



Image courtesy of St Joseph's Church

Singapore's revamped national treasure revealed

Electro-Acoustics Systems has helped 111-year-old Saint Joseph's Church overcome speech intelligibility as part of extensive restoration works

NATIONAL TREASURES DESERVE constant attention and upkeep, but with age, their features need to be delicately preserved and maintained. Constructed over a six-year period in the early 20th century, Saint Joseph's Church in Singapore serves as a good example. Numerous specialists including noted AV systems integrator Electro-Acoustics Systems (EAS) all played a part in elevating the church's grandeur.

Having been listed as a national monument in 2005, the 111-year-old Roman Catholic church underwent intricate restoration works in 2017. The one-year mission to repair the stained-glass windows and decorate the roof was exasperated by architectural complications, National Heritage requirements and a certain Covid-19 pandemic. Located along Victoria Street within Singapore's central business district, Saint Joseph's Church drew experts from various disciplines to conduct

restoration works delicately and intricately.

Built in the form of a Latin cross, the church measures 66.25m long, with transepts of 45m and a nave that is 18.75m wide. Having made Singapore his home in 1999, Father Joe Lopez Carpio was welcomed by the community of St Joseph's Church in July 2020. "This was a big restoration, and we are only one of 75 monuments to be gazetted here in Singapore," shares Andalusian Father Joe. "Following numerous meetings with consultants and architects, the extensive restorations covered absolutely everything inside and outside." Originally booked in as a 12-month project, the expert restoration works including the 16m-high ceiling, the restoration of some 26,000 floor tiles and the original Belgian stained-glass windows would ultimately extend over five years.



L-R: Electro-Acoustics Systems' Ng Soo Yee, Lam Tze Tze and Soh Jun Wei outside St Joseph's



Smaller DC12/2 digital directivity control columns serve the naves

Father Joe recalls the St Joseph's of old. "Previously, there was no air conditioning, and it was noisy, especially when it rained and with the traffic on Victoria Road. We cater for many different parties here, and one of the great challenges we had was how to improve the quality of the sound system. The acoustics for the choir and singing here are fantastic but, in terms of intelligibility, I noticed that the congregants previously had difficulties in understanding

what the priest was saying from the altar. As such, the team decided to improve the audio quality in the middle of the restoration in 2020. That is when we commissioned EAS to help us with this problem."

In their quest to provide an aesthetically pleasing, intelligible audio solution throughout the extensive sanctuary, the EAS engineers set about proposing a bespoke design using EASE software. Ultimately, director of project and system sales Lian Soon Ti proposed L-R Renkus-Heinz Iconyx IC16-RD digitally steerable columns to be installed at the front of the church with smaller DC12/2 digital directivity control columns



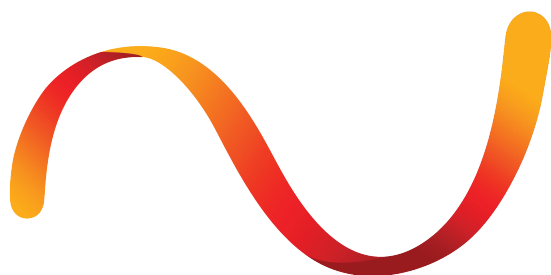
Image courtesy of St Joseph's Church

Father Joe Lopez Carpio delivers a sermon from the pulpit

serving the naves. The Dante-networkable, self-powered speakers receive their audio inputs from a Yamaha TF1 40-channel digital console located in the rear control room. DSP presets are stored within a QSC Core 110f digital signal processor, with the digital audio components routed through a Cisco 24-port PoE network switch.

Microphone inputs including Sennheiser ew 100 handheld and lapel wireless models together with a pair of Sennheiser MEG 14-40 goosenecks are fed into a Yamaha T101608-D remote stagebox. Four Sennheiser e 914 small-diaphragm condensers are suspended from the ceiling for the choir. EAS also provided a pair of QSC K8.2 active 8-inch loudspeakers that can be patched in when required for Father Joe or the choir to monitor themselves. Sennheiser active antenna splitters and UHF passive directional antenna boosters ensure strong wireless signals throughout St Joseph's. The addition of a wireless access point and an Apple iPad touch panel provide ease-of-use configuration.

Honoured to be bestowed with the contract to upgrade the AV systems within St Joseph's, EAS executive



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A pair of Renkus-Heinz Iconyx IC16-RD steerable column speakers provide intelligible audio throughout St Joseph's



A Sennheiser gooseneck ensures audio clarity for Father Joe

Image courtesy of St Joseph's Church

director Lam Tze Tze was conscious of the challenges that their engineers would face. "This church is one of the great landmarks here in Singapore, so we were fully aware that integrating the audio and visual technology in this monument was going to be very sensitive. From our experience, we knew the audio quality could be greatly improved in the newly restored church with the addition of Renkus-Heinz loudspeakers."

The EASE modelling confirmed that the addition of two main L-R columns would be almost sufficient for the project. "The directivity is excellent, and the throw is sufficient all the way to the front entrance. In terms of aesthetics and blending in with the architecture, the speakers fit well into the building's interior design. The enclosures have been painted in a custom RAL finish and the cabling is minimal, as the self-powered speakers don't require external amplification."

Father Joe agrees with Lam. "Ultimately, we are very happy from an aesthetics perspective that we only required four loudspeakers. The two main left-right columns together with two smaller models focused on the shorter naves are very accurate and provide even coverage. When you have a congregation of 1,000 people in a building like this with a ceiling that is 16m high, it is a challenge to create

such a volume, but the solution EAS provided achieves that."

The pandemic coincided with the restoration works, so when the government in Singapore restricted services to a limited number of people, before determining that worship had to take place online in 2020, St Joseph's turned to online streaming. "When I was assigned to this church in 2020, too many teams were online," recalls Father Joe. "I prefer worshippers to come to the church in-person, but we also need to offer livestreaming should we ever need to. Although I prefer not to encourage the congregation to worship from home, we have integrated four cameras for livestreaming."

The HD signals from the three Datavideo PTC HD PTZ cameras together with a Datavideo BC-80 3G/HD block camera are streamed to an SE-2850-8 eight-channel digital video switcher. HDMI signals are output to both an internal network of Samsung HD screens and monitors in addition to the YouTube platform. A Kramer 1:2 HDMI distribution amplifier together with 4K60 4:2:0 HDMI transmitters and receivers ensure the digital signals are broadcast over the HDBaseT infrastructure. The addition of a Datavideo NVS-25 video encoder and MP4 recorder promotes simultaneous livestreaming and recording in the H.264 format.



Video streaming is enabled with the addition of Datavideo PTC HD PTZ cameras

"Today, most churches require livestreaming for worshippers who cannot physically attend the service to be able to attend remotely," Lam acknowledges. "In addition, the church can also use the cameras for recording purposes, so it futureproofs the application should there be a need to stream internally and wish to expand on this as an alternative. With restrictions lifting, most people are entering into houses of worship, but streaming is here to stay."

A simple outdoor audio system consists of 12 Tannoy DVS 8-inch surface loudspeakers powered by a single Lab Gruppen E10:4

four-channel amplifier in 100V line operation. Wireless microphones can be used courtesy of the seven Winegard FlatWave Air digital outdoor antennas that have been installed in the grounds. Finally, a breakout room combines dual Sennheiser ew 100 handheld wireless microphones fed into an Ashly MX-206 six-input stereo mixer and output to dual QSC K8.2 active 8-inch speakers.

With Covid restrictions lifted, the reopening of the newly restored neo-Gothic building 110 years after its consecration in 1912, allowed 800 guests to attend a dedication mass in 2022. The occasion marked a new era for the church and one of satisfaction for EAS. "Heritage works require a lot of considerations to be made, so we need to engage in a lot more communication in advance," Lam extends. "It's standard now for installing an AV system that can deliver intelligible speech and HD streaming does not interfere with an interior design. However, the stakes are a lot higher in a heritage building." Having celebrated its 40th anniversary recently, EAS has consistently demonstrated the utmost attention to detail. This makes them a Singaporean national treasure of their own within the southeast Asian AV community.

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