

HOUSE OF WORSHIP PROJECTS

A Look at Some Recent Audio Upgrades

By Thomas S. Friedman

There's nothing easy about doing sound for the worship environment, where services range from traditional piano/organ with voices to high-SPL praise bands at rock concert levels — sometimes just hours apart. Add in a worship environment that's typically an overly reverberant space with lavish use of wood, glass, marble and other highly reflective materials, and reproducing clear audio becomes a significant challenge.

Modern technologies have enabled the creation of worship environments with high intelligibility, wide bandwidth, superb coverage, controlled dispersion and mix tools that allow the FOH engineer to translate the power of the word to the entire congregation, whether seated near the altar or in the last row. And in this case, the clarity of the message is everything.

With that in mind, we looked into some recent installation projects. Each of took a different approach, proving there are numerous solutions to any audio problem — large or small — for any sanctuary.



Church at The Mill, Spartanburg, SC

Since its humble beginnings in 1988, the Anderson Mill Road Baptist Church (known locally as the Church at The Mill) has grown, now to a multi-venue facility with a 2,200-seat main auditorium. With the new sanctuary came a need for a modern sound system to accommodate spoken word, a full contemporary band and a 150-voice choir.

Columbia, SC-based integrator XL Mediaworks Inc. proposed short six-box hangs of d&b audiotechnik Y-Series line arrays with three Allen & Heath dLive digital consoles. Along with that, XL Mediaworks invited executive pastor Ken Fisher to hear a d&b Soundscape demo at a nearby church.

Powered by the DS100 Signal Engine over a Dante-enabled signal matrix, Soundscape provides the En-Scene sound object positioning tool (for individually placing and moving up to 64 sound objects) that is combined with En-Space, a room emulation tool that can instantly offering the signature sounds of concert halls, recital spaces, chambers and more.

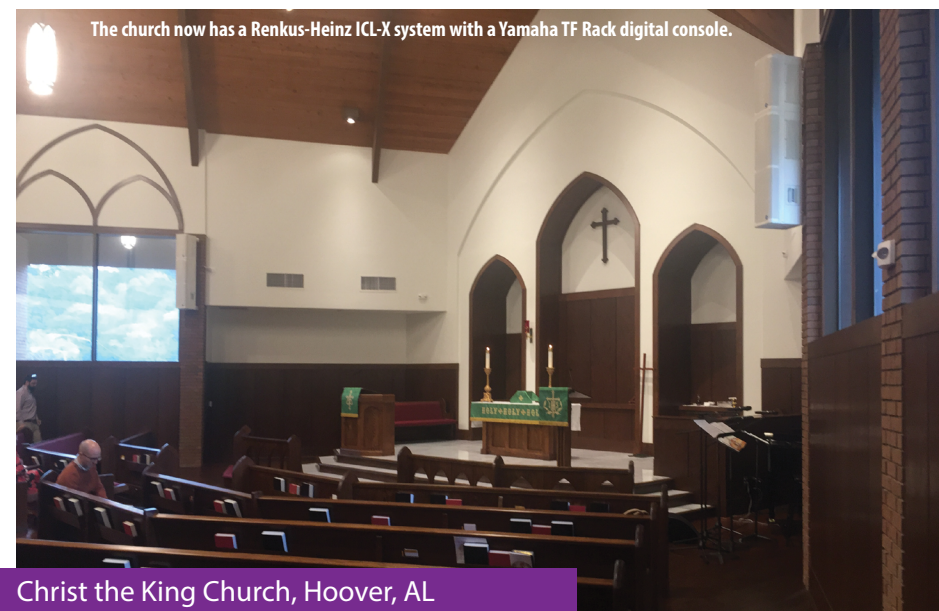
After hearing Soundscape, "Pastor Fisher immediately recognized the worship experience benefits, and we decided that the d&b Soundscape approach was the way we needed to go," says Jerry Temple of XL Mediaworks.

The fan-shaped main auditorium, with a sloped lower bowl and raked upper section seating are common to contemporary worship spaces. The relatively low ceilings in the wide room "posed some challenges in obtaining good audio coverage without compromising sight lines to the main video screens," Seaford added. "Long line array hangs would typically be used but they would block the screen view for many audience members. A distributed system would be the next choice, but with this approach, the audience tends to localize sound to the nearest speaker, not to the presenter or performer — this is where the d&b Soundscape system could solve the problems."

From the front row to the farthest seat that's 120 feet away, Soundscape delivers a consistent level of tonal quality, SPL and a true imaging perspective for every seat in the house.

"Church at The Mill could not be more pleased with the final result," stated Fisher. "The d&b Soundscape solution clearly has the ability to create an intimate setting even in a sanctuary of over 2,200 seats. The quality of sound delivered by Soundscape actually enhances the personal worship experience."

Church at The Mill
Capacity: 2,200
Key Components: d&b audiotechnik Y-Series with Soundscape; Allen & Heath dLive consoles
Integrator: XL Mediaworks, Inc.



Christ the King Church, Hoover, AL

When Christ the King Anglican Church moved into an existing church building, MediaMerge of Birmingham designed and installed a system based on Renkus-Heinz IC Live-X series high-output digitally steered line arrays.

Services at Christ the King are fairly traditional, including spoken word, acoustic guitar, piano, mandolin and a few singers — but no choir, organ or electric instruments. Even without high SPLs, the project presented several challenges. "The sanctuary seats about 300 and has flat floor level seating and a large rear balcony with raked seating," says MediaMerge's Jason Vieira. "The balcony juts out about a third of the way into the room, so half of the audience is under the balcony, and it has a big face. There would have been a lot of reflections if we didn't beam steer around it."

The sanctuary's side walls are lined with large windows, so acoustic treatment could not be applied in those areas, and some internal surfaces were brick, including the surfaces to which the IC Live-X arrays had to be mounted. "We did some acoustic treatment along the balcony back wall, which is about 50 feet from the stage," Vieira recalls. "The room is a triangle, so backstage comes to a point, and then the angle opens up to about 100 feet wide. There were a lot of challenges we met with beam steering."

The MediaMerge team installed a pair of ICL-X modules, arrayed with ICL-XS extended LF modules, all custom-painted white. The IC-Live X series is the newest generation of Renkus-Heinz 'high-powered IC-Live steerable arrays. The ICL-X uses six 1-inch compression drivers, coaxially mounted on two 8-inch woofers, with eight high-power amplifier/DSP channels. Steerable down to 1,500 Hz, it can be used as a high-output digitally steerable line array up to 12 boxes tall. The ICL-XL has four 1-inch compression drivers and four eight-inch woofers and is steerable down to 750 Hz. At Christ the King, adding ICL-XLs to an array of ICL-Xs, enabled improved LF control at lower system cost.

"The ICL-X Series were a perfect fit for the sanctuary, especially given the size of the space and the type of music they're doing. We were able to hit everything with just one pair of ICL-X arrays; we didn't need fills," notes Vieira.

All system processing is done within the arrays, using Renkus-Heinz RHAON II software. The rest of the sound system consisted of wireless mics and a Yamaha TF-Rack digital mixer located backstage, controlled with an iPad running Yamaha's TF software. "It's a straightforward, great sounding, simple system," affirms Vieira. "The congregation is ecstatic; they love it."

Christ the King Church
Capacity: 300
Key Components: Renkus-Heinz ICL-X, Yamaha TF Rack digital console
Integrator: MediaMerge

The upgrade includes two DiGiCo SD9 consoles and a Danley speaker system.



First Presbyterian Church, Bonita Springs, FL

First Presbyterian Church of Bonita Springs, FL recently upgraded with: two DiGiCo SD9 consoles (one for the main sanctuary; another for its smaller CenterPoint venue and broadcast duties); D-Rack I/O stageboxes; a Waves SoundGrid system; Earthworks choir mics; and a new Danley speaker system.

The existing gear was fine when installed a decade ago, but according to Tommy Hillegass, the church's media manager, "as time went on, it seemed to get harder to do what we wanted to accomplish." He points to the Waves SoundGrid server that was part of the install as an example. "I really wanted to incorporate more of the Waves stuff, and [the integration] is just so smooth on the SD9. I felt constrained on our previous console, but not anymore. As an example, we run five Earthworks FlexWand mics for our choir. I can now easily run three EQ and compression plug-ins on each mic channel to really shape the sound the way I want to. That was simply not the case with our former system."

With both installations now completed, the "jury" has returned with a unanimous verdict. "Our previous system just did not age all that well. I was used to getting complaints about the sound literally after every service or event. But since we've put in the new system centered on the DiGiCo SD9 consoles, there has not been a single complaint," says Hillegass.

"It was a long process to convince all of our church stakeholders that high-quality audio was a necessity," Hillegass explains. "And while we looked at other console brands, it became obvious fairly quickly that DiGiCo's reputation for quality — both in terms of build and sonics — was well-earned, and we've been very pleased with the results."

First Presbyterian Church
Capacity: 1,400
Key Components: DiGiCo SD9 consoles, Waves SoundGrid, Danley speakers
Integrator: All Pro Integrated Systems

Willowbrook Baptist Church, Huntsville, AL

Willowbrook Baptist Church's recently added a KLANG:fabrik immersive in-ear monitor mixing system in the first phase of the church's audio update. Installed by Byhalia, MS-based integrator Redwire Audio Visual, the KLANG system offers up to 16 musicians their own unique IEM mixes over RF transmitters or headphone amps via XLR. At the same time, the KLANG:fabrik is a fully flexible audio network router of up to 64 MADI, 64 Dante and 32 ADAT-compatible I/O's.

"Their worship orchestra had been frustrated by the lack of flexibility with their old IEM system," says Redwire AV president Tim Johnson. "We brought the KLANG:fabrik in for a demo, and they experienced a huge difference immediately."

The KLANG system's ability to operate at 96k Hz offers a much higher level of sonic fidelity to the musicians, while the ability to move mixes around in a fully immersive space has changed how they hear themselves and their music.

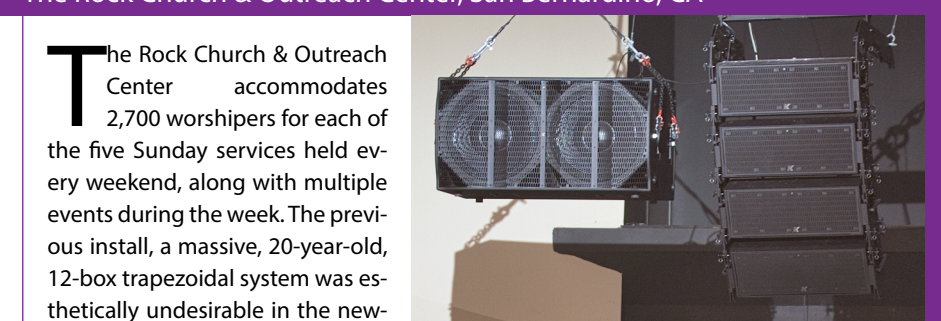
"They literally had no idea this science was possible," adds Redwire's Charles Thompson. "They can build a virtual stage that reflects where each of them are standing on the actual stage. This creates a realistic in-ear environment that helps them hear everything accurately, because they can hear each other where they are physically, not just left and right. It's made a huge difference for them."

Johnson notes that this kind of immersive monitoring environment on stage also helps keep volumes down, which is good for both the music and the congregation in the 800-seat sanctuary.

The KLANG:fabrik takes feeds—via Dante and three DiGiCo A168 STAGE I/O Expanders — from a new DiGiCo S21 console that has also been installed. "The S21 has made the existing sound system perform better," says Johnson "and the operation is very volunteer-friendly."



The church installed the first K-array KH2/KS5 steerable array installation in Southern California.



The Rock Church & Outreach Center accommodates 2,700 worshippers for each of the five Sunday services held every weekend, along with multiple events during the week. The previous install, a massive, 20-year-old, 12-box trapezoidal system was esthetically undesirable in the newly renovated sanctuary.

Darwin Tillery, the church's head engineer, tasked RC1 Productions to provide a system that would optimize venue coverage with minimal visual obstruction for church attendees.

RC1 head Rick Camp (FOH engineer for Destiny's Child, Beyoncé, J-Lo, Chris Brown, Anita Baker) used EASE Focus software to construct a model of the venue based on the blueprint dimensions provided by Darwin. Camp's EASE Focus prediction returned the exact K-array speaker model, amount, rigging height, splay angles and beam steering coordinates for the system. The main flown system consists of four K-array KH2 beam-steerable, flat-panel mid-high boxes and one KS5 dual-21" subwoofer per side. The front fills include six K-array Anakonda KAN 200+ flexible array speakers mounted on the front lip of the stage, coupled with two KMT21P single-21 subs mounted under the stage.

The church's pastors and sound crew were amazed at the coverage and frequency response by so few speaker elements, something K-array is known for. "Our venue is 280 feet wide by 140 feet deep" says Tillery, "and we are now covering every inch of that space with no frequency loss with just four K-array KH2s and one flown KS5 front-loaded double-21 sub per side."

The project marked the first K-array KH2/KS5 steerable array installation in Southern California.

The Rock Church & Outreach Center
Capacity: 2,700
Key Components: K-array KH2/KS5
Integrator: RC1 Productions



Minister of production Chris Olson runs FOH and monitor mixes via the church's new DiGiCo S21 and KLANG:fabrik combination.

"It's all just 'plug and play' for our tech team, with everything on just a single Cat-5 cable," adds minister of production Chris Olson, "and by eliminating all of the individual mixers on stage, it helps keep the stage looking neat and clean."

Willowbrook Baptist Church
Capacity: 800
Key Components: DiGiCo S21 console, KLANG:fabrik 3D monitoring
Integrator: Redwire Audio Visual