

TECHNOLOGIES FOR WORSHIP®

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INSTALL IN-DEPTH

Seth Jackson Builds Adaptable Elation Rig for Special Christian Music Tour

Technology Spotlight:
CHAMPION FOREST
BAPTIST CHURCH

CASE STUDY:
CEDARVIEW COMMUNITY CHURCH

Review:
PATHWAY CONNECTIVITY'S
COGNITO 2 CONSOLE

Out of the Box
previews for:

DPI, BETERRIFIC, CLEAR-COM,
JUST ADD POWER AND CANON

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To steal a phrase, “There’s no place like home!” In case you are immediately conjuring up visions of Wicked Witches, Cowardly Lions and Ruby Slippers, let me just reassure you a house didn’t have to drop out of the sky for me to realize where my heart really belongs. Having stepped away from editing the magazine for just a little under a year, I am happy to be back, with a renewed energy and passion for working with churches on technical excellence in worship – so, let’s get started!



MICHELLE MAKARIAK

This month’s issue features a range of interesting and educational articles, including a Tech Spotlight on Champion Forest Baptist Church, a Case Study on Cedarview Community Church, an Install In-Depth featuring Casting Crowns / Hillsong Worship / Elevation Worship Tour 2019, and reviews for Pathway Connectivity’s Cognito 2 Console, Out of the Boxes for DPI, BeTerrific, Clear-Com, Just Add Power and Canon PLUS our regularly scheduled, informative articles.

AND if the above isn’t enough, we also have some exciting news to share with you all.



First, there’s a new conference and exposition in town – The Church Facilities Conference and Exposition – and you will be hearing a lot about it over the next several months. Taking place in Dallas, TX, Sept 29-Oct 1, 2020, CFX brings together Technologies for Worship Magazine,

Church Production, Church Sound, Church Design and Live Sound for the first time ever. With four different educational tracks – Technology, Facilities & Buildings, Leadership and Hands-on Training, and what is already shaping up to be exhibit floor made up of industry leaders, Church Facilities Expo promises to be a gathering place for pastors, worship leaders, tech directors, volunteers and anyone involved in worship tech and management. Keep reading the magazine and checking out our website for more news about this great new conference – we can’t wait to see you there! www.churchfacilitiesexpo.com

Lastly, our upcoming February Digital issue, features our first-ever guest editor Holland Davis, and focuses on two different events – She Loves Out Loud, a one-million women strong prayer ministry running February 15, 2020, and the West Coast Worship Conference, June 25-27, 2020. Holland looks at lighting, streaming, audio, volunteerism and leadership for both these conferences, providing you with an in-depth look at both conferences, and how they are organized. We are happy to showcase both events and hope that any houses of worship looking to put together their own regional or national conference can get some good ideas from our digital offering.

Thank you for reading, and if you want to drop me a note with ideas for future issues, or to share what your church is doing, please email me at mm@tfwm.com or call/text me at 705-500-4978. **T**

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COVER:
CASTING CROWNS/
HILLSONG WORSHIP/
ELEVATION WORSHIP
TOUR 2019
*Premier Productions,
Dave Contreras*



CONTENTS 01/2020

VOL 29 - ISSUE 1



40

FEATURES

- 25** SETH JACKSON BUILDS ADAPTABLE ELATION RIG FOR CHRISTIAN MUSIC TOUR
- 29** FLEXIBLE LED VIDEO WALL DELIVERS IMPACT AT CROSSLAND COMMUNITY CHURCH
- 40** TECHNOLOGY SPOTLIGHT: CHAMPION FOREST BAPTIST CHURCH

DEPARTMENTS

OUT OF THE BOX

- 14** Digital Projection M-Vision 21000 WU
- 16** BeTerrific's Agility Quadracep LED Video Panel
- 18** Clear-Com FreeSpeak Edge™
- 20** Just Add Power 3G Thin Two-Gang HDMI Wall Plate Transmitter
- 22** Canon EOS C500 Mark II

REVIEWS

- 46** Pathway Connectivity's Cognito 2 Console

INSTALLS

- 10** First Baptist Church Covington Completes New Worship Center
- 12** St. Andrew's Presbyterian Church Adds Ayrton Khamsin-TC Profile Luminaires by ACT Lighting

INDUSTRY NEWS

- 8** Biamp's New Charitable Leadership Committee and Grant Program
- Shure Launches New Rebate Program for Digital Wireless

PRODUCT SHOWCASE

- 50** New Products from NAMM

CLASSROOM

MICROPHONES

- 24** Trouble Shooting Wireless Mic Problems

LIGHTING

- 27** Understanding Atmospheric
- 35** Adding LED

AUDIO GENERAL

- 31** Is It Time to Buy A New Sound System?

CAMERAS

- 33** Install In-Depth: Hope City Church Expands with Cameras from Hitachi Kokusai

INTERCOMS

- 37** Expanding to a Multi-Site Audio Network

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Biamp's New Charitable Leadership Committee and Grant Program

New Giving Efforts Aim to Deepen Biamp's Impact in Underserved Communities Around the World and the AV Industry

Biamp is helping strengthen communities where people work, play, and live by maximizing the company's giving and volunteer opportunities. Through Biamp's charitable leadership committee, the company will align and broaden its support of global organizations that share Biamp's vision of encouraging the discovery of audiovisual technology (AV) and engineering and enhancing the lives of those in need. The committee will be responsible for managing Biamp's new grant program, volunteer programming, and employee matching.

"Our mission is to connect people through extraordinary experiences, not only in the AV industry but in the community as well," said Rashid Skaf, Biamp President, CEO, and co-Chairman. "By strengthening our charitable leadership committee, which oversees our new grant and employee matching programs, we are pursuing a mission to ignite

even more positive change. I'm incredibly proud of the initiative and generosity of our team members. It's because of them that Biamp has been able to truly make a difference."

Biamp's charitable leadership committee will oversee the new grant program. Organizations within the underserved community and the AV industry can apply for a grant from Biamp's new program and, based on their qualifications, receive between \$500 and \$10,000. The committee will also help promote volunteer opportunities for internal employees and streamline employee matching. In the past, Biamp has supported several causes, including Rock 'n' Roll Camp for Girls, Biamp PDX Jazz Festival, Theater in the Grove, Young Audiences, Shared_Studios, and Habitat for Humanity.

Beginning Feb. 1, the grant application will be available online at www.biamp.com/company/community-involvement. **T**

Shure Launches New Rebate Program for Digital Wireless

Live performances and broadcasts – whether on a big or small stage – are only as good as the supporting audio production and quality. Between more complex production needs, shrinking RF spectrum, and sheer number of users competing for available airspace, digital wireless needs are at an all-time high. To support and empower professionals to lean into the digital transition, Shure has announced a new instant rebate promotion for customers who upgrade to a Shure digital wireless system. Shure's new promotion will apply to Axient® Digital, ULX-D®, and QLX-D® Digital Wireless Systems.

As the availability of usable wireless spectrum continues to evaporate, the transition to digital wireless—versus analog—is inevitable. Modern sound experiences, broadcast and theater productions, corporate facilities, and educational institutions all demand a reliable solution that enables them to operate in even the most crowded RF environments.

Digital systems, like Shure's, provide professionals, integrators, sound engineers, and end users with the ability to fit more channels into the condensed airspace for optimal performance.

"The wireless spectrum as we know it is diminishing, especially now that the 600 MHz auction is complete. So, there are more users competing for a smaller, usable spectrum – this causes a very crowded RF environment, and, in some cases, lackluster audio performance," said Sean Bowman, UCANZ Sales Director for Musician and Consumer Audio, at Shure. "We developed the new instant rebate program to provide an obvious path for transition from analog systems to our new digital solutions."

No trade-in gear is required, and the discount is applied upfront. Open to all U.S. customers, the program will run January 16 – April 16, 2020. To learn more, visit Shure at NAMM Booth #15608 or www.shure.com. **T**

Shure's new instant rebate program savings are:

- Instant savings of \$600/channel for Axient Digital with ADX-FD transmitters
- Instant savings of \$400/channel for Axient Digital with ADX transmitters
- Instant savings of \$300/channel for Axient Digital
- Instant savings of \$200/channel for ULX-D Digital Wireless Systems
- Instant savings of \$100/channel for QLX-D Digital Wireless Systems



Introducing ATEM Constellation 8K!

The next generation 8K switcher with 8K DVE, 8K SuperSource, 8K chroma key and 8K MultiView!

The new ATEM Constellation 8K is an Ultra HD live production switcher with so many features, you can combine them to make a powerful 8K switcher! You get 4 M/Es, 40 x 12G-SDI inputs, 24 x 12G-SDI aux outputs, 4 DVEs, 16 Keyers, 4 media players, 4 multi viewers, 2 SuperSource and standards conversion on every SDI input! Then you can combine everything for a powerful 8K switcher!

40 Standards Converted 12G-SDI Inputs!

You get 40 independent 12G-SDI inputs, with each input featuring its own dedicated up and cross converter. That allows 1080p and Ultra HD sources to be upconverted to 8K on all inputs. You can even loop out audio from SDI inputs 1 to 30 to MADI digital audio outputs, so you can hand off the audio from switcher sources to an external audio engineer for mixing.

Includes 8K Multiview with Audio Meters

The built in multi views let you view multiple sources in a single monitor. You get 4 independent multiview outputs that can each be individually customized or transformed into a single full resolution 8K multiview when you switch to 8K. Each multiview can be set to 4, 7, 10, 13 or 16 simultaneous views. Each view also has on screen status including a custom label, VU meters and tally.

Full Resolution 8K DVE

ATEM Constellation features 4 independent Ultra HD DVEs that all work together as a single full resolution 8K DVE when you switch to 8K formats. The DVE lets you create picture in picture effects with customizable 3D borders, shadows and lighting. DVEs can also be used to create amazing DVE transitions with squeeze, push and swoosh effects for adding excitement to your programming.

Professional Fairlight Audio Mixer

With a built in Fairlight audio mixer, the ATEM Constellation makes it possible to do complex live sound mixing. You get a massive 156 channels, for the biggest audio mixer in a live production switcher! Each input features 6 band parametric EQ, compressor, limiter, expander, noise gate and pan. Plus you can mix with an external Mackie compatible panel or full Fairlight Audio Console.



ATEM Constellation 8K.....\$9,995



First Baptist Church Covington Completes New Worship Center

First Baptist Church Covington has been an important part of Covington’s spiritual community since 1904. Over the last several decades, their growth in membership has necessitated several facility expansions, with their most recent iteration of growth bringing a renewed focus on reaching future generations with the message of the Gospel. Working with HH Architects and Idibri AVL consultants, new educational space, community space, and a new auditorium were constructed. When it came to selecting equipment for the auditorium, Chroma-Q and A.C. Lighting Inc. received the privilege of playing a role in lighting this all-important communication space.

“We make significant use of volunteers in supporting our services and events,” says Barry Carpenter, the church’s technical director. “Therefore, volunteer-friendly control systems are critical for us. Vista by Chroma-Q®, our lighting control system, is advanced and powerful enough to pull off

complex shows for the experienced user, yet simple enough for the untrained volunteer to operate.”

“We recommended Vista for its graphical way of programming,” says Dan Schoedel, senior consultant at Idibri. “When using Vista, the church doesn’t have to memorize channel numbers when programming, which can be freeing. There is also a ‘Timeline’ view for editing the timing of cues.”

All of First Baptist Church Covington’s spaces that have theatrical AVL installations are equipped with Vista control software and hardware control surfaces appropriate for that space. “We have five rooms using Vista right now,” adds Carpenter. “Three have Vista programming/playback control surfaces, and two have Vista playback control surfaces.”

For auditorium house lighting, Idibri recommended Chroma-Q Inspire™ RGBW LED fixtures. “The Chroma-Q Inspire houselights provide smooth dimming and color mixing which works well for clients who have both a traditional and contemporary

service,” shares David Stephens, senior consultant—VP of Idibri. “For the traditional service, the congregation may not even know the lights can change color. But for the contemporary service, the lighting designer has the ability to bring color elements of the service out into the audience. You’re also able to ‘choose’ your white to pair with the paint and seating colors in the room.”

“The Inspire fixtures look fantastic,” confirms Carpenter, “have very smooth dimming curves across the full color spectrum, and contribute greatly to the mood and ‘vibe’ of the room. It makes the congregation feel more a part of the service and not merely spectators. And for our more traditional service, the Inspires enable us to provide quality white lighting at a brighter level which better supports that service’s style.”

Chroma-Q and A.C. Lighting Inc. are pleased that First Baptist Church Covington is one of the many houses of worship that have adopted Vista and Inspire as key support components of their worship services. **T**



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INSTALL / NEWPORT BEACH, CA

Ayrton Khamsins Help St. Andrew's Boost Live Streaming Capabilities



St. Andrew's has been in the Newport Beach community for some 70 years and is known as a neighborhood church with global impact. It holds three weekend worship services, both modern and classic, and maintains a staff to handle AV production needs.

"It's been our long-term goal to offer live streaming on the Internet, and our recent camera and lighting purchases are designed to aid us in live streaming services and events," says

Erik Alkire, Lighting Designer at St. Andrew's.

The church has six Panasonic cameras, four of them remotely controlled by the technical director and two manned on tripods. Its extensive lighting complement includes 90 conventional fixtures plus some aging moving heads.

"The entire roof of the church is glass," notes Alkire, "so beautiful sunlight streams in during Sunday morning services in the sanctuary. But the sun creates a lot of shadows on

faces when we're shooting video. We were looking for some really bright lights to reduce those shadows and provide a quality of light that mimics tungsten sources and can be used as a key light if necessary."

Alkire launched "quite a research project" to find the right fixtures. "None of the lamp options were going to work because we don't have a budget to constantly relamp a set of moving lights, so we knew we needed LEDs. That narrowed the field."

Alkire discovered that Ayrton's Khamsin, distributed by ACT Lighting, "ticked all the boxes with no compromise." He was especially impressed by Khamsin's 6000 Kelvin light engine that required less color correction to achieve a high light output. St. Andrew's purchased a complement of Khamsin-TC models with custom white bodies that match the enclosures of the church's other fixtures.

While St. Andrews has been live streaming services since January 2019 the new fixtures, which were installed in October, have significantly upgraded the quality of live streaming for worshippers following services on the web.

"The Khamsins are mounted as front lights," Alkire explains. "They give the pastor a massive boost of intensity during sermons; he can walk through the sunlight and shadows, and we still see his face." In addition, the Khamsins "take the place of follow spots for the singers with the praise band in our modern services, and they bring up the intensity of speakers or the liturgy during the classic service."

The Khamsins are expected "to play a big part" in St. Andrew's upcoming Christmas concerts. "In the past we've tried to make the sanctuary more magical for Christmas," notes Alkire. "The concerts are generally at night so we're not fighting sunlight. We bring in haze and additional lighting equipment to get an extra layer of prettiness. But we also need to light faces for special moments in the concert, and the Khamsins will give us that ability." ■

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DIGITAL PROJECTION

M-VISION 21000 WU



1,000 MAINTENANCE-FREE LUMENS WITH COLORBOOST + RED LASER

The versatile M-Vision 21000 WU is designed for a wide variety of spaces. Featuring DP's innovative Colorboost+ Direct Red laser technology, this model adds a direct red laser to bolster an already impressive color space; producing more vivid, saturated, and true-to-life imaging than previous possible on single-chip DLP models. Delivering near 3-Chip performance at a 1-Chip price point, this model can transform any space into a captivating experience with truly stunning visuals.

As DP's brightest single chip projector, the M-Vision 21000 WU's unprecedented 21,000 lumens and a 10,000:1 contrast ratio, brings budget-sensitive applications a large-screen imaging solution at a 1-Chip price point.

The optical system, from the laser light source up to the lens, is completely sealed and is IP60 rated. This ensures that light output and color performance will not be degraded due to the ingress of dust. Additionally, this projector is completely filterless as the system is liquid cooled using a radiator heat exchanger so no replacement or cleaning of filters is necessary and allows unrestricted airflow.

Worship spaces contending with

ambient light, as well as those needing a powerful, budget-conscious, large-format imagery solution with improved color accuracy will directly benefit from the M-Vision 21000 WU's performance. The latest M-Vision incorporates class-leading light output & contrast ratio, and colorimetry making it perfectly suited for any application where high brightness is required. DisplayPort accepts frame rates up to 60 Hz and HDMI 1.4b for Side by Side, Frame Packing & Top-Bottom 3D formats. Motorized shift, zoom and focus across the whole lens range offers superb flexibility and ease of setup. This projector is not a class leader – it is in a class of its own.

The use of the Red Lasers, along with a specially designed color wheel enable projectors that feature this technology to produce more enhanced visuals with a resulting color gamut guaranteed to achieve at least the REC709 standard.

FEATURES

Colorboost + Red Laser - The M-Vision Laser 21000's built-in COLORBOOST + Red Laser technology brings the most realistic and saturated colors to this 1-Chip DLP Projector. Intelligent processing brings the color performance ever

closer to that of a 3-Chip DLP projector.

MultiAxis Orientation - For maximum flexibility, the M-Vision Laser 21000 can be operated in both Portrait and Landscape mode, pointing up and down and every angle in between

Edge Blending - Superbly capable edge blending and multi-projector tiling is provided by way of high bit depth processing that ensures a seamless, contiguous image can be created from multiple projectors.

TAA Compliant - Digital Projection has a long history of projector innovation and advancements in visual display technology. One important aspect of that is sourcing from quality manufacturers to give customers the very best viewing experiences. Recent upgrades to DP's engineering and assembly procedures have resulted in the majority of their product offerings to be fully TAA compliant – and the M-Vision 21000 is no exception.

Offering truly divine visuals, the M-Vision 21000 is the perfect solution for houses of worship that seek to captivate and inspire their congregations. Get a top-class display from Digital Projection and give your visitors the very best in viewing and worship experiences. **DP**

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BeTerrific's Agility Quadracep LED Video Panel

The Agility Quadracep 2.5mm video panel from BeTerrific's line of all-in-one

LED panels is a seamless, flexible, water-resistant LED video panel with a superfine pitch and flexibility that marks a breakthrough in the LED space.

Mount it flat, bend it or curve it – this durable LED panel does it all. Agility

Quadracep 2.5 joins the 3.8 Quadracep and BiCep (6"x6") as a solution that is easy to install, maintain and operate. The panel can be flexed outward (convex) up to 25 degrees and inward (concave) up to 45 degrees. Each 1'x1' Cabinetlite panel adheres to a thin metal sheet via embedded magnets within the panel. This setup slashes installation time and costs and eliminates the need in most cases for structural engineers to oversee the construction.

Taking up a lot less room than traditional displays, whether mounted on walls, supported from the floor or flown from the ceiling, the Agility Quadracep 2.5 easily mounts into challenging environments where other LED panels won't fit. These are just some of the reasons customers such as Disney execs and technical staff love the Agility Quadracep. Agility is small and light enough to work within limited spaces, and creative, complex designs can be created in a short period of time with their intuitive and easy-to-assemble design.

Agility Quadracep LEDs are dimmable and daylight viewable with outdoor brightness up to 6,500 nits. Additionally, the panels are dust and water resistant (to the IP65 standard) and weatherproof, so they are suitable for indoors and outdoors alike. Modular panels can operate alone, in clusters or in any configuration to compose large walls. Data is daisy chained from panel to panel, making setup a breeze. Users can easily sculpt and hang a huge wall in a flat, curved or waved form without the endless cords or hulking frames of traditional LED cabinets. At 2.75 lbs.

per square foot, the Agility Quadracep is, by far, the lightest and most versatile fully integrated panel and cabinet system on the market. Design is now in the hands of creative tech teams and not limited by form.

Made to last, the front of each Agility Quadracep 2.5 LED panel has an optional special coating called Pique Protection to protect the LEDs from damage. Agility Quadracep panels are driven by NovaStar processing, and BeTerrific recommends using Renewed Vision's ProVideo Player to manipulate playback and effects easily and seamlessly. Each panel is aligned for seamless graphics and video playback, so customers don't have to worry about disruptive edges from module to module. Refresh rate is fast at 3850, bringing the user experience to life with best-of-class speed and performance. The LEDs will maintain full brightness for 100,000 hours of use (equivalent to 24-hour usage at full brightness for 10 years), at which point they will continue to operate at half brightness. BeTerrific provides an all-in-one turnkey solution with Agility Quadracep.

BeTerrific introduced the Agility line of LEDs earlier this year with the idea of creating a quality product that is affordable and versatile. "We are known for doing the impossible and providing great customer service," says BeTerrific CEO Michael Artsis. "In that vein we wanted to create a product that could revolutionize the industry. The concept was simple: Innovate something that is high quality, easy to understand and use and can function as an all-purpose LED panel. So, we stripped down a traditional cabinet, focused on what was important and what customers want and then worked to deliver it. We see Agility Quadracep as the perfect solution for houses of worship, broadcast, entertainment, retail, hospitality and more."

BeTerrific is known for its dedication to customers, including its 24/7 service. The Secaucus, New Jersey company gives a three-year warranty on its entire Agility line. The panels are also offered in black or white LEDs and with a few upgradable options. **T**

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CLEAR-COM UNVEILS FREESPEAK EDGE:

Clear-Com® is proud to announce FreeSpeak Edge™, the latest addition to the industry-leading FreeSpeak® family of digital wireless intercom solutions. FreeSpeak Edge is the most advanced wireless intercom system, delivering the best audio quality and enhanced performance in some of the most complex live performance environments. The system also gives the user more control and customization options, thanks to advanced frequency coordination capabilities and intuitive design features in the system's transceivers and beltpacks.

Built from the ground up, FreeSpeak Edge is the result of extensive feedback from existing FreeSpeak II power users, incorporating recent advances in the fundamental technology, leading to an all-new 5GHz chipset that features an exclusive radio stack development which has been optimized for intercom. FreeSpeak Edge also leverages state of the art

audio-over-IP developments in its architecture, utilizing AES67 connections between the transceivers and the host intercom frame for exceptional flexibility in deployment.

"FreeSpeak Edge is the future of advanced wireless communication," said Bob Boster, President, Clear-Com. "While some manufacturers are trying to improve incrementally on existing solutions, we have leapfrogged right to the edge of what is possible with wireless intercom technology today, in readiness for tomorrow's increasingly demanding requirements. We often hear talk of so-called game-changers, but FreeSpeak Edge is the real deal."

The 5GHz band is an ideal choice for large scale communications, as it can be managed with frequency coordination for reduced interference and offers the widest range of RF channels available for exceptional scalability. Its higher frequencies mean there's more bandwidth for

data which allows for finer control, additional audio channels, more robustness, lower latency and better audio quality.

FreeSpeak Edge leverages all the power of 5GHz technology to perform flawlessly in even the most challenging venues and high multipath environments. The system takes advantage of Clear-Com's exclusive RF technology which uses OFDM to provide a robust transport layer that is immune to most forms of interference. FreeSpeak Edge delivers the clearest 12kHz audio quality with ultra-low latency and is highly scalable with the technology and bandwidth to support over 100 beltpacks and 64 transceivers to accommodate the largest productions. It can be combined seamlessly with FreeSpeak II 1.9GHz and 2.4GHz systems, providing three bandwidths across a single unified communications system.

FreeSpeak Edge transceivers and beltpacks offer more customization

and control than ever before to accommodate increasingly complex communication needs. The beltpack's ergonomic design includes asymmetrical concave/convex top buttons for identification at a glance and touch operation; eight programmable buttons; rotary controls on both sides; and a master volume control and flashlight on the bottom. With a mic and speaker for headset-free or desktop operation, the beltpack was designed with today's production needs in mind. Each ruggedized transceiver supports 10 beltpacks and includes attenuation and external antennas for custom RF zones as well as wall and mic stand mounting options. The system delivers the robustness and reliability that customers have come to expect from the award-winning FreeSpeak range. FreeSpeak Edge is available for demonstration, along with a wide range of Clear-Com's trusted intercom solutions. **■**

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Just Add Power

3G THIN TWO-GANG HDMI WALL PLATE TRANSMITTER



Just Add Power (J+P), a leader in Ultra HD over IP video distribution, announced that its new third generation (3G) thin two-gang HDMI wall plate transmitter is now shipping. The VBIS-HDIP-707WP2 allows users to easily incorporate laptops and other HDMI devices as sources for their Ultra HD over IP systems while offering a depth of only 1.5 inches to provide integrators with flexible installation options.

The slim depth of the VBIS-HDIP-707WP2 makes it the perfect

solution to address challenges faced by commercial installers around the globe. Outside the United States, walls are either solid and require a surface-mounted product, or they don't have the depth that structures in the U.S. do. In both cases, thin wall plates are required. Furthermore, the VBIS-HDIP-707WP2 can be used in flex spaces, huddle rooms, cubicles, and other modern office systems, where the walls are thinner to provide mobility and flexibility. The thin design of the VBIS-HDIP-707WP2

also provides installers with the flexibility of convenient installation beyond the wall. In applications such as houses of worship and classrooms, the wall plate can be mounted in pulpits and podiums to allow HDMI devices to be easily incorporated into sermons and lectures, while it can be table mounted in spaces such as conference rooms for presentations.

"With its slim design, our new two-gang wall plate is ideal for the thin walls common in international installations, while providing integrators with the flexibility of table or podium mounting," said Taft Stricklin, sales team manager at J+P. "In addition, the thin wall plate features a field-serviceable modular design, making it easy to service with a screwdriver in the event of damage."

Offering ultra-low latency, the VBIS-HDIP-707WP2 wall plate distributes Ultra HD and 4K video with HDCP 2.2 over a single Cat-5e cable and supports HDMI 2.0 devices and all lossless multichannel audio formats. Additional features include CEC control, image pull, and Plug-Play-Present functionality for effortless connection of HDMI sources. To match any décor, the unit's faceplate is available in black, white, or custom colors.

As with all models in the J+P lineup, the 3G wall plate integrates seamlessly with any generation of the company's products, allowing integrators to build a future-proof infrastructure that suits any application requirement. **T**

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Contrary to popular belief, sometimes a sequel is better than the original. That is the case with the all-new Canon EOS C500 Mark II. Impressive usability and imaging power combine in the customizable full-frame cinema camera that's built for House of Worship creative freedom.

The Cinema EOS C500 Mark II features Canon's high-resolution 5.9K (38.1 x 20.1mm) Full-Frame CMOS sensor, which offers exceptionally low noise and a broad range of tonality with over 15 stops of dynamic range. The sensor's expansive native cinema gamut goes beyond that of current standards, including ITU-R BT.2020 and DCI-P3, helping the EOS C500 Mark II achieve more natural skin tones and allowing for greater freedom in color grading in both SDR and HDR productions.

The Full Frame sensor is capable of capturing footage in a wide variety of aspect formats, including DCI-4K, UHD and Anamorphic Widescreen. The EOS C500 Mark II sensor supports both anamorphic and spherical lenses. In addition to full-frame, the sensor can also be paired with conventional Super 35mm and Super 16mm lenses using appropriate sensor crop modes, lens mount and adapter. This is where Canon changes the game for HOW. Imagine a company that can pair its broadcast, cinema, and still image lenses with its cameras set in different modes to create different looks for each project.

Churches can set up for Broadcast/IMAG/Streaming using either Broadcast lenses and the camera set in Super 16 mode to achieve a very stellar Broadcast look or Canon's Cinema Servo line of lenses with the camera set to Super 35 mode for a shallower depth-of-field. Both looks handle varying lighting levels, moving lights and LED walls as backdrops.

The same cameras can be used in Full-Frame or Super 35 mode to capture amazing life change stories, church news segments, B-Roll for promotional material etc. Full-Frame at 6K Raw using Cinema and EF L-series primes allows HoW to achieve a look that meets and beats anything on TV today. By using the same cameras for both Broadcast/IMAG/Streaming and Creative Capture allows for the same video

look to hit the IMAG screens whether live or pre-produced.

The EOS C500 Mark II ships with an EF mount that can be user swapped to an optional Locking EF (EF-C) or PL mount. Each mount swaps easily by simply removing four M3 hex screws. A shim set is provided with each mount kit in order to adjust back focus for the precision in focusing accuracy that professionals rely on.



All of the C500 Mark II models also connect with the RC-V100 remote paint controller for control room camera shading and live color correction during live events.

60 fps is available when recording in 5.9K Cinema RAW light, an ideal range of high-quality slow-motion capture for typical human movements. In 2K (crop) mode, frame rates up to 120 fps are available allowing users to slow down the action even further, for more dramatic scenes and special effects. Two new buttons, slow and fast motion and slow and fast motion FPS were added to give quick access to desired speed settings, making it simple

Canon EOS C500 Mark II

to utilize this creative tool quickly and spontaneously when the moment is right.

To accurately record the extensive data produced by the 5.9K imaging sensor and provide greater recording times, the EOS C500 Mark features two CFexpress recording slots. CFexpress is the future of onboard recording media providing write speeds needed for higher resolutions and frame rates. The dual card slots can be used to either create an instantaneous backup thorough simultaneous recording or extend record run times by relay recording.

Featuring a newly developed DIGIC DV 7 Image Processor that takes the extensive RAW information captured from the 5.9K imaging sensor and processes it for output. The processor is also the engine behind features such as high frame rate recording, Dual Pixel Auto Focus, Cinema Raw Light Recording, HDR(PQ and HLG) output, electronic image stabilization, proxy recording and oversampling 5.9K processing. Canon's Dual Pixel CMOS AF with the right lenses for HOW allows less experienced volunteers to achieve stellar focusing results. **T**

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Trouble Shooting Wireless Mic Problems

BY JEAN ANDERSON

If your house of worship relies on wireless microphones, the chances are quite high that you've run into problems at some point in time. Here we look at some of the most common reasons a wireless mic system isn't working, and how to (hopefully) fix it.

DEAD/WEAK BATTERIES

Rule out the obvious first: check the batteries and make sure they aren't dead. While you are doing that, look at the battery terminals as well and make sure the batteries are connecting with them.

OPERATING FREQUENCY RANGES DON'T MATCH

Make sure the frequency range of receiver matches the frequency range of the transmitting mic. When they don't match, the mic(s) won't work.

PROBLEM WITH AUDIO CABLE

Check the audio cable and make sure it works – you can do this by disconnecting it from the wireless receiver and connecting it to a wired dynamic mic. If the connected mic works, the wire is working. You can also switch out the cable for a new / same cable, or change out the mic on the body-pack transmitter to see if that does the trick. If you have an ohmmeter, use it to make sure there are no shorts or open wires.

INTERFERENCE FROM OTHER DEVICES

Make sure there are no other devices or wireless systems interfering with the mic. You can do this by turning off anything electric within five feet of the receiver. Once everything is turned off, see if the interference has been resolved – if it has, you can try to pinpoint the device or devices causing the problem by turning them back on again one at a time and checking the mics again. If it is another piece of equipment causing the problem, see if you can move

it elsewhere or don't run it when the wireless mics are in use. If this doesn't work, you need to use a frequency spectrum analyzer to find the source of the interference – this can be expensive, so do this last. If you had your wireless system installed by a professional integrator, this shouldn't be an issue.

INTERMODULATION

Similar to interference, intermodulation is caused when you have two or more wireless devices crowding each other's frequencies. To fix this, you need to change your frequencies to one that is not as crowded. An intermodulation analysis program can help you find frequencies that aren't as crowded. Intermodulation can also happen when you have too many analog mics running at the same time; once you are up around 16 mics, you should look at switching to a digital system, as digital mics only use about a tenth of the bandwidth analog mics do.

WIRELESS RECEIVERS/ANTENNAS NOT PROPERLY INSTALLED

Again, if you had your wireless set-up professionally, this shouldn't be an issue. However, if you didn't you need to ensure there is a clear line-of-sight between the transmitter and receiver at all times. If there isn't, you will need to either move the antennas/receivers to achieve a clear line-of-site or have a professional come and do it for you.

CHECK THE RECEIVER'S EXTERNAL POWER SUPPLY

Make sure the external power supply is working properly, and don't forget to power up and unmute the microphones! **T**



If you are looking at adding a wireless mic system to your house of worship, you can research all the different options via the Search It Up App available for iOS and Android. Click on the Turn It Up from the app splash page, click on Gear, scroll down the list to Microphones and then click in Types and choose 'wireless' from the keyword search. You can also search for this information at the online directory at www.searchitup.directory/crescit-search by choosing microphones in sub-category and wireless in types, before hitting the big red search button.

CASTING CROWNS / HILLSONG WORSHIP / ELEVATION WORSHIP TOUR 2019



Seth Jackson Builds Adaptable Elation Rig for Special Christian Music Tour

Seth Jackson was called on by Premier Productions to design lighting for a special fall concert series that saw three of the most prolific bands in Christian music tour the US to packed houses. The special USA arena tour featured multi-platinum-selling artists Casting Crowns, Hillsong Worship, and Elevation Worship, three top acts that brought together their devoted fan bases all under the same roof for a night of music, worship and praise.

Jackson designed an adaptable rig using 51 Elation Proteus Rayzor 760™ and 20 Smarty Hybrid™ LED moving heads, along with 12 Elation Protron Eclipse™ multi-effect lights, and then turned it over to each group's design team to put their own unique touch on. Lighting supply was by Bandit Lites.

Sandbox lighting rig

The 17-date circuit kicked off Nov. 1 in Memphis, Tenn., making stops in major cities across the country before culminating on Nov. 23 in Hartford, Conn. As all three acts were out on their own headlining tours prior to the special concert series, coordination could have proved especially challenging. Premier Productions therefore felt it was important to have a general-purpose designer to put it all together, “basically a designer to create a sandbox for everybody to work in,” as Jackson describes it. “It was a good decision because it was very last minute as far as the acts were concerned and there was very little rehearsal time.” Despite the pre-tour frenzy, Jackson had months beforehand to communicate with each artist and camp, valuable time that allowed him to consult with each band about their

wishes. “It never felt rushed,” he said. “It was actually a really good process and the artists were great to work with.”

Despite the fact that the three groups are united in their faith, they represent three very different styles and it was Jackson’s challenge to put all their needs together. “Hillsong is known for their very visual presentation and very high art kind of approach. Casting Crowns is more ephemeral and earthy and very much about their audience, while Elevation are the young and hip up-and-comers. They all have their own taste and we were able to come up with an overall design that married the three styles together but unified in worship.”

Putting it all together

One of the similarities across all three groups, Jackson says, was the desire for the audience to share in the experience. “I knew there would be a lot of interaction with the crowd in a very participatory kind of show,” he says. “That was the same for all three acts but it was different in how they each approached it. The challenge was to create something that had enough flexibility that each artist could put their own stamp on it. Casting Crowns had some ideas about vertical trusses for example and Hillsong wanted a broken up screen surface. Each had their own request so I took pieces and parts from each to put it together.”

Rayzor 760 wash

Jackson’s design featured a main overhead rig of concentric circle trusses with a number of upstage vertical towers separating vertical LED video screens and a large curved front-of-house truss above the B stage. The designer chose the Proteus Rayzor 760 as his main wash light and



placed them in both the overhead rig and on the deck. “It was the perfect fit for all parties,” he said. “It could do nice keylight, wash levels and toning of colors, but it could also go heavily saturated. It also delivered on the punch, even with the darker colors and hues, and held its own in an arena show that was wide open. The fact that the beam was visible all the way to the floor made a big difference. It was bulletproof reliable and turned out to be the perfect base for the whole design as far as the wash fixture.”

When Jackson was in search of a smaller profile spot fixture to serve as an upstage hard edge on the vertical towers, vendor Bandit Lites suggested the Smarty Hybrid, a compact yet full-featured CMY color-mixing hybrid fixture with 20 graphic options and dual prisms. “Initially I was worried they wouldn’t be punchy enough but they cut right through. It had enough design features that the LDs took them in different ways and each found a unique way to use them.”

Also populating the back vertical towers were Protron Eclipse, a multi-faceted hybrid LED luminaire with 27,000 lumens of output that can take on a number of roles in a rig. “I needed the multi-functionality of the fixture. Everyone needed something from that light and again how the LDs used them was fantastic because everyone got a different feel and a different emotion out of the same fixture, which was terrific,” said Jackson, who added that Casting Crowns used them for colorful crowd washes while Elevation Worship utilized them more as a strobe light.

Even with three separate acts to coordinate and sponsor messaging to accommodate, plus an intermission, the show was fluid with the three acts coming together on stage for a show-stopping finale. The concert series sold so well, Jackson says, that at one point the stage design was reworked to expand to 270-degree seating to accommodate the interest. **T**

CONCERT PRODUCTION TEAM

Producer: Premier Productions, Josh Chambless

Production & Lighting Design: Seth Jackson /

Nathan Alves - Darkroom Creative

Casting Crowns

Lighting Design: Chris Lighthall

Video Content: Kyle Lollis, Lot 35 Productions

Hillsong Worship

Lighting Designer: Jarrad Donovan

Tour Lighting Operator: Wesley Hahn

Elevation Worship

Lighting Design: Daniel Connell, Cory Edwards

Lead Programmer: Bryan Landry

Lighting Director: PJ Peters

All Photos: Premier Productions, Dave Contreras



UNDERSTANDING ATMOSPHERICS

BY STEPHEN ELLISON

Atmospherics is an interesting word, with a different definition in theatre than the one which you would see in a dictionary. In the theatrical sense, atmospherics refer to changes made to the air mass in a space, typically by adding small particles in the air to make beams of light

more visible. Particle size, composition, creation of the particle, and distribution make up the different atmospherics commonly used in live performance productions.

Let's start with the haze effect. Haze is a fine mist used extensively to help show the whole light beam. This effect uses small

particles which can be made from water-based or oil-based formulas, with the latter having a longer hang time than the former. There are two ways to create particles for haze. One process, called cracking, injects high pressure into a tank of fluid which causes bubbles that allow fine particles to float away. The

second method uses a heat exchanger. In this process a tube is built into a mass of metal and a heater. The heater brings the metal and the tube up to a specific temperature, after which the fluid is injected into the tube. By regulating the temperature, amount of fluid, and the fluid formula, you can get fine particles in

a volume suitable for haze. If you need faster distribution, you can always add a fan to help disperse the haze.

A word of caution about the heat method: since the fluid is formulated for a specific heat exchanger, use of a different manufacturer's

backstage using large pieces of carboard or ¼" plywood to move the fog along.

There are a number of ways to work with the heat exchanger machines and their dense clouds. You can use duct work to move the clouds around your

and small pieces of dry ice, a knee-deep cloud can be formed which will cover a stage in seconds. Another method of producing a quick blast is to use a CO2 fire extinguisher.

There are dangers involved in working with dry ice. First, the temperature of the ice can cause damage to your skin if you don't use gloves. Second, the pressure in a machine can build up quickly. Some small machines will eject very hot water from the hose if you introduce too much ice too quickly. Most importantly, be aware that inhaling concentrated carbon dioxide can be fatal since it replaces oxygen in the blood stream. Because the fog tends to seek the lowest level, people in orchestra pits or low-lying areas could be at risk. As a safety precaution, it is a good idea to test your effects before using them live.

Hybrid Machines

The last type of machine to discuss is the hybrid machine. These machines utilize a heat exchanger to vaporize the fluid which creates a cloud of fog. They also use carbon dioxide as a propellant to get the fluid through the machine. By controlling the pressure and volume from the carbon dioxide, you can go from a trickle of fog to stage covering volumes.

Lastly, there are two

things to think about before you put anything into the air: first, people are breathing this in. While all the fluids used are safe to ingest, people with breathing problems can be affected by the particle size. Second, if you use a bottle of fluid to make fog, the particles will settle somewhere. Eventually you may notice a residue which can be noticeable on items such as projector lenses. Regular cleaning can solve this problem.

To recap, atmospherics run the gamut from haze, which is hardly visible, to clouds of fog that are denser and dissipate faster using chemical fluids. Carbon dioxide is good for old-fashioned low-lying fog and, with the addition of fluid, you can create a real 'Pea Souper'. Atmospherics can set the mood of the production and, when finely tuned, can add just the right touch. ■

Stephen Ellison became interested in lighting early on looking at the colors in the sky. On his way to following his Father's profession he made a serious detour into getting a BFA in lighting design. Today he works for The Light Source helping customers understand how to use the products.

Particle size, composition, creation of the particle, and distribution make up the different atmospherics commonly used in live performance productions

fluid can have adverse effects on the machine. The haze could come out wet, creating a slip hazard. The output of any heat exchanger-based machine should be dry to the touch and not create fluid on stage.

The next level of density is the London Fog, which fills the air space around the performers. The London Fog calls for a heat exchanger machine which produces a warm air mass. The fog emanates from the machine at floor level and naturally rises to fill the space. To create larger rolling clouds, you need wider air movement. This can be generated by people

space and under platforms. Using small box fans at the entrance to the duct can move the cloud quite quickly. If you use a hose, set it up with a slight down grade at one end so that any fluid which re-condenses on the walls has a place to drain. Also match the fluid to the machine.

One of the older fog effects is the low-lying cloud. The traditional method for creating this effect is to use dry ice and hot water through a process called sublimation, which causes a change in state from solid to gas without changing the chemical structure. Using larger vessels with heaters



You can research a variety of atmospheric products in the **Search It Up Directory** – simply click on the **FX It Up** icon on the home page, and from there you can explore a variety of products.

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FLEXIBLE LED VIDEO WALL Delivers Impact to the Worship Experience at Crossland Community Church

Crossland Community Church, based in Kentucky, offers a community of refuge and hope for all people and a “come as you are” worship environment. Sunday worship services are held at the church’s main location in Bowling Green and simulcast to two other Crossland campuses in

Glasgow and Morgantown. Crossland’s sermons are also available online. During Easter 2019, the church rented an LED video wall and the response from the congregation was so strong that they decided to invest in a permanent solution. The church collaborated with AV designer and integrator DB Integrations, a strong

partner of the church, which led to the installation of a nearly 24-foot-long, 7-foot-high Leyard® VVR Series LED Video Wall with a 3.9mm pixel pitch (VVR3.9) in a 12x6 configuration from Leyard and Planar, a Leyard company.

Adaptable Design Allows Different Looks

As a highly flexible solution, the Leyard VVR Series provides customers the opportunity to easily change the design configuration of the video wall—a feature that

PHOTOS ABOVE: LEYARD® VVR SERIES LED VIDEO WALL MEASURING 24-FOOT-LONG BY 7-FOOT-HIGH ENHANCES WORSHIP EXPERIENCE AT CROSSLAND COMMUNITY CHURCH

Crossland Community Church is fully embracing. “The Leyard VVR Series is designed for the rental and staging market, but we saw its features as well suited for supporting what the church wants to do,” said Ronnie Stanford, DB Integrations director of sales and marketing.

Depending on the message or the intent of the sermon—or if the sermon is part of a specific series—the church can quickly modify the design of the video wall to fit their needs, according to Stanford.

“For example, the church can decrease the height of the video wall and stretch it across the stage. Or, they can split the video wall up into more than one installation—such as a main video wall in the middle and two smaller ones flanking it to either side,” he said.

DB Integrations added an outboard processor to the video wall, which enables content to adjust to any configurational changes. “The video wall is really easy to work with—it’s a very simple process for an end user to reconfigure the layout,” Stanford said.

Creating a Compelling Worship Experience

The new Leyard VVR Series installation replaces a projector system that the church had previously used for years. “We used to think of our image quality as really good but then we learned there is a huge difference between projecting light and reflecting it,” said Crossland Community Church Senior Pastor Gregg Farrell.

“The new video wall is overwhelmingly dramatic—we can display lyrics,



integrated moving graphics, or video footage and the imagery is incredible.”

The benefits of the Leyard video wall installation have enhanced several areas of the service and touched across the full spectrum of the congregation. “The breadth of impact has been tremendous,” Farrell said. “The biggest response from the audience has come from our oldest demographic—the seniors just love it. That’s because they can now really see text and lyrics and engage in the service. The feedback is very positive, and it’s not just a result of being enamored by technology, but more about being enamored by the experience.”

During services, Crossland employs the video wall as an extension of their set and scenery design, displaying nature scenes or sermon illustrations. For music sets, the church might show moving abstract graphics as a background presentation. Crossland also uses the video wall to display impactful

messages—in some cases just one word—that support the theme of each sermon. “We use large white lettering against a black backdrop which creates a really dynamic expression,” Farrell said.

In the future, Farrell anticipates using the Leyard VVR Series video wall as a teaching tool for sermons.

“Our presentation is now far more compelling,” he said. “The video wall has enhanced our worship experience as well as the broadcast experience at our other campuses. We haven’t yet scratched the surface in terms of the video wall’s potential and we are already blown away with what we can do.” ■

Location : Bowling Green, Kentucky

Partner: DB Integrations

Application: Video Display

Product: Leyard VVR Series LED video walls

Product Description:

Provide a high level of display flexibility and are easily adaptable to various designs, including hanging, stacking, wall-mounted and floor-mounted applications as well as traditional and customized frame styles. The Leyard VVR Series features magnetically attachable cabinets with a quick-lock system, and allows fast assembly and support for single-person handling. Leyard VVR Series LED installations also deliver high brightness, excellent contrast and a wide color gamut for exceptional image quality and dynamic applications.



Is It Time To Buy a New Sound System?

BY TIM ADAMS

Buying a new sound system is not a small decision; the process of researching, demoing, evaluating and ultimately purchasing equipment is just the beginning. Installation, tuning and training can take weeks, if not months, before all the bugs are ironed out and you and your crew are comfortable working with a new system.

But when do you know it's time to start that process? I've provided some tips below to help you decide for yourself if a new sound system is right for you.

Tip #1: Are You Fully Trained?

Many times, equipment is blamed for what really is a lack of proper operator training. If your training process involves mostly an "If/Then" process, you may wish to invest some time and energy to either purchase a training system (lots of DVD content available), put together a customized YouTube Watch List and/or consider bringing in a consultant or local integrator to train up properly.

Foundational concepts such as ringing out the room, how to find and defeat feedback, understanding signal flow through your system and your mixer, proper mic placement and how to teach proper mic etiquette are just some of the topics any training should be able to address. It is important to also understand that while generally, signal flow is fairly standard in a sound system, every system is unique and as such, it is important that time is spent learning the particulars of your system.

If you have been properly trained and are having issues with your system, then it's time to move further.

Tip #2: Are the Problems Equipment-Specific?

Are you getting random pops in your speakers? Do you have squeals and noise from a specific microphone, regardless of who is using it or what cables are connected to it? Maybe you are getting a radio station on one of your wired or wireless microphone channels. It could be that there is a 60Hz hum or buzz in the system when the lighting is dimmed or when a specific guitar plugs into the system.

These are generally equipment specific, with the exception of the ground loop hum (60Hz hum). If the rest of your sound system is functioning just fine, then you address the problem equipment and find a real, long-term solution for the problem. If you have multiple issues that continue to stack on top of each other, then it might finally be time to start the process of a system upgrade.

Tip #3: Speaker Coverage

Many times, rooms can change configuration over time and the speaker system cannot adapt to the change. This is not a fault or shortcoming of the speaker system, necessarily. Rather, it is a change in scope for that space, and such changes can lead to issues with clarity, intelligibility and the overall ability to hear properly for some church attendees sitting in areas outside of the speaker coverage.

This would not generally necessitate a completely new sound system on its own, though many churches use new speakers as a trigger to upgrade the rest of the system as it generally costs less in the long-term and can help provide a solid foundation of fundraising and overall support for the project.

While we are talking about speakers, it is very important to know that this is one area where corners should not be cut. If you do not understand how sound propagates in a space, if you have clarity problems in addition to your coverage and/or feedback is unmanageable because your space is acoustically “live,” it’s time to bring in a specialist. Acoustical consultants, often called acousticians, are well worth their cost because they will isolate your problem areas and can work directly with a system integrator and/or consultant to ensure that what is being recommended for a new system will do exactly what you need it to do and will sound awesome.

**Tip #4:
Have a Plan**

Depending on the size of your sound system, it could be very possible that the new sound system will not be fully operational for your use the weekend after the upgrade begins. Having a plan for how to still support your church services during an upgrade is important. Perhaps church is held in the fellowship hall or a gym space you may have. Timing can be your friend, as well-perhaps your church has an annual “church in the park” or a church-wide campout or some other event where the space is not utilized. Look for any of these kinds of events on the calendar and do what you can to try and organize an install for around these events.

This can greatly aid your integrator or if you’re self-installing by taking the pressure off of getting everything done in a week’s time. I recently heard of an integrator that had to work 17-hour days, 6 days straight to get a project done in time for weekly services to be uninterrupted. Having an insane install schedule like that has two primary downsides: if hiring out the installation, it will likely cost you much more money than a longer schedule with shorter days, and over-tired people make many more mistakes. Mistakes that can lead to dangerous situations, such as not installing safety cables on lighting fixtures, or not tightening down brackets that hold speakers together while hanging over people’s heads.

In the end, there is only one, tried-and-true way to tell if you need a new sound system, and that is if your entire system fails. While this does happen, it’s not common, at least not without any kind of warning signs of impending failure.

My advice is that you start your research now-I’m a big fan of having a plan on paper for such a time as the church decides they want/need an upgrade or a catastrophic failure occurs. You do not want to do 6 months of research in two days-that will likely not end well. Have a plan and be prepared!

Blessings, T

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Hope City Church Expands to New Campus via Video with Z-HD5500 Cameras from Hitachi Kokusai

42 years after being named for its neighborhood within the city of Edmonton, Alberta, the church originally known as Mill Woods Assembly changed its identity to Hope City Church last year to reflect its expansion into new communities. Wanting to maximize the quality of the live video being fed to its new satellite campus, Hope City purchased three Z-HD5500 cameras from Hitachi Kokusai Electric America, Ltd. (Hitachi Kokusai) to capture its Sunday worship services for remote distribution and in-venue image magnification.

A total of roughly 3400 congregants attend three Sunday morning services at

the Mill Woods campus each week, while up to 300 more come to services at the newer Terwilligar location that opened in October 2018. While the Terwilligar site has its own pastor and live music, time-delayed live feeds of Lead Pastor Phil Kniesel's sermons from Mill Woods are the centerpiece of its service. Already displeased with the quality limitations of their existing cameras, the launch of the new campus provided the impetus for the church to upgrade.

"Our old cameras didn't allow us to achieve the quality we wanted, with insufficient low-light capabilities and consumer-grade controls," said Dan Mandryk, technical director at Hope City Church. "We needed to replace them, and our expansion gave us the big push to get new cameras on board. Video enables us to multiply our presence, allowing us to deliver the same message across campuses while still creating unique experiences at each location. We wanted to go to a broadcast-grade camera because the video feed would essentially stand in for a live pastor, so must be high-quality."

Taking note of the accolades the Z-HD5500 was receiving in trade press, Hope City Church knew they needed to investigate it. "We narrowed our choice to two major brands, and Hitachi Kokusai worked closely with our dealer, Applied Electronics, to put together a package that met our needs at a price that worked for us," explained Mandryk. "The Hitachi cameras' ability to integrate with the Ross Dashboard control system was also important, as we are considering adding a Ross switcher in the future."

Hope City's three Z-HD5500s are now stationed on pedestals in the Mill Woods campus' 1235-seat main sanctuary. In addition to serving the live video link between campuses, the cameras also power IMAG for the auditorium's two 20-foot-wide, rear-projection side screens and 19-foot-wide center screen. An additional 26-foot screen in an overflow room is used for special events, while services are also streamed live via the Church

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Mandryk highlights the Z-HD5500s' ease of use as one of his favorite attributes of the cameras. "The best part has been how volunteer-friendly they are, even though they're high-end cameras," he elaborated. "We have operators who have never touched a camera before, and focus is always one of the hardest things for new camera users to master. The Focus Assist feature on the Z-HD5500 has made it so much easier for them, giving them something to check their focus against."

The exceptional video quality of the Hitachi cameras has also earned praise from the church and its attendees. "The Z-HD5500s deliver an obvious quality boost from our previous cameras," said Mandryk. "The color reproduction is also fabulous, as we finally see on video exactly what we see in the room. The first day we put them in, our congregants could see the difference, and were excited to see more vibrant colors."

Mandryk also commends the Hitachi cameras' handling of lighting conditions at both ends of the spectrum – their sensitivity in low-light situations, as well as their ability to acquire flicker-free images against a mix of LED lighting. "We push the boundaries on lighting, so sometimes we have to get a shot where there's not a whole lot of light, and the Z-HD5500's low-light handling is far superior to our old cameras," he explained. "Conversely, we use a lot of LED lighting of varying quality in our sets – from high-end professional lights all the way down to do-it-yourself LED tape lights in our set pieces – and we've never had a problem with these cameras capturing great video."

Summing up Hope City Church's satisfaction, Mandryk shares that the Z-HD5500s have fulfilled all of their objectives. "The Hitachi cameras have elevated the quality of our visual experiences for our in-person and online congregants, while enabling an exceptional video link to our remote campus." 

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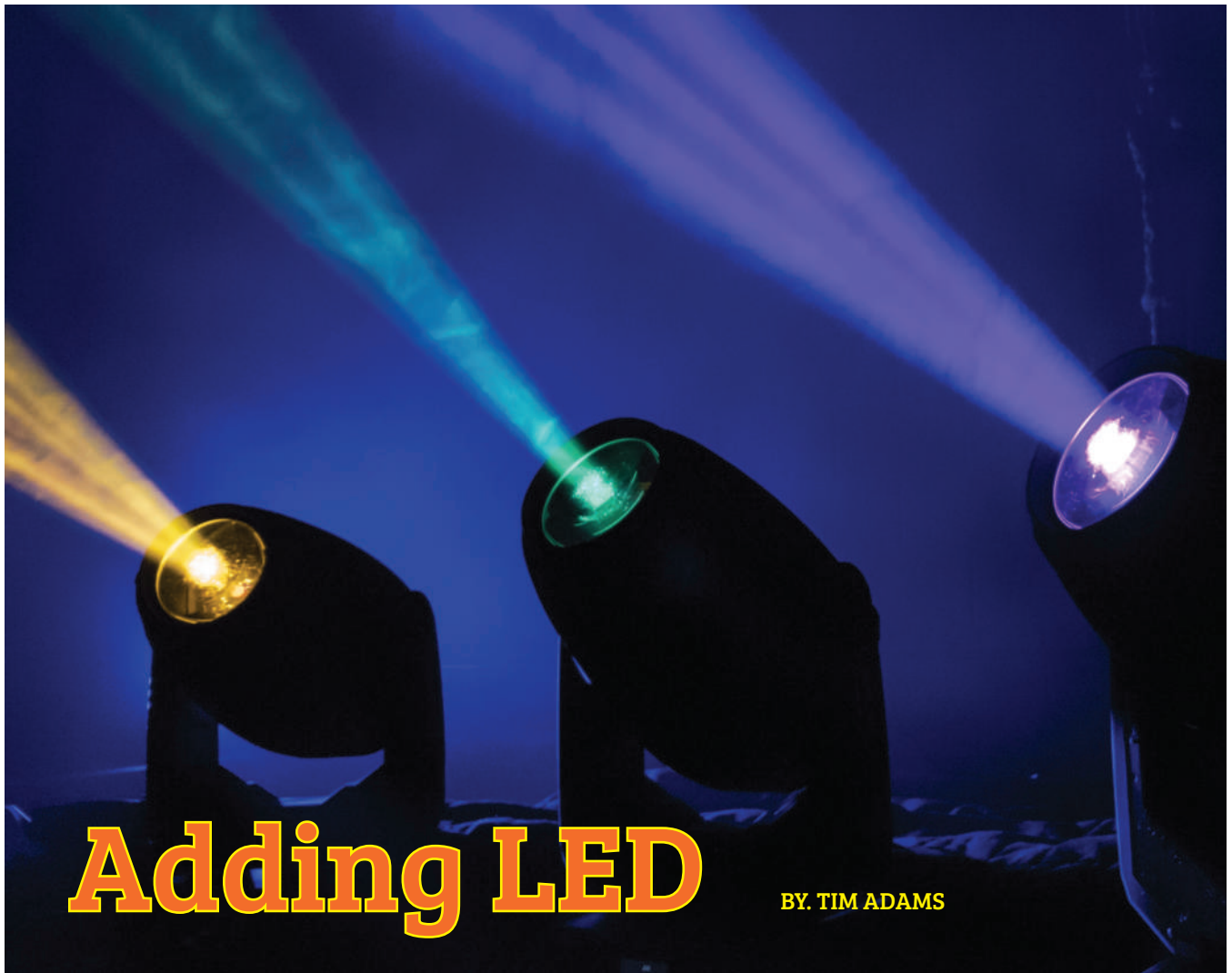
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Adding LED

BY. TIM ADAMS

The continued price drops of professional LED lighting fixtures has caused many churches to look at integrating them into their current lighting systems. This can cause problems if the churches have not paid attention to important details about those LED fixtures.

First, it's important to understand that while prices are falling, your expectations should be properly set. This starts by doing your research; not all LED fixtures are created the same and this goes down to the quality of

the circuitry and the LEDs themselves. LEDs can be quite inexpensive to produce in bulk quantities, but it's important to understand what sets the name brands apart from what you can find at your local electronics store or online.

Even within a name brand manufacturer, like Chauvet and American DJ/ADJ, is a value-based "DJ" line and a more professional line aimed at more long-term, heavier-use applications. Something to consider about the "budget" product lines is that they are designed to be replaced rather than repaired, thus

their price point. If one of your primary considerations or priorities for lighting equipment is longevity, you will want to have the appropriate expectation for the requisite pricing of the equipment that will last.

With that out of the way, let's discuss the actual logistics of implement LED fixtures into an incandescent lighting grid. The first consideration is color temperature-incandescent lighting has a warmer color temperature, between 2800K and 3500K, so if you want to the best blend of the two lighting types, it's best to ensure that your LED

fixtures can replicate a warm white in this temperature range. You can get away with having color-changing LEDs in your grid, but ensuring that they have an amber LED source to properly blend is important (e.g. RGBA, RGBAW, etc.)

Secondly, power and dimming go hand in hand with LEDs and both are handled at the fixture. You might be thinking that your incandescent fixtures also just plug into an outlet, but the power for that outlet usually will feed back to some kind of dimmer (assuming you have the ability to dim). LED fixtures

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have on-board dimming so they just need a steady power source that is NOT connected to a dimmer; this is critically important so you don't break your brand new LED fixtures. The power supply any outlet an LED fixture plugs into must be fed by a continuous voltage, be it 120VAC or 220VAC (whatever your particular electrical standard is in your country). I cannot stress this enough. However, if you are retrofitting an incandescent fixture with an LED bulb, that is a separate discussion; you will still need to address your dimming situation as LED bulbs require pulse-width modulation dimming rather than voltage dimming.

Thirdly, control of your new LED fixtures will require either wired or wireless DMX to be fed to each fixture. DMX is designed to daisy-chain but if you have a traditional dimming system, the lighting controller sends DMX to a bank of dimmers and the dimmers do the rest. With on-board dimming and other controls, the DMX control signal must be fed to each individual LED fixture. The easiest way to do this for most churches is to use wireless DMX; however, this can also introduce some issues with interference from WiFi systems, distance limitations and dropouts. Not all wireless DMX systems have issues, but again, this is about establishing expectations and flagging up areas that could cause you to trip up or cause issues. If you can run DMX cabling to your fixtures, do it—it's just easier. A point here for longer runs of DMX cable—make sure you get 120ohm cabling to adhere to the DMX specification. Many, many suppliers and manufacturers will use the cheaper and more widely available 110ohm and while this might work for shorter cable runs, such as between fixtures, it can also lead to erratic behavior from your fixtures and should be avoided, if possible. I have learned the hard way that simply because a cable is labeled as DMX or sold as such does not mean it meets the standard specification for impedance. So be sure to check the specs and spend the extra money—the headache just isn't worth it.

Ok, so we have discussed about color temperature, power and DMX,

what are the other considerations about integrating LEDs to your existing incandescent lighting system?

Fan noise could become an issue as many LED fixtures have fans on them to keep them within proper operating temperatures. "Why do LED fixtures need fans," you ask? Well, there are a couple reasons; first, LEDs require DC power to function so there is a conversion between AC power from your facility and DC power for the LEDs; this conversion creates heat. When you factor in the amount of wattage being used to power the LEDs, this heat can be substantial. While 80 watts may not sound like a lot to you in the lighting world, for LEDs, that is a lot of power and produces a fair amount of light, particularly in a small sanctuary. Light itself is energy and energy represents a certain amount of heat and with the aforementioned wattage being used, it can generate a noticeable amount of heat, as well. These two factors mean that the fixtures can run hot enough to need active cooling. For many of the higher end manufacturers, this means implementing convection cooling, using a passive approach with heat fins and heat sinks to draw the heat away from the LEDs and outside the fixture to dissipate in the air. This is a great approach but does cost more money, generally. The cheaper way is to use fans and this introduces noise. Sometimes, this noise can be quite noticeable, especially during a quiet time of the service, say silent prayer or theatrical performances. If you have a large facility, this may be less of an issue as the fixtures are located far away from participants; however, in most cases, fan-based cooling will likely not be desirable.

Having a plan to gradually replace your current incandescent lighting system with LEDs can help keep your financial situation stable while allowing you to take advantage of the inherent advantages LEDs bring to the table. However, it's important to understand the challenges that LEDs can bring with them, as well, so you can enjoy the positives while mitigating the negatives. ■



seamless
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Expanding to a Multi-Site Audio Network

BY JAMES CARELESS

There comes a time in the lives of many successful single-site churches when they open satellite campuses in order to serve parishioners outside the main campus' immediate geographic area.

When this happens, the people in charge of the main church's AV department must create a multi-site

network to integrate the campuses together. This will allow people at the satellite campuses to share in the service at the main church; be it the sermons of the chief pastor, or the musical performances of church artists.

Here's how to create multi-site audio networks that function, rather than frustrate.

Start with a Proper AV Production Facility

In many smaller single-site churches, the AV system can get away with being pretty basic. If the building's acoustics are good, the minister may be able to speak without using a microphone. The same may be true for the choir and live musicians,

who can rely on the power of their voices and own amplifiers to get the music across.

Once the decision has been made to move into a larger facility and/or add a second (or more) sites, everything has to be miked, mixed and balanced. This means that the main church must first be properly outfitted with a true AV system before it can provide signals to be fed to satellite campuses.

For single-site churches lacking such equipment, now is the time to bring in a professional AV systems designer/installer; even if the person currently doing AV is knowledgeable enough to do the job. And since this AV installation is being done to support audio signal distribution, multi-site distribution capability will need to be included in the main church build.

Decide on Satellite Campus AV Facilities

The satellite campuses will have AV needs of their own, depending on their relationship to the main church. Will these sites simply reproduce the audio coming from the main site with no intervention? Or will these satellite sites start producing their own audio to be shared across all campuses; whether as standalone audio inserts or back-and-forths in real-time between the sites?

These factors will have to be taken into account, because whatever function the satellite campuses play will determine what level of equipment and two-way interaction is required across the multi-site

network.

Whatever role the satellite campuses will play, it is wise to build in two-way intercom communications from the outset. This will allow the coordination of audio playback from the main church to the satellite campuses and support multi-site content



origination in the future.

Riedel Communications' Artist intercom system is well suited to this purpose. It is a decentralized, scalable digital intercom system that allows small matrixes to be installed at each site, and connected to each other over fiber for fast, delay-free voice communications.

"The Artist matrix is a router at heart, so you can move whatever audio you want between campuses over this system," said Joe Commare, the company's North American marketing manager. "Although I hate to use the word 'agnostic' in a House of Worship setting, the fact is that Artist is format-agnostic when

it comes to digital audio transport. So you can use Audinate's Dante, AES67, or whatever digital audio standard you prefer over Artist."

Clear-Com also offers intercoms that can be effective over multi-site networks.

"The LQ Series of IP

app on smart phones. LQ interfaces also enable users to scale up existing two-way radios for system expansion, and greatly enhance communication with SIP telephony."

Choose IP Transport

We live in a digital world enabled by IP transport. This is why choosing audio technologies that can be transported over IP make the most sense for today's multi-site networks.

Selecting IP ensures that the multi-site network will be expandable and relatively future-proof plus have access to affordable off-the-shelf IT equipment options. It also ensures that the church won't be stuck with a proprietary non-IP system that becomes obsolete in 5-10 years.

"One challenge in audio networking is getting all the sites on the same IP protocol," said Yvonne Ho; principal in Wider Pro, the North American distributor for AuviTran. "For expansion or upgrading in particular, new tools are available to help churches convert and scale without always conducting an overhaul which is expensive and timely. A product like AuviTran's Audio Toolbox allows any protocol to connect (convert) to any other protocol so a site can go from Dante to Ethersound or CobraNet to Dante."

In those cases where a single IP network subnet is unable to handle the number of AV devices being hosted on the multi-site network, software like Audinate's Dante Domain Manager can provide extra

headroom. (Note: Audinate offers free Level 1 and 2 Dante certification at its website: <https://www.audinate.com/resources/training-and-tutorials/dante-certification-training>.)

“Dante Domain Manager allows you to combine IP subnets into a single entity, which solves the problem of scalability for multi-site networks,” said Brad Price, Audinate’s senior product manager. “At the same time, Dante Domain Manager lets you organize your assets logically by location and type, which makes it easy for people to navigate the AV equipment system.”

Decide on Transmission Standards

The type of audio (and video) traffic to be transported over a multi-site audio network, and how it is to be used by satellite campuses, affects the kinds of transmission standards required to move it effectively.

A case in point: North Point Community Church in Alpharetta, Georgia has seven campuses in all. Five of these are connected to each other by dark fiber, while two more are connected using the internet (AV over IP).

“We use dark fiber for those locations where we need to feed uncompressed, real-time video and audio signals,” said Jeremy Lommori, North Point’s senior engineer. “We employ the

SMPTE ST 2110 suite of standards to ensure almost no signal latency occurs going site to site; maybe half a frame. But for the sites where signal latency isn’t an issue – where they record the main church feed and then fit into their own schedule – we can use the internet to send compressed, encoded video/audio at a lower operational cost.”

Again, the specific transmission standard you select for a multi-site network entirely depends on your church’s needs and budget. This said, choosing an IP-based standard allows the church to move from one specific standard to another, while using the same transport network.

Make Room for Video

Although this article is focussed on provisioning multi-site audio networks, a wise AV manager will allow enough space on the network to carry video as well. This is because video appeals to ministers and the masses alike: Once they can hear the pastor’s voice in their satellite locations, the parishioners are likely to want to see who’s speaking as well.

In other words, when planning a multi-site network, aim to build a

multi-site AV network. This will ensure that the system has enough headroom to add video down the road, when people start asking for it. **T**

James Careless is an experienced freelance writer with credits at the *Toronto Star*, *National Post*, and *Globe and Mail* newspapers. He is also a broadcaster/podcaster, and produced the ecumenical radio show “Daybreak”.

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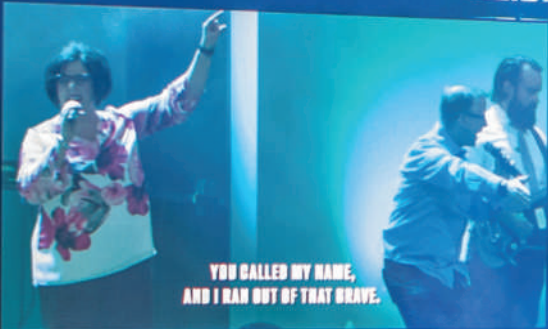
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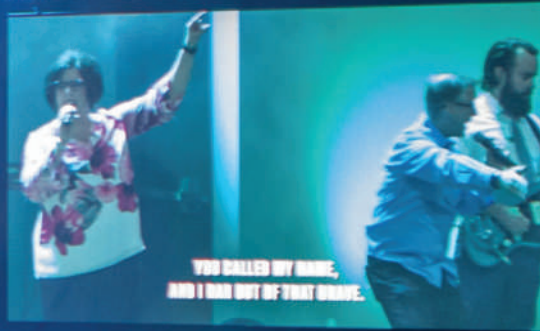
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Champion Forest Baptist Church

BY MIKE MASON



Champion Forest Baptist Church's steady expansion over many decades has recently accelerated, inspiring the launch of satellite locations around its central Houston, Texas location. CFBC's services are decidedly contemporary, with an energetic praise and worship band that's unleashed at inspiring volumes and supported by full production video and theatrical lighting. Instead of receiving a simulcast from the central campus, each CFBC satellite has its own live pastor. The pastors at the different campuses work together to deliver a common message on a given Sunday. When the church was ready to install an AVL system at CFBC's newest, 800-seat, satellite location, as well as the student building in North Klein, Texas, they reached out to Clair Solutions to lead the install.

We had worked with CFBC in the past, installing a new line array system manufactured by our sister company, Clair Brothers, along with a new DiGiCo console at their main location many years ago. That system was designed by the Texas-based AVL consultants

at Idibri. The folks at Champion Forest were really pleased with how that job came together, because they got exactly what they needed at a fair price, and it has continued to serve them well. They initially launched their North Klein location a few years ago by renting space in a school, but when it grew to a size that justified its own building, CFBC hired Idibri to design an awesome AVL system and Clair Solutions to make it a cost-effective reality.

CFBC worked with the architect to open the doors on the North Klein sanctuary with 800 seats. Once that capacity is regularly filled, the design makes it relatively easy to add raked stadium seating in the back that will nearly double the capacity. In anticipation of that eventual reality, our team pulled wire and prepared the infrastructure to make it easy to install delay speakers in the future. In addition, the North Klein location includes a separate student building with a main meeting room that can be subdivided with an airwall into two independent spaces. Clair Solutions worked with Idibri to make the second AVL system in the students' main meeting room a useful "delay" when the full space is being used and to make the combining/separation intuitive to manage even for non-technical staff.

The main audio system at CFBC's North Klein location is a Clair Brothers stereo line array with eight C8 elements per side and a directional low-end array composed of Clair Brothers CS18 and CS218 subwoofers. Eight Clair Brothers kiTCurve12

loudspeakers provide side fill. Lab.gruppen amplifiers power the system with system-level processing and routing logic provided by QSC's Q-SYS platform. A DiGiCo S12 console with two D2 racks mixes the house and monitors, with additional musician-level control from a Livemix personal monitoring system. Shure wired and wireless microphones provide clear, articulate audio at the front of the signal chain. The use of MADI and Dante protocols allows for an entirely digital system.

The video system consists of Hitachi Z-Series and Sony PTZ cameras providing image magnification to the two custom 18 by 10 foot Absen LED screens located on either side of the stage. Camera operators and other technicians communicate with a Clear-Com system. Two Absen LED screens hang side-by-side to create a massive 36 by 10 foot display that raises and lowers at center-stage. The screen provides graphics and lyrics from an intermediately-raised position when the band is playing. Cleverly, the screen lowers all the way down during a sermon to hide the abandoned instruments and band paraphernalia. In that role, the center screen can show relevant imagery or tasteful designs or colors. A Blackmagic ATEM system handles video switching and routing, and CFBC uses Renewed Vision Pro Presenter for lyrics and Renewed Vision Pro Video to run content. All distributed video uses SDI.

Lighting is a mix of ETC conventional Color



Source Pars & Color Source Ellipsoidals, Martin moving fixtures, and Chauvet LED strips. An ETC Sensor IQ works with all the lighting (there are no dimmers in the building whatsoever), and an ETC Paradigm system provides all control in conjunction with a MA Lighting GrandMA3 during a service. The Paradigm system includes "snapshots" of the lighting that can be recalled for simpler events that don't require a lighting operator.

Although Clair Solutions is also an A-list design firm, in this case that was Idibri's role: they wrote the recipe; we baked the cake. That said, we did bring our design experience and deep history in live event productions to make the installation as efficient and effective as possible. ■

Mike Mason, regional vice president at Clair Solutions' Dallas office



Why You Should Always Work With an Integrator

It's an integrator's job to help connect the dots and educate their clients. A good integrator is there every step of the way, providing the right tools and making sure all the different pieces work together in harmony.

What are some of the benefits to hiring a professional?

Continuing education - Integrators can (and should) be available to help teach your volunteers how to properly use new equipment; they will also recommend gear your volunteers should be able to run without need to take university courses in audio engineering or lighting design.

Process improvement - It doesn't matter how long you have been involved in your tech department; there is always room for improvement in your processes and an integrator can help identify those areas, establishing standards that everyone is trained on so important tasks are not only done every time, but done the same way every time.

Help understand and stay within the law - An integrator can help your church obtain the correct music performance and live streaming licenses, educate you on why those licenses are required to begin with, steer you towards the best hearing/assisted listening solutions to keep your facility current with state and nationwide laws, and find wireless channels that fall within the specified and legal channel spectrum for houses of worship, potentially saving your church from being sued and/or fined for inadvertently breaking a law you might not have been aware of.

Better pricing - Integrators have relationships with suppliers and equipment manufacturers that allow them to extend pricing that is often lower than any pricing you will

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Livemix

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LIGHTING EQUIPMENT

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CHAUVET Professional

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- 16 Rogue R3 Wash fixtures
- 32 DJ 32 COLOBAND LED Strip lights

ETC

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- 43 Color Source Spot Light engine w/ Barrels

- 11 D40 Narrow Round Diffuser
- 10 D40 Medium Round Diffuser

MA Lighting

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- 1 grandMA3 onPC 4Port Node 4K
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VIDEO EQUIPMENT

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Ace Backstage

- 3 Double Wide Stage Pockets

Behringer

- 1 X32 Rack Mount Mixer

HITACHI

- 1 Customized camera

Marshall Electronics

- 3 Compact HD Genlock Cameras

Blackmagic Design

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- 2 HyperDeck Studio Pro 2's
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be able to find on your own.

How can you find the right integrator? Network and research! Search the web and social media, and also reach out to other churches that are 'doing it right' and find out who they recommend. Once you have a few integrators to choose from, call them and discuss your goals and budget and see how they can help, and don't be afraid to ask for references.

Find an integrator who can help you design your project "from the inside out". It's easier and cheaper to have your technological infrastructure mapped-out and in-place prior to construction, rather than making those costly decisions afterwards. This includes power requirements, circuit placement, conduit drops for running cables to specific locations, distributed audio/video wiring for campus TV's or lobby speakers, network and WiFi runs, digital audio snakes, stage boxes, hang points and weight calculations for lighting, speakers, screens or LED walls, even sound booth, control room and rack designs.

Discuss your long terms plans with any potential integrators and ask them what you can do in the early stages to make it easier and less costly to add new gear as budget allows. An integrator can help you determine what your first steps should be, the most logical and cost-effective way to add new pieces, and also make sure that the gear you buy now will work with the gear you are planning to add as you grow. **T**

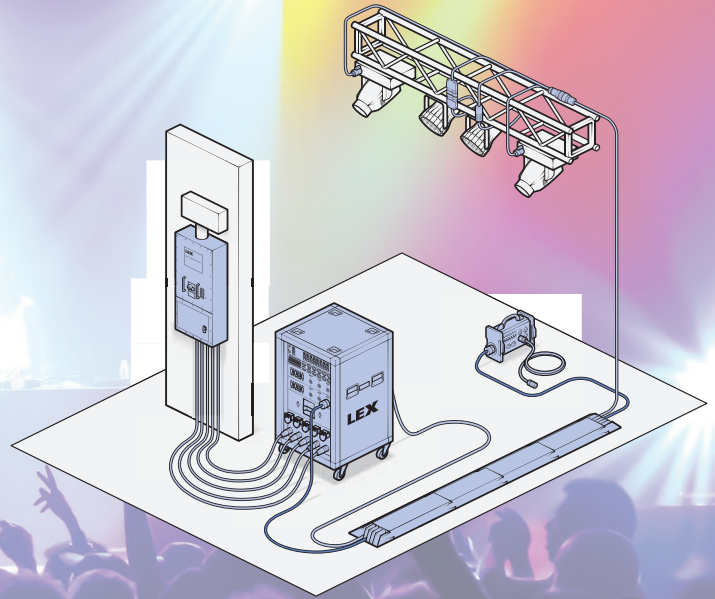




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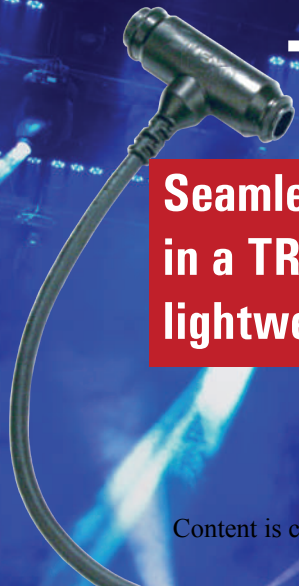
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Pathway Connectivity's Cognito 2 Console

BY DEREK LEE

Recently, it's been hard to label a lighting desk as "unique". They pretty much have the same faders, switches, readouts and connectors, making them all appear to be different flavors of the same dish. Even though the Pathway Connectivity Solutions' Cognito 2 looks like a typical console, which makes it easy to learn if you are jumping from another brand, there are some rather unique differences inside the console that really caught my attention.

Although it has a color touchscreen on the surface, there is an HDMI connector for an external monitor and external control can be interfaced using MIDI and RS-232 allowing connection to ProPresenter and Ableton and many other systems. The touchscreen is the core component for programming the console, although there is a balance of useful faders and switches. For example, pan and tilt can be managed either through two rotary encoder controls, or via a virtual joystick on the touchscreen.

Many of the parameters that appear on the touchscreen can also be controlled by the hard switches. Small graphical indicator "bugs" reveal which button will activate a particular setpoint. Also, in reverse, many of the hard switches will change color to indicate what they are prepared to do.

The recessed back panel houses all of the input and output jacks so that the console can be jammed up against a wall without compromising the integrity of the connectors. Of course, it can also be rack mounted in a more permanent integration.

The Ethernet + PoE jack allows for direct operation via DMX over Ethernet connections, but the console can also be powered via a PoE connection instead of the outboard power supply.

There are two universes of 5-pin DMX including a separate 5-pin DMX input. I'm a big fan of 5 pin connections for DMX since it prevents someone from grabbing a 3-pin audio cable and infecting a data path with improper cable.

A total of 4 USB ports are provided. Two are on the top surface, and the other two are on the rear panel. Each port will accommodate a keyboard, mouse, or USB stick. The two ports on top also provide power if you want to use a

couple of USB powered lights to illuminate the surface. In another extension of good design, the top USB ports can be used to charge your cellphone. The ports still provide power when the console is powered by PoE instead of the power supply.

Natural language is a unique implementation that makes the Cognito easier for novices to operate. Essentially, Natural language control uses "real-world" terms and labels instead of channel numbers and data-level values. Originally called the "Abstract Control Model" authored by Horizon Control, the protocol was inherited when the entire team joined Pathway.

How Cognito 2 handles tasks differs from anything else I've seen. For example, turning up the red color channel raises the red. But if you want more blue, turning up the blue channel also reduces the red so you are going toward blue rather than just mixing into an unwanted magenta. This may be a more difficult concept adjustment for veterans that are ingrained with trying to estimate where the color curve might be, but it makes so much sense. Another example is to think about panning a moving head fixture. Consider two fixtures: one with a 360 degree pan range and the other with 540 degrees of pan capability. If you start them both aimed at the same point and adjust the pan control, they will quickly diverge from being parallel. That is because out of 65,536 increments of pan between 0 and 100 percent, 13 percent





of a 360-degree pan range is only 45 degrees, as opposed to 68 degrees of movement with the second 540-degree fixture. Natural language with the Pathway differs in that it will keep beams moving parallel even if they have different characteristics.

Another nice feature is the context sensitive help document that can be called up on the touchscreen along with tutorials for training purposes. Reading the 64 page manual is highly recommended for this product, regardless of how many operators insist on never reading manuals. There are so many clues and hints to situations that having a little extra knowledge is a valuable thing. For instance, the DBO (Dead Black Out) button above the Grand Master fader will glow blue if the Grand Master is at full intensity. If not at full, then the DBO button glows red, alerting the operator that the console is producing less than full output. There are also a bunch of detailed internet tutorial videos in bite sized durations that get into the most detailed of feature explanations which I highly recommend.

By pressing the Power button once and then the Lock button, the console enters “Wall Station” mode, where the touch screen becomes a preset recall panel while locking the ability to program. In this mode, anyone can operate a selection of scenes without fear of messing up something deeper in the configuration or programming. Basically, it behaves like a standard lighting wall station which is a perfectly suited feature for churches that have laypeople using the facility during the week.

Also, a benefit for churches is the ability to start small and upgrade the console as their needs increase. From the “Starter” level, there are four more ascending levels of channel counts and IO capabilities that can be added via the

internet when the Cognito is connected to a data network. Also, building a show can be done offline using a free downloadable offline editor (OLE) that works on Window or Mac based hardware.

Another great feature is the ability of the Cognito console to be controlled by the Vignette wall controller series of products. This is especially helpful for “amateur” operation of the lights during the week when a small group might want to do their own event. Vignette can be configured with a few button modules and fader modules networked around the room that can be mapped to specific scene settings with snapshots. The general daily users can still fade several useable scenes without needing to understand the Cognito console. When the Cognito console is turned back on, the Vignette yields control back to the console.

Quick Note: typo on Quick Start Guide: Page 20-Bump Momentary and Bump Toggle appear to be reversed in the Action/Function description. ■

Derek Lee is the Technical Director at Cedarview Church, and also owns the AV-integration company Media Dynamics.

DEREK'S REPORT

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

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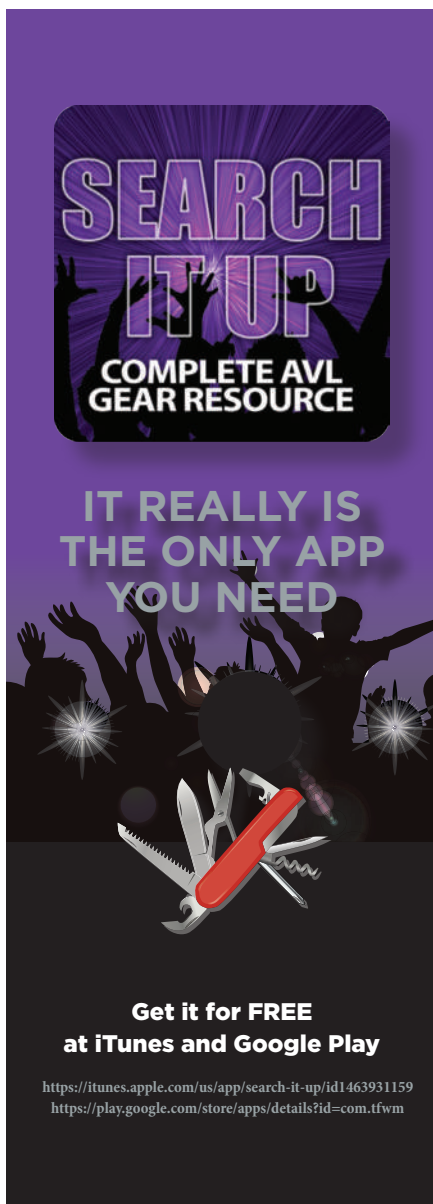


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