PROFESSIONAL

Installation at Melbourne's St. Paul's Cathedral
as featured in the Spring issue of
WORSHIP AUDIO ASIA Magazine

St Paul's Cathedral

From WORSHIP AUDIO ASIA's Spring 2008 issue, here is the story of the challenging job of bringing an outstanding sound system to Melbourne's historical St. Paul's Cathedral.

It needed the ability to bring excellent sound to every pew and fit in without marring the dignity and beauty of the traditional building.

Sound systems in a place such as St. Paul's should be heard and not seen!

Audio and architecture

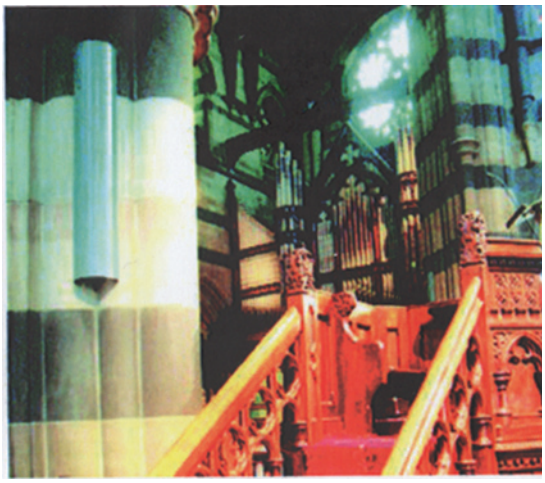
Working against cathedral acoustics and within heritage guidelines meant that the sound system for Melbourne's St. Paul's was going to be a challenging project. **Tim Goodyer** reports.

The AT Line arrays installed on the church columns...

The current St. Paul's Cathedral in Melbourne is a traditional Anglican church in the architectural style described as Gothic Transitional (meaning that is it partly Early English and partly Decorated). The foundation stone was laid in 1880 and the cathedral was consecrated in 1891, although the erection of the spires did not begin until 1926. Today it celebrates a long tradition of musical excellence, and is one of the very few Anglican Cathedrals outside of the British Isles to hold a Choral Evensong on Sundays and most weeknights. Organ recitals are an integral part of the cathedral's services, alongside other music recitals, drama productions and art exhibitions.

The cathedral site can trace its history back to the first public Christian services held in Melbourne, led by Dr. Alexander Thomson in 1836. With the church moving away, the area subsequently became a corn market until 1848, when it was made available for the building of the bluestone St. Paul's Parish Church. Consecrated in 1852, this saw service until 1885 when it was demolished to make way for the present cathedral. Services are held daily, and there is a busy list of special events that includes visits from international choirs and orchestras. It also has its own choir – one of Australia's foremost choral ensembles that can be heard at Sunday Choral Eucharist and at Evensong six nights every week. There are Carol Services at Easter and Advent and regular recitals of sacred and secular music from a repertoire ranging from the 17th to 21st centuries.

'..and with "shrouds" fitted



Acoustic Technologies ALA07C near the pulpit

Since 2001, St. Paul's Cathedral has been following an ambitious restoration and conservation programme. Along with many important structural building repairs, substantial work on the interior and a major upgrade of the building's services is being undertaken. A key component of the restoration is a complete reworking of the cathedral's audio distribution system – and it was with this in prospect that the services of Acoustic Directions' principal acoustics consultant Glenn Leembruggen were called upon. His brief was to design and commission a modern and effective audio system, which would enable the cathedral to more effectively conduct its ministry and communicate with the congregation.

So what was the final result?

To quote Glenn Leembruggen:
"The St Paul's system sounds fantastic. It has exceeded our expectations and our hopes and I think it should be a showcase for the AT product. Rutledge have done a wonderful install job. When you are next in Melbourne I suggest you attend a church service.

For cathedrals and churches that have a reverb time of less than 3.5 secs and a series of structural columns, this system has to be the optimum choice. It is also extremely cost effective, given its quality level."

St Paul's Cathedral have echoed Glenn's sentiments when they said to him: "We believe that the installation of the new sound system has become the most important part of the entire restoration project."

Mr. Leembruggen has a great deal of understanding of, and practical experience in, the particular acoustic challenges presented by this style of architecture and how best to design an audio system that will deliver highly intelligible reproduction to every pew in the hall. He is also a pioneer in the use of beam steered line arrays, and knew that this technology would offer the obvious solution to the problems associated with long reverb times and multi-path reflections that are characteristic of the large spaces and reflective surfaces that are to be found in the cathedral.

The installation specification he devised called for 46 line array boxes to be mounted on the cathedral's columns. Specifically, these were to be ALA07C Beam Steered Line Array from Acoustic Technologies, an independent loudspeaker developer founded by Harry Lloyd-Williams and based in Queensland, Australia. The St. Paul's Cathedral project would join an enviable portfolio that already includes a 3,000-seat sports ground in MunGeong (South Korea), Griffith University (Australia), and Australian and New Zealand courts of law.

The ALA07C Series line array is a relatively new range from Acoustic Technologies, offering advanced steering capability in the vertical plane. Consisting of two standard models, with custom versions available, the ALA07C Series offers control over vertical directivity, as well as beam angles from 0° to 40° with suitable signal processing and amplification. Due to this defined vertical dispersion pattern, the ALA07C Series Arrays is able to provide speech reinforcement in highly reverberant or acoustically challenging spaces, such as the St. Paul's hall. The loudspeaker uses seven precision-engineered 78mm Neodymium cone transducers to deliver the low and mid frequency programme information, while the HF is provided by either a constant-directivity horn with 1-inch exit compression driver for the ALA07C Type H, or a passively tapered tweeter assembly for the ALA07C Type T.

The loudspeakers in the hall at St. Paul's Cathedral were mounted on the columns at various heights and with steering angles ranging from 20° to 40°. A custom frequency shaded tweeter array with adjustable inclination angle was also designed and supplied by Acoustic Technologies specifically for this installation. Beam steered arrays require separate DSP and amplification for every transducer in the array, and the St. Paul's installation saw the debut of the Acoustic Technologies FLA8.dsp Focused Linear Array System processor/amplifier. This is an eight-channel amplifier delivering 40W/channel with extensive onboard DSP capabilities. A total of 26 FLA8.dsp units were used with some of the ALA07Cs being powered in parallel due to the symmetry of the cabinet placement. The overall system integration is provided by Biamp Audia digital controllers, which are programmed to provide a simple-to operate system for the daily operational needs of the church.

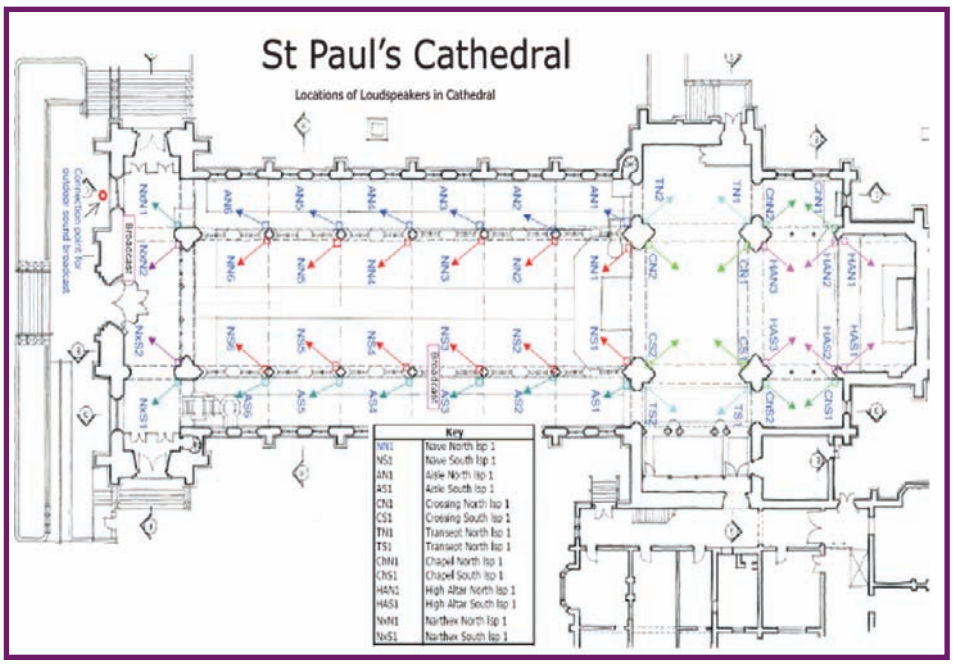
Heritage listed buildings require a carefully planned and conducted installation, and this was certainly the case for a system of this magnitude. Project architects Falkinger

Melbourne's St. Paul's Cathedral

Andronas worked in conjunction with the installation team from Rutledge Engineering to provide a superbly installed system, with Acoustic Directions conducting the final commissioning.

'The St. Paul's system sounds fantastic,' says Glenn Leembruggen in conclusion. 'It has exceeded our expectations and our hopes, and I think it should be a showcase for the AT product. Rutledge Engineering has done a wonderful install job. For cathedrals and churches that have a reverb time of less than say 3.5s and a series of structural columns, this system has to be the optimum choice. It is also extremely cost effective, given its quality level – when you are next in Melbourne, I suggest you attend a church service.'

The St. Paul's Cathedral staff echoed Mr Leembruggen's sentiments: 'We believe that the installation of the new sound system has become the most important part of the entire restoration project.'



The Acoustic Technologies FLA8.dsp Focused Linear Array System processor/amplifier. The eight channel amplifier delivers 40 watts per channel with extensive onboard DSP capabilities.

Richard Faint, Acoustic Technologies' Director of Engineering and chief designer of the FLA8.dsp Focused Linear Array System

A part of the FLA8 amplifier rack in St. Paul's Cathedral

ALA07C Series Line Array offering advanced steering capability in the vertical plane.

Glen Leembruggen, Acoustic Directions' principal acoustics consultant.

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