

Shape 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.



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*, *Avatar*, and most recently *Spectre*, 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 Listening Experience

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 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 and the upmix algorithm is the creation of immersive AMBEO 3D audio installations for the Victoria



and Albert Museum in London, the world's leading museum of art, design and performance. Both their internationally successful "David Bowie is" exhibition (1.5 million visitors on the global tour as of November 2016) and the new "You Say You Want a Revolution?

Records and Rebels 1966 – 1970" exhibition (pictured) use AMBEO sound installations that fully envelop visitors in sound and music, establishing a completely new type of museum experience. <https://www.vam.ac.uk/exhibitions/you-say-you-want-a-revolution-records-and-rebels-1966-70>

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.



"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.



“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,” says 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.”

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.

Venue Modeling

A look into the future: Further down the road, AMBEO will also comprise a Venue Modeling software which replicates the sound characteristics of specific venues to

allow DJs, PA artists and EM producers to experience their sets and audio tracks in advance as if present in the location they desire for the performance. A milestone in virtual room acoustics replication, this VST plug-in enables them to tailor the audio to any desired room atmosphere. The current demo version features the room characteristics of Mighty in San Francisco, the Rex Club in Paris, and Berghain in Berlin; a growing venue database will be connected to the plug-in, which will become available in 2018.



More AMBEO items will be added to the line soon, including consumer electronics products.

Image captions:

Image 1 (AMBEO logo): AMBEO is Sennheiser's trademark for breathtaking 3D immersive audio

Image 2 (V&A exhibition): The Woodstock experience area of "You Say You Want a Revolution? Records and Rebels 1966 – 1970" uses an AMBEO 14.1 installation

Image 3 (AMBEO VR Mic): Sennheiser's AMBEO VR Mic captures high-quality audio in three dimensions

Image 4 (Screenshot of AMBEO Music Blueprints): Sennheiser's AMBEO Music Blueprints website explores how to record, mix and deliver immersive 3D audio experiences

Image 5 (Venue Modeling): The Sennheiser Venue Modeling VST plug-in at a tradeshow demonstration

About Sennheiser

Audio specialist Sennheiser is one of the world's leading manufacturers of headphones, microphones and wireless transmission systems. Based in Wedemark

near Hanover, Germany, Sennheiser operates its own production facilities in Germany, Ireland and the USA and is active in more than 50 countries. With 19 sales subsidiaries and long-established trading partners, the company supplies innovative products and cutting-edge audio solutions that are optimally tailored to its customers' needs. Sennheiser is a family-owned company that was founded in 1945 and which today has 2,750 employees around the world that share a passion for audio technology. In 2015, the Sennheiser Group had sales totaling €682 million. www.sennheiser.com

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