Tech Notes

Mixing Choirs with VENUE

Challenge

- Mixing a large 50–100-voice choir in a challenging space filled with hard room reflections, acoustic issues, a booming church organ, and a penchant for mic bleed.

Solution

- Mic selection and placement, combined with the routing and mixing flexibility of VENUE, gave MPPC improved control over the audio quality at weekend services.

Products used

- Avid VENUE D-Show System
- Avid Reverb One
- Neve 5045 Primary Source Enhancer
- SCHOEPS CMC 5 mic amps, MK 4 capsules, and MK 8 capsules

> "I try to use the most minimal mic setup as possible to get more of a choral sound."
>
> –Robert Iriartborde, staff audio engineer, Menlo Park Presbyterian Church

Photo by Jack Marsal, Menlo Park Presbyterian Church

Proper mic positioning and creative mixing techniques defeat multiple audio challenges

The main sanctuary at Menlo Park Presbyterian Church (MPPC) in California is a traditionally designed house of worship that can hold up to 1,000 congregation members seated in pews on the main floor and on a second-level balcony at the back of the room. But its design poses many significant sound issues for the worship and audio teams. The front of the room features a deep stage backed by a choir loft, which contains five rows of upwardly sloping tiers, with each tier seating 16–20 choir members. The wood stage and solid side walls make stage volume control a priority, as open mics can easily pick up sounds from anywhere on the stage.

The walls behind the choir are an elegant façade of organ pipes—in reality, it conceals a large matrix of speakers that deliver the full sound output from a traditional church organ. This creates another challenge for the audio team—minimizing the organ bleed into the choir mics.

To overcome these challenges, MPPC staff audio engineer Robert Iriartborde designed an effective choir miking and mixing approach that enables him to control and balance the choir in the house sound system. These techniques also deliver a rich mix for the service recording, which is used as the stereo master for all audio and video recordings of the weekend services.

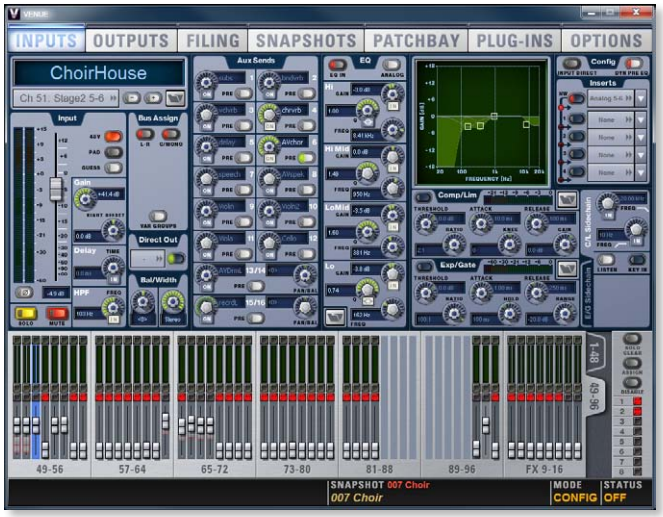
Iriartborde has an extensive background in studio recording and combined his knowledge of studio mic techniques with the pristine sound quality of the VENUE D-Show® System used at FOH to enrich the service experience for the congregation.

Choir coverage from above

Iriartborde uses up to six hanging microphones to provide complete coverage of the choir loft. For the choir house and recording feeds, his main mics are two SCHOEPS CMC 5 mic amp bodies paired with MK 4 cardioid capsules mounted on a stereo bar in an ORTF configuration. The bar is approximately two feet in front of and five feet above the first row of the standing choir members, pointing towards the middle of the five choir tiers.

Supplementing the main stereo mic pair are four additional SCHOEPS MK 8 mics (featuring a figure-8 pattern) paired with CMC 5 mic bodies that are suspended above the choir loft. Two of the MK 8s are focused on the first two choir rows, with one mic positioned left of the main stereo pair and the other to the right of it. The other two MK 8s are focused on the back two choir rows and positioned towards the left and right ends of the singers. According to Iriartborde, the figure-8 pattern helps cancel a bit of the organ bleed coming from behind the choir.

The VENUE D-Show System is configured to support all choir mic inputs, and the main stereo pair is split to two additional channels. Using this configuration, Iriartborde can easily change the EQ and auxiliary sends for the house mic pair without affecting the stereo record feed. In general, the house EQ requires more aggressive adjustment for the sanctuary sound, while the record EQ remains fairly flat in the lo-mid and high frequencies.



This VENUE software screen shot shows Iriartborde's EQ settings for the main stereo pair of mics routed to the house mains.

"I try to use the most minimal mic setup as possible to get more of a choral sound," he says. Depending on the song, arrangement, and accompaniment, he can further balance the house and record feeds by mixing in the additional MK 8 mics. "The MK 8s are closer to the singers, so they can pick up individual voices, but when mixed in with the main stereo pair, they give more presence and gain."

Iriartborde further notes the acoustic challenge of the space: "The room has a build-up of energy in the B-flat range below middle C (around 230 Hz), making it necessary to ride gain on the choir mics to control feedback when the organ hits low notes in that range."

VENUE routing simplifies monitor mixing

The VENUE system's flexible routing also enables Iriartborde to set up appropriate monitor mixes for the musicians and vocalists on stage. Although nearly all of the musicians and vocalists use in-ear monitors (IEMs), there are still a few open wedges on stage that need to be managed, including a configuration of speakers at the sides of the choir loft used as choir monitors.

The choir monitor mix is primarily a cue mix for the choir members and consists of the piano, choir soloists, worship leaders, and any other lead instruments such as acoustic guitar. The pastor's mic is also required in the choir monitors, as the members often remain seated in the choir loft during the sermon in order to maximize the seating availability for the congregation. Iriartborde uses a combination of mute groups, snapshots, and VCA control on the D-Show console to ensure that the choir monitor mix doesn't contain any unnecessary mics left open throughout the service.

Musicians who require a mix with the choir mics receive a mono signal from the house stereo pair. The choir mix is never bussed to the wedge monitors, with one exception: the organist uses a "hot spot" reference monitor that is operated at very low volume and not located near any open mics.

Natural reverb with plug-ins

Iriartborde also relies on VENUE plug-ins to add a natural reverb layer to the choir mix for both house and record feeds. He uses an Aux send to bus the house choir through an Avid® Reverb One™ effects processor plug-in that is then returned to the VENUE stereo effects channels for adding to the main mix.

"Early on, I noticed that sending too much reverb from the main stereo pair reduced gain before feedback," he explains. "Since we have four other mics that are only used on occasion, I experimented with using two of those mics as reverb sends without bussing the mics to the house. This gave an extra 2–3 dB of gain before feedback," which helped him improve the overall mix.

Recently, he added a Neve 5045 Primary Source Enhancer to the choir channel configuration, observing that "the 5045 acts more as a gate than a feedback suppressor. It is inserted on the main stereo choir mic channels using the VENUE hardware insert option."

He also found that by setting the appropriate threshold for the choir signal, the 5045 automatically reduced the channel gain based on the user setting when it detected a lack of signal. "In our situation it has given us at least an extra 4 dB of gain before feedback," which is often enough to bring out soft passages without riding the edge of the feedback threshold in the room.

Through Iriartborde's use of mic selection, positioning, and the power of VENUE, the MPPC congregation enjoys a warm and natural choir sound throughout the sanctuary.