

The Basilica of Saint Mary Minneapolis, Minnesota

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Crestron Helps Landmark Church Achieve Acoustic Balance

Creating superb acoustics in a historic church with 60-foot high ceilings and stone and marble walls, without permission to install sound treatments, is no easy task. Completed in 1914, The Basilica of Saint Mary has a rich history, including the distinction as the first basilica in the US. Receiving its designation during the visit of Pope Pius XI in 1926 and named to the National Register of Historic Places in 1975, the majestic structure is a Minneapolis landmark and hosts a wide range of liturgical and public events.

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Despite being renowned as one of the finest examples of Beaux-Arts architecture in the country, its interior acoustics and sound systems had major deficiencies.

Technology Implementation in a Hall of Echoes

The sanctuary, constructed of marble and stone, was originally designed to optimize the acoustics of live choral performances. However, the strong echoes made individual speech virtually inaudible. When addressing a mass, clergy and other speakers were forced to pause their speech every few syllables to compensate for the echo in the enormous hall. After decades of dealing with this problem, church leaders finally decided to take action. They called on local Crestron dealer, Audio Video



Electronics (AVE), and its 20 years of experience in House of Worship integrations and acoustics, to provide a solution. Rather than continue to repair the existing out-dated system, the decision was made - based on the recommendation of AVE acoustics designers - to update and install a new state-of-the-art sound system. A Crestron managed solution was implemented to control and manage the complex audio distribution configuration.

One of the biggest challenges for AVE president and system designer, Stefan Svard and programmer Jeff Gallus was installing high tech equipment in the church without disrupting its historical integrity. Due to the ‘historic’ designation of the building, room alterations and sound treatments were not allowed. Therefore, new technology, and a creative acoustic design, had to be implemented in order to dramatically reduce the echo and achieve a noticeable improvement in acoustics.

The Digital Transition Simplified

The first step was a switch from analog to digital, which delivered 256 channels of uncompressed audio over a single CAT5 cable. Sound is mixed by a Yamaha M7 48-Channel Digital mixing console. Specially designed 16-foot tall, narrow speakers were positioned to increase amplification and optimum acoustical symmetry. The configuration was designed to project a thin vertical layer of sound across the tops of the pews for clear, even coverage throughout the seating areas. The design also included smaller speakers within side columns for maximum coverage from multiple angles, and added permanent outdoor speakers to accommodate overflow and outdoor events.



Crestron AV2 Dual Bus Control System was installed to automate and manage high speed audio routing and distribution over Ethernet, to ten zones. Crestron touchpanels are the primary interface to power up the sound system, with access from two locations. A TPS-3100L 6.4" Wall Mount touchpanel is located in the Sacristy, a separate room behind the main altar, and a TPS-15G-QM Isys® 15" Touchpanel with QuickMedia™ resides at the main mixing console at rear of church.

To serve users of any technical level, two distinct touchscreen interfaces were programmed by AVE, each with varying degrees of functionality. Automatic Mode, typically for lay users such as priests, offers several basic options such as choosing audio zones and volume settings. The Sacristy touchpanel allows access to Automatic Mode only.

Automatic Mode provides ease-of-use functionality for non-technical staff to turn on the system and enable a basic Mass preset. With the touch of a button, they can control up to 4 microphones (this actually moves a fader on the M7 console) right from the touchpanel. Additionally, there are preset 'one-touch' options to select where the choir will be located and enable or disable specific audio zones. The mixing console reports real-time feedback as well. Should a sound tech make a change on the console, two-way communication allows immediate response back to the touchpanel.

"We use Crestron to simplify the controls, when a user goes to the touchpanel and touches 'Automatic Mode' we set it up to be just that, automatic" explains Gallus.

Complex Network, Streamlined Control

For sound technicians and technical staff, Technician Mode enables full system control with a more detailed command of each audio zone. Any zone can have a different source routed to it, and from the mixer, outputs are selected and sources get seamlessly routed as needed, through the Crestron control system.

Gallus explains, "For example, if they are doing an outdoor service, we could send a separate mix out on Auxiliary 1 and route that signal to the 'Outside' zone. Or, if they wanted only the Priest's mic in the hearing assistance system, we can assign that to yet another aux-send and route that aux-send to the hearing assistance feed. This made programming tricky to say the least."

In addition to the unenviable acoustical challenges, this proved to be a complex system and an ambitious undertaking from an integration standpoint. The entire system functions over three

different data networks, and from the administrative network the control system had to communicate with the other two networks in order to facilitate campus-wide control. In the end, though, this was completely transparent to the end-users and staff.

"Considering most of the control happens over the data network, it would have been very difficult to manage everything without a Crestron system," Gallus said. "The AV2 is the central link for the majority of the system. Without Crestron, the features of the Automatic Mode would not have been possible, and the interface for routing sound would not have been possible."

"The improved sound is a true gift. A gift that will benefit parishioners each time they visit the Basilica of Saint Mary," beamed Emily Helm, director of development at the basilica. The basilica is now host to an array of new liturgical and public events where messages can finally be heard.

