



VASAS HANDBALL HALL

CASE STUDY

The complete upgrade of the sports hall with a gross floor area of 4,300 m² and 574 seats began in July 2017 and was handed over in the third quarter of 2019. We designed and installed its sound system at the request of our partner company responsible for the low-voltage construction.

As the investor considered the sports and multifunctionality aspects when designing the hall, the installed sound system had to adapt to these. During the planning, we paid attention to the needs expressed by the customer, the operational requirements, the functions of the building and its architectural design. We installed systems in the facility which are used to amplify various events, give presentations and lectures, thereby helping to provide high-quality-streaming information to the audience. The implemented system includes sound equipment permanently installed in the technical room, as well as a mobile sound system, which ensures high-quality operation by moving it out of the technical room into the hall during various events.

We paid special attention to sound pressure values and maximizing the speech transmission index. To simulate the sound system of the hall, we used the internationally recognized EASE software, which was designed separately for

the auditorium and the track. The homogeneity of the sound system we implemented is characterized by the fact that the speech transmission index (STI) measured for the empty hall did not drop below 0.6, which counts as a good value internationally. The direct sound pressure in the stands and in the middle of the track is above 112 dB, which is also an outstanding value.

The required speech intelligibility is provided by a state-of-the-art sound system. The 12 coaxial, 2-way funnels with their associated amplifiers provide enough sound pressure for announcements and music to be heard and understood by even the biggest fans. With the digital sound processor, we were able to perform fine-tuning on the system, which exceeded the preliminary modeling values. The 32-channel digital mixing console and stage box also offer one of the most advanced solutions available today.

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3 stands were built in the hall: One on each longitudinal side and one on the shorter side farther from the main building. The speakers were placed directly above the stands, mounted on the ceiling support structure, facing the audience. We equipped the auditoriums with a total of 10 speakers, and 2 were placed above the field, directed to the court.

The CPUs use a digital signal processor and a high-performance Class D amplifier. The mixing console and sound center units communicate over a DANTE network, which is currently the most common digital audio networking solution on the market. It operates on a gigabit structured IT network in parallel with other IT, broadcast and control data streams. Using a computer configuration program, the system provides the audience with optimally-tuned sound performance and the best possible speech intelligibility under the given conditions by creating a maximum proportion of direct sound relative to the ambient sound. The units are capable of broadcasting both background

music and speech. They provide exceptional sound quality even in unfavorable acoustic environments and are quick and easy to set up with the associated configuration software. A desktop PC is provided for music playback, program editing and system control. An additional device is provided for playing audio files.

The sound kit also includes wireless microphone sets with handheld, clip-on, or headset microphones. An active antenna system was built in the hall to ensure proper reception. The mobile sound system can be set up anywhere to serve the sound needs of smaller, local events. The system includes a mixing console, two wideband speakers and a subwoofer, a 4-channel Class D power amplifier, and a set of connecting cables. With the help of the connection of the mixing console, it can be connected to the central sound system at the established sound network points, so its sound can also be heard on the speakers of the event sound system.

DEVICE LIST

- NOVA CX 15WP high power coaxial speakers
- NOVA XPS 3600 2-channel, class DH power amplifiers
- NOVA DC 400 digital sound processor
- YAMAHA TF1 digital Mixing Console
- YAMAHA Tio1608 stage box
- DENON DN-300C audio player
- SENNHEISER ew 100-935 G3 wireless handheld microphone set
- SENNHEISER ew 122 G3 wireless microphone set with clip-on microphone
- SENNHEISER A-1031U active antenna kit
- HPC-17S / Dell U2415 PC set
- APPLE iPad tablet
- AUDAC PRE126 mixer
- AUDAC PX115MK2 2-way speakers
- AUDAC BAS015 subwoofers
- AUDAC SMQ750 4-channel, class D power amplifier with DSP

