TECHNOLOGIES FOR WORSHIP

®

How Edge Blending, Scaling Add Up to Environmental Projection Success

In-Depth
CANON EOS C70

REVIEW:
BLACKMAGIC DESIGN ATEM MINI PRO

OUT OF THE BOX:
HOLLYLAND'S MARS 400S PRO WIRELESS
VIDEO & AUDIO TRANSMISSION SOLUTION

MULTI CAMERA LIVE STREAMING SOLUTION
MODEL 500785 FROM MUXLAB

L-ACOUSTICS CONTOUR XO IN-EAR MONITOR

H7 HEADSET

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EDITORIAL NOTE

In our quest to put together compelling and interesting articles for you every month, we sometimes forget to tell you about our other endeavors, including our website and an active and growing social media presence.

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See you again in December!

Michelle

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LightParts Supplies UVC Disinfection for Fellowship of The Woodlands

LightParts recently supplied Luxibel B Air 2 indirect UVC disinfection to The Fellowship of The Woodlands for their video broadcast control room. The Luxibel B Air 2 is an indirect UVC air sanitizer utilizing two 55W UVC lamps, encased in an aluminum tube with fans at either end in a push/pull configuration. Potentially infected air is drawn over the UVC tubes and disinfected air is exhausted out the other end. The Luxibel B Air 2 can cycle the air in a 10' X 10' X 10' room four times per hour. The Luxibel B Air 2 is distributed by ACT Lighting.

Robert Mokry of LightParts said, "Several of our customers have asked for UVC disinfection products that can be used in occupied spaces. The IES paper that discusses application of UVC makes it clear that for occupied spaces, a desirable solution is indirect UVC. Indirect UVC is where the UVC emission is enclosed (as in the B Air 2), or the use of direct emitting UVC fixtures with UVC emission directed upward, away from people. This strategy greatly reduces the risk of human exposure to direct UVC emission. Once we investigated several indirect UVC products on the market, we determined the Luxibel B Air 2 is a great value – 110W of UVC power for a reasonable cost. And they are supplied and supported by ACT Lighting, a long time trusted vendor to LightParts". **T**

Peter Wharton Joins TAG Video Systems as Director, Corporate Strategy

TAG Video Systems, the world leader in integrated software-based IP Probing, Monitoring and Multiviewer solutions, has announced that Peter Wharton has been named Director, Corporate Strategy for the Company's global operations. Wharton, an industry veteran with deep roots in transformative cloud-based media operations joins TAG on a permanent basis following two years working with the Company as a consultant. Kevin Joyce, Chief Zer0 Friction Officer, revealed details of the appointment noting that Wharton's technical capabilities combined with his market knowledge played a pivotal role in opening TAG's platform to new applications and increasing the Company's international market share.

"Peter has an incredible grasp of emerging technologies, such as cloud-based production, and how they will impact the future of the industry," said Joyce. "His extraordinary capabilities have been a tremendous resource as we help our customers navigate the new normal of remote production, but they also played a crucial role in the steady growth TAG has experienced, even in this time of global uncertainty. We are thrilled that he is now a permanent member of the TAG team."

In his role as Director, Corporate Strategy, Wharton will shape corporate strategy by evaluating business and technical opportunities and identifying areas of growth. He will work with senior management and executive leadership to structure solutions that add value to customers' financial, technical and operational business units. **T**

Atlona Promotes David Shamir to VP of Product Management

Atlona, a Panduit company, has promoted David Shamir to VP of Product Management. Reporting to Atlona co-founder and CEO Ilya Khayn, Shamir will continue to lead the company's product strategy while expanding his responsibilities to oversee engineering and product development.

Shamir takes on his new role as the AV industry navigates many disruptive changes, from technology transitions to pandemic-driven shifts in how people work and learn. Combining product management and engineering leadership into a single role streamlines Atlona's internal processes, increasing the company's agility and responsiveness to rapidly evolving market needs.

Shamir has served as Atlona's Director of Product Management since 2015, following senior product management roles at media technology companies including Magnum Semiconductor, Harmonic, and Scopus Video Networks. He has introduced new processes and methodologies at Atlona to quickly and effectively take product ideas from concept to reality. He successfully led several major product line launches, including the OmniStream™ AV over IP platform; Velocity™ System AV control and management platform; and Omega™ Series of AV integration solutions for modern workspaces and meeting environments. Shamir takes Atlona's engineering organization under his umbrella as co-founder and VP of Engineering Michael Khain retires after 17 years with the company. **T**

KLANG:APP RUNNING AT THE CHURCH'S MIX POSITION

Good News Heard Better Than Ever With KLANG At Good News Church

First established in 1936 as Glad Tidings Church, Good News Church, located atop the hill at 75th and Hickory in Omaha, Nebraska, eventually chose to modernize its name to better reflect the language of current times. Much more recently, that same impetus to remain fresh and relevant also prompted the church to modernize its sound system with the addition of a DiGiCo SD12 mixing console and KLANG:fabrik immersive IEM mixing solution, both supplied by the local office of Conference Technologies, Inc.

Having read about KLANG:technologies online, Good News Band Leader Aaron Ott mentioned to Greg Peteler, the church's sound engineer, that he was interested in learning more, feeling that "it stood out as a truly unique and flexible system." Upon learning that Church of the Resurrection in Leawood, Kansas used a KLANG system, the two reached out to coordinate a visit during a weekend service to experience their system and see how they were using it. Both Ott and Peteler were duly impressed and quickly contacted Ben Shipman at AVA Reps, who supplied Good News with a DiGiCo SD12 and KLANG:fabrik for a few days of testing, solidifying that this combination was the right solution for moving forward.

"We needed eight to ten discrete monitor mixes with 48 input channels," Peteler says. "Considering the DSP-to-channel count balance in the KLANG system, mixing 48 channels with surround processing allowed each fabrik to deliver four fully immersive monitor mixes, requiring three fabriks to meet our minimum with a few extra mixes."

Good News Church's new SD12 is paired with MADI and Dante audio networks, three KLANG:fabrik units for 12 immersive monitor mixes, and a Dante-based multitrack recording system. Audio arrives at the SD12 via the MADI SD-Rack or via Dante. The console then pushes out 48 monitor channels via MADI to the daisy-chained KLANG:fabriks.

Each musician and vocalist has a dedicated iPad for managing their monitor mix during rehearsals as well as for displaying chord charts or lyrics during the services. Ott additionally has the KLANG:app running on his keys rig computer, while Peteler also has the same app on his computer at the front-of-house mix position if assistance is needed.

"Most of my sound design and keyboard work is prepared in my own studio," Ott says. "I had built such a habit of eliminating most high frequencies and cutting certain mids in every sound I designed. With the new DiGiCo/KLANG system, my sound design elements translate directly to the system as they should sound—beautiful and enveloping. No more weird 'for the system' adjustments."

Good News Church doesn't have a separate monitor console, but, as Peteler points out, "With as easy as the KLANG system is, it's not a position we would consider necessary at this point. Even if we have new vocalists or entry-level musicians join the worship team that don't know how to dial in a good monitor mix, we find that recalling presets from the lead instrumentalists provides them with a great place to start. It's all very intuitive."

And, as Good News Church Worship Director Carissa Carter sums, "I absolutely love being able to feel the music—every instrument and vocal—all around me. It helps us each perform our very best and has been such a tremendous blessing for both the worship team and our congregation." **T**
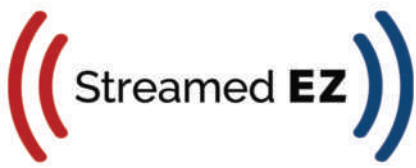
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A.C. Lighting Inc. Delivers a Stellar Lighting Rig to Discovery Church

After 15 years at their original location in Orlando, FL, Discovery Church outgrew their space's ability to effectively support their ministry. Purchasing a former Sports Authority retail space, the church renovated the building to support their needs for worship services. Headlining the new lighting rig are fixtures from PROLIGHTS and Chroma-Q®, controlled by Vista by Chroma-Q®, with data distribution by Luminex, all distributed by A.C. Lighting Inc.

"The PROLIGHTS fixtures are a major upgrade for Discovery Church," says church Lighting Designer Anthony Stofflet. "We went from very simple systems that really put us in a box as far as creativity was concerned, to a lighting rig that significantly opens up the creative options for us. We weren't that familiar with the PRO-LIGHTS brand of LED fixtures, but A.C. Lighting Inc. set up a lighting shoot-out for us, and the PROLIGHTS fixtures truly blew the competitors away."

Discovery Church installed Eclipse-FS ellipsoidal static profiles for their primary front stage wash; JetSpot 3 moving head spotlights; Stark 400 moving head wash fixtures, and Ra 2000 Profile HB moving head fixtures—a full complement of PROLIGHTS fixtures for all their stage illumination.

"The Ra 2000 Profile HB fixtures were brand new at the time we looked at them," Stofflet says. "In fact, Discovery Church was one of their first US installations. They are a great moving-head special fixture. Having a moving light, we could use as a key light was critical for me, as our stage changes all the time. The feature set is excellent: massive zoom range, shutters, animation wheel, 18,200 lumens of output, two frosts (one for soft focus and one for heavy diffusion). With a color temperature of 6200k, the video guys love them, and it means I have less work to do in getting them to match our other key lights. It also comes with a CTO wheel to provide a warm color temperature when desired."

For house lighting, Stofflet went with the Chroma-Q® Inspire XT™ color-changing fixtures, installing 72 Inspire fixtures on a 12' grid spacing pattern to get 59 foot-candles in the room.

Luminex network switches are used for lighting control data distribution and coms, and the church also utilizes the Luminex LumiNode product, to convert Ethernet-based data to DMX signals.

Bringing the entire lighting system together is the Vista by Chroma-Q® lighting control system. "I've used Vista since version 1," says Stofflet. "When I first saw Vista years ago, I was impressed by how easy it is to learn. Now, across three campuses, we have Vista in almost every performance equipped space. Our larger spaces have Vista control surfaces; our smaller spaces use touch screens, and our children's ministry spaces I've set up with Korg Nanopad MIDI controllers to trigger cuelists. I make great use of controlling Vista from ProPresenter, firing timecoded cue lists. No matter how I'm using it, it just works. And with Vista having such a user-friendly UI, I've had kids as young as 8 years old 'doing lighting.'"

Online streaming has become a critical part of churches' engagement with their congregations, and Discovery Church's investment in their lighting rig has proved to be a significant benefit to this aspect of their ministry. "With our new gear," states Stofflet, "our streaming quality saw a significant improvement. We would not be able to achieve our current level of production quality without it." **T**

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Hollyland's
MARS 400S PRO Wireless Video & Audio Transmission Solution

Hollyland Technology keeps adding new products to their MARS Series. This time, they are announcing their new member, MARS 400S PRO into the series, a 400ft wireless video and audio transmission system with a brand-new transverse design.

Besides the same 400ft range, App monitoring capability, both SDI and HDMI, and of course the price, there are many additions to the MARS 400S PRO which differentiates it from the popular MARS 400S. Its' transverse sleek industrial design is revolutionary to Hollyland product line, which gives the system a lower gravity center, which means it takes up less space in the setup. Plus, with the integrated cold shoe on both the transmitter and the receiver, the system provides a much more stable and convenient installation.

Like other products in the MARS Series, it has eight channels for use on set, and there are channel scan and scene modes to avoid interference and to ensure a stable wireless transmission.

Hollyland has finally added a silent mode for the cooling fan, which can turn the fan completely Off, switch it to Low Speed, or Auto to let the system decide whether it needs to be cooled down, for different applications and better shooting experiences. When it is on Off, the MARS 400S PRO may get a little bit hot, but as long as the temperature doesn't bother you, it won't affect the performance of the system according to Hollyland's test results.

Another new feature Hollyland introduced with their MARS 400S PRO is the direct live stream data feature. Now, with the PRO, video feed straight out of RX will be used for live streaming on OBS, vMix, or VLC on a computer without further encryption and decryption via a video capture device.

The software on the PRO was optimized to accurately understand the current wireless environment and enable users to easily find out the optimal channels for use on both RX and on the HollyView App. The App can also directly upgrade the system, abandoning traditional upgrade on the devices. Both the channel scan and firmware upgrade are just a click away, making it a hassle-free choice.

These are the key standing out features for the brand-new MARS 400S PRO. All in all, the new 400S PRO is a very affordable, robust and compact wireless transmitter for those who are looking for an entry-level wireless video and audio transmission solution. **T**
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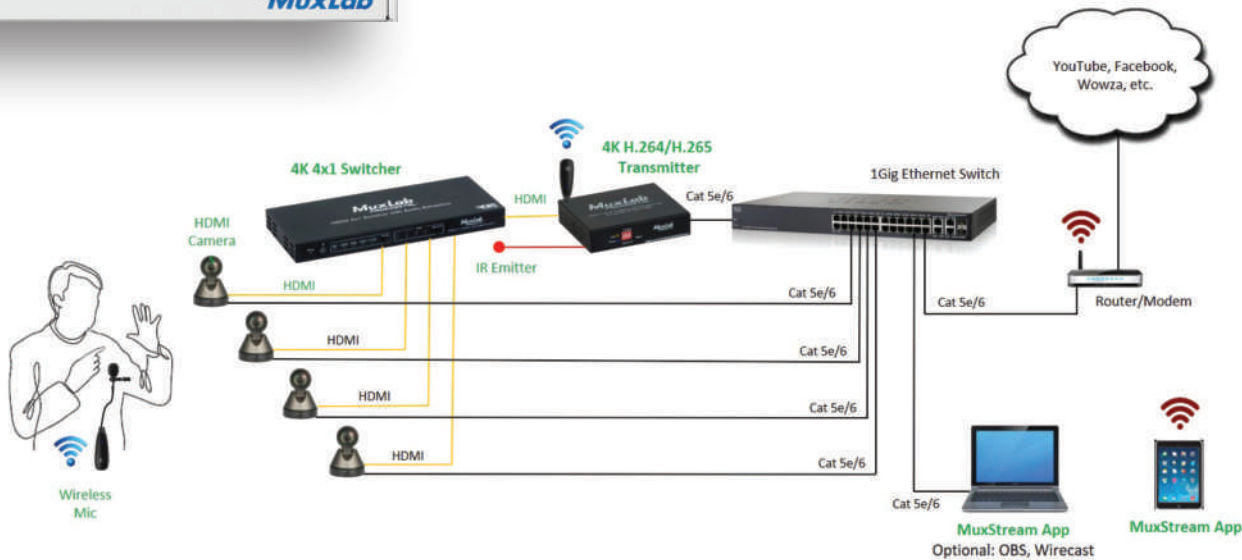
MuxLab introduces a new line of Live Streaming Solutions which allow you to live stream from your house of worship to all your followers in minutes. The easy to use House of Worship streaming kits offer simple installation and high quality streaming and allows you to quickly be streamed to YouTube, Facebook, Wowza, and many more services you already know and love. The House of Worship Streaming Solution also works with popular Audio/Video content production software such as OBS, Wirecast, and others.

The kits come in two models; Single Camera Live Streaming Solution when one camera is all you need, and Multi Camera Live Streaming Solution with the added flexibility of multiple camera angles for a more professional experience. Both kits include an HDMI PTZ camera, HDMI premium certified cables, a wireless mic, and the use of the intuitive MuxStream app.

Ideal for Houses of Worship, religious classes, and worship events of all sizes the MuxLab Multi Camera Live Streaming Solution includes the main components needed to broadcast live content to mass recipients spread out across the globe. The solution allows live presentations to effectively be streamed over the Internet at up to 4K.

The kit comes complete with an AV over IP H.264/H.265 4K Transmitter to stream content to Broadcasting Services, a 4×1 HDMI 4K Switcher to select between four difference camera angles, a high quality HDMI/IP PTZ camera @ 1080p/60 (additional cameras sold separately), a wireless Mic system, an intuitive Control App to manage setup and connectivity, two (2) 6.6ft (2m) Premium Certified HDMI 2.0 cables, and an IR Emitter (to manage the 4×1 Switcher).

The MuxLab MuxStream Control App is free to download, available for iOS and Android tablets, and Windows PC. MuxStream manages and significantly simplifies the system setup, configures the Transmitter to stream to various broadcast services such as YouTube, Facebook and Wowza, manages camera settings (such as PTZ) and offers an intuitive interface to manage the switching between different camera views. MuxStream walks you through a step-by-step setup process of streaming to YouTube, Facebook and Wowza, so even the novice will manage this task with ease. The AV over IP H.264/H.265 4K Transmitter supports up to 4K video @ 30Hz and may be located up to 330ft (100m) from an Ethernet network switch and supports PoE (but a PSU is included) and supports low bandwidth for streaming AV content over the Internet.

The overall system has been designed with ease of use in mind so that anyone can be up and running in no time. There is no need to spend time with complicated systems when MuxLab's streaming solutions offer you a high quality and flexible alternative that does the job without the fuss, while being a pleasure to use. ▪

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L-Acoustics reinforces its mission of elevating the listening experience for professionals and audiophiles worldwide with its first offering in personal audio, Contour XO in-ear monitor powered by JH Audio. Designed to reproduce the renowned L-Acoustics sonic signature frequency contour, this premium, 10-driver IEM elevates the standard for in-ear monitoring. Widely viewed as the benchmark for live production and the worship community, the L-Acoustics sonic signature is natural, dynamic, generous, and consistent. Contour XO provides that perfect reference IEM on stage, at the mixing desk, in the studio, or on the move.

Contour XO is born from the meeting of two pro sound icons: Jerry Harvey and Dr. Christian Heil. Both pioneered technologies that forever changed the pro audio industry: multi-driver in-ear monitors and the present-day live production PA based on the L-Acoustics line source array.

The newly designed universal in-ear monitors bring listeners inside the music with ten balanced armature drivers and three-way crossover in a quad low, dual mid, and quad high configuration. Contour XO offers control of the low end with bass adjustment of up to 15 dB above flat response. Pastors, ministers, musicians, sound professionals, and audiophiles alike will appreciate the individual care and attention to detail transmitted by the limited-edition premium in-ear audio solution, Contour XO.

Furthermore, the development of Contour XO supports the upcoming release of new L-ISA binaural object-based mixing software tools currently in beta testing with a select pool of audio professionals.

For the Worship community Contour XO suits workflow and performance requirements perfectly. Two key concerns for any service are intelligibility and musicality. A 10-driver IEM provides ample detail across the full range to preserve clarity of instruments and vocals, whether individual or choir, sung or spoken word. From a pre-production perspective, the portability of Contour XO allows mixers enhanced mobility and flexibility to work efficiently offsite, ensuring that the mix will remain true to the desired result. For churches equipped with an L-Acoustics PA, the IEM matches the sound system response perfectly and offers the full range of a dynamic mix. For houses of worship which may not rely upon L-Acoustics, mixers can still trust Contour XO to deliver the typical pure, live response of a main PA, to better replicate what the congregation will hear.

Jack Nellis, studio and live mix engineer for Elevation Worship recently used Contour XO for a worship broadcast mix. "From a professional end-user perspective, I think the Contour XO are perfect for live mixing reference as well as portable mixing rigs," comments Nellis. "Especially if you are used to mixing an L-Acoustics system. In addition, I think musicians and vocalists who want an idea of how the room is sounding in their ears will find this new product very appealing." T

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ADDITIONAL TRICKS
for Gain Staging Transmitters and Receivers with Recorders – *Part 2*

BY BRIDGET HARRINGTON

In part one (October 2020), we heard from Bal Rayat and Bruner Dyer. For part two, we hear from Chris Howland and Steve Morantz.

Chris Howland is the founder of the LA Sound Mixers Group, a long-time Lectrosonics user and has worked on countless film and TV projects. Chris reports that "most of my gain staging is done by feel and the anticipation of the unknown." The following numbers are his starting points:

From a VR Field Venue to a Sound Devices 688
Line level input settings (normal voice and louder performances)
- Field Venue output +08
- Sound Devices 688 input trim at LINE level and -8db for unity gain. Will sometimes push to 0 or 2db for soft speakers.

Mic level input settings
- Used when I have a "mumble actor" or soft speaker. This allows me to add gain on the receiver side if it is needed so I don't have to push the mic pre's so high that they are out of proportion.
- Field venue output -15
- Sound Devices 688 input trim at MIC LEVEL and 26db will have to reference tone sitting at 8db on the 688's meter. This allows me plenty of head room for soft speakers

UCR411a receiver to a Sound Devices 688
Line level input settings
- UCR411a output set to +5
- Sound Devices 688 input trim set to LINE LEVEL and dialed in to -6db for unity gain. (will sometimes push to 2db for some speakers)

Mic level input settings
- UCR411a output set to -33
- Sound Devices 688 input trim set to MIC LEVEL and dialed in to 34db for unity gain. I will sometimes push the mic pre to 42db for soft speakers and if needed, the last resort is to take the receiver from -33 to -25.

Transmitter levels (with a Sanken COS11 black band standard sensitivity lav mic)
- SMWB Transmitter Level set to 22 to start. Would need to be higher for softer voices.
- SMV Transmitter Level set to 18 to start. Would need to be higher for softer voices.
- Boom transmitter (HMa) with a Sennheiser MKH50 microphone level at 35 and the receiver and Sound

Devices 688 is always set to line level receiving numbers, because we always have access to that transmitter for gain adjustments whereas, with actor lavs, access is not always guaranteed or convenient.

Steve Morantz has worked extensively on TV productions – including Parks & Recreation, Entourage, Dead to Me, Just Add Magic and many others. Here, he shares his settings for the variety of mics and situations that he works with:

Receivers
- I run my receivers at line level as high as they go, +8 on the rack receivers and +5 on the 411 series. I have a Sound Devices SL-6 with Lectrosonics SRCs, and the default setting for that is -6. So for that system only, I use that setting.

Lav Mics
- Lav mics have different gain and padding. I use DPA 4061, 4071 and 6061, which are 10 DB lower than the DPA 6060s, and Sanken COS11 lav mics. For the Sanken and 6060, I start my gain on the mic pack at 20 and adjust accordingly. On the 4061, 4071 and 6061, I start at 26 and adjust as well.

Booms
- I just finished up Season 2 of the TV show Mayans M.C., where we would put a boom on the biscuit (vehicle with camera arm) and record the motorcycle noise. For that, I would put the gain down all the way to 0 on the transmitter for the plug-ons.

Cardioid and Shotgun Mics
- For cardioid and shotgun mics, I run the gain on the transmitter usually around 28 and again, depending on the environment, I can adjust down to 17 or as high as 34.

More educational articles are available from Lectrosonics' The Wire-Lists (https://www.lectrosonics.com/The-Wire-Lists/) **T**

Bridget Harrington *is a Marketing Specialist and Content Creator at Lectrosonics*

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LED efficient, it can effectively light an auditorium or foyer in white, and then complement and color match what is happening on stage whether it's a church service, musical performance or special event.

SPECIFICATIONS

SOURCE and PHOTOMETRIC DATA
- 230W RGBWL LED (Red, Green, Blue, White, Lime)
- 11,000 Total Lumen Fixture Output
- CRI 90 @ 3,200K

EFFECTS
- Color Temperature Control 2,400K - 8,500K
- Virtual Color Swatch Book
- Dimmer, RGB, RGBWL and HSI Control Options
- Variable 16-bit Dimming Curves
- High Speed Electronic Shutter and Strobe
- DMX and Menu adjustable LED Refresh Rate Frequency

CONTROL
- 4 DMX Channel Modes
- Standalone and Master Slave Modes
- RDM (Remote Device Management)
- 0-10V Dimming (Current-Sink)
- E-FLY™ Internal Extended Range Wireless DMX Transceiver

SIZE / WEIGHT
- Length: 12.5" (318mm); Diameter: 7.8" (197mm)
- Weight: 15.8lbs. (7.2 kg)

ELECTRICAL / THERMAL
- AC 100-240V - 50/60Hz
- Max Power Consumption 230W

APPROVALS / RATINGS
- CE | cETLus (pending) | IP20

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- **CONVECTION COOLED FOR SILENT OPERATION:** Featuring a compact and fanless design, the Fuze Pendant is convection cooled to operate silently in noise sensitive environments.

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Pathport® UNO™ is a single Pathport DMX-over-Ethernet gateway that provides reliable DMX512/RDM routing and configuration. It is the ideal solution for house of worship venues and applications where a simple, single universe of DMX is needed for stage lights and effects.

SPECIFICATIONS

Power
- Power-over-Ethernet Class 1 Device - 4W maximum
- Auxiliary 24VDC Power input

Operating Conditions:
- 14°F-122°F (-10°C to 50°C); 5-95% relative humidity, non-condensing

Standards Compliance:
- USITT DMX512 - 1990 / ANSI E1.11 DMX512-A R2013
- E1.20 RDM - Remote Device Management
- E1.31 sACN - Streaming ACN
- IEEE 802.3af Power-over-Ethernet
- CE/ETL
- RoHS 2011/65/EU
- California Title 1.81.26, Security of Connected Devices

Weights and Dimensions:
- 1.0 lbs (0.45 kg)
- 1.31"W x 4.08"H x 2.04"D (33.3mm x 103.6mm x 51.7mm)
- [models 6101/6102 - not including face plate]
- 1.83"W x 3.2"H x 4.98"D (46.5mm x 81.3mm x 126.5mm) [Portable models 6151/6152]

5 KEY FEATURES FOR HOUSES OF WORSHIP

Flexibility with single DMX/RDM Port with option for portable accessibility. Perfect solution for locations where only 1 universe of DMX is required - whether it's for color changing fixtures that subtly enhance the mood during worship or a fog machine for effects during a production.

Easily configurable – with use of Pathscape™, the free configuration software. Tools allow users to select port direction, control DMX routing on a universe or channel-by channel basis and direct multiple source merging and prioritizing. Can also be configured with simple physical jumpers on the device without using Pathscape.

Supports all of the main Ethernet protocols –sACN (E1.31 Streaming ACN), Art-Net, ETCNet2, Strand ShowNet and Pathway ssACN.

Elegant Design with LED indicators for network and DMX status. Available in black or stainless steel to blend in with any location. The truss mount version can be powered over the same Cat5 cable and placed up on the lighting truss with little weight added to the rigging.

Security - Implemented with security features to protect the church's lighting network.

AUDIX MICROBOOM

The church has suddenly had to transform itself from live and in-person meetings to virtual on-line streaming due to the pandemic, therefore the microphones we have at our disposal must be able to be used for not one but multiple applications, and the Audix Microboom does it all.

SPECIFICATIONS

- Microphone (M1250B):
- Transducer Type: Condenser
- Frequency Response: 50 Hz - 19 kHz
- Polar Pattern: Cardioid, Hypercardioid, Omni, Supercardioid
- Output Impedance: 150 ohms
- Sensitivity: 10 mV (C/HC), 11mV (O/S) / Pa @ 1k
- Signal/Noise Ratio: 73 dB
- Equivalent Noise Level: 21 dB (A-weighted)
- Maximum SPL: ≥140 dB
- Dynamic Range: 119 dB
- Power Requirements: 18-52 V
- Connector: 3 pin mini-XLRm
- Materials / Finish: Machined Brass / Black Finish
- Weight: 16 g / 0.56 oz
- Length: 54 mm / 2.1 in
  Microboom System:
- Rod material: Carbon Fiber
- Gooseneck: Flexible Steel
- Length: MicroBoom™ 24 609 mm / 24 in
- Length: MicroBoom™ 50 1270 mm / 50 in
- Length: MicroBoom™ 84 2134 mm / 84 in
- Diameter: 7.4 mm / .2 in
- Connections: mini-XLRm (bottom), mini-XLRf (top)
- Weight: MicroBoom™ 24 45 g / 1.6 oz
- Weight: MicroBoom™ 50 78 g / 2.5 oz
- Weight: MicroBoom™ 84 111 g / 4 oz
- Finish: Black Finish / White Finish

5 KEY FEATURES FOR HOUSES OF WORSHIP

Sonics: The microphone needs to sound great out of the box. Extended frequency response, high output in the Audix M1250B – the smallest integrated condenser mic – captures the essence of whatever you are trying to record or reinforce...choirs, ensembles, drum overheads, theatre, room/ambience or singular sources like a cello or guitar cabinet.

Portability: The problem with installed mics is that they are...installed. This very small microphone can be attached to a 24", 50" or an 84" carbon fiber boom affixed to any microphone stand. It can then be moved anywhere to facilitate whatever application is required, vertically or horizontally, no matter where the microphones need to be.

Low-Profile: The microphones are not desired in the camera's view and with streaming and broadcast being the norm these days we do not want to see large diaphragm condensers and obtrusive mic stands. Audix Microbooms are heard but not seen.

Scalability: Unlike some competitors, choir microphones which are permanently fixed on their boom arm, the Audix Microboom offers different capsules/polar responses and output sensitivity required for the particular application, giving plenty of variety for multiple scenarios and rooms.

Affordability: With an Audix Microboom you will have saved hundreds of dollars or more. And you can do the job of what many microphones (and more dollars spent) could have accomplished, in addition to countless saved hours of effort in the process.

Photo by Peter Calvin

SSL *Live*

Ultimate sonic performance

Transform your worship services and turn events into world-class performances to remember with the SSL Live audio production platform

SSL Live L550 console

Dante SPOKEN HERE

"We did a shootout between the SSL Live and one other console. The sonic performance of the SSL console is pretty spectacular. Without any processing, it sounded wider and deeper, like the speakers had all moved 10 feet apart. So there was a clear winner: SSL." - Travis Brockway, Nexos founder and Systems Intergrator - **Watermark Community Church,Tx**

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Solid State Logic
OXFORD · ENGLAND

Lighting Solutions from ETC

LED technology has come a long way in the past decade. What was once an expensive, out-of-reach technology for many venues is now an attainable possibility. There are many reasons for this shift. Control options have simplified. The user interface is more intuitive for intro-level users. And because cost has come down, you no longer need to sacrifice fixture quality, or more importantly, light quality, because of budget.

ETC offers high quality fixtures with bright, bold color mixing, for every venue. You can enhance your traditional sanctuary, your contemporary worship space, your youth room, or your fellowship hall with LED lighting. ETC knows that when you're deciding which fixtures to purchase, there are several factors to consider. That's why they offer fixtures in a variety of sizes at a variety of price points.

SMALLER CHURCH

Source 4WRD Color

ETC's Source Four incandescent fixtures can be found in congregations around the world. With more than 3.5 million sold, there's a chance you'll find them in your church too. If you're considering an upgrade to LED fixtures but your budget is limiting, consider Source 4WRD Color. Quickly turn your incandescent white-light fixture into a color-changing LED fixture in less than five minutes.

This four-color RGBA LED fixture unlocks a world of additive color mixing. You'll get saturated colors for dramatic lighting that washes across your altar or stage. The responsiveness of the fixture control brings quick color changes for every cue imaginable. Add breakup patterns for more texture to your lighting, or use as a spotlight to bring attention to important speakers and performers. Like all ETC LED fixtures, you can use the free photometry app to get full color information and take the guesswork out of your designs.

ETC knows that many churches run because of their volunteers. If your volunteers have limited time or expertise, ETC has you covered! With 12 built-in color presets and five built-in sequences, Source 4WRD Color makes fast, quality lighting design a breeze. Source 4WRD Color gives you flexibility in an easy-to-use fixture at a desirable price point.

MEDIUM-SIZED CHURCH

ColorSource Spot jr

If your expectations are high, but your budget is modest, consider ColorSource Spot jr. These red, green, blue, and lime LED fixtures are a natural choice for a variety of venues around the globe including houses of worship. ColorSource Spot jr gives you more of what you need at a fraction of the size and a fraction of the cost. The true benefits of LED fixtures include low power consumption and ColorSource Spot jr is no exception. Fewer watts for greater output mean less energy consumption and higher brightness. Lower power also equals lower heat which means your cooling costs go down as well.

The built-in 25-50 degree zoom functionality is great for churches that need light from a variety of locations. Hang these fixtures from the balcony rail or directly over the altar and know that you'll get quality light from both near and far. Weighing only 12 pounds, ColorSource Spot jr is a fraction of the size of other comparable fixtures. Like all ETC fixtures, Spot jr is backed by an industry leading warranty – five years on the full fixture and ten years on the array – and unmatched technical support.

ETC pays attention to the science behind the color of your light. This is why all ETC LED luminaires include what's known as Color Integrity Technology. ETC takes great care to ensure that the colors you expect are the colors you see day after day, service after service. Select your color mix from two array options. The Original color array is ideal for warm pastels and enhances skin tones beautifully. The Deep Blue array brings saturated blues, greens, and magentas to your lighting design, ideal for enhancing praise bands, live nativity scenes, and other higher-production elements of your worship.

LARGER CHURCH

ColorSource Spot

ColorSource Spot is an LED fixture crafted by lighting experts. Using a balance of red, green, blue and lime LEDs to provide a richness of color only available from ETC. These fixtures output bright, beautiful light with or without a lighting desk making them easy to use in any worship space.

All ETC LED luminaires include what's known as Color Integrity Technology. This means ETC takes great care to ensure that the colors you expect are the colors you see day after day, service after service. How can they be so confident? Before the fixtures even leave the factory, they are individually factory calibrated to ensure consistency with all other similar fixtures. The fixtures you buy today will match the fixtures you bought last year. Second, ETC studies the science behind the light. As LEDs warm and cool, their color temperature can change slightly. That's why ETC LEDs include thermal management algorithms built into their software. You can rest assured that the colors you choose when the lights are first turned on, will match the colors outputted hours later.

Select one of three array options depending on if you need warm pastels, deep saturated colors, or variable white light. Know that no matter what you select, you'll get more lumens per dollar than other comparable fixtures on the market.

With a lifetime expectancy of 54,000 hours, unmatched fixture warranty, full photometric data available on the free app, and a UL924 listing, you can feel confident in ColorSource Spot lighting your sanctuary for years to come. ▣

INTERCOM SOLUTIONS from EARTEC

Since 1961 the Eartec Company has supplied state-of-the-art headset communications.

Today Eartec is a worldwide leading manufacturer of affordable industrial headsets for production teams. What has always set Eartec apart is a commitment to building rugged, yet affordable communication equipment along with providing professional courteous service.

Smaller Churches

The Eartec UltraLITE series are the perfect wireless communication solution for smaller venues because they are simple to use and affordable. These revolutionary headsets eclipse all other full duplex systems for performance and convenience because the transceiver is built right inside the ear cup. This self-contained, "All in One" design eliminates wires and belt worn radios. And since UltraLITE do not require complicated base stations users can remain in constant full duplex voice contact even while on the move. Standard UltraLITE intercoms provide instantaneous wireless communications for crews that need to communicate without pushing buttons. At the heart of these systems is a specialty base or "MAIN" headset that relays the digital signals generated by up to four "Remote" units. The resulting open line talking pattern allows up to 5 people to talk simultaneously allowing them to work with their hands.

MID-SIZE CHURCHES

The Eartec HUB is a compact wireless Base station that expands the capacity of UltraLITE headsets for larger crews that need to communicate and work with their hands. This wireless repeater weighs only 9 oz. and can either be placed strategically "on location" or belt worn. When clipped comfortably to the users waste it moves seamlessly allowing your team to maintain constant voice contact. The HUB features two channels of communication allowing separate groups of four to talk privately. Pressing the conference button connects the talking patterns linking up to eight UltraLITE wireless. HUB transceivers also include a dual pin jack that allows addition of a wired headset expanding capacity to nine users. Two HUBs can also be linked together increasing capacity to 16 UltraLITE all connected in full duplex. The HUB features a dual power option, rechargeable Lithium battery and AC wall plug (both included). The battery can be charged externally, is field replaceable, and also charges when the HUB is operating under wall current.

LARGER CHURCHES

Many larger churches have wired intercoms that are permanently installed. The HUB Interface is the answer to the age-old problem of how to affordably add wireless headsets to these existing wired systems. Eartec has engineered a special software-controlled wired to wireless interface that plugs into the wired party line with an XLR connector and then into a HUB mini base repeater taking the place of a wired belt pack amplifier. Push button

adjustments on the Interface then balance the signal levels between the permanently installed wired party line and up to 8 UltraLITE self-contained wireless that are linked to the HUB. The complete system establishes a seamless audio link providing a crew of up to 8 tremendous mobility and simultaneous talk, hands free communication just as if connected by a floor cable.

Small-Format Broadcast-Capable Camera Solutions from Marshall Electronics

For over 40 years, Marshall Electronics has been dedicated to offering a range of professional cameras, including innovative POV and PTZ cameras, format converters, monitors and production equipment at great value. With many houses of worship streaming their services, having a camera that can achieve quality images that is also small and discreet is an important component to any broadcast and/or streaming set up. The addition of a Marshall camera can help convey your message to at-home viewers, through live streaming and by posting recorded content online.

SMALLER CHURCH

The CV506 Miniature HD Camera offers performance and flexibility in a tiny form factor. This low-cost, ultra-discreet, miniature point-of-view camera is perfect for small, traditional churches looking to add video components without sacrificing the beauty of their venue. It incorporates the latest video technology; simultaneous 3GSDI and HDMI options; and a next-gen 2.5-Megapixel sensor for better picture, color depth, clarity and low-light performance. It offers all frame rates in one model, delivering ultra-crisp, clear HD video up to 1920x1080, along with newly added stereo audio inputs. The CV506 comes with an impressive array of picture adjust and match settings, which can all be adjusted through an OSD menu joystick, remote RCP (CCU) unit, or downloadable camera control software. Sporting full-sized BNC and HDMI outputs and a locking I/O power connection, its Hirose breakout cable triples as a power, control and stereo audio input port. The camera's rear panel offers easy and reliable connections in a concise housing unit. These features make the CV506 a truly affordable, high-end camera solution for small-town churches. Just a few inches in size, the CV506 can be placed where many traditional broadcast-quality cameras cannot. It also has a new body style with locking I/O connections, durable build quality and swappable lenses. This interchangeable lens function and remote adjustability for matching with other cameras make the CV506 suitable for a range of workflows. It captures and streams detailed shots while maintaining ultra-discreet POV, versatility and convenience, perfect for capturing everything from weekly services to weddings and other events.

MEDIUM CHURCH

The versatile CV355-10X zoom block camera is designed with new sensor technology, refined to meet the highest in broadcast and AV standards. The new CV355-10X replaces the existing CV350-10X camera and improves on every measure of performance. It is perfect for a wide range of applications, such as broadcast, production, live events, traditional worship services, college/university presentations and front of stage confidence monitoring, among other things. Featuring a durable build construction, the camera has a robust aluminum alloy body, full-sized BNC and HDMI connections, a locking I/O cable carrying RS485, audio and power, and side impact protection panels to secure cable connections. It also offers 2.5 million pixels with 1/2.8-inch sensor covering the HD range in a very compact design. It features 10X optical (12X digital) zoom block and flexible 3GSDI/HDMI simultaneous outputs with clear HD images up to 1920x1080 at 60fps. It also has stereo audio embedding abilities, all usable frame rates and added 24- and 23.98-fps for dramatic capture, as well as ultra-low light sensitivity and industry leading low noise performance. These features make the CV355-10X great for recording or streaming services and events at mid-sized houses of worship. Remote adjust and match settings are available via Marshall Electronics' touchscreen RCP camera controller or through the company's free camera control software, which can be found online. Settings such as zoom, iris, white balance, exposure and pedestal can be controlled over long distances or during setup with capable auto tracking settings that track environmental conditions, an ideal feature for socially distanced services and events.

LARGER CHURCH

A great alternative to large, traditional broadcast cameras, the CV730 is a cutting-edge PTZ camera that provides crisp broadcast-quality images up to UHD (4K) resolution with smooth, synchronous movements controllable from IR remote, professional grade joysticks and video management software. It is ideally suited to use in broadcast, production, live events, house of worship, college/university, front of stage, confidence and observation applications. The CV730 features 12GSDI, HDMI2.0 and IP simultaneous outputs from a professional level 8.5 Megapixel 1/1.8-inch UHD sensor with a 30x optical zoom block. The first camera on the market to include NDI®|HX, the CV730 provides low latency, high-quality, frame-accurate audio and video in real-time. This ensures that the CV730 delivers crystal-clear UHD head and shoulder images from very long distances at up to 3840x2160p at 60fps. These features make it possible for large/megachurches to produce TV/film caliber content for broadcast, streaming and recording purposes. This easy to use PTZ requires just one cable for all functions – power, control, audio and video. The remote broadcast-style adjust and match setting control is made possible through network adapters or IP using universal protocols. These settings include iris, pan/tilt/zoom, white balance, exposure, pedestal and many more, over long distances or during setup with capable auto settings that track environmental fluctuations. Ethernet can also be used for PoE+/Preview and other outputs to allow for simultaneous streaming, production and archiving workflows, while the NDI tools make it possible to integrate more video devices and applications, for a truly all-encompassing video production.

Choosing the Best System for Your Space

BY TIM ADAMS

Many are mystified by the seemingly "black art" of choosing the right speakers for a given space, and while there are many variables to consider, such as room size and shape, materials in the walls, floors and ceilings, speaker mounting locations, splay angle, coverage angles, etc. there are also factors such as available budget, aesthetics and potential sight line issues for projectors and/or LED video walls.

There will be those who argue that placement is the number one priority and to a point, they are correct. However, for churches where aesthetics reign supreme, finding a way to strike a balance between these two priorities can be difficult and it certainly places a huge load onto an integrator to try and find the right solution. At the end of the day, though, budget usually determines whether the look or function of a speaker system will rule.

Why? Because the right solution might be visually obtrusive but will provide the best sound and if an integrator has to find a visually unobtrusive solution, that very well will drive the overall cost up significantly.

As a church, you should also determine what your needs of a speaker system really are. Are you hosting concerts or musical groups that require a certain level of speaker system? If not, then you can likely get by with a system that can handle your worship service style. Of course, you're not out of the woods yet, either. There is a

balance any church speaker system has to strike between spoken word and music. I have personally seen the nastiness between groups in a church that don't want to mess with the acoustics of the space (i.e. treating the room, amplifying certain instruments, etc.) and those who want to make sure the sound system provides clear and intelligible sound for every seat.

I remember a speaker demo years ago where room types in churches; first is the long and narrow, second is the wide and shallow. If you have the first style room, you'll need a speaker solution that can project sound to the back without blasting those in the closer areas; you will also need a delay solution so sound arrives at everyone's ears at the same time. These can be somewhat difficult to not only spec, but also to configure. If your room is wide and shallow, you vary widely in price and capability and the last thing I want you to do is tackle this yourself if you're ignorant about what goes into spec'ing a solution and then being disappointed and wasting money.

Talk to Stakeholders

I learned a long time ago that tech has a large impact on many different groups and people and there are benefits to including these order to have the best environment to dial in the system. Unfortunately, the room acoustics can change incredibly when it's full of people and for this reason, it's important to understand that the speaker system may need further tweaking after the first service. The difference between an empty room and a full room can also be fairly minor, but it's important to not expect to have a concert level speaker system if you've invested

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I was asked if I wanted maximum intelligibility or maximum coverage. I had never considered these were mutually exclusive but they often are, unfortunately. A good integrator will be able to offer a solution that can provide a good mix of these two needs; trying to do this on your own will be a time-consuming and headache-inducing exercise as you research and arrange for demos. I've done this for a church I attended and it took me eight months of concerted effort. While it was fun for a while, it became a huge drag because I was doing it all for free and it was a constant monkey on my back amongst the many responsibilities I had in my life at the time. *So, what are some tips I can offer you?*

Room Shape

There are generally two will need a wide coverage pattern to accommodate the seating area. Generally, you will need to mix at least two speaker stacks/hangs/enclosures for this style of room, which leads to "comb filtering," which is a weird "phasing" of sound as you move laterally across the listening area. Personally, I don't have an issue with this phenomenon as most church environments don't involve people moving during service, but that is my own personal preference.

Speaker Education

Learn the difference between active and passive, point source and array speakers and the advantages and disadvantages of each. I'm offering this tip mainly as a means of being able to communicate and understand conversations with an integrator or consultant. Speaker systems entities in the conversation about upgrading things like speakers. Why?

They may bring up an issue that you haven't thought about and thus you can find a solution to that issue. Their perspective could offer additional insight into capabilities that you were not aware were needed, and they will appreciate that you included them in the conversation which could lead to critical support for the project when the time is right

Appropriate Expectations

One of the most useful things I can suggest is to have the right expectations for a new speaker system – these things can take a couple tries to get right. When integrators tune a room, it's empty, which is great for them because they need it quiet in $1000 into it.

At the end of the day, a speaker system is too important of a system to just randomly pick components off a shelf or let budget dictate what will and will not work in your space. There are just too many variables that affect overall performance in order to guess what will work the best. When in doubt, it's always best (and usually free) to contact an integrator and start asking questions. ▪

Tim Adams *spent over 20 years volunteering in church technical ministry and now focuses on helping small churches achieve technical excellence through equipment upgrades, training, sharing best practices and teaching leadership how to cast God-sized vision.*

Professional Audio is Key for Churches Now Regathering

BY ADAM SHULMAN

This year has brought with it a number of challenges around the world. Church leaders are tasked with ensuring community support and stability by bringing their congregations together in a variety of ways and locations — from socially distanced in-person gatherings back in church or in the parking lot and open green spaces, as well as streaming services online. While the need to serve, connect and nurture fellowship remains the number one priority each week, it can be a challenge to determine how technology can be used to support the changes required by a global pandemic.

And while regathering can look a little different depending upon where you're located, church leaders and their technology teams find themselves addressing similar challenges of how to best use their available spaces each week. Whether it's for children's services and education or a service for the entire congregation, understanding the how of connecting people together using available technology is key to that success regardless if they are separated by six feet or in completely different locations.

This connection starts with sound. Therefore, a crucial step is understanding the impacts of using spaces and equipment differently, whether inside or out. Sound behaves differently with a congregation that is only a quarter its previous size. There are a number of things that can be done beginning with learning how sound behaves, adjusting what is physically located in these gathering spaces, as well as how to best complement the video stream without compromising audio quality.

A CRUCIAL STEP IS UNDERSTANDING THE IMPACTS OF USING SPACES AND EQUIPMENT DIFFERENTLY, WHETHER INSIDE OR OUT. SOUND BEHAVES DIFFERENTLY WITH A CONGREGATION THAT IS ONLY A QUARTER ITS PREVIOUS SIZE.

Assessing Your Gathering Needs

Our sense of hearing is such an important part of our lives — it's how we connect with our surroundings; it aids in our understanding of those around us and enables us to lose ourselves in music and be moved by the word. At Bose, we tend to view sound as the most important sense as seen in our commitment to making sound experiential, no matter where you are.

Church members can have a wide range of technology comfort levels and understanding what those levels are is an important first step in determining how to use building and in the open with the right technology and understanding, for both in-person and streamed services.

Leveraging Audio to Enhance Video

With the increased adoption of streaming services comes an increased comfort level of this previously inaccessible technology. Now, even the youngest members of a church are familiar with the concept of creating a video and posting it for others to access, and the idea of video chatting is commonplace. But regardless of a person's familiarity, audio plays a key role in these activities. People are more tolerant to audio quality and clarity, which ultimately creates frustration and fatigue to people on the receiving end. When investigating streaming options, connect with your dealer or professional AV partner and lean on them for the expertise is this area. By choosing a lower streaming resolution, the audio/video stream can become more widely available to people regardless of their available bandwidth.

Technology teams have an increased amount of responsibilities when supporting both in-person and streamed services. They need consistent reliability and audio quality regardless of whether the service is in an indoor space with a good

Make Available Spaces Sound Great

Rooms that are used with far fewer occupants can lead to a host of audio and acoustic issues. It will be imperative for church leaders to engage their experts to take a closer look at how each room was designed and how it's now being used, including its shape, structure and surface treatments used. This will guide churches as they remap their audio, which will also assist them in selecting audio equipment and acoustic treatments that best meet their needs.

Whether a church has moved out furniture to create more open areas for easier social distancing or

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IF A CHURCH HAS ACCESS TO MULTIPLE LOCATIONS, DOES ITS TECHNOLOGY TEAM HAVE THE RIGHT AUDIO EQUIPMENT TO ENABLE EVERYONE TO HEAR, UNDERSTAND AND PARTAKE IN THE SERVICES?

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the audio technology you currently have, and whether it's necessary to invest in additional equipment.

If a church has access to multiple locations, does its technology team have the right audio equipment to enable everyone to hear, understand and partake in the services? We've all experienced a situation where sound was just made louder to make up for larger groups or to cover a greater distance. But improving intelligibility is actually what is necessary to aid understanding, and this can be achieved inside a an underwhelming video experience or an image that freezes if the audio is still available. Conversely, it wouldn't matter how amazing the video image was if the audio is poor. The opportunity to engage and connect with their fellow congregants is lost.

With the availability of ultra- high resolution displays on our mobile devices and televisions, church leaders may be tempted to stream in the highest resolution possible. This can consume significant bandwidth, causing playback issues and degrading the installed system or in an entirely new space (indoors or out). This is easier to achieve when using the same manufacturer (or set of manufacturers) because of consistency in the operation of these products. When working with the same manufacturer, a portable PA system on stands should provide a similar voicing characteristic as a large installed system, requiring less time re-EQing the audio sources, as an example. This can be a major time-saver for technical teams when moving worship services from one venue to another. incorporated a transitional space just outside the entrance, it's possible to create a welcoming, inviting variety of spaces with the right audio equipment. By adjusting worship spaces and outfitting them with audio solutions that support the post-COVID goals of the space (which are probably different than the pre-COVID design goals), everyone will be able to participate. These decisions will make sure churches are ready today and tomorrow, wherever their congregations regather.

Delivering an Experience that Connects People

As churches integrate a variety of worship experiences to meet the needs of their parishioners, the expectation is that the audio will be clear and consistent, no matter where they regather. No matter if services are in-person and socially distanced at church or an outdoor space or joined from afar by others who are simply hesitant and join from home, your dealer is your ally. You should leverage their expertise in audio to help make services available in a variety of formats each week and enable church leaders to focus on opportunities to connect with their parishioners rather than challenges imposed by the technology they are using.

By understanding that spaces and technology will need to be used differently than they have in previous times, churches can overcome the audio distortions, acoustic artifacts and audio fatigue caused by the increase in hard surfaces — and ultimately deliver dynamic, high-quality sound to their congregations no matter where they may be located. ∎

Adam Shulman *is the Market Category Lead for Installed Sound at Bose Professional. With more than 15 years of experience in system design and product development and a Master of Engineering in Acoustics, he has a deep understanding of sound and how to achieve quality audio experiences.*

IS FINANCING AN OPTION?
That question opens a can of worms, doesn't it?

BY TIM ADAMS

I know that most churches, particularly small and medium churches, will choose to pay for things when they have the money in the bank to do it, but sometimes financing can be the right move. However, it should only be done after much consideration and prayer.

Financing terms could carry a lengthy payback term, much like a mortgage, and that doesn't make any sense. This is because by the time you have paid off the loan, you would have already upgraded the tech equipment at least once already (assuming a 30-year term). I do draw a distinction between financing a tech-only upgrade and wrapping a tech upgrade into an overall facility remodel or improvement project. With the latter, you are including other value-add benefits into the loan, whereas the former only gains you new tech equipmen. This new gear will wear out or need upgrading within ten to fifteen years (if not sooner), which means the value you receive for the principal + interest is much, much less.

As we have learned in the last ten years, financing is full of minefields, bad terms, high interest rates and other dangers. It can be an incredibly attractive option as it offers a lower initial financial outlay, but ultimately, you will pay more for that equipment than you would if you purchased it outright.

Add to this reality the fact that working with an integrator or consultant can yield better than retail pricing, and you would be saving more money by purchasing upfront. Sometimes an upgrade is unavoidable and the money just isn't there and thus financing must be utilized. However, that balance should be paid off as quickly as possible. Pay particular attention to any early payoff penalties in your terms. If the upgrade hasn't reached critical status, I would recommend strongly to wait and have leadership discuss the need for financial support openly to the membership; this can yield strong and immediate money to avoid going into debt.

Other ideas you could look at are the used market., places like GearSource.com, solarisnetwork.com or the Church Production Gear Traders group on Facebook. This can help you keep overall costs down but also obtain great gear that still has a lot of life left. If you choose to go this route, I would strongly advise developing a plan to set aside funds over the next year or two to purchase the gear you need, as there is no way to guarantee buying used or refurbished will be a long-term solution.

I have often found that a lack of funds for tech upgrades tends to be caused by tech not being part of the annual budget and/or not being supported openly by leadership. Both causes are unfortunate and unnecessary, but a reality

that we techs have to deal with. Tech upgrades are necessary and while they shouldn't be happening every two years, they should be financially supported with a percentage of savings going towards upgrading equipment every five to ten years. This can help you stay out of debt by providing funds for replacing or repairing gear without getting Board approval.

Now that I've scared you away from getting financing, let's talk about options that are available to you for financing. If you absolutely need to seek financing, I would avoid going through a retailer's financing options. Not only would you be paying retail pricing + interest, but who knows what your interest would be? You will likely be able to get better rates and terms from an actual financial institution, and being a non-profit, you might even qualify for special rates/terms and/or programs. Depending on the size of the loan needed, you could also get a shorter term loan, which would be better for the reasons stated above.

Of course, my personal preference would be to wrap any financing into a capital improvement project; however, it should be approached from the standpoint of capital improvement project with tech upgrades rolled in rather than the other way around. In other words, the purpose of the financing should be capital improvement, with tech upgrades working as a natural part of that upgrade. If your tech upgrade is more than 50% of the loan, I would start to have some serious reservations about your approach.

We need to be wary of the "get it now" mentality and not let that affect how we determine what is and is not actually in the budget for our churches. We also need to recognize that we don't need the "latest and greatest," especially when your system is currently working well and fulfilling the needs you have. It's only when your needs begin to seriously outweigh your system's ability to deliver that you should start considering a tech upgrade.

The final piece of advice I can offer here is that when you are considering an upgrade and/or financing as an option, try to maximize the value you are getting for your money. This means having "master planning" conversations so you can think five to ten years down the road in terms of capabilities you will want/need, and includes things like video distribution around your facility, overflow, live translation, assisted listening systems, better lighting, better display systems (e.g. projection upgrades), etc. You could also include ancillary systems to tech, such as the Internet connection, servers, network, etc.

Tech upgrades should add significant value and capabilities, ESPECIALLY if you are borrowing money. If you're not seeing either of these, you're probably not ready for an upgrade. Harsh? Maybe, but sometimes we need harsh truth to bring us back from the brink of making a bad decision. **T**

Tim Adams *spent over 20 years volunteering in church technical ministry and now focuses on helping small churches achieve technical excellence through equipment upgrades, training, sharing best practices and teaching leadership how to cast God-sized vision.*

How Digital Signage Helps Houses of Worship Navigate the Pandemic

BY CAROL WADE

Before the COVID-19 pandemic, the word "Zoom" had a different connotation for churches, synagogues and other houses of worship. Now worship leaders regularly hold bible studies, small group discussions, and prayer meetings using the video conference service in order to continue to meet the spiritual needs of congregants while complying with social distancing directives.

Two other uses of digital technology have been instrumental in helping houses of worship adapt to pandemic restrictions: indoor and outdoor LED displays. The advantage that digital video boards have over other forms of digital communications, such as websites, social media and meetup sites, is that they reach all age groups, including those who are not active online.

Locations with digital screens have been creative in how they use them to meet the needs of congregants both during the shutdown period and as they reopen, and offer compelling reasons for houses of worship without digital displays to consider installing them.

OUTDOOR MESSAGE CENTERS

When houses of worship were forced to close abruptly in March, leaders needed a way to communicate effectively with congregants and the community, and outdoor digital

displays, or message centers, were the perfect answer.

One of the biggest challenges facing houses of worship was the introduction of live-streamed and videotaped services available online via outlets like Facebook and Vimeo. Houses of worship with outdoor digital displays, such as Victory Church in Westminster, Colo., (see photo) were able to quickly encourage parishioners to watch services online and could provide information about when and where services would be live-streamed.

Digital displays also can be used to announce that bible studies, support groups, and other small groups have

moved their meetings online.

While houses of worship also get creative in how they reach congregants, including offering drive-through confessions and outdoor communion services, digital signs are instrumental in notifying the community about these changes.

Once in-person services resume, many houses of worship need to communicate new times, rules and restrictions, including the wearing of masks, capacity restrictions and the need to register for services. As churches and synagogues re-open, some add services in order to meet capacity restrictions, and often these

While houses of worship also get creative in how they reach congregants, including offering drive-through confessions and outdoor communion services, digital signs are instrumental in notifying the community about these changes.

times change from week to week as congregants start coming back. River of Life Church in Jacksonville, NC, effectively used their outdoor display to post changes in service times (see photo). Digital signs also can be used to recruit additional volunteers needed to help services run more smoothly, including check-in staff, ushers and people to help with enhanced cleaning between services.

Finally, many organizations have mobilized to meet the needs of the greater community by offering hot meal delivery, grocery shopping services, rent assistance and other help, and have been able to advertise this assistance on their outdoor digital displays. These displays have also been used to help communicate important community information about school openings, health messages, blood drives and virus testing locations, as well as messages of hope. This illustrates the real beauty of outdoor digital message centers:

they are able to reach others in the community who may not currently be affiliated with a house of worship.

INDOOR DISPLAYS

Once congregations have been able to resume in-person worship services, indoor digital messages centers become instrumental in communicating new rules and procedures, including the need to wear masks, socially distance and use hand sanitizer inside the building.

In order to socially distance, many houses of worship have had to change the way they conduct services. Digital signs can provide a visual cue for congregants by referencing color coded pews for communion or dismissal. They also can provide reminders about necessary procedures, such as changes in how to receive communion.

Many houses of worship already were using digital displays to post lyrics and prayers so congregants could

easily follow along, including Otter Creek Assembly of God in Little Rock, Ark (see photo). This became even more important during the pandemic when most churches and synagogues removed printed hymnals and prayer books to prevent the spread of the virus. Indoor video walls now can act as digital hymnals and prayer books. Responsive and easy to use software makes customizing messages simple.

Looking forward to when the pandemic is over, houses of worship can use indoor and outdoor digital displays to congratulate newlyweds, thank donors, promote events, and provide important reminders, reducing or eliminating the need to design and print signs, posters, and banners. ▪

Carol Wade is senior director of marketing at Watchfire Signs, a leading manufacturer of exterior and interior LED signs.
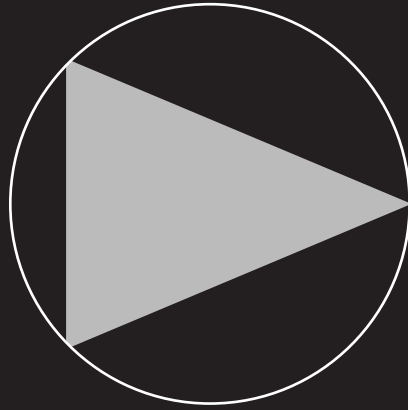
CFX VIRTUAL HIGHLIGHTS FROM WEEK TWO.

CFX Virtual
Birth…. Birth… and Rebirth

BY RON PROCOPIO

So, 2020, hasn't turned out as we had all hoped when the ball dropped in Times Square. But for myself, I wouldn't have it any other way.

On December 28, 2019, EH Media LLC and I finalized the plan to begin CFX to replace WFX which had unfortunately been sold and placed on the shelf. I had spent four years working on WFX in the early years of the event and helped grow it to its peak with an amazing team from EH.

The following day, I proposed in NYC to my lovely and amazing girlfriend of four years at her favorite place in the city, that has a beehive on the roof and creates cocktails and food from the honey they harvest. Lyndsay is a beekeeper herself.

On January 7, 2020, I returned home from visiting my brother in the hospital where he was sick with what we now believe was Covid-19, and my new fiancé tells me to sit down because we're pregnant.

Within TEN days I started a business, got engaged and found out we're having a baby. 2020 began with an explosion of God's gifts. The potential seemed limitless and oddly daunting at the same time.

Then the world changed. I buried my nose in our work and focused on creating the original feeling and focus of WFX with the new CFX event: creating an event and community for those who work and serve in their church and connecting people and products to grow their worship production, their congregation and glory to God.

As all of us watched the news, we learned to "pivot" which became somewhat of a catch phrase in our meetings. We had hoped that Texas would be able to host shows in the fall. I spent

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a solid week working on a Plan B and Plan C. We watched other events in front of us fall; still hoping we could pull off a live event. Alas, in June it became evident that wouldn't be possible. We would move to Plan C: CFX Virtual.

We took pieces from what was around us. The data shows that people in general aren't willing to spend eight hours in front of a screen as they would at a live event. So why force it? Why pretend we're in a convention center without the distractions of our children, our jobs, our social media. Our plan was to look to what is successful with attention and create a platform that is more of a "choose your own adventure" style.

> **CFX Virtual Network will be online until December 6, 2020. Sign up today for just $29 to view 50+ hours of session to improve your live stream, your finances, your volunteer leadership, and your service production. Use the promo code "Rebirth" to secure the $29 pricing.**

Netflix, Amazon Prime, DVR's all show that we're an insanely busy culture that want to digest information and entertainment on our own time. So that's what CFX Virtual Network offers. We host sessions live for those who want to attend at 2:00pm and 3:15pm EST; then place those sessions in the network for those who want to watch with their teams later on.

Here we are, halfway through our two months of CFX Virtual and there are dozens of sessions, product demos, ask the expert sessions and short "TED Talks" like sessions available on-line to be viewed.

I absolutely love our virtual exhibit hall as well. Not only because there are super innovative products that I know churches like my dad's could use (he has been a music minister, choir director and elementary school music and religion teacher for 50 years); but because of the ability to connect with people face to face. That's what most of the virtual events are missing that the live event offers: connection with people.

Admittedly, the cancelation of CFX in Dallas was beneficial for me personally. On September 7, 2020, we welcomed Weston William Procopio into the world after four and a half days in the hospital. If the live event had occurred, I would have been flying off for a week just nine days after the birth.

I am so blessed to be able to create this event and community. To have a loving family we've created. To have a healthy family during this time where so many are suffering.

So, for me, 2020 has been a year of birth and rebirth. Creating one life from what was an idea; a dream. **T**

How Edge Blending, Scaling Add Up to Environmental Projection Success

BY ANDRES CAAMANO

As churches are winding down Christmas production planning and planning beyond, one consideration may be to create a virtually immersive worship setting.

To make it happen, part of an environmental projection equation often includes edge blending.

With edge blending, it entails trying to cover a large area with projection. By doing so, it pushes the limits well beyond the capabilities of a single projector.

When using multiple projectors paired with edge blending, the images created are partially overlapped. In many cases, the overlap can be one-third of that projector's created image.

The end result? A cohesive image that spans across a much larger area.

In what sounds to be a very complex undertaking, the first question should be, "'Why are you doing it?' Followed by, 'And what's the purpose?'" noted Mark Hanna, owner of FxN Productions. Going further, he asked, "Why do you want that shape and that size?"

ProPresenter A Valuable Edge Blending Tool

Upon determining the specifics and that edge blending is needed, there are many ways churches can do it well. Those options don't have to be expensive, beginning with using Renewed Vision's ProPresenter 7 and its now-bundled edge blending module.

For many churches, turning to ProPresenter for such a solution is very convenient. It just so happens to be what most houses of worship use for their lyrics and production work.

"ProPresenter is the leader. If you have to do edge blending, (most churches) have ProPresenter already," said Camron Ware, owner of Lightware Labs and founder of Visual Worshiper.

Elaborating on the value of ProPresenter for churches, Stefan Svard, president of Audio Video Electronics said, "It is one of the best tools to cost-effectively do edge blending."

Beyond just ProPresenter, undertaking a project that includes edge blending has become much more feasible in recent years. That's largely due to the growing prevalence of laser projectors. "With lamp projectors, one of the issues was how the color temperature shifts as a lamp ages," explained Svard. "With the advent of laser projectors like the 3LCD projectors from Sony, Epson or Panasonic, the color accuracy and consistency is an order of magnitude better."

Laser Projectors a Great Match for Edge Blending

In seeking how best to succeed on a project using edge blending, laser projectors have shown to be a particularly strong option.

"A laser projector won't change its luminosity and color as quickly as a lamp projector," said Svard. By contrast, a lamp projector will render color that will "degrade over time, and will change over time."

When facing cost pressures, another major factor is brightness, noted Liam Monroe, creative producer for Bethel Production. "You can always try to get away with more budget-friendly projectors, but you'll run into them not being bright enough. That's where the biggest issue is, in terms of expense, whether they throw out enough brightness."

Edge blending is very often used when trying to "create scenic elements (using

projection), instead of going the LED wall route," said Monroe. Edge blending, though, goes well beyond environmental projection. For example, a valuable wide screen projection setup would include a 16-foot by 9-foot screen behind a worship band.

"If you want to create a very big and very bright image, most of the times I see a horizontal strip of video behind the band," noted Ware. "The images are edge blended, and are more cost effective than a big LED wall." Such setups are seen in youth rooms, Ware noted, where one might "use two or three projectors edge blended behind the band, or as a wide screen above the band in the room."

Make It Easier, Don't Mix and Match

Among the best ways to flourish when doing edge blending when using multiple projectors is having each be from the same manufacturer. Better yet, "It's definitely the safest for them to be the same model, even as they will still have slight variances, for brightness and output," Monroe said.

Using the same model, though, is just a beginning factor. It is crucial to also use the same lamps in each (if they are lamp projectors). Going further, if the projectors use lamps, ensure each used lamp has run about the same number of hours.

Why is that key? That's because one shouldn't expect close to identical performance from a new lamp versus one used for about 2,000 hours. Likely the differences in performance will be stark between the two lamps in such an example. Hanna noted, "you might not see (the difference at first). At the same time, though, I can see the projector on the left is 3 degrees cooler, and it's driving me nuts."

Recalling one Christmas season, Hanna remembered borrowing projectors at a church, aiming to fulfill an environmental projection project, "from all over the facility. The projectors did not match (with the other already installed projectors) in the auditorium."

In trying to capably edge blend using different model projectors,
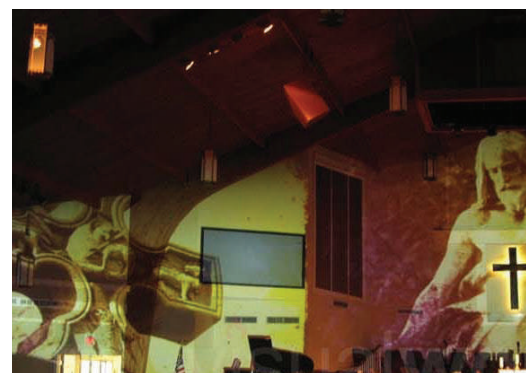
Hanna noted, "you will make it hard for yourself. Where they overlap, if there is a higher brightness (between one projector over another), it will make it tough to fudge, to make it look seamless."

Select Projectors Offer Features To Simplify Edge Blending

In trying to minimize the challenges with edge blending, various tools are available beyond the ProPresenter plugin.

For example, a Christie projector typically has edge blending utilities integrated right in the unit, noted Hanna. They include Christie Twist, which works within a grid point/mesh interface. The utility easily allows precise control to edge blend and stack multiple images seamlessly across a 2D or 3D surface. With the interface, it "looks at the image, does the math, and does the edge blending for you," he added.

Upon considering low-end projectors versus professionally installed units, Ware fully sees the benefits offered by professionally installed projectors, in that they "have the warping and corner pinning features, to allow for edge blending to be extremely easier."

Keeping Projectors Configured Is Not A One-Time Deal

Upon setting up a projector along with edge blending, one must recognize edge blending is "an ongoing maintenance issue; not a set-and-forget type of scenario," warned Svard.

That's because once all the finite edge blending settings are in place, it requires regular fine tuning. Some settings require being "constantly aware of alignment. Maybe not weekly, but at least monthly," cited Svard.

From Ware's perspective, "I've told churches, expect to spend 30 minutes a month for tweaking. Maybe you spend five minutes each Sunday, to turn on a blend grid to align the projectors, and make sure the lines are still matching up."

Among the most common culprits that throw a projector off and require readjustment, is a church's HVAC, explained Svard, "which causes a shaking of the roof deck. Or when the sun comes out, the roof expands. During the summer, the sun gets hot and the steel gets hot. When the sun goes down, the steel contracts … it's something we can't avoid."

With ProPresenter, many of these settings can be adjusted via the software, while others are tweaked using built-in capabilities within some projectors. One coomon feature that helps with minor projector adjustments is lens shift, moving a lens either up or down or left and right, without having to tweak the unit's install position. In addition, if the image is slightly skewed and not a perfect rectangle, keystone correction is a helpful feature.

Sometimes, though, needed adjustments go well beyond a slight tweak.

"At my church, where you have a kids ministry, they might be playing dodgeball, and a projector gets knocked out of place," explained Monroe. "Or in California where we are, there are earthquakes, where any shift in a projector will make a seam noticeable."

How Much Edge Blending Works Well?

In figuring what should be the desired overlap between two intersecting images, Ware pegged the overlap at about a third. "The more you edge blend, the better. The more you overlap, the better. And with more projectors, the better and the less obvious the edge blend will be," he explained.

Other variables to calculate ideal overlap, Hanna said, relate to a projector's

> **The more you edge blend, the better. The more you overlap, the better. And with more projectors, the better and the less obvious the edge blend will be.**
>
> *Cameron Ware*
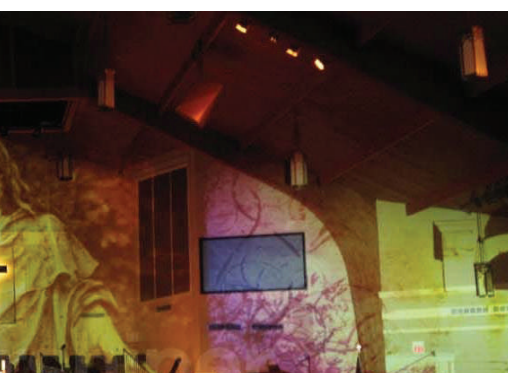
brightness and resolution. Over the years, he's seen configurations with overlaps as minimal as one-fourth, up to two-thirds. From experience, though, Hanna said he "usually uses about a third of the image."

For Monroe, the variables that come into play regarding an edge blending overlap, begins with overall screen size. Typically, he noted "aiming for a quarter of the image size. When you start getting into giant screens, you can have a three to six feet overall overlap, depending on the size of the screen."

Projection Content Likely Needs Some Scaling

Once a church opts to do edge blending, the screen content typically will require some scaling, usually upconverting lower-resolution content. The challenge arises in determining how much is acceptable, before the content becomes too pixelated.

"If you are upscaling by 10 percent, that's fine, especially for environmental projection," noted Hanna. Scaling aggressively, though, can be problematic. "When you blow it up too much, it has the capability to make it look bad," said Svard. "Are you taking low-res images and blowing them up significantly?"

When scaling content up in a configuration that also edge blended, additional issues arise.

"Upconverting and scaling a standard definition image to an HD image, surely causes pixilation," said Monroe. "It adds a gritty texture to the image,

and makes it hard to edge blend right. Essentially, you are not outputting pixel-for-pixel correct, as you are adding pixels to the image." As a result, correctly determining the actual lines of the image becomes complicated with the added distortion.

From experience, Ware said, when working with multiple projectors and edge blending, scaling content becomes almost a 100 percent necessity. That's particularly true since the screen most often won't

match the pixel count of the source. As elaborated by Svard, "Rarely does a church have source content that is 1-to-1 for what the (projection wall) is in size," particularly when a screen is ultrawide.

With an expected high need for upscaling video content, anticipate a small amount of latency or display delay, at least a few milliseconds. To minimize potential latency issues, Monroe suggested the content be at least HD in its original format and

avoid drastically scaling the content. As another means to limit latency, Monroe added, "use the camera lens to zoom and make it bigger, instead of upscaling the signal." **T**

Andres Caamano *is a writer and editor with nearly 20 years' experience, including over four years bringing attention to the latest news in audio, video and lighting technology for houses of worship.*

Ribbon Microphones— High End Problem Solvers

BY JOHN JENNINGS

Harsh, aggressive sounding electric guitars, piercing brass instruments, thin overly-bright cymbals, stage bleed problems… Every FOH engineer has fought these gremlins using a variety of tools and workarounds, but the most effective, easiest and best sounding solution may be parking a few ribbon microphones in the right places.

Different microphone types "hear" sound differently. Condenser microphones pick up sound through capsules, which tend to produce a bright response with accentuated treble frequencies. Dynamic microphones use a moving coil system to pick up sound, making them durable and able to handle high SPL's, but limiting their frequency response and their ability to capture the detail that other microphone types can deliver. Ribbon microphones pick up sound through a ribbon transducer, which contains a corrugated aluminum ribbon element suspended loosely at two ends in a magnetic field. A well-designed ribbon microphone "hears" sound extremely naturally, more like the human ear than any other microphone type, so when you like the sound of an instrument at the source and are trying to reproduce it realistically, a high quality ribbon mic will do a surprisingly good job of getting you there. Ribbons are popular in recording studios for capturing natural sounding electric guitar and brass instrument recordings, but they are even more effective in live venues where sonic problems are often exaggerated.

Electric Guitars

Electric guitars are a foundational instrument in many church venues, where their overall sound can make or break a mix. If they're too bright, guitars are painful and shrill and the midrange body (where guitars live in the mix) is diminished or underrepresented. Unless a bright, overly aggressive electric guitar sound is what you're shooting for, you don't need to live with it.

A quality ribbon microphone, placed on a speaker cabinet or combo guitar amp (usually centered on, or just slightly off, the dome), will reward you with an electric guitar reproduction that sounds and feels in your FOH system like you're standing right in front of the amp. All of the low end, mids and body are well represented, and the highs are realistic as well, never screechy or shrill. Because ribbon mics produce proximity effect when close-miking, engineers often filter out 80 Hz and below to keep the guitar in its sonic place. Even at lower volume levels, the power and punch of the guitar is more present and full with a ribbon mic involved.

The infamous SM57 dynamic mic has a high-end bump and midrange "fist" that we've all gotten used to hearing on electric guitars. Combining a ribbon mic with a 57 with and blending to taste is one of the most popular ways to capture electric guitars in the studio, and it's equally effective onstage. You get the body and mids of the ribbon, with a taste of the more aggressive highs of the 57 – a lethal electric guitar sound! This involves two stands and two mounts and a bit of time getting the phase relationship right. An easier solution is to use a Royer AxeMount dual mic clip, which holds an R-121 ribbon mic and an SM57 closely together in one clip and keeps the phase alignment correct.

To get more high end when using a single ribbon mic, put the mic dead center on the speaker dome, where the speaker is brightest. Want to EQ instead? Ribbon mics take EQ extremely well so don't be afraid to hit the knobs and dial in some top end. Adding highs to a ribbon mic will take nothing from the mids and low end – it simply gives you more cut in the highs when you want it. A famous touring band (Foo-something or another) recently toured for two years with one Royer R-10 on each of the guitarist's cabinets, keeping the setup simple and trouble free by using one mic per guitarist and opening up a little extra high end at the console. (The author can attest it sounded fantastic!)

Brass & Woodwinds

Brass and woodwinds often exhibit the same problems as electric guitar – too much high end energy in FOH systems, with anemic mids and body. Using quality ribbon mics makes a major difference, smoothing the highs and giving a natural reproduction of the overall tone of the instrument. Live brass comes across powerfully and bright played into ribbons, but never shrill or piercing. It's the same with woodwinds, where the fullness of the instrument's tone is beautifully represented in FOH systems.

Drums

Ribbons are excellent as drum overheads for three reasons. 1) The pickup of the toms and snare are full and powerful – you capture much of the entire kit with two overhead ribbon mics. 2) The cymbals sound extremely natural, but engineers are usually looking for a brighter sound from cymbals unless it's a jazz gig. Opening up the highs with EQ will bring out the cymbal's high end energy while keeping the fullness of the rest of the kit intact. 3) Ribbon mics have a figure-8 pattern, meaning you can position the "null points" of the microphone to face sound sources and very effectively cancel out any bleed.

Figure-8

Ribbon microphones are by nature figure-8, because a ribbon element suspended at two ends responds to sound pressure on its front or back side. When sound pressure approaches a ribbon from its side, the pressure acts on each side of the ribbon at the same time, effectively cancelling the sound out. The null points of ribbon mics are extremely effective, so properly placed in a live sound environment, they are useful in controlling bleed.

Try using a good ribbon mic soon – you may be surprised at how big difference you hear. **T**

John Jennings *is VP of Royer Labs, one of the company's founders and owners and a musician dedicated to high quality sound.*

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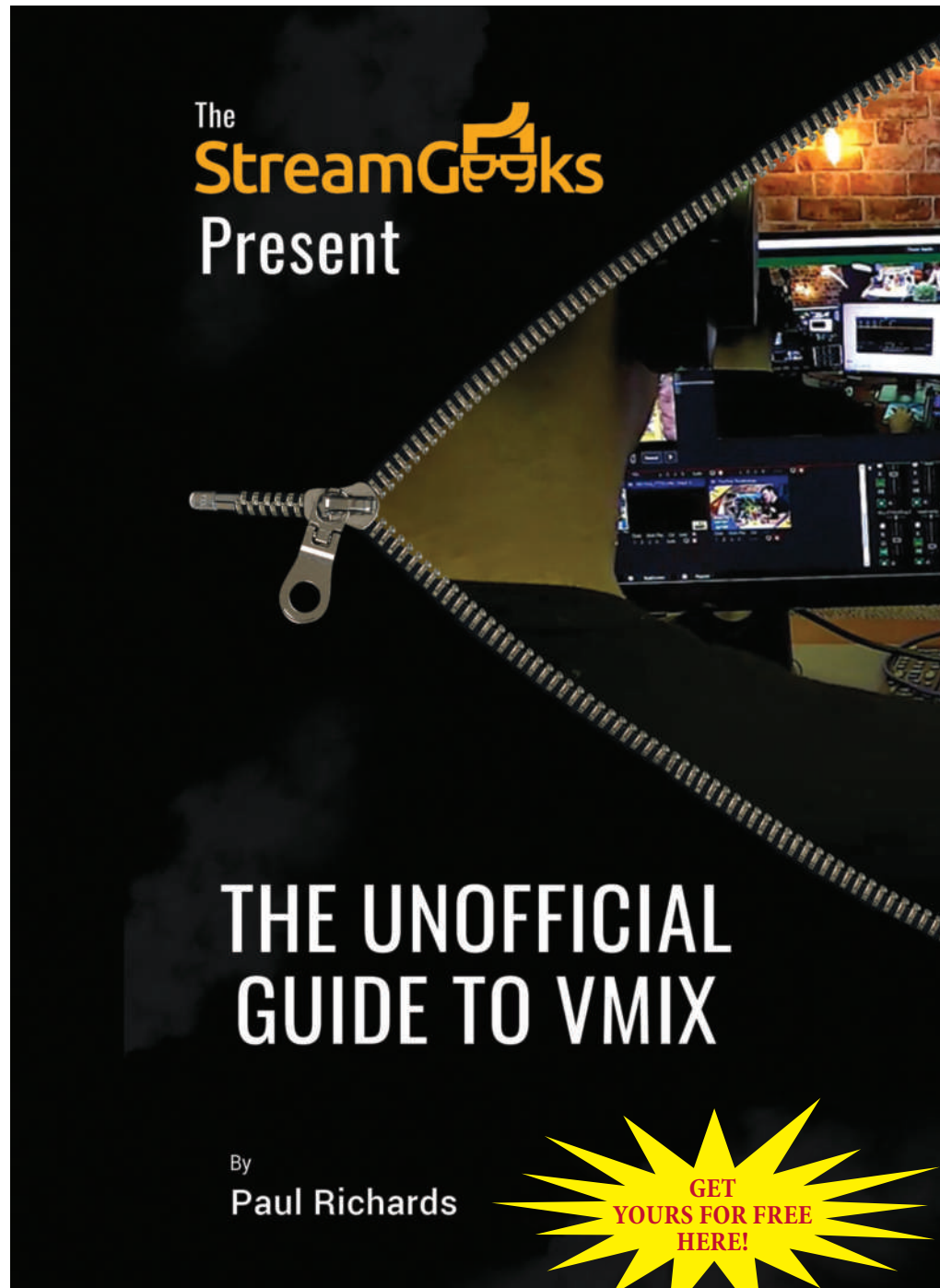## churchfacilitiesexpo.com/2020-virtual/2020-registration/

The Unofficial Guide to vMix®

vMix is live video production software that can turn a regular Windows computer into a professional video production studio. The software allows you to mix together video and audio sources into a production which can be recorded, streamed and connected to a number of popular video production workflows. The output of vMix can be set up in standard definition (SD), high definition (HD), and even 4K. All you need is a PC desktop or laptop with Windows 10 and a DirectX10 compatible graphics card.

The layout of vMix is designed to create the look and feel of a professional broadcast studio with both preview and output windows set side by side during operation. Some users may feel a bit overwhelmed at first but will quickly find the interface both intuitive and powerful.

In this book, you will learn everything you need to know to set up and operate vMix like a pro. First, you will learn how to download the software, get set up and become familiar with the interface. Next, you will learn about your audio-visual mixing options and common workflows associated with vMix productions. Then, you will learn how to get all your sources connected.

vMix accepts inputs in multiple formats, including cameras, capture devices, NDI (Network Device Integration) sources, video files, and even more advanced input sources such as SRT and RTSP live video streams. You will then learn about all the features within the software you

The
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THE UNOFFICIAL GUIDE TO VMIX

By
Paul Richards

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can use to mix sources and improve the look of your video. Next, you will be introduced to options for controlling and viewing your video production. Finally, you will see how easy it is to begin your own production for recording or live streaming. You can even use the virtual camera output from vMix to send audio and video into a webinar or video conference software.

How Does vMix Compare to Other Solutions in the Market?

There are several options for video production software, but vMix hits the sweet spot of features and value for many users and organizations. It has a unique pricing strategy that allows users with different budgets and needs to choose the best option. It comes in five editions Basic, Basic HD, HD, 4K, and Pro, ranging in price from free to $1200.

Many of the best core features are included in even the lowest-priced editions. The lowest-priced paid option ($60) offers HD resolution, three camera inputs, overlays, built-in animated titles, scoreboards, and tickers. All versions allow the user to record and send up to three simultaneous live streams. One of the greatest features of vMix is its ability to grow with you. New streamers can purchase a license for what they need at the time and quickly upgrade, adding more features without having to learn a new software environment.

For this reason, vMix is a great choice for many

users because it isn't likely you will have to stop the learning process and switch to another software because of a technical limitation. vMix is used for simple productions and advanced solutions everyday all around the world. In fact, if you keep an eye out, you will find the world's top broadcast professionals using vMix in even the most mission critical situations.

PTZ Camera Controls in vMix

vMix has modernized live video production and increased what small video production teams are able to do. vMix 4K and Pro

editions include multiple ways to control pan, tilt and zoom cameras which can help automate video production workflows even further. vMix can currently control specific PTZ cameras over an IP connection and USB cameras that support UVC.

Here is the list of PTZ cameras that vMix currently supports:

- Sony
- Panasonic
- PTZOptics
- iSmart
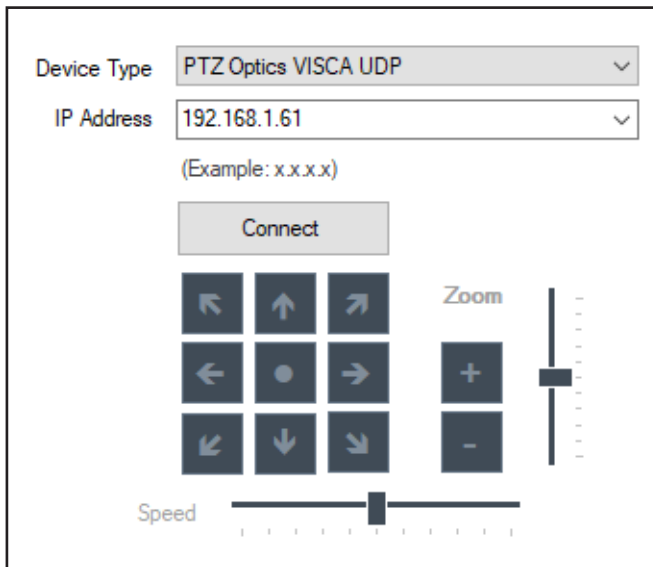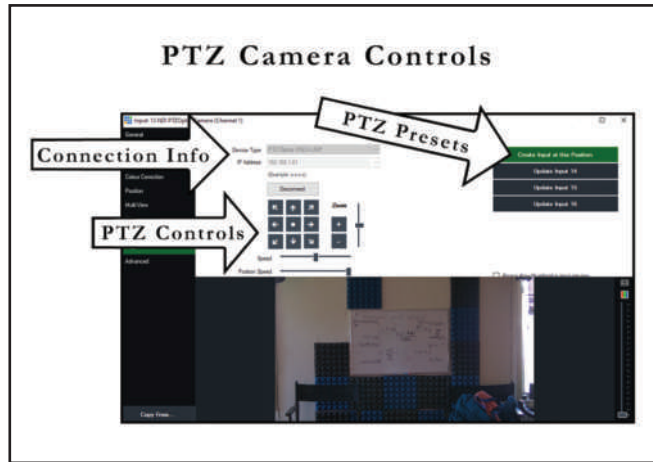- HuddleCamHD (via USB)

Enabling PTZ Controls

You can enable PTZ

camera controls inside of vMix by opening an input and clicking on the PTZ tab. Here you can select one of the supported devices in the dropdown menu. Most PTZ cameras will require a static IP address for vMix to connect. USB cameras like the HuddleCamHD Pro can be controlled via a USB connection by selecting the UVC PTZ option.

Ethernet Controls

To gain IP controls of any IP supported camera you must make sure your computer is connected to the same network as your PTZ camera. You will also need to know your camera's IP

PTZ Camera Controls

Connection Info

PTZ Presets

PTZ Controls

| Device Type | PTZ Optics VISCA UDP |
| IP Address | 192.168.1.61 |

(Example: x.x.x.x)

Connect

Zoom

Speed

control bars which allow you to select the speed of your pan, tilt and zoom. There is also a slider designated to control the speed at which the camera moves in-between presets. This is ideal for adjusting the camera to perform slow moving scenes that sweep across an area, or quick movements that are hidden from viewers while the camera is in preview.

You should also notice a Create Input at this Position button at the top right of the input settings window. You can click this button to create a PTZ preset inside of vMix. When you click this button vMix will create a new input inside of your vMix production. When you bring this input into preview the camera will automatically recall the camera's PTZ preset position.

You will notice that vMix takes a screenshot of the camera's position when saving the preset inside of vMix. In this way you recall PTZ presets with a visual aid that is inside each thumbnail. The idea for professional productions is that when you use one of the PTZ presets in the preview window the location of the PTZ preset moves. In this way, you can hide the PTZ movements from your audience if you would like to.

It is worth noting that PTZ camera controls are also available inside vMix shortcuts. Therefore, you can control PTZ cameras using a variety of hardware solutions that integrate with vMix. For example. you can use an Elgato StreamDeck, an Xkeys controller, or even a USB connected xBox controller. ⊤

address. PTZOptics cameras for example can receive an IP address in two ways. One is a statically assigned IP address, where you manually give the camera an IP address on your network. The other way is via DHCP. DHCP allows your camera to automatically receive an IP address from your network's router.

Pro Tip: Your camera and computer should be on the same IP range. You can find the IP address of your computer using the Command Prompt in

Windows and typing in "ipconfig" and pressing Enter. Look for your computers IPv4 address. Make sure your camera's IP address is on the same IP range which means the first 3 sets of numbers are the same, and the last number is unique.

Click Add Input and select Camera. If you have an NDI camera click NDI and choose your camera from the list. Select your camera from the list and click OK. Once your camera is inside of vMix you can

click the settings cog to find the PTZ section. Inside the PTZ section you will see a device type dropdown menu.

Note: *ZCam camera models from PTZOptics do not offer pan and tilt but vMix can control presets and zoom.*

Once you select your camera's control method, you can enter your camera's IP address and press connect. This you will unlock the pan, tilt and zoom controls of your PTZ camera. You will notice two

[TOP LEFT] PAUL RICHARDS, AUTHOR OF THE UNOFFICIAL GUIDE TO VMIX
[TOP RIGHT] PTZ CAMERA CONTROLS INSIDE OF VMIX.
[BOTTOM RIGHT] VMIX CONNECTED TO A PTZOPTICS CAMERA OVER THE NETWORK.

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CANON EOS C70

When the Canon RF mount was first introduced, imaging professionals, including Houses of Worship, began to dream about the possibilities that this revolutionary mount system might provide them. One request that Canon consistently heard was to put an RF mount on a Cinema EOS camera so that future lens performance could capitalize on the short flange depth. Just two short years later, those wishes have come true with the new C70 camera.

The Canon EOS C70 is an ideal imaging tool for a wide variety of churches because of the cameras price for performance and versatility. The compact and lightweight EOS C70 provides maximum agility to the user and is a camera that a Church can use every day of the week. From traditional worship services all the way through whatever content your creative services team is developing the rest of the time, the C70 is a piece of equipment that will come in handy. The EOS C70 is also compatible with the EF-EOS R 0.71x that provides operators with the ability to use any EF mount lens on the new camera without losing any of the full-frame functionally of the EF lenses. For those reasons, the EOS C70 is one of the best value tools a Church can invest in if it is looking to enhance the production of their worship services and creative services offerings.

The unique design of the EOS C70 camera puts a significant emphasis on operational convenience for the end-user. The small form-factor, weighing only 2.6lbs., allows the camera to be easily handheld and dramatically enhances a videographer's mobility, providing a seamless bridge between the EOS and Cinema EOS families for cinematic applications. Cleverly designed, the camera features a slim, motorized ND filter unit – having a mere 6mm depth – that is built into the short flange back of the RF mount. The motorized 10-stop ND filter provides users with the flexibility to control exposure while keeping the desired depth-of-field and capturing images that feature the desired level of bokeh. Thirteen customizable buttons allow users to select from more than 80 functions to be assigned based on individual preferences.

"The Canon EOS C70 camera is truly a special tool that will undoubtedly satisfy and delight a variety of users on the search for a high-powered piece of video equipment," said Tatsuro "Tony" Kano, Executive Vice President and General Manager of Canon U.S.A.'s Imaging Technologies & Communications Group. "In today's fast-moving, ever-changing world of filmmaking and content creation, versatility is key, and the EOS C70 will provide a familiar form and feature set to our entire spectrum of imaging customers. We are eager to see how creatives use this tool and the projects that come from it."

The camera features Canon's innovative and next-generation Super 35mm DGO Sensor that further extends the high dynamic range and lowers noise levels by reading out

each photodiode with two different gains. One gain prioritizes saturation – protecting detail in highlight areas – while the other suppresses noise in the shadows. The result is an image with up to 16-plus stops of total dynamic range, clean, rich shadows, and vibrant highlights in up to 4K/ 60p or 2K/120p in Super16mm Crop mode. The EOS C70 camera also features Canon's recently developed DIGIC DV7 image processor that collects the extensive information captured from the DGO sensor and processes it into exceptional HDR imagery while offering choices between Canon Log 2 and 3, in addition to PQ and HLG gamma functionality. The C70 camera can also record 4K DCI or UHD up to 120fps and 2K DCI or HD up to 180 fps – with an important flexibility in the choice of codecs. The camera supports XF-AVC format (in variable bit-rate) – both Intra and Long GOP with MXF file format. The intra-frame format compresses the data after analyzing each frame separately, while Long GOP format compresses data at a higher rate, creating an even smaller file size. A secondary choice is Long GOP 10-bit 4:2:2/4:2:0 MP4/HEVC (a next-generation HDR video recording compression standard) with an MP4 file format – a first in the Cinema EOS line.

The EOS C70's independent air intake system is separated from the electrical systems to protect the sensor from water, sand, and dust. In addition, the camera also features two air outlet vents that allow uninterrupted recording for extended periods of time.

Additional features of the Canon EOS C70 4K Digital Cinema Camera include:

- *New Direct Touch Menu System*
- *Coordinated Electronic Image Stabilization*
- *Two built-in Mini XLR inputs*
- *Time-code input/output terminal*
- *Custom picture processing via import of 3D LUTs and recording to Look Files*
- *Dual-SD card slots*
- *Built-in stereo mic*
- *Support for optional Canon RC-V100 remote control*
- *Canon Mount Adapter EF-EOS R 0.71x*

The Canon Mount Adapter EF-EOS R 0.71x is a new optical adapter that allows users to tap into Canon's extensive collection of superb full-frame EF lenses when operating the EOS C70 camera. The adapter implements two critically important functions – preserving the similar FF wide-angle image onto the 4K Super 35mm image sensor while simultaneously elevating the lens camera sensitivity by one stop. The mount adapter preserves full electronic communication between the lens and camera, enabling optical lens corrections and transfer of lens metadata between the EOS C70 camera and select Canon EF lenses.

The Canon EOS C70 4K Digital Cinema Camera is scheduled to be available in November 2020 for $5499.00. The Canon Mount Adapter EF-EOS R 0.71x is scheduled to be available in December 2020 for $599.99. ◻

Powering ROI— How to Rein in Surging Utility Costs

BY CHRIS BISHOP

The world is becoming more energy-conscious by the day. For worship facilities, energy costs are a major line item of the budget as organizations add to their load with new audio, video, and lighting systems. The good news is that some of these operating and associated costs can be reduced or outright avoided with the right power control solution.

There are certainly several different solutions to reduce power consumption. Turn off the lights and other equipment and replace incandescent lighting with LED fixtures. Sounds simple enough, right? Maybe you've made these changes in your own church by upgrading the lighting systems and "turning off" the AVL Systems through the use of "standby" or vampire power modes and dimming lighting fixtures to zero or fading them to black.

However, your utility costs might tell a much different

— and a shockingly costlier — story than you had planned. That's because all that AV equipment and those new LED lighting fixtures are not actually turning off when you are powering them in a standby power mode or dimming to zero although they appear to be off. Need proof? Touch the heat sink on the back of a performance spotlight after it's long been "turned off". My guess is it will feel hot to the touch because the internal electrical components are still fully energized. The power was never truly turned off as the drivers, processors, motherboards and other internal components for the lighting and AV gear are still energized and awaiting the next command at a moment's notice. Because the end-loads are still energized and being hit with AC line voltage, they're still generating heat and this heat can cost in more ways than one. It can add to the bottom line of a utility bill, up the HVAC load, and

shorten the life expectancy of AVL gear by naturally degrading the electrical components internally and significantly shortening the fixtures overall lifespan which leads to an increase in maintenance costs and earlier replacement times than necessary.

Energy costs and associated operating or maintenance costs related to AVL fixtures weren't always such an expensive line item on the budget as it is today. It's only in the last decade that houses of worship of all sizes have invested more capital into AV gear. Rather than a simple loudspeaker system and two or three wired microphones, it's not uncommon for facilities to now plan and raise money for years simply to upgrade their entire AVL outfit that may include wireless microphones, powered PA systems, video walls, projectors, mixing boards, and LED lighting. This can lead to an increase in energy consumption rather quickly as more circuits are added — and then left on in a standby power mode. For example, a church that designates 12 circuits for audio, eight circuits for a video wall, and 20 circuits for performance LED lighting fixtures, control and processors is leaving 40 circuits powered at a full electrical draw or a slightly lower standby draw nearly 100% of the time.

Facilities not only have more circuits but they're sitting idle for much of their life. Personally, through discussions with everyone from AV Designers to Facility Managers to Pastors, that on average, AV gear in churches is typically only used approximately 5% of

the week. This typically includes a Wednesday evening service, Saturday afternoon services and then the traditional Sunday morning services. The other 95% of the week, it's quietly sucking energy, called vampire (standby) power.

Let's take a look at an example: A medium size

worship facility that has 200 devices among their audio, video, and lighting setup that's in disuse 95% of the time is a great yearly savings opportunity when a power control solution is installed.

In Kansas City, Missouri, electricity costs around 10.75 cents/kWh, with a hypothetical 20W/hour average standby draw per AVL fixture. Energy cost savings per year can be calculated using a simple equation:

Energy Cost Savings Per Year = (Standby energy consumption) X (Standby Hours/Week) X (52 week) X (kWh cost) / (1000)

(20 X 200) X (159 hrs.) X (52) X ($0.10751) / 1000

The approximate energy cost savings per year comes to about $3,555.57 thanks to being able to completely power down an AVL system. In some places like Chicago, where the average cost of

electricity per kilowatt hour is 4.03 cents, churches will save less. But in Hawaii, electricity can cost upwards of seven times as much at 30.6 cents/kWh, allowing them to save more.

The other factor contributing to higher utility costs is heat. Even standby or vampire power draws put

off heat, and with more AVL equipment, the temperature of a facility will be higher. This in turn will tell the HVAC system to kick on more frequently. You can put a price on that heat as well by simply calculating the BTUs per a watt:
1 watt = 3.412 BTU/hr (British Thermal Unit per hour)
12,000 BTU = 1 Ton of air conditioning (HVAC)

A 2,000 square feet building requires approximately 5 tons of HVAC. A facility with 80,000W of AVL equipment and with an average fixture efficiency of 10% draw in standby mode is still consuming 8,000 watts of energy. That comes out to 27,297 BTU/hr or 2.25 tons of air conditioning.

While that equipment is constantly pulling energy and racking up a hefty utility bill on multiple levels,

it's also taking a toll on each electrical component internally due to constantly generating heat from still being powered when left in a constant standby mode. This leads to devices often requiring much more frequent maintenance and may ultimately lead to a shortened lifespan and replacement sooner than intended. Therefore, if a power control system is not being considered when a facility is making an investment at the front end for new AV gear, the potential for additional utility costs, maintenance, or in worst cases, early replacement needs to be taken into consideration to understand the full cost of that investment.

As the example earlier lays out, churches can significantly reduce energy costs by removing their AVL systems from the grid. How? Well, one option is simply to unplug everything. But in most cases, that's not feasible for gear such as a large video wall or projector mounted in the ceiling. Another option churches resort to is using the standard circuit breakers as the on-off switch to power down their equipment at the source. But that option isn't recommended and — in the U.S. — is against National Electrical Code.

The best solution is a power control system designed to power and protect AVL at the circuit level. These power control systems open the electrical circuit and kill power to each connected device downstream, eliminating the taxing costs of standby power. Solutions that offer remotely operated circuit breakers with built-in system

> "Energy costs and associated operating or maintenance costs related to AVL fixtures weren't always such an expensive line item on the budget as it is today"

automation also provide greater benefits beyond monetary. When a power control solution offers fully automated system startups and shutdowns, it decreases the human errors. Likewise, automated sequencing ensures that equipment is turned on in the right order, avoiding damaging end-loads. For example, speakers and amplifiers are susceptible to damaging "pops" if not turned on in the proper order. An automated solution utilizing an astronomical clock does the heavy lifting without personnel involvement, ensuring proper sweep-offs and startups. This is especially beneficial for facilities that use volunteer-run crews or have smaller tech teams by helping to decrease time demands and freeing up technical directors, facility managers, and volunteers.

If you're looking at adding a new power control system but are worried about project costs, new compact and pre-wired solutions can offer some budgetary respite and may not require electricians. These options decrease project costs by leveraging already established circuits motorized circuit breakers that don't require a secondary relay panel. That saves on a relay panel as well as the conduit, wiring, and electrical contractor's labor. In fact, churches have the power to save anywhere from $1,200 to $2,400 on labor alone.

If you're looking at adding a new power control system, you have several options including differing sizes, configurations, and control features. Power control systems can range from motorized circuit breakers for new build

facilities that reduce the need for secondary relay panels by adding control inside of the circuit breaker which is required regardless by code. Or, if budgets are tight and an existing electrical system is in place, then a relay-based system that either hangs on the wall or is rack-based can offer budgetary respite and may not even require electricians in some cases. But either way, there are cost savings to be had at both the integration and operations level.

If your facility already has a power control system, observe that it's being properly used. We repeatedly hear from churches that have made the investment in power management only to have forgotten to train new crew and volunteers on how to use it. Properly training new members can literally save an organization

thousands of dollars every year.

Power control systems offer a multitude of benefits including a very true Return on Investment unlike majority of Audio, Video and Lighting gear. Lowering energy costs as well as maintenance costs, prolonging the longevity of an investment and reaping the monetary rewards of a greater ROI are all benefits of a well-designed power control solution. T
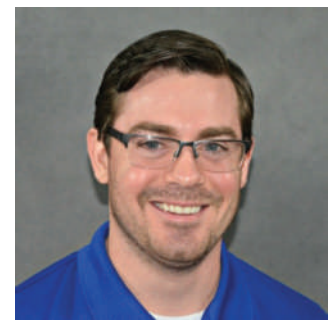
Chris Bishop *is the Director of Western Regional Sales at LynTec.*

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Southeast Christian Church LEDs the Way with Absen

BY TRAVIS WARREN

Skylark AV was recently approached by Southeast Christian Church in Parker, CO, to help find a solution for their older projection system, which we had first installed for them about 15 years ago. That system, which included three screens and three projectors, had done very well for the church, but as it aged the colors became dimmer and the image quality the church wanted just wasn't there anymore.

After some discussion, it was decided that Southeast Christian Church would keep the two side screens, and just get new projectors installed. However, for the main projector and middle screen, the church decided on creating visual impact with an LED wall. The Absen PL 2.9 XL was chosen to meet this task, for a variety of reasons.

Obviously, the LEDs themselves are very bright and run at about 5,000 nits when turned up to 100% brightness. The small pixel pitch of 2.9 mm means the wall appears virtually seamless: when it's turned on, you can't even see the pixel separation. The Absen panels also have an increased contrast, so the colors are very rich and vibrant, providing absolutely stunning images. They are also extremely lightweight and have integrated corner blocks and 90-degree corner screen support, making them easy to hang and also to configure in a variety of different ways.

As well, we are very familiar with Absen, having installed them in several houses of worship in the past, and felt very confident that the PL 2.9 XL panels would be a great fit for the church.

The church itself seats 2000, and the stage is quite wide. Southeast Christian Church wanted to fill that

space with a system that everyone in the church, regardless of where they were seating, would be able to enjoy. With that goal in mind, we ordered 140 of the PL 2.9 XL Panels to create a horizontal screen 45 feet across and 16 feet high which hangs backs roughly 20 feet from the front of the stage. Two truss systems from Tom Cat Truss were installed to give the church future options for breaking the wall and creating different panel configurations, depending on what they are looking for.

Each of the 50 foot truss systems were installed with 4 chain motors per truss controlled by the Motion Labs control system. The wide wall is just the first of many configurations that Southeast will use over the upcoming years. Two Nova Star processors offer more than enough power

An LED wall was needed to cut through the brightness of both the ambient and artificial lighting at Southeast Christian Church, and the Absen PL 2.9 XL panels – set at 40% – are bright enough to ensure the image is crisp and bright, with no fade.

for the current wall, while also allowing for more panels to be added in the future. A remote for the motors at FOH gives the church the ability to raise and lower the wall to the preferred height, and the media for the wall is being driven from a powerful Boreal Hippotizer media server which was tied into their Hog lighting console to give them easy triggers to match content of the

lighting with the LED wall.

One of the driving forces for replacing projection with an LED wall was the church's recent video upgrade. The older system just couldn't meet the needs of the new video and graphics being created. They had also added a variety of new lights as well, and an LED wall was needed to cut through the brightness of both the ambient and artificial lighting. We were able to set

the Absen PL 2.9 XL panels at 40%, which is plenty bright enough to ensure the image is crisp and bright, with no fade. Even up close, you can't see the pixels – which has made the pastor very happy as he is now able to show maps and images from his travels throughout Jerusalem, without losing any of the fine details.

It took Skylark AV about three weeks to install the wall, making sure all proper rigging and safety needs were taken care. The final product is stunning, and Southeast Christian Church thrilled with the results. **T**

Travis Scott Warren - *Double Double at Skylark AV – is in n charge of marketing and coffee at Skylark AV. Technical information provided by Steele Beaty - Ninja at Skylark AV*

2020: A Practice of Faith at Centro Cristiano Renacer

BY ADAM HENDERSON

I was talking with a friend the other day about life after graduation, all the fun of being in the class of 2020, etc. My friend closed our conversation with, "Oh well, you know, '2020'." I was not aware this year has blessed the English language with a new idiom; "2020" has become a statement of exasperation and frustration as a result of a loss of control. My teenagers tell me "2020" replaces other idioms like, "That's the way the ball bounces," or my personal favorite, "It is what it is." So many plans made in 2019 and 2020 simply haven't worked out. When you work in an industry dependent on planning it makes for a very interesting year.

Typical timelines for design build projects take anywhere from 12 to 18 months. There are quite a few steps between that first hearing of a church's vision and the realization of the dream on the first Sunday.

Every firm has a primary process they follow, and many sub-processes for design, review, purchasing, pre-building, installing, etc. Great processes yield great projects, but what happens when your process is interrupted or straight up stopped in its tracks? "2020."

A typical Technology Spotlight is a celebration of God's work through a completed project. But 2020 has been more about trusting than celebrating. So, for the first time in the history of Technologies for Worship magazine (that I know of) we offer you a spotlight of an INCOMPLETE project. It is, however, a great view to the realities of designing and building technology for worship in our day. After all, it is "2020!"

THE CHURCH

Centro Cristiano Renacer was established in February of 1991, in the Freeport neighborhood on Long Island, New York. Centro is a bilingual, multi-generational congregation pursuing a vision to reach and restore families and "empower them with the word of God to reach the nations of the earth with the gospel." Hallmarks of ministry at Centro are a foundation on the Word of God, Family and community as the backdrop for spiritual growth, and worship that focuses on God and genuinely comes from the heart.

Over the course of thirty years, Centro has birthed several campuses and ministries to every generation. In that time, they have upgraded and added technology to raise their capabilities and accentuate their worship. Centro utilizes LED color accents on their stage for atmosphere. They have an established streaming/recording ministry highlighting their Sunday morning worship service.

THE PLAN

"Renacer," translated into English means "to be reborn, revived." It serves as a good description of Centro Cristiano's desire when they approached CSD Group, of New Haven, Indiana. The desire was to rebirth their sanctuary technology, by integrating various pieces collected over the years with new gear; designed to function as complementary systems.

Speakers from Meyer Sound and dLive consoles from Allen & Heath are part of the plan. A broadcast suite is planned with Ross Carbonite switching to control I/O from upgraded cameras. Lighting gets an extensive upgrade for both house and theatrical. Media will be seen on a beautiful 16'x9' THOR LED wall.

Typically, I would go into greater detail on the equipment for this project,

but this project turned out to be about much more than gear. You know… "2020!"

A TIMELINE OF EVENTS

Everyone was excited in November 2018 when Centro first contacted CSD. It was a bold move forward by a congregation with vision. Preliminary design work began immediately. In May 2019 signatures were put to paper and everyone was running full steam ahead. Site visits followed, signal flows were confirmed, house lighting designed, and an acoustic report submitted. By Fall 2019 CSD was moving into review mode, making sure all documentation was captured and consistent in preparation for purchasing and pre-building systems for delivery.

Meanwhile, the World Health Organization (WHO) was closely observing the outbreak of a strange flu-type virus in Wuhan, China.

FIRST INKLINGS

On January 9, 2020, the WHO first told the world of this mysterious coronavirus. Two weeks later the city of Wuhan was quarantined, and on J*anuary 31,* the WHO declared a global health emergency. COVID-19 was spreading through Asia into Europe.

February 2 global air travel was restricted and the next day the United States declared a public health emergency.

While this was all going on the materials list was finalized, gear ordered, and boxes accumulating in Warehouse 2 at CSD. This is always an exciting time as things "get real" when the boxes arrive. On *February 4* unpacking, inspecting and testing began. Eighteen days later everything passed and was re-packed. Centro Cristiano was "go for launch!"

March 3 was our first sign that things were changing. E-mail was received from four major manufacturers warning of inventory shortages. In addition, US warehousing was being limited as a measure against the spread of the virus. None of this was of great concern to Centro Cristiano's project because we were out ahead of this.

March 8 a crew left Indiana for two weeks as we pre-rigged and ran wire for the final install.

A FAST, DOWNWARD SPIRAL

Things got weird while our guys were in New York. *March 6th* a cruise ship based in California reported 21 positive cases of COVID and was refused entry. *March 9th* the entire country of Italy quarantined, and two days later the WHO declared COVID-19 a global pandemic. *March 12th* the NCAA canceled its men's and women's college basketball tournaments. Professional sports leagues at every level were followed and soon ALL live events were postponed indefinitely.

March 13th the United States declared a national state of emergency; Spain quarantined. *March 16* the first COVID death was reported in CSD's home state of Indiana. *March 18* CSD initiated a "work from home" plan.

March 20th the CSD team returned to Indiana,

and New York closed to all non-essential business.

By the end of March all of Europe and North America was locked down in quarantine for the foreseeable future.

This included the final installation trip for Central Cristiano, scheduled to begin *April 13* with a proposed first use date of *April 26, 2020.*

WHERE ARE WE NOW?

CSD returned to the offices May 4. We've been working on projects that were originally scheduled for completion in the Spring. Several projects in Texas, Louisiana, Arizona, and other states have completed. However, New York state has maintained stringent travel requirements throughout. These requirements make it impossible for CSD to complete work on the project.

Centro Cristiano Renacer has returned to worship services in their facility. CSD has worked with the church to integrate new gear wherever possible, but wires protrude from walls and ceilings in anticipation of speakers, amps, LED panels, and all the rest. Through it all the church has been gracious and patient as we all wait for New York to reopen.

My teenagers tell me "2020" replaces other idioms like, "That's the way the ball bounces," or my personal favorite, "It is what it is."

IMAGES: CENTRO CRISTIANO RENACER AWAITS A COMPLETE UPGRADE, CURRENTLY ON HOLD DUE TO COVID-19
PHOTOS COURTESY OF CSD GROUP

THE BOTTOM LINE

The Bible says that God is in charge of everything. He doesn't just know the future and past, He IS the future and past (Rev 1:8). He has plans for His people; in this case that includes Centro Cristiano Renacer and CSD. Both are committed to the daily ministry of Centro Cristiano and waiting for the day when the new systems can be installed and used to full effect. Until then we wait and trust while seeking opportunities to take another step, any step forward.

This is the bottom line. We are never fully in control. Every project is a practice of faith. 2020 has been a great reminder.

I look forward to writing Part Two of this Technology Spotlight. In that article I'll provide specifics of the gear and how it is deployed. Most important we will celebrate God's faithfulness, again. **T**

Adam Henderson *is the Client Advocate for CSD Group, Inc. and an Ordained Minister in the Missionary Church (USA). He is also a volunteer Lighting Technician for his local church.*

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DO I NEED A PODCAST?

BY HOLLAND DAVIS

Recent polls are showing that the popularity of podcasts are increasing across the board, with even Spotify and Amazon now offering a variety of different podcasts for their users. More than half of monthly Spotify users aged 12-24 years listen to podcasts, which is a 21% increase in listeners in just one year. The average podcast user listens for more than seven hours a week! So yes, you need to have a podcast; however, in order to have a successful podcast you need to put some thought behind it.

Develop a Show Template

A show template is like a service template in planning center online. You need to think through each segment of the podcast and include times. A typical template might be:

· Opening Bumper
· Intro Copy, which includes what this session is about, how to follow your podcast and how to follow your host on social media.
· Interactive Element, which is a way for people to participate in your podcast by sending a voice mail, an email, a social media post or whatever you can think of to get their participation.
· The actual podcast
· Featured Resource, preferably one you can link back to Amazon Smile or some other program that lets you generate income from the products you recommend on your podcast.
· An invitation to become part of your growing online community and a plug for your website
· Closing Bumper

Don't try to be so creative that you come up with a different template every week. You want people to be familiar with your program and start to look forward to your program elements. For instance, our radio program / podcast had the following template:

· Opening Bumper
· Show Intro, which included an overview of the sermon, an introduction to an interview and a featured song
· Transition Ear Candy to the Interview
· Program Break in the interview reminding people they are listening to our podcast
· 2nd half of the interview
· Worship song
· Intro to the Sermon
· Sermon
· Commercial Break featuring a Bible Study Series for purchase
· 2nd half of the Sermon
· Closing Comments
· Closing Bumper

Each segment was around five minutes in length and when it was put together it moved really well – so well you wouldn't realize you had just listened to a 30-minute program.

Plan to Market your Podcast

For many churches marketing is a bad word, so instead use the word communication. Letting people know

AIR

Letting people know you have a podcast is key to growing your audience. Sounds really simple, but you'd be surprised at how many people make something and never tell anyone about it.

you have a podcast is key to growing your audience. Sounds really simple, but you'd be surprised at how many people make something and never tell anyone about it. They just put it out there.

To develop a good marketing plan you need to know who your audience is. Are you wanting to reach young families? College students? Career adults? Business owners? Knowing who you want to reach will help you develop content that fits your audience. Once you know the who, ask yourself how you can serve the audience. Let your answers be the driving force behind the development of your program template.

Determine the Outlets

Where are you having the best results reaching your audience? Twitter? Facebook? YouTube? Instagram? We have a very large Instagram and Facebook following. However, we never looked at the numbers and were putting a lot of effort into YouTube. We had the best program and NO ONE ever heard it on that platform. Once we realized our efforts were best spent elsewhere, we shifted how we were broadcasting our program and now we broadcast to Facebook AND YouTube AND everywhere else. The result is our audience is growing. It's also important that you do a custom description for every program. This let's your audience go back and hear past programs.

You Need a Way to Distribute Your Podcast

Some distribution methods are free, and some will cost you; there are a few which are limited in what they can provide. However, the ones I've been most interested in are PodBean and Stitcher. These distribution outlets can get your podcast on iTunes, Spotify and Amazon.

Track your Programs

It's easy to get confused over what programs you've done, what subjects, what guests, so develop a system to track everything from the very beginning. I always track date, broadcast location, guests, sermon series, scripture passage, songs and topics. It keeps you from playing the same songs over and over again or talking about the same things. It also helps you get a big picture of your podcast and where you are going.

I love to listen to well done podcasts, so if you have one please send it to me or post it on my Facebook page. T

Holland Davis
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Blackmagic Design
ATEM Mini Pro

BY JOHN CHEVALIER

As the world changes, and the needs for streaming our services and other content increases, I was personally looking for a way to stream with multiple inputs for cameras and computers but had decided that it was just unaffordable. I heard about a new product from Blackmagic Design, and since I had used their gear in the past, I saw the price, read some reviews, and decided to buy one and see how it worked. This product review is not being driven by a manufacturer request, but rather by my personal experience.

Before you read any further you should know that there are two "mini" switchers from Blackmagic design, the ATEM Mini and the ATEM Mini Pro. This review is on the Mini PRO. I encourage you to look at the differences. It's my personal opinion that most users will become frustrated with the limitations of the ATEM Mini. The price difference will make it tempting; however, the features of the ATEM Mini PRO are not only worth the additional cost, but I would say they are essential if you are serious about multi-camera broadcasting.

Product Description

The ATEM Mini Pro from Blackmagic Design is a four-input live production switcher with an integrated control panel designed for multi camera live streaming up to HD video to the internet or broadcast applications from gaming consoles, corporate computer streams, or HD cameras. Along with the software control update, the Mini Pro features a live stream data rate and status information, a built-in hardware encoder, simultaneous recording to USB drives, drive hot swapping with the Blackmagic MultiDock, record and stream buttons, stream caching, a timecode generator, program preview multiview, tally support, and support for Blackmagic Design Pocket Cinema Camera 6K and 4K to utilize as your broadcast sources.

The Actual Test Drive

I am not using the ATEM Mini Pro in the worship service environment, but for recording and streaming lessons as an educator. Although my application is slightly different than what our readers are looking for, the function is exactly the same. I needed to be able to easily switch between three cameras, as well as a feed from my computer. I also wanted to be able to share my iPhone or iPad screen which would require five inputs (the ATEM only has four). However, I was able to set up my three cameras on inputs one through three and installed an HDMI A/B Switch to switch going into input four, which switches between my computer and Apple TV which I use for the iPhone/iPad.

I plugged my laptop into the USB Port (BTW, this is only one of several ways to set this up) and installed the ATEM Control software. You can switch inputs from the ATEM Mini Pro or use the software. My computer immediately recognized the software as a webcam, which allows you to livestream to various places (Facebook, YouTube, Zoom, etc,) without having to use a stream key, even though you can input a stream key and

broadcast directly out of the ethernet port on the unit if you wish. Really cool!

I turned on all the cameras and the computer first and then powered up the unit. It booted up and all screens were lit in the multi-port display (AKA: an $80.00 TV from Walmart.) A side note here: I did need to purchase HDMI to HDMI Mini cables for the cameras. You will need something depending what you are using. I am using three small camcorders, but with a lightning to HDMI adapter you can easily use iPhones. Snagging three iPhones from congregation members should be easy, since they would much rather listen to the pastor than be on their phones anyway, right!? OK, moving on...

I connected a small mixer to one of the audio inputs and ran all mics and computer audio through that. The one downfall with this setup is that, besides the input meters which display on the multiscreen, there is no way to monitor output audio. I got around this by opening up QuickTime and choosing New Audio Recording and using my IEM's. It does have a little delay, but as long as you are not monitoring and speaking at the same time it's really no big deal.

I initially ran several tests on this, driving several friends crazy: "Dude here's a link, get on Zoom and check this out!" But at the end of the day, it really didn't take long to master this. The unit is set up to cut from camera to camera, but with a few setting changes in the software you are able to preview all screens and cut or dissolve to any you choose. Just like a big time switch. There's a lot packed into this small little box.

Key Features

- **Multi Screen Display:** Having the ability to see all cameras, other inputs, graphics, etc. is really important if you are going to do a quality shoot. The original ATEM Mini does not have this capability, so this by itself should drive you to this unit.
- **Stream directly from the device:** No need to have an interface or run through a computer to stream. You can, but that's not necessary.
- **Record Directly to an External Hard Drive:** If you want to upload your show later or record while you are streaming. The recording is direct from the unit with no lag or loss of quality, which will happen sometimes if you are recording a live stream.
- **Two Stereo Audio Inputs:** This allows for good quality audio whether you are inputting a mixer or a room mic or an audio device. The only downside is that they opted to use ⅛" connectors for this. I assume this was due to the size of the unit but at least ¼" inputs would be nice. I'm very happy with the audio quality, but did have to purchase adapters to work with my mixer.

Wrap Up

OK, so by now you all want to know the real question; "How much does it cost?" Normal selling price is $595.00 which is what I paid for it. They are flying off the shelves right now so you will find them listed anywhere from the $595.00 to around $800.00. Be patient and you can get one for $595.00. I also spent about $100.00 in cables and adapters and $80.00 for a small TV to use for multiscreen. I already had three small camcorders with HDMI Mini outputs.

You can get these for around $199-250 each. So, with a budget of about $1500.00 you can make your livestream look very professional. Not bad at all. I have to admit, at this price point I have been waiting for something to go wrong. I'm five months in, using it four times a week and very happy with the quality and performance. **T**

John *has been involved in multimedia communication for over 20 years. He is an Apple Certified Trainer and a full time Digital Video instructor in Sonoma County, CA. He also travels extensively presenting at workshops and seminars, focusing on Team Building and Leadership Development to improve organizational performance. www. johnchevalier.com*

JOHN'S REPORT

FLEXIBILITY	★★★★
STABILITY	★★★★★
EASE OF USE	★★★★★
COST	★★★★★
OVERALL VALUE	★★★★★

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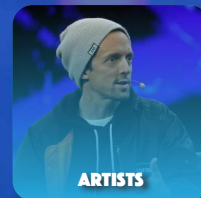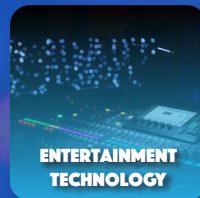
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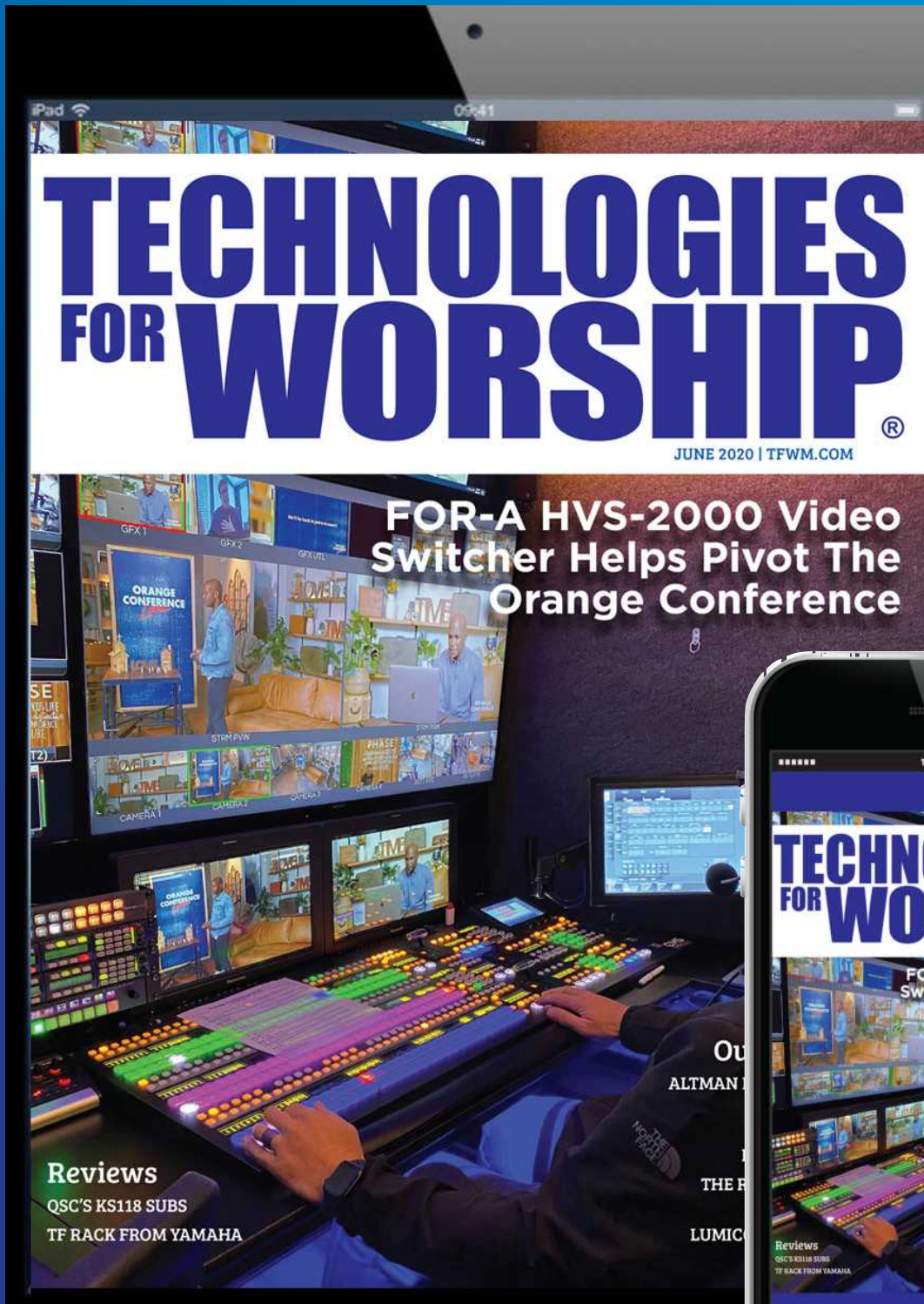
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