

**BOSE® PROFESSIONAL SYSTEMS DIVISION
SUCCESS STORY - LINKÖPING CATHEDRAL**

The venue

One of Sweden's largest and best-loved church buildings, the medieval Cathedral at Linköping measures 110 metres in length. Its magnificent 107 metre spire dominates the city's skyline.

The challenge

Design a sound system to overcome the problem of 7.5 seconds of reverberation. Ensure high speech intelligibility from three different points simultaneously, and provide live music reinforcement across the full bandwidth.

The solution

Install vertical line array loudspeakers on the columns of the building. Add a portable endfire bass array for low frequency reinforcement.

The result

An easy-to-use system with the ability to combine different zones if required, enabling voices in various positions to be heard clearly and localised accurately.

BOSE® PROFESSIONAL SYSTEMS DIVISION - COMPLETE COMMERCIAL SOLUTIONS

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Project management

Products and accessories

Installation services

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BOSE®



A MEDIEVAL MASTERPIECE NEEDING TWENTY-FIRST CENTURY SOUND

The venue

The challenge

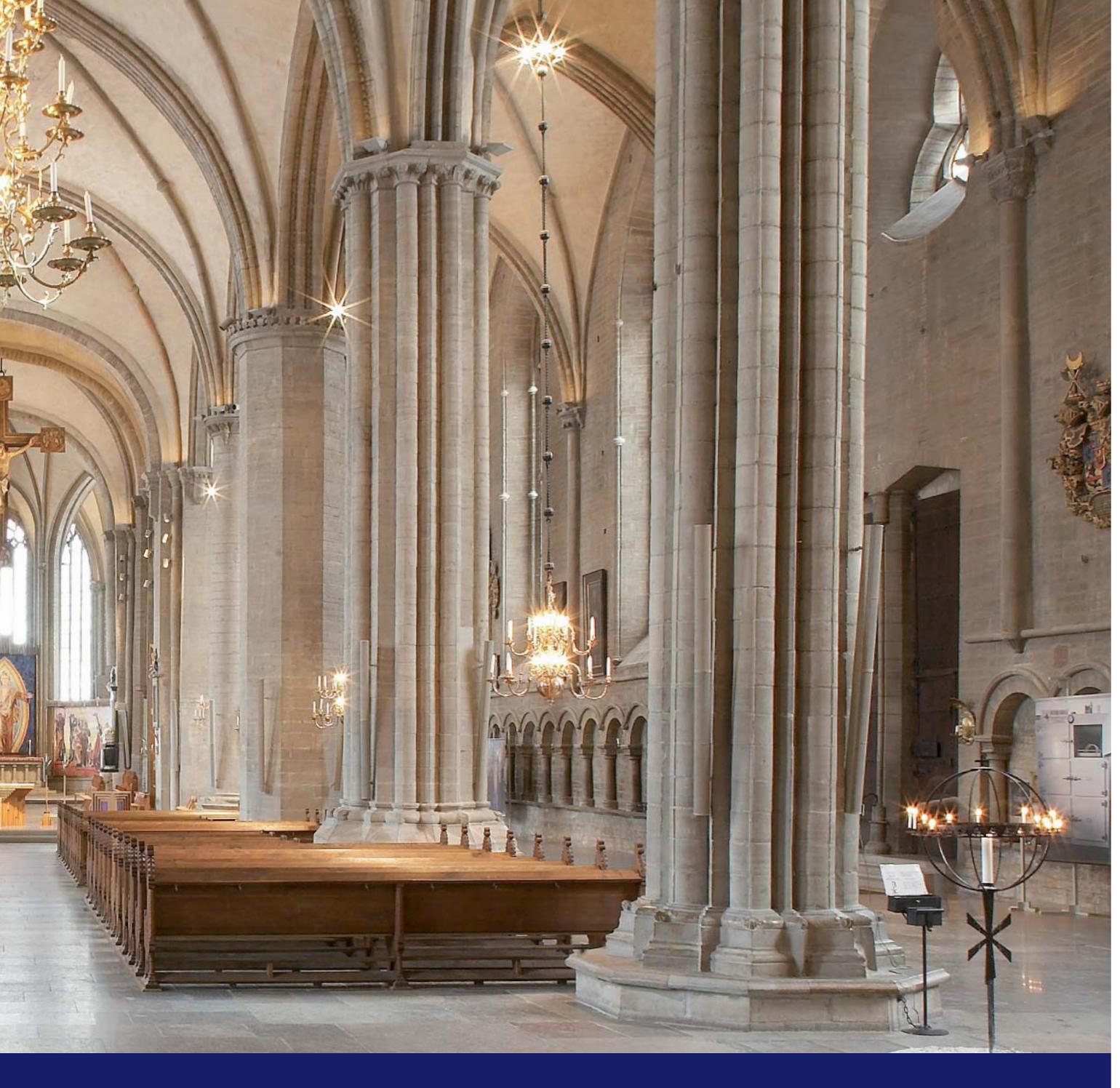
The solution

The result

The Swedish city of Linköping is justly proud of its splendid cathedral, which dates back almost 800 years. Construction began in 1230, the main building works were completed in 1520, and the belfry and west façade were added in 1885. Improvements are still being made today so that the cathedral can

remain a vibrant focus of the city's spiritual and cultural life.

The scale of the cathedral is immense, with an overall length of 110 metres long and a magnificent spire rising 107 metres from the ground. Its interior is equally impressive, with an abundance of fine stonework and wood carving. However, the building's dimensions and the hard



surfaces of traditional materials inevitably led to acoustical problems. With 7.5 seconds of reverberation, speech intelligibility was often poor and sound quality during musical events was severely compromised.

This situation may have been tolerated in the past, but the sound was not acceptable to twenty-first century ears

To continue functioning effectively, the cathedral required an audio system capable of overcoming the difficult acoustical environment.



WELL DEFINED SOUND FROM A FLEXIBLE, EASY-TO-USE SYSTEM

The venue

The challenge

The solution

The result

Berton Nyström, the cathedral's Facilities Director, had heard about two other church buildings with successful loudspeaker installations by Bose. He was also aware of the unique benefits of BOSE® MODELER® audio planning software and patented AUDITIONER® audio demonstrator technology.

Accordingly, he presented Bose with the challenge of designing a sound system that delivered high levels of speech intelligibility and excellent music quality with minimal unwanted dispersion. Berton also required the system to be flexible, allowing three zones to operate either independently or simultaneously. And, naturally, the installation must be



as visually discreet as possible. Working with its local BOSE Authorised Pro Partner, the Bose team devised a solution incorporating PANARAY® MA12 modular line array loudspeakers, with some units mounted on the pillars of the cathedral. In addition, a foldable mobile Bose bass array provides the extended bandwidth required for high quality live music. As

requested, the system has the ability to deliver sound effectively from multiple positions. **Regardless of where different preachers or performers are standing, they can be heard clearly and distinctly by everyone in the cathedral and their individual voices can be accurately localised.**



PURE SOUND AND MINIMAL VISUAL INTERFERENCE

The venue

The challenge

The solution

The result

Berton Nyström gives the new audio system a highly favourable report. "The BOSE sound system delivers a clear, pure sound with the minimum of reflections and much reduced reverberation," he says. "The sound is well defined, making it easy to recognise a voice that you have heard before. And the

entire system is very simple to control, using a touch panel."

He also commends the way the ancient building's visual integrity has been preserved. Every cable has been concealed underneath the floor or inside joints in the wall.

The BOSE® MA12 speakers have been professionally



painted to simulate marble, and the painter has even taken the fall of sunlight and shadow into consideration to ensure the cabinets blend unobtrusively with the fabric of the church.

All in all, Berton is very pleased with the performance and the

appearance of Linköping Cathedral's new sound system. In fact he has already recommended that other church authorities consider a Bose solution.

Hotel, restaurant, large venue, stadium, shopping centre
– whatever the situation, BOSE® Professional Systems Division
can provide a successful total solution for your business
audio requirements – fully supported by the unique BOSE
Performance Guarantee.

So talk to us, and tell us what you wish to achieve. Let us
share your vision for your business or organisation, and allow us to
help you to reach that goal.

We look forward to working with you to produce and deliver
a total sound solution. And to proving that, whatever and wherever
the setting, Bose means 'Better sound through research'.

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