

“The Cathedral has the sound of angels”

- Dagbladet Roskilde, reviewing the new audio system in Roskilde Cathedral

The venue

Built in the 12th and 13th centuries, Roskilde Cathedral is one of Denmark’s largest and most historically important ecclesiastical buildings. It is the burial place of 37 Danish kings and queens, and was declared a World Heritage Site by UNESCO in 1995.

The challenge

Large pillars, domed ceiling arches and hard granite surfaces contribute to reverberation of more than six seconds. The challenge: to design an inconspicuous audio system that provides high speech intelligibility and localises the pastor’s different speaking positions.

The solution

Using proprietary acoustic modelling and simulation technologies, an audio system was created offering effective performance and simple operation. It features multiple Bose column speakers controlled via a Bose DSP-based audio distribution system.

The result

A visually unobtrusive audio system that overcomes the reverberation challenge, ensures excellent speech intelligibility wherever listeners are seated, and adjusts automatically to localise the pastor’s voice when speaking from the altar, pulpit or other point.

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A MUCH-LOVED BUILDING, WHERE ONLY THE SOUND DISAPPOINTED

The venue

The challenge

The solution

The result

The skyline of Roskilde, just 40 km from Copenhagen, is dominated by the twin spires of its medieval cathedral. One of the most historically significant churches in Denmark, and attracting almost 100.000 visitors annually, the building's vast ground floor is frequently thronged with people. During festivities the numbers swell to fill the aisles and gallery.

Over the centuries, however, one problem remained ever-present. With the cathedral's massive pillars, soaring Gothic ceiling arches and numerous hard granite or brick surfaces, reverberation measured over six seconds. This tended to make it difficult for people in many parts of the church to hear clearly what the pastor or minister was saying.

In modern times, attempts were made to remedy the situation, but the audio system installed was not capable of clearly conveying the preacher's message to all sections of the seated congregation. In view of the cathedral's importance both historically and as a present-day place of worship, the parish authorities decided to seek a radical solution.

Aware that Bose had designed successful audio systems for churches in Copenhagen and for Linköping Cathedral in Sweden, the cathedral officials journeyed to hear these for themselves. Impressed with what they found, they engaged Bose and Northstar, the company's local Authorised Pro Partner, to design and install a bespoke solution.



CLEAR, TARGETED SOUND WITH SIMPLICITY OF CONTROL

The venue

Using proprietary BOSE® MODELER® audio planning software, a sound system was developed to serve the cathedral's uniquely challenging acoustic environment. A total of 49 BOSE® PANARAY® MA12 modular line array column speakers - typically two metres in height but of discreetly slim section - are strategically placed throughout the body of the building. Instead of transmitting

The challenge

sound waves towards the arched ceiling, from which they would be reflected to various parts of the cathedral, the MA12 speaker projects horizontally targeted sound. Moreover, each speaker incorporates its own column amplifier channel for accurate adjustment of the sound within its specific area of coverage.

The solution

The result

When the pastor addresses the congregation from the altar, the sound is localised as coming from the direction of the altar. Equally, when the preacher ascends the pulpit, the sound is immediately adjusted so that it is perceived as emanating from that particular point.

This adjustment takes place automatically without intervention from the pastor or other member of

staff. Simplicity of control is a keynote. When the cathedral is crowded, a staff member can connect any combination of speakers together to ensure full sound coverage throughout the church. All other settings of the audio system are controlled automatically. Only the volume may require manual adjustment, and this can be achieved wirelessly from any convenient point.



PERFORMANCE THAT IS "AS PERFECT AS WE IMAGINED"

The venue

The effectiveness of Roskilde Cathedral's new sound system has been greeted with acclaim, but has not altogether surprised the cathedral officials. This is because they were able to hear and approve a computer-based demonstration of the system in action prior to installation. Patented BOSE® AUDITIONER® technology accurately simulated the system's capabilities,

The challenge

allowing the church building committee to give the project the go-ahead with confidence.

They were further reassured by the industry-leading Bose Performance Guarantee, which states that the final results would equal or exceed the levels demonstrated. After the system was installed, an independent consultant measured its performance at 28 different positions throughout

The solution

The result

the church, and found that the results did indeed meet all predictions. In the words of Per Horse, Chairman of Roskilde Domsogn church building committee, "It is as perfect as we had imagined. We can clearly hear the difference between the former system and what we have now. In fact, people have spontaneously come and remarked upon it to us.

The Bose system truly lives up to expectations." The computer modelling of this huge cathedral, and the design of an audio system with performance covered by a money-back guarantee, was a challenge that Bose, its Authorised Pro Partner and its unique technologies were uniquely equipped to meet. Now, as Dagbladet Roskilde reported, the cathedral finally "...has the sound of angels".

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