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A Monumental Undertaking

Rock Springs Baptist Church boasts modern AVL, archiving and streaming

High-Impact Worship Experience

Rock City Church's tour-level AVL network, with streaming to other locations

Two Rooms, Many Functions

AV transforms St. Thomas High School's gym and performance hall into worship spaces

Visual Wonder, Audio Challenge

Church of the Presentation's expansion is a great success, despite acoustical obstacles

Cemo Performance Hall. When set up for mass, seating is oriented toward the west wall, which features two projection screens and two steerable line arrays on either side of a large crucifix.

TWO ROOMS

MANY FUNCTIONS

AV TRANSFORMS ST. THOMAS HIGH SCHOOL'S GYM AND PERFORMANCE HALL INTO WORSHIP SPACES.

BY ANTHONY VARGAS

Creating a top-tier worship experience in a school is a tricky proposition. Although some religious schools may have their own purpose-built worship spaces, these spaces are typically not large enough to serve the entire student body and faculty (and, when necessary, friends and relatives) simultaneously. So, in order to accommodate everyone for worship services, schools tend to rely on larger spaces like gyms and auditoriums that are outfitted with versatile, multipurpose AV systems.

St. Thomas High School, a Catholic all-boys school in Houston TX, is one such school that utilizes multi-use spaces for worship. During a recent AV upgrade, St. Thomas made it a point to outfit two areas of its campus, Reckling Gymnasium and Cemo Performance Hall, with flexible AV systems that could be used for worship services, in addition to supporting the rooms' more typical use cases. To achieve this goal, the school enlisted the help of AV design consultant touch thirty three, inc. (t33), which had previously overhauled the AV at the school's outdoor ball field, Granger Stadium. t33's work on the project was spearheaded by its Principal Designer, Bruce Coffman. LD Systems was the integrator for the installation; the LD Systems installation team was led by Ron Jones.

St. Thomas High School's Director of Technology, Christopher Hodge, laid out the school's expectations for Reckling and Cemo's new AV systems. "The scope of work for Cemo was to replace the overhead speakers that were pointed directly down from the ceiling; we wanted a versatile setup that would allow sound from

Reckling Gymnasium. When set up for mass, folding chairs are placed facing the east wall, which houses the two 7x7 LED displays. In Mass Mode, the speaker cluster on the east wall is used to cover the front two thirds of seating, whereas the center cluster is used as a delay for the back third of seating.

In Sports Mode, Reckling Gymnasium functions like most typical high school gyms. The announcer's audio comes from the center cluster over the court, while audio for the LED screens comes from the nearby speaker cluster on the east wall.

either our north stage or west wall for mass. There was also a need for projector screens on either side of the crucifix for mass," he shared. "The scope for Reckling was very much the same: Update the sound system for better coverage of the area and [add] screens for mass."

Reckling Gymnasium

Reckling Gymnasium pretty much resembles any typical high school gym at a glance, with a hardwood basketball court and pull-out bleachers along the side walls, but the room's history makes it rather unique. "The interesting thing about the building itself is that it used to be an airplane hangar that was located approximately 120 miles north of Houston, apparently during World War II, and then it was donated to the school, so it was disassembled and brought down to Houston and assembled on site," Coffman shared. Unique history aside, Reckling boasts the same hard, reflective surfaces common to most gyms, as well as windows above the entire north set of bleachers.

In addition to athletic events, Reckling is used to host large assemblies and gatherings, and it is intended as a backup option for outdoor events during inclement weather. Reckling is also the largest interior multipurpose space on St. Thomas' campus, so it is the setting for some of the most well-attended masses of the year, including family masses, the annual Christmas Eve service and the Baccalaureate Mass held in honor of each year's graduating class.

Hodge described the lengthy process of preparing Reckling for mass services. "We can accommodate about 1,500 people for mass. In preparation for mass in Reckling, we first put down carpet so chairs don't damage the basketball court," he said. "We next pull out the sports seating on the north and south side of the gymnasium. After that, platforms are placed on the east wall for the altar and podium. Decorations are then placed throughout the room depending on the mass being hosted. We use the soundboard from [Cemo Performance Hall] to run the larger masses. Area mics are set up for the student choir, along with a cantor and organ mic."

AV is an important part of creating an environment conducive to worship in any multipurpose room, and St. Thomas sought for several years to make major changes to Reckling's AV system. According to Coffman, the installation documented here began when t33 made some initial audio upgrades in Reckling. These would be the first steps in a larger process to transform the gym into a true multi-use space equipped with high-end audio and video.

"The current system in Reckling is a logical outgrowth of the baby steps that we took initially," Coffman explained. "The first thing we ever did in there with their existing system was to put a Symetrix SymNet 8x8 DSP processor frontend on it. A few years later, we added [a new speaker cluster] and a small AMX control system with a five-inch rackmount touchpanel. Another couple of years later, we added a SymNet BreakIn12 input expander, so then we had 20 inputs into the system. We ended up taking a 12-channel analog snake with a stage box attached to it, and we threw that underneath the north bleachers—that's the side of the room where the combo or orchestra is set up when they do a mass. So, they had a 12-channel analog snake that led into the SymNet system, and then they had mic jacks around the room that were put in by the original installer. Programming-wise, it was pretty much nanny controls on everything, where all they had was the ability to control the volume of each input. The final step was providing wireless AMX control via iPads and programming an Expert Mode of AMX operation that gave them password-controlled access to custom text labels, adjustable compression, three-band sweep EQ, global snapshot memory and four

When Cemo Hall is in Stage Mode, audio is played through the stage's LCR system. The flown left and right arrays contain two speakers and a sub, whereas the center array only contains two speakers.

aux send buses from all 20 inputs."

As a result of these initial system upgrades, t33 had laid the groundwork for further audio improvements. When the time came for the recent full-scale AV upgrade, t33 only had to make minor tweaks to the audio system's frontend. "We replaced all the original SymNet components that we'd installed there a long time ago," Coffman said. "It's now all Prism 16x16 DSP, and there's a Symnet xIn 12 12-channel input expander that services that 12-channel analog snake—that's still there. Because of the way that these Prism devices leverage Dante, whatever's plugged into that mic snake is now a digitally accessible source anywhere on the AV network."

Speaker Solution

Reckling's existing speaker setup also required an overhaul. At the same time it added the initial AMX system, t33 had replaced St. Thomas' old center-court cluster that Coffman described as "woefully inadequate" with a Renkus-Heinz PN15/4-4(T) Reference Point Array installed on the east end of the room, supplemented by two Renkus-Heinz PN81/12DF downfills; this speaker cluster is still used for both athletic events and mass.

"Reckling had the RPA cluster at the east end of the room, and it was capable of reaching the back—no sweat—when they set it up for a mass," Coffman said. "I went in there and mixed it with no feedback and good intelligibility all the way to the back row. However, I will admit that I was

The Cemo Hall control room. The digital mixing console is stored on a cart that can be wheeled into Reckling Gymnasium or out into Cemo Hall itself.

bringing a lot of the tricks that I've learned over the last 40-odd years of doing live sound to bear during that process. Chris, on the other hand, found it challenging to hit the back third of the room without dangling on the edge of screaming, howling feedback. And no matter what I would do with the system in terms of processing, you can only push the laws of physics so far. So, we started talking about an additional cluster."

For the additional cluster, Hodge wanted a solution that would cover the rear third of seating, and the school's Athletic Director, Mike Netzel, wanted a traditional center-court cluster for basketball games. Coffman specified three Renkus-Heinz PN15/4-2(T) arrays for the new center-court cluster. "Each array has two 15-inch, two-way powered cabinets," Coffman described. "You've got two speakers dedicated to the north bleachers, you've got two speakers for the south bleachers and you've got two speakers facing west."

t33 programmed two distinct modes into the AMX control system for Reckling: Sports Mode and Mass Mode. "During basketball games, the two speakers facing west do not operate. But when you go into Mass Mode, now it's a distributed system, and each speaker in that cluster goes on its own dedicated DSP delay/EQ delay, so you now have the ability to reach the back of the room with no feedback and tons of headroom," Coffman explained.

For larger events and masses, Cemo Hall's DiGiCo S21 digital console can be wheeled in and connected via Dante using an AV network input box near the 12-channel analog snake.

Reckling Video

The other major part of the Reckling half of the installation included adding video playback capabilities to the east side of the gymnasium. Because of the nature of the room, with its large windows and high amount of ambient light, it was determined that projectors would not work. Instead, t33 specified two 16:9 displays made of Vanguard Rhodium LED panels. The two 7x7 LED displays each have a protective covering to shield the panels from errant projectiles—Coffman described it as a system resembling "thin black rubber doilies" that cushion the face of each panel. The displays also feature custom aluminum dress panels for the sides and bottom.

According to Coffman, the LEDs have no trouble standing up to the ambient light in the room. "Those things are running at about 70 percent, and they are still brighter than a supernova," he exclaimed. "I mean, those LEDs have got *serious* firepower. It's bright in Reckling, but those Vanguards will just pop your eyes right out." The protective covering does reduce off-axis visibility somewhat, but the effect is negligible. "I calculated it would start falling off in just in the last two or three seats closest to the video displays in the top rows of the bleachers, and I did the math right on that one," Coffman said. "So you don't have quite the viewing angle that you would have without the protective covering, but then again, the LEDs also don't get destroyed when Junior kicks a basketball at them."

A video rack loaded with an Extron 8x4 HDMI matrix switcher is stored in the equipment room on the east end of the gym; however, there are multiple ways to send content to the displays without interfacing with the rack. "There's a dual-input HDMI/DisplayPort input panel over in the northeast corner of the room where Chris sets up and where that 12-channel analog snake happens to live and where the S21 plugs into some RJ45s that are in a box on the wall," Coffman explained. "There's a

Because of the high amount of ambient light in Reckling, the school decided to install LED screens instead of projectors. The LEDs have no trouble standing up to the brightness of the room.

30-foot HDMI cable that coils up into the bottom of the rack in the equipment room that you can pull out and use if you want to. There are two HDMI inputs on the rack panel itself, and there are two Apple TV interfaces that feed the Extron router. So, if you have the proper creds and the AMX password, you can take your iPhone and watch it on the LEDs. Anything that can be interfaced into that system can also be sent over to Cemo Hall on an HDMI bounce."

The video rack also features an AMX seven-inch touchpanel that is used to interface with the AMX control system. A ToteVision 15-inch rackmount LED panel mounted just above the AMX touchpanel can be used to preview any source or monitor any video feed from the rack.

Audio for the video system is handled by the speaker cluster on the east end of the room in both Sports Mode and Mass Mode. "When the system is in Sports Mode, the cluster at the east end of the room—which has far more low-frequency capability—still drives the video," Coffman said. "So, when they're playing hip-hop videos in between plays, you have this stomping system at the east end of the room that is tied to the video image because it's in close proximity."

To wrap up our discussion of the Reckling AV system, Coffman broke down how everything ties together and how the various components are controlled. "In terms of the video system, the volume controls are based on sources and on the screen. You can turn the left screen up or the right screen down however you want," he described. "In terms of the audio system, it's pretty simple. Symetrix DSP frontend, powered Renkus-Heinz speakers, the speakers and everything else in that room are under the control of a LynTec panel, and every output curcuit on the LynTec panel has a SurgeX protector built into it. You've got that analog 12-channel snake that shows up as faders on the AMX system, as do the other mic inputs and the video sources. All of the mic inputs are programmed so they've got a DSP eight-channel feedback fighter in front of them. And the LynTec panels are under the control of the AMX system, so we can turn everything on and off when we need to. It's just a big, happy system."

Cemo Performance Hall

The other area of St. Thomas' campus impacted by this installation, Cemo Performance Hall, is the setting for the school's plays and musical recitals. It also sees quite a bit of use as a worship space; each Sunday, Cemo Hall serves as the sanctuary for Seven Mile Road Houston, a local Christian church. Cemo Hall also hosts all worship services at St. Thomas that are not large enough to be held in Reckling; these typically involve about 700 students, faculty and staff.

Cemo Hall presented the team with significant acoustical challenges, according to Coffman. "It has a full-size proscenium stage built back into the north wall," he described. "The room has a polished granite floor, and walls that are fossilized limestone slabs down low and gypboard above. The acoustical treatment, which is two-inch compressed Owens Corning 703, is all 12 feet and up, right where it needs not to be. So, the room itself is nasty in terms of its acoustic signature. Reverb for days, flutter echoes…you name it."

The process of transforming Cemo Hall into a worship space is almost identical to the process for Reckling; it involves a 90-degree reorientation of the room, plus a lot of folding chairs. "For mass in Cemo, we set up chairs on the bare floor facing the west wall," Hodge explained. "Our crucifix is cen-

tered on our west wall, and platforms for the celebrants are set up underneath it. Typically, we set up for a student choir to the right of the platforms, along with the organ."

Cemo Hall AV

The Cemo Hall AV system functions in much the same way as the one in Reckling. Cemo Hall also has two distinct modes in the AMX control system: Mass Mode and Stage Mode.

In Mass Mode, audio is played through two Renkus-Heinz IC24-RD-CC steerable line arrays, which are hung on the west wall on either side of the crucifix. In Stage Mode, audio is played through an LCR system flown above the stage: the left and right arrays are composed of two Renkus-Heinz IC2-FR speakers and one Renkus-Heinz IC212S-FR sub, whereas the center array only contains two flown IC2-FR speakers.

"The mass system is a dedicated dual-array Iconyx system—totally steerable—and the stage LCR system is a Renkus Heinz IC² system, which is also steerable," Coffman explained. "We used that to great advantage in this room. touch thirty three was one of the original commissioning agents for Renkus-Heinz when they first started doing the Iconyx stuff, and I was pleased to be able to use the Iconyx for both of those systems in Cemo because, as I said, the natural acoustics in there are dreadful, and being able to keep the energy off of the walls and direct it where you want to go makes a huge difference."

A DiGiCo S21 mixing console is housed on a wheeled cart in the Cemo control room and used to mix audio for both Cemo Hall and Reckling. In much the same way the audio cart can be wheeled into Reckling, the cart can also be wheeled out into Cemo Hall to allow an audio technician to mix from a more traditional front-of-house position.

A preexisting Hitachi CP-WX11000 feeds a Da-Lite 240"Wx135"H Professional Electrol projection screen that lowers from the proscenium stage on the north wall; this display is used in Stage Mode. Two Da-Lite 192"Wx108"H Advantage Electrol projection screens are hung on either side of the crucifix on the west wall. They are fed by two Epson Pro L1405U projectors, which are used when the system is in Mass Mode.

The two mass screens are mounted in soffits, and complicating matters, each soffit houses three recessed ceiling lights that cast their beams in front of where the screens go. "We used some AMX interfaces—off-the-shelf units—so we can shut off those down lights that are in front of the screens when the projectors are in use," Coffman said. "We have the screens under AMX control, and when you retract the screens it turns the lights back on."

The projectors receive their inputs in a similar fashion to the video system in Reckling. "In Cemo, we have two projectors instead of two LEDs, but otherwise exactly the same HDMI sources being routed to an Extron 10x8 HDMI switcher," Coffman said. "In this case, we've got more 'gozintas' and 'gozoutas' because we have three projectors and a control-room display. The cart has two Extron dual-input HDMI/DisplayPort panels on it. You have a 30-foot HDMI cable that coils up in the bottom of the rack. There's a stage box that's built into the stage that has eight mic inputs, and it has one of those Extron HDMI DisplayPort panels in it. There's a 10-inch AMX touchpanel on the roll-around cart next to the S21, and there's a seven-inch AMX touchpanel in the rack."

Control System

The video rack is housed in the Cemo Hall control room, alongside the wheeled audio cart. "The Cemo control room is very small, with a tiny glass window, and vision in there can be kind of a nightmare," Coffman described. "So we mounted a Sony 4K HDMI PTZ camera up above the door, and there's a 32-inch LCD mounted above the window that can show that camera feed, because a lot of times when it's crowded in Cemo, people stand in front of the window. That camera also routes through the Extron switcher, so they can output the camera feed just like any other source."

After a few weeks with the system, Hodge requested that an additional seven-inch AMX touchscreen be placed near the stage. "It's a really smart addition to the system. I can't tell you how many times I've walked from the stage to the control room to make a touchpanel change and then back to the stage," Coffman joked. He added, "It's exactly the same touchpanel that's in the rack, so you can completely operate the system from there."

Hodge also requested that an additional mode be added to the Cemo Hall system. "He wants us to create a Hybrid Mode for him where he can use the entire thing as

EQUIPMENT

RECKLING GYMNASIUM – AUDIO SYSTEM UPGRADE

1 Apple AirPort Express Wi-Fi extender/audio interface
1 Juice Goose SCV-10001 on-line double-conversion UPS
2 Middle Atlantic PWR-8-V Essex power strips
1 Middle Atlantic RCS-3524 Essex RCS Series residential configured rack system
3 Renkus-Heinz PN15/4-2(T) Reference Point Array speaker arrays w/custom rigging hardware
1 Renkus-Heinz PN15/4-4(T) Reference Point Array speaker array (existing)
2 Renkus-Heinz PN81/12DF powered downfill speakers (existing)
1 Symetrix Prism 16x16 digital signal processor
1 Symetrix xIn 12 12-channel analog input expander

RECKLING GYMNASIUM – VIDEO/CONTROL SYSTEM UPGRADE

1 AMX MSA-RMK-07 rackmount kit for 7" Modero S Series touchpanel
1 AMX MSD-701-L2 7" Modero S Series touchpanel
1 AMX NX-2200 NetLinx NX integrated controller
1 AMX PSR4.4 13.5VDC, 4.4A power supply w/3.5mm phoenix connector
1 Apple TV 64G personal video input adapter
1 Extron DTP Crosspoint 84 4K 8x4 seamless 4K scaling presentation matrix switcher
1 Extron DTP HDMI 4K 330 Tx long-distance DTP transmitter for HDMI
1 Extron DTP T DWP 4K 232 D 2-input DTP transmitter for DisplayPort and HDMI w/audio embedding – decorator-style wallplate
1 Luxul XFS-1816P 18-port/16 PoE+ managed switch
20 LynTec MB-20 20A 1-pole snap-on motorized circuit breakers
1 LynTec SCLC 326-20 3-phase load center circuit breaker panel
` w/20 RS232 controls
2 LynTec SGX20-10 power conditioning surge suppressors w/10 module units
1 Middle Atlantic RLM-15-1CA standalone switchable power module
1 ToteVision LED-1562HDR 15.6" LCD rackmount monitor
2 Vanguard LED Displays Rhodium P3.3 16:9 15' LED displays w/wall-mount/rigging hardware

CEMO HALL – MASS SYSTEM UPGRADE

1 AMX MSA-RMK-07 rackmount kit for 7" Modero S Series landscape touchpanel
1 AMX MSD-701-L2 7" Modero S Series touchpanel
1 AMX MST-1001 10.1" Modero S Series G4 tabletop touchpanel
1 AMX NX-3200 NetLinx NX integrated controller
1 AMX PSR4.4 13.5VDC, 4.4A power supply w/3.5mm phoenix connector
2 AMX UPC-20+ control interfaces
2 Chief VCM106E heavy-duty custom ceiling projector mounts
2 Da-Lite 192"Wx108"H Tensioned Large Advantage Electrol projection screens w/screen downlight relocation and wiring
2 Epson Pro L1405U laser WUXGA 3LCD projectors w/4K enhancements and standard lenses
1 Extron DTP CrossPoint 108 4K 10x8 seamless 4K scaling presentation matrix switcher
2 Extron DTP HDMI 4K 230 Rx DTP receivers for HDMI
1 Extron DTP HDMI 4K 330 Rx long-distance DTP receiver for HDMI
1 Extron DTP HDMI 4K 330 Tx long-distance DTP transmitter for HDMI
3 Extron DTP T DWP 4K 232 D 2-input DTP transmitters for DisplayPort and HDMI w/audio embedding – decorator-style wallplates
1 Luxul XFS-1816P 18-port/16 PoE+ managed switch
1 Middle Atlantic WR-37-42R rotating equipment rack (existing)
2 Renkus-Heinz IC24-RD-CC digitally steerable line-array speaker systems w/Dante
1 Samsung U32J590UQN 32" ultra-HD 16:9 flat monitor
1 Sanus Premium Series VST4-B1 tilt wall mount
1 Sony SRG-300HW 1080p desktop and ceiling mount remote PTZ camera (white)
1 Vaddio thin-profile wallmount bracket

CEMO HALL – STAGE SYSTEM UPGRADE

1 AMX MSD-701-L2 7" Modero S Series touchpanel
1 AMX NI-700 NetLinx integrated controller (existing)
1 AMX NXD-CV5 5" Modero wall/flush mount touchpanel (existing)
1 AMX PS4.4 13.5VDC, 4.5A power supply w/2.1mm coaxial barrel connector (existing)
1 Apple TV 64G personal video input adapter
1 Da-Lite 240"Wx135"H Tensioned Professional Electrol projection screen w/custom dress panel, cover
1 DiGiCo D-Rack 32x8 XLR interface panel
1 DiGiCo S21 digital console
1 Extron DTP HDMI 4K 230 Rx DTP receiver for HDMI
1 Hitachi CP-WX11000 Professional Series installation projector w/custom mounting hardware (existing)
1 Juice Goose IP 1520-RX iP Series web-based power controller
1 Juice Goose SCV-10001 on-line double-conversion UPS
1 Luxul XFS-1816P 18-port/16 PoE+ managed switch
1 LynTec MSLC 326-12 3-phase 4-wire 120V modular sequencing load center w/26 circuits, 12 sequences (existing)
1 LynTec SGX20-8 power conditioning surge suppressor w/8 module units
1 Middle Atlantic RCS-1824 Essex RCS Series residential configured rack system w/custom stage rack input/output panel
1 QSC CX502 2-channel low-Z power amp (existing)
1 QSC CX602V 2-channel 70V power amp (existing)
2 QSC GX3 power amps
4 Renkus-Heinz CFX121M 2-way complex conic speaker systems
2 Renkus-Heinz IC212S-FR dual 12-inch subs
6 Renkus-Heinz IC2-FR digitally steerable array speakers
5 Renkus-Heinz RHANG-IC2FB rigging bars w/custom rigging hardware
4 Shure SLX Series wireless mic systems (existing)
1 Shure UA-844+ antenna distribution system (existing)
1 Symetrix Prism 16x16 digital signal processor
1 Symetrix xIn 12 12-channel analog input expander
1 Symetrix xIO 4x4 Dante-enabled analog I/O expander

List is edited from information supplied by touch thirty three, inc.

one big system," Coffman said, "because, when you go into Mass Mode, the audio naturally comes out of the Iconyx speakers, and when you go into Stage Mode, it comes out of the LCR array. So, for instance, if you're doing a meeting in there and you want to show a video on the big screen, you have to go into Stage Mode to get the audio to come out of the appropriate place. Chris wants to be able to make the audio assignment sticky to where he can assign them himself and have this input staying on this playback system and that input staying on that playback system and have that be a third mode in addition to Stage and Mass Modes."

Throughout the discussion of this system design, Coffman was sure to emphasize the importance of designing the right control system for the client and how important it is for system designers to approach programming with simplicity in mind.

"My AMX programmer, Jim Titus of JT Programs, I drive him insane. We've been working together since 1998. I am very, very, very proud of the AMX control system touchpanel pages and how painless they are for the users to use them," Coffman shared. "In our AMX programming, we use colors like crazy, so if a customer calls me and tells me they're having a problem, I can ask them, 'What color screen are you on? Purple? Okay, you need to be on the green screen. Go back and find the menu button that gets you to the green screen. Guess what color it is? Green!'" He added, "You will not find any animated gifs or spinning logos on any of our AMX control systems. They are all big buttons with lots of space around them. Big text and colors, that's what we do. It's boring, but it works." t33 can also access all of its control systems remotely via VPN /VNC for troubleshooting purposes.

In addition to both Reckling and Cemo Hall having two dedicated settings for Mass Mode and Sports Mode or Stage Mode, respectively, there are two master modes for the AMX user interface: Simple Mode and Expert Mode. Which mode is activated depends on which credentials are entered.

"Simple Mode basically allows you to turn the system on and off and do a couple of defined things that they do on a daily basis," Coffman described. "Basically, you are presented with a page of finger-touch faders that allow you to control the volume level of different things based on sources. When you're in Simple video mode in each room, you have a fader on the left side of the touchpanel that controls whatever is coming out of the left screen, and you have a fader on the right side of the panel that controls the right screen, and the AMX programming automatically tracks all of that."

He continued, "In Expert Mode, you can't get yourself into trouble—I still have several nanny controls on there—but you can do some pretty cool things. For instance, you have to have the Expert path activated in order to plug the S21 into the system via Dante."

The system also includes a t33 signature feature—an emergency reset called "the Big Red Button." "It's either a software or hardware button, and basically what it does is it completely turns everything off, including the AMX processor, and turns it all back on again in a very controlled manner," Coffman explained. "It takes 10 to 15 minutes to do it, but if you ever get the system to where it just won't respond or for some ungodly reason something's locked up or you think it is, you can press the Big Red Button and, after all the passcode warnings, the system will reset." This feature relies on a Juice Goose UPS feature to reset the AV system components, the Ethernet switches and the AMX control system in a particular sequence.

For its part, St. Thomas High School seems pleased with its new AV systems. "I feel the [project] has accomplished everything we set out to do," Hodge said. "The versatility of the system has proven itself through many events. The 15-foot displays in the gym have withstood several basketball hits without a problem. Overall, we are getting feedback that the masses are clearer, and the new video screens in both areas have really brought a new modern feel to our masses." Hodge added that the system upgrades have also served a welcome educational purpose, as well. "Students are trained to use the new soundboard for plays," he said, "and they have been very successful in learning some sophisticated sound techniques for our drama productions."