

## TOA PROVIDES SOME SOUND ADVICE TO BROMPTON ORATORY



One of London's most spectacular buildings, Brompton Oratory was consecrated in 1884. With a busy schedule of services and events, ensuring that the congregation is able to hear messages clearly is vital, so audio technology from TOA Corporation UK has recently been specified throughout.

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Located in South Kensington, The Church of the Immaculate Heart of Mary – better known as Brompton Oratory – is the second largest Roman Catholic church in London after Westminster Cathedral, and its nave is exceeded in width only by Westminster Abbey and York Minster. Built between 1880 and 1884, the interior is swathed in marble and statuary and much of the decorative work predates its construction.

### Home sweet home

With busy services held throughout each and every day, the great liturgies of Christmas, Holy Week and Easter attract packed out congregations. In order to enable visitors to hear words and music clearly, Brompton Oratory has utilised audio equipment for many years. However, with an increasingly aging system, it was felt that the latest technology would enhance the experience for all concerned, so Worthing based System Design Audio was called in to specify, configure and install a new solution.

‘As a specialist in church sound systems we have grown our business purely through word of mouth,’ explains Peter Hearn, managing director at System Design Audio. ‘Our reputation has spread throughout the religious community and now this type of work forms 99 per cent of our business activity. Having already completed projects for hundreds of churches, I was delighted to receive a call from Brompton Oratory and, after carrying out a full survey, we presented our recommendations.’

### New and improved

Brompton Oratory’s previous audio system had been in-situ for over 30 years and although still functional, the sound it produced was quite distorted by today’s standards. Those speaking also had to get very close to the microphone to ensure their voices were picked up, while people with quiet voices were often inaudible in various parts of the church.

‘Audio technology has moved on considerably over the last two decades and it was clear that we would be able to configure a system that improved overall quality of sound,’ states Peter Hearn. ‘About 12 years ago TOA Corporation UK introduced one of the first line array speaker systems, which we installed at Arundel Cathedral. During that

installation we took out 44 speakers and replaced them with just four. This resulted in a massive improvement in sound quality and I have been convinced of the benefits of this technology ever since. Therefore, I was confident that it could also provide excellent results for Brompton Oratory.’

Making sure that sound is clearly heard is vital in a place of worship, which is why line array speakers are an increasingly popular choice because they are designed to collectively function like one large speaker, and provide consistent sound levels. They can be oriented at different angles and the sound level of each product in an array can be adjusted to project louder sound to the back of a building. Furthermore, speakers that use digital signal processing technology can steer sound precisely to desired areas without requiring a change of location, which is useful where structural or design considerations make it hard to move speakers about, or where unwanted reverberations must be kept to a minimum.



### A sound decision

Each building has its own unique requirements when it comes to configuring the technology that acts as a vehicle to effectively communicating sermons, religious narration and/or music - and Brompton Oratory was no exception.

Explaining some of the considerations that needed to be addressed, Peter Hearn says, ‘Acoustics are an important factor and all churches are notoriously challenging environments in which to get sound right due to high ceilings, objects such as pillars and a building fabric that includes large amounts of glass. Furthermore, feedback, reverberation, unbalanced mixes and volume levels that are too high or low are just some of the common problems that can literally ruin the atmosphere of a service or the composure of those imparting words and/or music.’

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In most celestial environments sound originates from the front and is often relatively direct. Lower frequencies are omnidirectional and higher frequencies are directional – the former can become problematic if they are not controlled by an audio system and are often the frequencies responsible for feedback.

To address these issues, the solution System Design Audio came up with was based around TOA's SR-S4 line array speakers. Malcolm Crummey, TOA Corporation UK's sales manager UK and Ireland, comments, 'SR-S4 speakers are designed to perform optimally with ideal sound dispersion characteristics in spaces that pose difficulties for more conventional speaker systems. Available in different configurations and with a wide range of mounting possibilities to suit particular requirements precisely, these slim tower configured devices offer a perfect solution for difficult sound reinforcement problems that require effective coverage.'



### Pole position

Peter Hearn and his team removed the previous speakers that were in 18 different positions and replaced them with SR-S4s in just six positions. Located near the pulpit are three SR-S4s on each side that are fixed on top of each other to create a one point source. Each speaker is individually tuned to a particular set of pews and while it looks like one large speaker, each separate device has a specific job. These are complemented by two arrays of two SR-S4s at the nave, which ensure that sound is projected evenly and consistently throughout the entire area.

'The speaker banks near the pulpit are 3m high,' states Hearn. 'Although this seems very big, you have to consider it in context of the overall size of the building, which is around 100m long and 60m wide and 60m tall. We wanted to achieve an 85dB sound level to give plenty of headroom and I was delighted that the system we configured has a discrepancy of just 1dB, regardless of where you sit. This level of consistent sound is quite an achievement and having fewer speakers also improves clarity by reducing echo and eliminating excessive sound. I believe this was only possible due to TOA Corporation UK's advanced technology, as there are an incredible 32 driver units in each SR-S4.'

Complementing the SR-S4s is TOA Corporation UK's M-9000M2 digital matrix mixer – a modular matrix mixer and digital signal processor (DSP) that combines an enhanced GUI programming interface with exceptional audio quality. Malcolm Crummey says, 'The M-9000M2 enables easily configured custom systems with up to eight mic/line inputs and eight outputs and has two output channels with built-in DSP, including 10 band parametric EQ, compressor and delay. Programming the M-9000M2 is easy via the front panel or using the convenient new GUI programming interface, which allows fast configuration and upload/download of all settings.'

When it comes to amplification, TOA Corporation UK's DA-250 has also been installed. Amongst its many benefits, it is equipped with switch mode power supply – this means that it operates at 85 per cent efficiency and consumes almost one-third less power than conventional analogue amplifiers. In addition, it has an independent power supply for each channel to assure continuous operation, and unmatched reliability and performance.

### Looking good

In a building as stunning as Brompton Oratory, nothing should detract from its architectural features. Even though TOA designs its products to be as stylish as possible, having them on full display was not considered appropriate in this situation.

'In celestial buildings an audio system must perform as intended but the aesthetic is just as important as its sound, so it must but be inconspicuous,' explains



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Peter Hearn. 'Therefore we covered the speakers with black cloth, which not only looks good, it also blends into the surroundings and has no negative impact on the quality of sound produced.'

With regular services and other events taking place on a 24/7 basis, the System Design Audio team had to stop work at certain times of the day and base its installation schedule around a significant amount of evening and weekend work. This flexibility resulted in minimal disruption and ensured that the work was completed in as little time as possible.

Hearn adds, 'Part of the reason that the installation went so smoothly was due to the design features of the TOA equipment. Ease of use is always built in and the result is a highly satisfactory working process and final result. The first time the new system was tested was for a Eucharistic celebration just before Christmas and I have to say that the effect produced in terms of clarity and sound quality greatly enhanced the overall ambience and for a church experience, it created one of my most relaxing and enjoyable experiences!'



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