

Concert Hall Acoustics in the CCS - Congress Centrum Suhl



Photo: Robert Kallenbach / CCS Suhl

Project:

Multi-functional Great Hall of the Congress Center Suhl, Germany, which is being used for a variety of events ranging from conferences and theater performances to chamber music and symphonic concerts.

Capacity: about 2,300 seats

Aim:

Improve the hearing experience for the up to 2,352 visitors and to distinctly enhance the very short natural reverberation time for concerts and other occasions. Particular emphasis was placed on enhancement of the acoustical envelopment and the perceived loudness during concerts.

Solution:

Amadeus Concert Hall Acoustics System: To enhance the venue's room acoustics, the regenerative operation of the Amadeus Core processor uses the acoustical signals of the whole hall. Thus the natural sound impression will persist even when the performance is over. The audience and the musicians experience the same room acoustics. To pick up the acoustical signals, seven Audio Technica microphones were placed above the stage (for the use at concerts) and the audience each. After processing by the Amadeus Core, the signals are distributed through 74 already existing wide dispersion ceiling speakers and 35 newly installed loudspeakers (Renkus-Heinz CX61) at the side walls and the back of the hall. By reproducing the natural sound of the hall, the reverberant energy is increased. In addition, the stage sound is used to increase the amount of early reflections that determine the spatial impression and transparency during concerts. Ten Bittner 8X100 power amps are used for amplification.

The signals are transmitted via a newly installed Dante network, using an Attero Tech Synapse D16Mio interface with integrated microphone pre-amplifiers for D/A conversion and three unD32 breakout boxes for A/D conversion of the loudspeaker signals. All components except for the speakers and microphones are installed in an impressive half-open circular construction in the roof above the audience.

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continued

Presets:

The different acoustical parameters for the different venue types were tuned and stored in presets that are recalled by a keystroke:

- **Acoustics Off:** The system is deactivated
- **Acoustics On:** The system is activated and the presets can be selected
- **Theater:** Mean reverberation time of 1.4-1.5 seconds; no increase of the natural reverberation time of the hall, but denser reflection pattern
- **Chamber Music:** Mean reverberation time of about 1.7-1.8 seconds; higher density of reflections
- **Symphony Concert:** Mean reverberation time of about 2.0-2.2 seconds; appreciably longer reverberation time; higher density of reflections
- **Cathedral:** Mean reverberation time longer than 3 seconds; overlong reverberation time, for demonstrations and special effects

Feedback:

The new Amadeus Active Acoustics system was introduced with the New Year ´s Eve concert 2018 of the Prague Festival Orchestra. The responses were positive throughout. „The CCS GmbH is very pleased with the result of the installation of the reverberation enhancement system“, says Diana Schneider, managing director of the Congress Center Suhl. „This is reflected by the great number of feedback messages from our visitors, who speak about a special sound experience and perfect musical enjoyment. Special thanks to all persons and companies in charge for the very competent project design and implementation.“

Companies:

Customer: CCS - Congress Center Suhl, Germany

Design: Prof. Dr. Wolfgang Ahnert, ADA Acoustics & Media Consultants GmbH, Berlin, Germany

System Components: MediasPro Medientechnik GmbH, Eckersdorf, Germany

Installation of the acoustics system and a Dante network: Elektroakustik Neuenhagen GmbH, Neuenhagen, Germany

System tuning and configuration of the presets:

Amadeus Acoustics OG, Salzburg, Austria



Fotos: Robert Kallenbach / CCS Suhl