

Enhancing sound and aesthetics

The system designer shares with **WAVL** how Singapore's Church of the Holy Spirit solved issues with both visual obstruction and fidelity

FOUNDED IN 1960, AFTER THE parish's beginnings on a site that then held a small bungalow, two wooden structures and a shack on Singapore's Upper Thomson Road, the Church of the Holy Spirit held masses both in the bungalow and on the premises of The Little Sisters of the Poor for its larger Sunday services. In 1964, the church opened the doors to a new home. The design by one of Singapore's well-known architects, Alfred Wong, included an iconic bricked-wall façade, high-ceiling interiors and accordion-styled timber doors. Thirty-six years later, in 2000, ground breaking began on a total rebuild to better serve the growing number of parishioners. The new rebuilt church building, presbytery and columbarium opened in 2002.

With seating for over 1,500 worshippers, the sanctuary at the Church of the Holy Spirit is used for daily morning and evening masses. On weekends, masses start on Saturday evenings and there are four masses on Sunday mornings, as well as a Sunday evening mass. The church also adds services as needed to accommodate the celebrations that populate the Catholic calendar, including additional services for the capacity crowds on holy days such as Good Friday and Easter Sunday.

The original sound system for the new building proved less than adequate, shares Winston Ignatius Goh from The Sound Principles audio consultancy of Singapore. 'They had a sound system put in then, which the congregation had to live with; it wasn't a very good design – it was plagued with all sorts of problems. Acoustically, the church is well treated, but the sound system introduced a lot of anomalies – reflections and echoes.'

Mr Goh brought the experience necessary for an audio overhaul, to address 'the sound system and also the way it was being operated – the way they would control it. I specialise in churches, sound and audio-visual,' he says, 'understanding the requirements and coming up with the proper designs to suit and, more importantly, with something that is operationally easy to



Yamaha/Nexo's Aloysius Tang, left, and Darryl Tang, right, flank The Sound Principles' Winston Goh

use. They were looking for something new, to improve things, hence we went with a more streamlined look as well.'

A Nexo system from Yamaha was selected for the refit project. 'Looking at all the options available, Yamaha is the one that gives us the most support,' Mr Goh says, citing a local headquarters and a strong team at Yamaha with whom his consultancy has a successful ongoing relationship.

'We got the Yamaha team in to take a look at the place and I gave them a brief of what was expected,' he recalls. 'I understand the Catholic churches very well, where we can put things and where we should stay out. We need to respect that this is a church; it is not a concert hall. The sanctuary has to remain clean as much as possible. Aside from microphones being in the sanctuary area, nothing else should be there. Furthermore, we should keep things flown and integrated into the architecture as much as possible.' Nexo's NS-1 system configuration and simulation software was used by the Yamaha/Nexo team to develop the system design under the philosophy that 'the optimum solution would be that every seat is a good seat,' says Mr Goh. That support team included Darryl Tan, PA sales and marketing, and Aloysius Tang, technical marketing support engineer, both from Yamaha Music (Asia).



The main system is an L-R cluster of Nexo Geo M6 cabinets, which Mr Goh describes as 'their little baby line array'. 'It's a baby,' he says, 'but it does cover the entire audio spectrum that we require here. Each left and right cluster has one set of six M6s facing the front and another one that covers the wing, because the layout of the church is very wide. Within each cluster, there's also a Nexo PS10 that provides the monitoring required for the sanctuary area.' The system is powered by two Nexo NXAMP4x1C 4-channel amplifiers with TD Controller processing. Previous experience with the array inspired confidence in the choice. 'This line array has also been used in the church of the Holy Cross and the Church of St Peter and Paul,' Mr Goh explains.

The choice of the Nexo array was beneficial aesthetically and sonically, says Mr Goh. 'The previous system was actually much lower than this, and it obstructed the view of the stained glass. This has been a contentious problem for the last 15 years. Every time you walked into the middle aisle,

you didn't see the full stained glass. You saw the two speakers sticking out. The size of the cluster now is probably a third of the previous system.' The result is an unimpeded view of the stained-glass windows for the congregants.

That said, the positioning of the loudspeakers was driven first by performance. 'I'm never one to compromise on speaker positioning in place of aesthetics,' Mr Goh elaborates. 'It has to be where it has



The church's left Nexo Geo M6 cluster with arrays for the house and side-fill, and a rear-mounted PS10 for stage monitoring

to be in order to do its job.' The Nexo M6 arrays satisfied both aesthetic and sonic criteria. 'Not only is it smaller,' he explains, 'because of the capability of the M6, we are able to spread the cluster further apart and higher so now it somewhat blends in with the ceiling.'

The main cluster covers everything below the seating area that's outside the gallery, and the gallery itself. Underneath the gallery is a series of ID24i Dual 4-inch low-profile compact loudspeakers that are time-aligned with the main array. 'It's a very compact little speaker,' says Mr Goh of the ID24i. 'Everyone was a bit surprised by what you could get out of it.' The church, he says, was familiar with the ID24 as a number of the

loudspeakers are also used with a subwoofer in an upstairs lecture hall as its main sound system.

The main console is a Yamaha QL1, with no user access – it's preset and out of reach. A Yamaha MTX3 matrix mixer is used to pipe in other instruments and mics as needed with



The choir's view



The new Nexo Geo M6 system provides fidelity and uniform coverage while not blocking the view of the stained-glass windows

the main mics for choir and voice (Shure and Audio-Technica models) all input directly into the QL1. A Yamaha organ and Yamaha digital piano are the standard instruments used, though sometimes guitar, flute and other instruments are added. Mr Goh says it's easy for the volunteers to add in supplemental instruments.

When the system install was completed, The Sound Principles worked with the church the entire first weekend on final adjustments. 'The way it's designed,' says Mr Goh, 'it's pretty much a one-touch operation. The sacristan is the one that will turn on the sound system, and all he needs is one switch.' The church's A/V team is



Nexo ID24i loudspeakers serve as fills beneath the gallery

more concerned with controlling slides and other visuals and there's not a dedicated audio operator.

Video has been updated throughout the years; about three years ago, The Sound Principles provided projection screens from South Korean manufacturer Mocom, coupled with Hitachi projectors fitted with long-throw lenses. 'They are very good concave screens,' says Mr Goh. 'They provide about 18x gain, so you can use a much smaller projector but with the benefit of getting a very high output.'

'Speaking on behalf of the priests here, and most of the congregation,' concludes Mr Goh, 'they are happy with what they have. Certainly, they can hear a lot better than before. The Word of God has to be heard

clearly otherwise this is all pointless. In terms of operations, they are more streamlined now. It's far easier for the user to operate the system – they simply just turn it on and off, which means that it is far more predictable and reliable than before. It will sound the same today as it did yesterday and tomorrow. The consistency is extremely important here.'

Parish priest Father Richards Ambrose reinforces the church's experience: 'We are very happy with the sound system. It's very good and clear – a big improvement on what we had before. It's important to have this level of clarity to get the message across to our congregation.'

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