistently developed with an early involvement of users, producers, content providers and technology partners across the globe.



AMBEO is Sennheiser's trademark for breathtaking 3D immersive audio

3D immersive audio is increasingly becoming a format of choice in professional recording, mixing and listening. The composer, producer, and musician Simon Franglen, well known for his work on the films *Titanic* and *Avatar*, commented: “Every time I do an immersive mix, I notice how much more clearly I can hear what's going on within a track. The extra playback area allows individual voices and instruments room to breathe in a way that the flat plane of a stereo mix can never hope to accomplish. 3D audio gives a completely new experience to the listener. Not only are they inside the music, but they get the opportunity to really hear the detail and the arrangement that the musicians, arrangers and producers put into the recordings. Even as a professional, I have listened to tracks that I have thought I knew



intimately to discover so much more than the stereo or mono mix was able to give me. Once you hear this, music changes forever.”

AMBEO 3D Audio Recording and AMBEO Listening Experiences

Sennheiser has been making original 9.1 recordings since 2010, and has promoted this immersive format ever since at audio congresses, workshops and tradeshows around the globe. In the course of this work, a tonmeister-quality AMBEO upmix algorithm was developed to turn legacy stereo material into stunning 9.1 music.

A key highlight in Sennheiser’s work with the 3D audio format is the creation of immersive AMBEO 3D audio installations for the Victoria and Albert Museum (V&A) in London, the world’s leading museum of art, design and performance. Their internationally successful “David Bowie is” exhibition (1.7 million visitors on the global tour as of August 2017) and the “You Say You Want a Revolution? Records and Rebels 1966 – 1970” touring exhibition use AMBEO sound installations that fully envelop visitors in sound and music, establishing a completely new type of museum experience.

AMBEO 3D Audio is also used for “The Pink Floyd Exhibition: Their Mortal Remains”, which runs at the V&A until 1 October 2017. Retracing the legendary band’s history, music, live performances and sound technology, the exhibition features an AMBEO installation in a dedicated Performance Zone, where a unique 17-channel remix of “Comfortably Numb” is played back over a total of 25 loudspeakers. The immersive live mix was created at the Abbey Road Studios by producers Simon Rhodes and Simon Franglen, who closely collaborated with Pink Floyd associate and recording engineer Andy Jackson on this project.



“The Pink Floyd Exhibition: Their Mortal Remains” runs at the V&A until 1 October. An AMBEO installation plays back a new immersive mix of *Comfortably Numb* from the Live 8 concert – the last time David Gilmour, Nick Mason and Richard Wright played onstage with former member Roger Waters.

(Photo courtesy of the Pink Floyd Exhibition: Their Mortal Remains)



AMBEO VR Mic

High-quality 3D audio that eliminates the boundaries between playback and reality – this is the promise of the AMBEO VR Mic. The compact handheld Ambisonics microphone comes with everything needed for creating professional virtual-reality sound: a split cable with four colour-coded and labelled XLR connectors according to the capsule position, Rycote suspension mount, foam windshield, and a free A to B format encoder for downloading as VST, AAX and AU plug-ins or as a stand-alone version for Mac or Windows

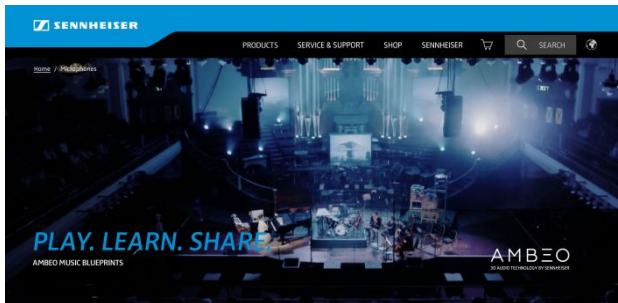


Sennheiser's AMBEO VR Mic captures high-quality audio in three dimensions

“The demand for compact microphones that capture spatial audio to match visual 3D experiences has increased enormously in the recent past. For the user to gain a truly immersive experience, however, it is imperative that the sound within VR is also 3D,” said Kai Lange, product manager, Broadcast and Media. “The AMBEO VR microphone has been designed specifically for VR/ AR purposes and enables VR content producers to capture the natural sound field, providing a realistic and immersive experience for the user.”

AMBEO Music Blueprints

AMBEO Music Blueprints is a dedicated website that explores how to record, mix and deliver live music as an immersive 3D audio experience. At www.sennheiser.com/ambeo-blueprints, three Blueprints – AMBEO for Loudspeakers, AMBEO for Binaural and AMBEO for Virtual Reality – provide straightforward information on recording set-ups and microphone positioning, on mixing with additional spot microphones and on delivery and playback for a 3D listening experience. Complete with expert voices, equipment rental options, sound examples, video material and free plug-in downloads, the website gives seasoned engineers, aspiring recordists and streaming specialists guidance on how to record and mix immersive 3D sound.



Sennheiser's AMBEO Music Blueprints website explores how to record, mix and deliver immersive 3D audio experiences

"Our greatest experiences of music are usually live moments in which we are completely immersed in sound and the situation – whether at a festival, a concert or even a party," said Véronique Larcher, Director AMBEO Immersive Audio. "With AMBEO Music Blueprints, we are showing how to record and mix music with the same grandeur and natural, spatial sound as in the original performance."

AMBEO SMART HEADSET

AMBEO SMART HEADSET is Sennheiser's first AMBEO consumer product. The compact earphone for immersive 3D audio recording lets consumers capture and listen to binaural audio recordings on their smartphones with unprecedented simplicity. Binaural audio delivers an incredibly immersive 3D experience, placing the listener inside the soundscape and replicating the direction of sounds and spatial characteristics of a given environment. With the creation of the AMBEO SMART HEADSET, Sennheiser will bring this sophisticated recording technology to an intuitive pair of consumer earphones for the first time. This easy-to-use product creates immersive, 3D audio that complements the high-quality video that is available from a wide range of consumer devices such as smartphones.

The AMBEO SMART HEADSET lets consumers capture and listen to 3D audio recordings on their smartphones with unprecedented simplicity





VR Gaming / AR applications

Another central field for AMBEO will be virtual-reality gaming, for which Sennheiser will be providing 3D audio libraries that ensure that the sounds in a given game are easily localizable and transport the listener to an imaginary yet utterly realistic soundscape. The transition between real-life sounds and virtual audio sources for augmented-reality applications will be incredibly smooth.

About Sennheiser

Sennheiser is shaping the future of audio – a vision built on more than 70 years of innovation culture, which is deeply rooted within the family-owned company. Founded in 1945, Sennheiser is one of the world's leading manufacturers of headphones, microphones and wireless transmission systems. With 20 sales subsidiaries and long-established trading partners, the company is active in more than 50 countries and operates its own production facilities in Germany, Ireland and the USA. Sennheiser has around 2,800 employees throughout the world who share a passion for audio excellence. Since 2013, Sennheiser has been managed by Daniel Sennheiser and Dr. Andreas Sennheiser, the third generation of the family to run the company. In 2016, the Sennheiser Group had sales totalling €658.4 million. www.sennheiser.com

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