

ETA ENTERTAINMENT TECHNOLOGY ASIA

For The Technical And Production Professionals in Asia



MAY 2022

Creative Technology Middle East Impresses the World Through EXPO 2020

LED VIDEOWALLS - TRESTLING
THE CONVERGENCE OF CONTENT
AND TECHNOLOGY

ALEX COLUMN: BACK TO BASIC,
THE MIC PREAMP

REYNOLD'S REINFORCES
TWO OF BANGALORE'S MOST
MEMORABLE POST-PANDEMIC
LIVE CONCERTS

W W W . E - T E C H A S I A . C O M

eos A P E X

The luxury of complete control.



ETC's flagship line of lighting control consoles offers a sleek control interface engineered for your comfort and customization. With generous programming surfaces and the power to run complex rigs, Eos Apex is the ultimate hands-on, professional workspace – powered by the ultimate control platform.

etcconnect.com/Eos

CONTENTS



24 LED VIDEOWALLS - Trestling the Convergence
of Content and Technology

IN THIS ISSUE VOL 23 ISSUE 05 MAY 2022

04 FIRST WORDS

06 NEWS

14 VIDEO FILES

ALEX COLUMN

15 Back to Basic, The Mic Preamp

16 ENNOVATION

LIVE

34 **DUBAI:** Creative Technology Middle East Impresses
the World through EXPO 2020

42 **JAPAN:** Naquyo Artists Harness d&b Technology to
Create Immersive Fusion of Music and Art

44 **JAPAN:** Outline Dominates the Dome

48 **INDIA:** Reynold's Reinforces Two of Bangalore's
Most Memorable Post-pandemic Live Concerts



46 **NEW ZEALAND:** Rebe Helps Create a Big Picture
for 2022 Halberg Awards

52 **SAUDI ARABIA:** Protec Takes Command at World
Defense Show 2022

56 MARKET PLACE



The world is opening up, and exhibitions are making a comeback. Prolight + Sound Frankfurt, held from 26 to 29 April, saw around 20,000 visitors from 93 countries taking part “in this tremendous reunion of the event industry”, as commented by the organisers. Closer to the region, PALM EXPO will be taking place

in Mumbai, India, from 26 to 28 May. Live events are also making a comeback in the region which is undoubtedly music to the ears of industry professionals. In this issue, we highlight Reynolds Sound & Lighting’s involvement in two post-Covid concerts held in Bangalore. It has honestly been a while since we have been able to cover so many events in our magazine, and we are just so delighted.

Thomas Richard Prakasam

Publisher / Editorial Director
thomas@spinworkz.com



Ram Bhavanashi

Editor, India And Middle East
ram@spinworkz.com



Julie Tan

Admin & Circulation
admin@spinworkz.com



David Lim

Director, Industry Engagement
Tel: +65 96835275
davidlim@spinworkz.com



Elton Noronha

Features Editor
elton.s.noronha@hotmail.com



Hazel Gundaya

Design / Layout

To subscribe to Entertainment Technology Asia click here: <https://www.e-techasia.com/subscribe>

PUBLISHED BY



71, Bukit Batok Crescent, #06-13 Prestige Centre,
Singapore 658071. Tel: (65) 6316 2716
www.spinworkz.com

Disclaimer : Entertainment Technology Asia is published 12 times a year. All rights reserved. No part of this magazine is to be reproduced, whether mechanical or electronic without the prior written consent of the publisher. Views expressed in this magazine do not necessarily reflect those of the editor or the publisher. Unsolicited contributions are welcome but the editor reserves the discretion to use them. Whilst every care is taken to ensure the accuracy and honesty in both editorial and advertising content at press time, the publisher will not be liable for any inaccuracies.

Please be informed that products and company names mentioned in this publication may be protected with tradenames, trademarks or registered trademarks of their respective owners. Our non inclusion of such symbols is not an indication of us not recognising the copyright but rather to have a common look across our articles. Misuse of tradenames, trademarks or registered trademarks is strictly prohibited. It is the obligation of our readers to check if company names and products are protected with tradenames, trademarks or registered trademarks.

OUR COLLABORATORS

Rosalind Tan

Website Management Wizard

PV Anthony

Server and IT Security Guru



presents:

IMPRESSION X5

prolight+sound

26 – 29 April 2022
Booth 12.1 C30

**OUT
NOW!**



Watch the video:



The first washlight of a new generation!

High Efficiency Output
without Compromise

Round face with a super narrow
3.5° beam to a vast 60° wash

High TLCI and TM-30 values
for standard-setting light quality

Prismatic Group Adds PROLIGHTS Dot Q LEDs to Inventory



AUSTRALIA: Art, Entertainment, and Events Company, Prismatic Group has purchased sixty (ten cases) of the IP-rated PROLIGHTS Dot Q ultra-compact, wireless, battery LED lights.

Stacy Kempton, CEO of the group, explained: "We had a great sales rep from Show Technology (<https://www.showtech.com.au/>) (Gareth Mealing) take me through all the options for lighting fixtures to meet our scope and answered my long list of questions. Versatility was very high on the must-have list for all our purchases, as we work across theatre, music, corporates, and other live events and were pushing more into outdoor art installations and architectural lighting as part of our pivot during Covid."

Prismatic Group ultimately chose PROLIGHTS because they trust the brand and a large percentage of their inventory is from them.

"The Dot Q are compact, lightweight, battery-operated, wireless DMX and have an IP rating so they can handle some rain," she added. "These were all the features we wanted in a fixture so that we could avoid cable runs in outdoor public spaces and didn't need to worry as much

about the weather. The inbuilt magnet, large range of included accessories and the fact it all came in an easy-to-handle weatherproof case was a bonus. They are also very punchy with RGBW LEDs and if we find that we need a bit more power we just place them in groups."

During the sales pitch, Stacy noted that it was obvious they could be used to uplight walls, uplight trees and yet be used as part of an elegant table centrepiece. However, she found so many more uses for them.

"They have been held by people to uplight faces, attached to sheds for bush dances and gazebos for night market stalls, lit outdoor stages, used to create impromptu festoon lighting and internally lit opaque sculptures just to name a few," she said. "The versatility has been well beyond what we expected. They are a great little set of lights that punch well above their weight."

The LEDs are sold in the Dot QPack, a bundle composed of 6pcs of Dot Q, IR remote controller, accessories, and charger for the whole set - all included in a sturdy ABS case.

PROLIGHTS/Dot QPack



►► NEUMANN.BERLIN

STUDIO HEADPHONES



Mixing with Confidence

NDH 30 – OPEN DYNAMIC HEADPHONE

Superior linearity – like a perfectly calibrated Neumann loudspeaker system |
High-precision imaging with razor-sharp localization | Manufactured to extremely tight tolerances



NEW: NDH 30

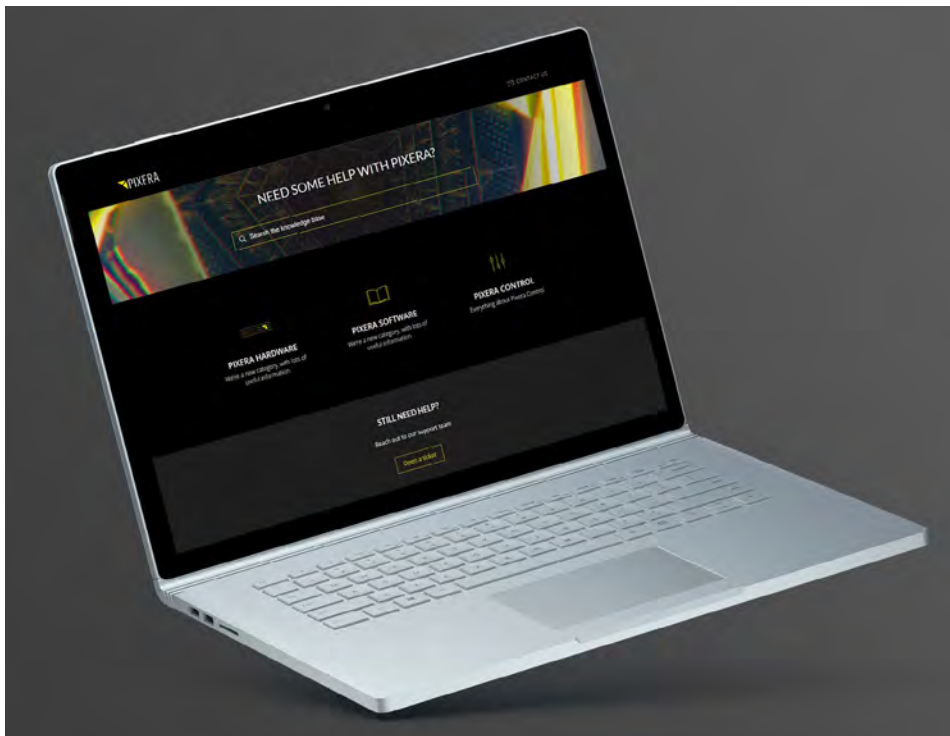
Open Dynamic Headphone
Sound and mix compatible with Neumann KH-Line speakers
Reference-class sound quality for mixing & mastering



Also available: NDH 20

Closed Dynamic Headphone
Excellent isolation allows working in noisy environments
Monitoring, editing, mixing. On the road, at home, in the studio.

PIXERA User Community Receives PIXERA Knowledge Base



AV Stumpfl GmbH

GLOBAL: AV Stumpfl has released a new online information platform for its rapidly growing PIXERA media server user community called the “PIXERA knowledge base”.

In addition to combining the latest written PIXERA documentation with video tutorials and animated clips of key topics, visitors to the knowledge base can also contact the PIXERA team by creating a support ticket from the same interface.

The knowledge base covers topics related to PIXERA media server hardware, software, and the new show control system PIXERA control.

PIXERA control is a distributed, software-based integration and control framework that empowers users to seamlessly host new functionalities within the PIXERA

media server system and to control all aspects of an extended project environment. Anything users create and integrate can be distributed across their connected systems and shared.

PIXERA project manager and trainer Florian Eder outlined the reasons for introducing the knowledge base: “Our user community has grown a lot recently and is still growing really fast. We felt the need to create a one-stop environment where all available information could be collected and easily accessed, as well as enabling users to get in touch with our support team directly.”

With PIXERA being regularly used for a great variety of different applications and programming scenarios worldwide, direct written input from experienced users is very welcome: “We would love to hear from AV professionals who want to contribute to our ever-growing knowledge base. When it comes to our PIXERA user community, we all empower each other.”, explained Florian Eder.

Click [HERE](#) to access the new PIXERA knowledge base.

[AV Stumpfl](#)



XS Wireless IEM

About time to level up

Make the move to personal monitoring with Sennheiser's new XS WIRELESS IEM. Defining new standards for simple, flexible, and reliable wireless in-ear monitoring, this system is designed to help you level up your sound – regardless of your experience level. Whether a rehearsal or live performance, on a club stage or for a worship service, benefit from renowned Sennheiser sound and solid wireless reliability packaged into a convenient system – letting you focus on playing and singing your best.

www.sennheiser.com/XSW-IEM



SENNHEISER

Elite Technology Makes a MegaPointe Investment



©Darren Russell

AUSTRALIA: Elite Event Technology (EET) – one of Australia’s leading rental and production companies – has expanded its stock of Robe lighting fixtures by adding 16 x Robe MegaPointe moving lights, bringing their total supply to 32.

“MegaPointe is a go-to lighting fixture for so many entertainment and corporate event scenarios,” commented EET’s Darren Russell. “It is highly versatile, so we knew it was a solid investment with a good ROI, and that the kit will be busy all the time,” he stated, adding “it’s a great all-purpose fixture with an amazing output for the size and weight!”

One of the world’s leading moving light manufacturers, it is no surprise that several other Robe products appear in EET’s rental inventory, including Spiiders, Pointes, BMFL Spots and BMFL WashBeams, Spikies, LEDBeam 100s,



LEDWash 600s and LEDWash 300+s, MiniMe's, MMX Spots, DLX Spots, and 600E Spots. Darren was an early adopter and started purchasing Robe products around 15 years ago when the brand was still emerging. Since then, Robe has become a market leader and all these products have proved to be reliable workhorses.

MegaPointe is one of Robe's all-time best-selling moving lights. With super-bright and sharp parallel beams, excellent gobo projection, precise movement, smooth CMY colour mixing, and dimming plus a multitude of beam splitting, wash, and shaping effects, the cutting-edge optical system design provides a crystal clear, razor-edged beam, which is adjustable via the zoom, from a tight 1.8° beam to a wide 42-degree wash.

Static and rotating (glass) gobos produce precision in-air effects as well as outstanding projected images with a high-contrast flat field. The MegaPointe's effects engine has several beam and 'flower' effects, and the beam can also be shaped using innovative shutter emulation.

EET's new MegaPointes immediately went out to several music events including the 2022 SummerSalt Festival, at Stage 88 in Australia, where they were used by multiple lighting designers including Kait Hall and Steve Granville.

They were also in action on the Red Hot Summer tour which played the same venue as part of the Unfinished Business tour, complete with an impressive line-up of Australian artists plus multiple LDs, like the semi-legendary Jeff Pavey!

The entire lighting rig – apart from blinders – was Robe for both these events, underlining Darren and Elite Event Technology's commitment to the best production values and the brand that they have been supporting since near the beginning of its journey.

Robe

NEW GENERATION ELECTRIC CHAIN HOIST LP



**WEATHERPROOF
LIGHT
ROBUST**

**QUIET
POWERFUL
DURABLE**



GIS

swiss lifting solutions

GIS AG | swiss lifting solutions | CH-6247 Schötz | Phone +41 41 984 11 33
tel@gis-ag.ch | www.gis-ag.ch

 since
1957

Adamson E-Series Enters Bangalore with Sugandar House of Sound & Light



Sugandar House of Sound & Light team with the Adamson E-Series.

INDIA: Leading technical supplier, Sugandar House of Sound & Light (<https://sugandar.com/>) has recently joined the Adamson E-Series network with the purchase of 12 x E12 3-way line array enclosures, 16 x E119 subwoofers, and 7 x Lab.gruppen 20,000W PLM20K44 amplifiers.

“Our firm prides itself on ‘keeping its ear to the ground’ in order to keep abreast of current trends and developments,” said Shiva Kumar and Prabhakar of Sugandar. “We are constantly looking to improve our operational system, and maintain the highest international benchmarks; Adamson helps us attain that vision of becoming the solutions provider of choice for all major events in the city.”

Concluding, “The E-Series is a great-sounding system with high-fidelity, phase coherence, and clarity. It offers a lot of punch, is easy to use and looks great! We’re thrilled to join the Adamson network as we continue to expand and provide our clients the latest, international-standard equipment.”

[Adamson](#)

DESIGNING WORKSPACES IN CHANGING TIMES



Certified AV Specialist Course

This year PALM AV-ICN Expo's very own three-day certification course aims to empower attendees with an understanding of technology and trends in the AV world. The speakers **Abdul Waheed**, Managing Director, EYTE Technologies Pvt. Ltd & **Arif Patil**, Principal Consultant at EYTE Technologies Pvt. Ltd will be providing knowledgeable information on how one can create talent with specific learning for AV integration and more.

Course Structure:

GOING BACK TO BASICS

DAY 1

- a) Basics of Audio, Video and Control
- b) AV Maths
- c) Design Considerations

DESIGN PHASE/DESIGNING

DAY 2

- a) Requirement Gathering (Need v/s Wants)
- b) Project Flow

TECHNOLOGY POST COVID

DAY 3

- a) Shift from Professional to Consumer
- b) Lifestyle and trends Post Covid
- c) Technology and Experience

Training Conducted by:



ABDUL WAHEED
Managing Director,
EYTE Technologies Pvt. Ltd. (CTS)



ARIF PATIL
Principal Consultant,
EYTE Technologies Pvt. Ltd.
(CTS-I along with CCNA Certification)

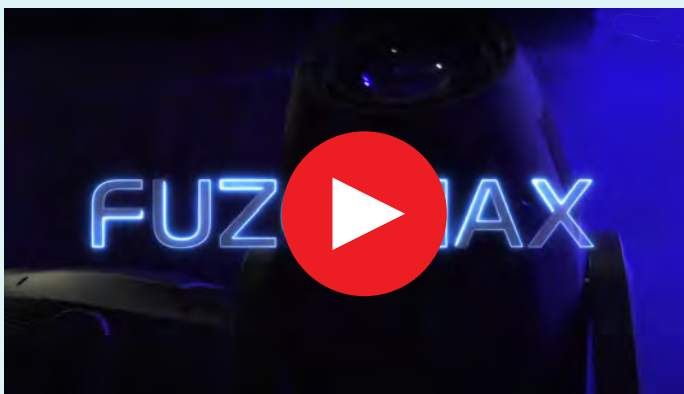
To become a part of this course, register here:
<https://av-icnx.com/cavs-2022.aspx>

Contact: **SMITA RAI**
+91 928 936 8200

Organised by:



Elation FUZE MAX Series



The FUZE MAX Profile and FUZE MAX Spot from Elation Professional are more than double the output of previous models. With a large 140mm front aperture and a powerful 800W 5-colour homogenized LED array, the Fuze MAX series is a punchy full spectrum automated LED fixture designed for theatre, television, and a wide array of other precision lighting applications. In addition to the multitude of creative features, the FUZE MAX PROFILE offers 4 rotating full blackout framing blades, and the FUZE MAX SPOT offers dual rotating gobo wheels.

Ayrton Zonda 9 Luminaires



Zonda 9 introduces a new family of products equipped with a high-performance 40W LED source with RGB+W additive colour synthesis. Though they may look alike, each Zonda luminaire has a distinct personality. Zonda 9 Wash is a subtle luminaire allows LDs for unlimited freedom with its myriad of colour shades. Zonda 9 FX is a creative luminaire capable of prolific stage effects. Its translucent honeycomb creates a hypnotic LiquidEffect.

ADJ Lighting Encore FR Pro Color



Watch Mike Turner, ADJ Regional Manager (Central USA), explain the professional-grade Fresnel fixture with a 7-inch lens designed for key light, as a fill light, and as a back light. He notes the addition of Lime to the 6 primary RGBACL LED colour line-up to illuminate faces. The fixtures also feature in-built 7° - 53° motorized zoom which allows you to pinpoint either specific props or narrow from one person to expand on an entire choir.

Scenes from World Defense Show 'Command & Control Center'



Unique attractions generated high levels of interest at the recent World Defense Show held in Riyadh, Saudi Arabia that was held from the 6th till the 9th of March. One of them being the 'Command & Control Center' experience which was entrusted to Protec to handle the full theatrical and stage management, as well as complete scenic, staging, and technical production for the inaugural edition of the expo.

Back to Basic, the Mic Preamp



A lot of you have asked for some more background on some basic pro Audio topics and I thought I would pick the Microphone Preamplifier as a starting point for signal management. Quite a lot of consideration goes into this, also because of Gain Staging. In the current time, when almost all larger

consoles are now digital consoles, the role of the Mic preamplifier also becomes even more important, since it defines the audio quality interface before anything audio just becomes bits and bytes in a computer.

So let's have a look at traditional designs and understand some limitations and what that means for the output. Even though it sounds simple, the Mic Preamp has quite a number of items which need to be considered and which impact the quality and sound of the unit a lot. You will need a input stage, then a phantom power supply for condenser microphones, then a Polarity Switch to switch polarity in case you need to, plus a Input PAD for signals that might be too hot for the rest of the preamp. Some designs offer "low Z switch" for signals coming from low impedance sources and then of course the general mic preamp, mostly done by an OP Amp design plus finally an output buffer to decouple the Mic preamp from the next circuitry in the signal processing chain.

Traditionally the main OP Amp was offered by companies like Texas Instruments and Analog Devices and they both offered a variety with different gain capacity and different signal to noise ratio. Of course the entire circuitry will require a power supply and at this stage the quality and cleanliness of the supplied DC voltage to the Op Amp will have a major impact in the quality of the output signal. The better and the cleaner the DC voltage is, the better the performance of the preamp within their specification. Ideally you would drive all this from a pure DC source (battery) which in reality is just not practical. This explains the large and heavy power supply units for analog consoles both for studio and also for live sound applications.

To make things a little more interesting you will need a COMMON MODE REJECTION circuitry to avoid the amplification of common mode sine wave signals (hum). The CMRR (Common Mode Rejection Ratio) is a rather critical item in the signal chain and quite sensitive to design. And since we are in 2022, you will of course also have to make sure that you are protected against RFI (Radio Frequency Interference) in the signal chain. Doing all this while maintaining the purest possible signal path for your precious low level mic signals.

The early generation Microphone preamplifiers did use a single Resistor for the gain setting and generally this resistor would drive the BIAS Voltage into the Op Amp and therewith drive the gain stage. However this created issues with rather high noise levels at low gain, because you consume a lot of voltage in the resistors and they do create noise and it also did create rather high distortion levels at the higher end of the gain settings, because you are experiencing thermal noise of the OP Amp chip, again due to reaching saturation of the Op Amp chipset and then this will add harmonic distortion to the signal. A solution for all this was found in the Current Feedback Instrumentation amp. Here the current is driving the Gain of the OP Amp and the circuitry for driving the current is designed in such a way that performance at low gain and high gain is managed better and with less noise impact.

This is also the most widely used variety in today's world before signals are being converted to Digital Signals inside digital consoles. So luckily you really don't need to worry too much about the details of the mic preamp design, since over the course of developments this has been optimized in both size and also performance and a entire preamp is nowadays integrated in one single chipset. A good preamp is still very important of course, but today we get to enjoy a whole lot of other problems when working in the digital domain. More on that later...

Join the conversation and share your thoughts with Alex. Alex can be reached at alex@asaudio.de

Elation Fuze MAX Offers MAXimum Fusion of Performance, Features, and Value



Available in Spot and Profile framing versions, the Fuze MAX line possesses specifications that rival 1000W/1200W class discharge fixtures. The fixtures have been designed for precision lighting applications such as theatre, broadcast, and Houses of Worship where a wider chromatic spectrum, a full feature set, and outstanding quality are required.

The Fuze MAX Spot and Fuze MAX Profile, both automated LED moving heads, offer full-spectrum performance from a 92 CRI engine that utilizes an 800W 5-colour homogenized LED array of Red, Green, Blue, Mint, and Amber sources. The RGBMA LED engine produces fully blended colours across an impressively wide breadth of the colour spectrum like rich saturates and vibrant primary colours, along with pure dynamic whites that are tunable from 2400-8500K. The addition of Amber and Mint emitters has extended the possible range of colours, including warmer tones, theatrical whites, and pastels. Colours blend quickly yet smoothly with natural colour transitions and no colour fringing.

The carefully tuned LEDs ensure accurate colour reproduction and dynamic whites while delivering a powerful output of over 21,000 total fixture lumens. Precision control over green/magenta allows for detailed

colour accuracy, allowing the user to perfectly match light sources and create visual balance. Virtual colour temperature plus CMY emulation provides the designer with immediate access to the impressive LED colour array while a virtual gel library allows for easy recall of a variety of premixed shades.

The Fuze MAX uses advanced, high-quality optics that are razor-sharp for crisp projections, and dimming of the LED engine is smooth and step-less with variable 16-bit dimming curve modes available to suit any application. Both the Fuze MAX Spot and Fuze MAX Profile house a motorized zoom that can adjust the beam angle from a tight 7° to 53° wide and ship with an included snoot attachment to position the beam even more precisely. The Fuze MAX Profile houses a full blackout framing system with four rotating blades and +/- 60° indexing for full control of the beam shape when required.

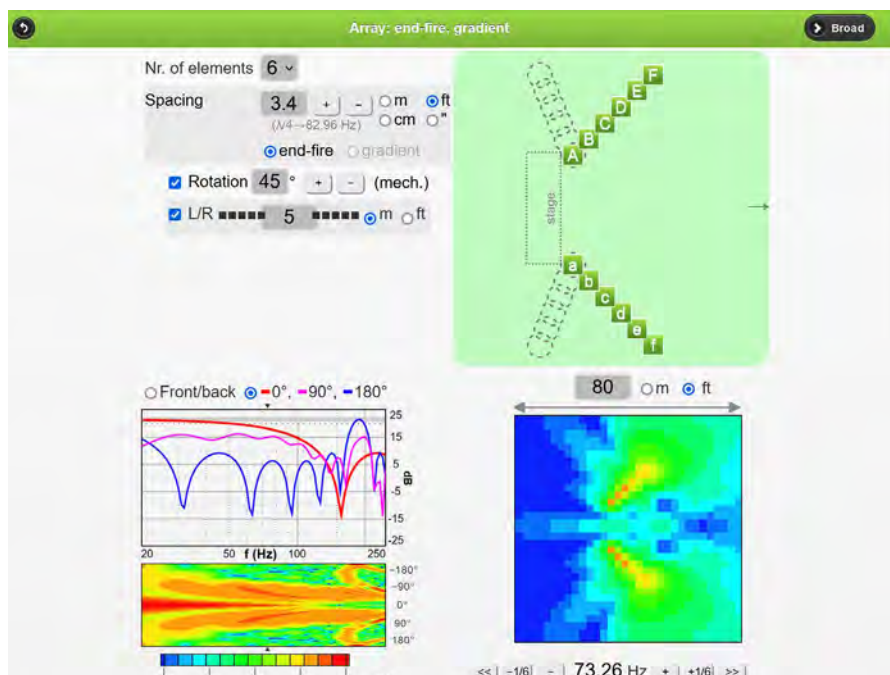
Designers have access to a comprehensive FX package that includes 19 gobos across three gobo wheels in the Fuze MAX Spot and 13 gobos across two gobo wheels in the Fuze MAX Profile. Both fixtures offer rotating and fixed glass gobos, ideal for aerials, textures, or breakups, and an animation wheel can also be engaged to bring graphics to life. Effects can be multiplied via dual prisms (4-facet round and linear) and a dual variable frost filter (Medium/Wash) can be employed when designers wish to diffuse the light for softer gobo or wash effects. A motorized iris and high-speed electronic shutter and strobe can be engaged for further impression.

The Fuze MAX will also be welcome in noise-sensitive environments thanks to its quiet operation and Mute mode option. The LED refresh rate frequency can be adjusted remotely to avoid any flickering, a must when working with today's sensitive camera systems.

The full-spectrum luminaires are now shipping and will début at Prolight + Sound (Hall 12.1, Stands B49, C49).

[Elation Professional/Fuze MAX Profile](#)

RCF Updates PAcalculate App with Subwoofer Array Modelling



PAcalculate version 1.3.2, an Android and iOS app for mobile phones or tablets, comes equipped with over 30 calculators, reference info, and utilities for both sound reinforcement and lighting professionals.

The update focuses on in-line and broadside subwoofer array calculators. The in-line calculators allow for simulation of end-fire and gradient arrays, including an obscure 4-element topology. The broadside section features independent mechanical and electronic arcing and steering, with the possibility of adding a gradient line, or several end-fire lines, a type of subwoofer configuration that has become widespread to achieve wide uniform subwoofer coverage with reduced stage leakage.

Frequency response graphs (front-to-back ratio as well as multi-angle responses), an isobar display, polar plots, and coverage maps provide a comprehensive set of graphics for an insightful analysis of design alternatives. Up to 96 elements (sound sources) can be simulated, 48+48 in L/R mode. A table displays coordinates and settings (delay, polarity) that can be emailed for reference. A footer alerts the user if the specific configuration requires delay tuning on top of the results calculated (such as for gradient arrays).

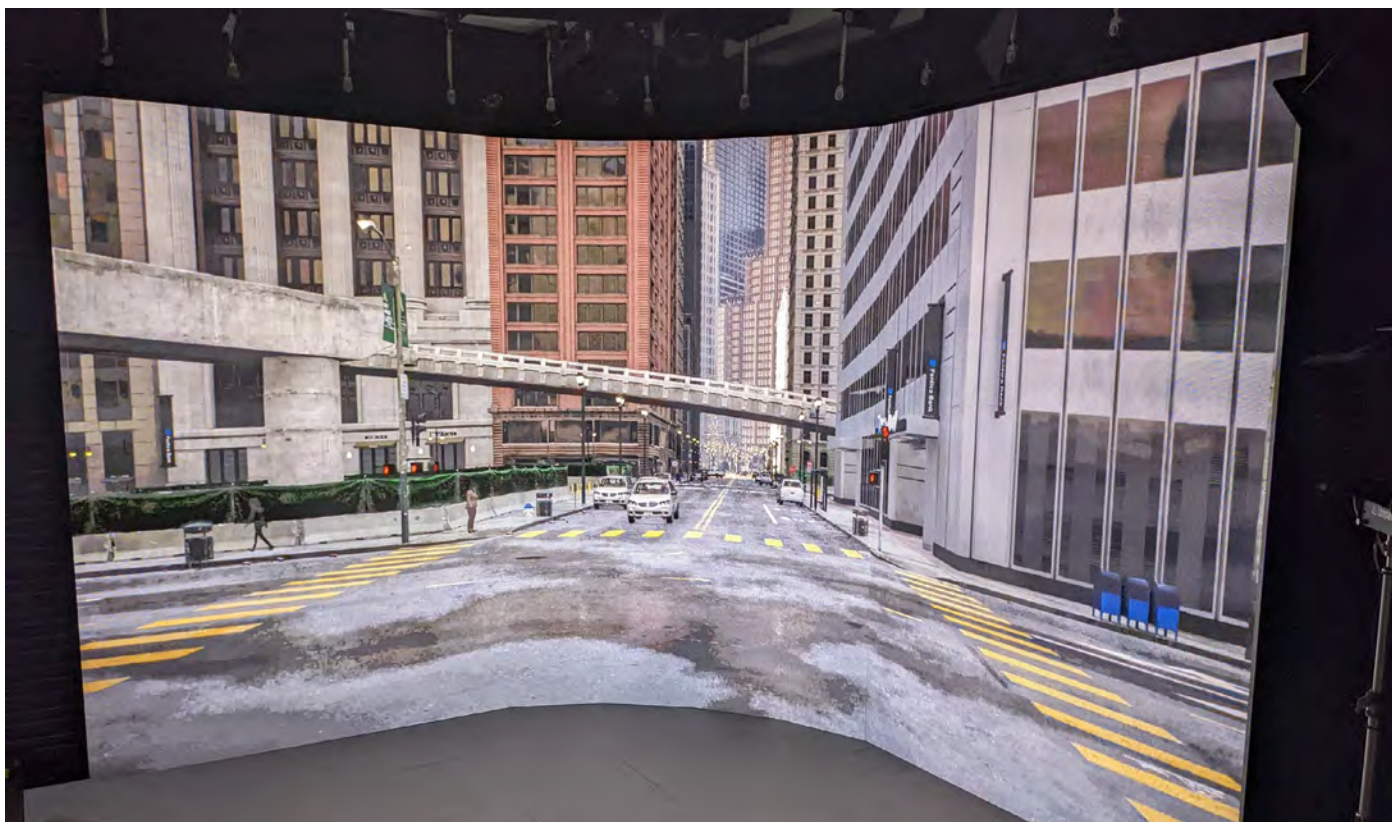
The dedicated tool helps designers and engineers achieve results quickly. As an example, comparing electronic and mechanical steering just requires entering the angle in the rotation input field of the broadside array calculator to get results for the former, and then clicking on a radio button to switch to results for the latter.

The straightforward user interface also encourages 'what if' experimentation, such as trying different toe-out angles in Left/Right deployments. Settings can be combined such that the user could, say, simulate an L/R arrangement with two broadside arrays that are arced electronically (using delay) but also steered mechanically and complemented with a gradient line.

PAcalculate supports 8 different languages (including English, Spanish, Italian, and Chinese) and can be downloaded for free from Google Play Store (<https://play.google.com/store/apps/details?id=com.PAcalculator>) or Apple App Store (<https://itunes.apple.com/us/app/pacalculate/id793460437>).

RCF

disguise Levels Up Game Engine Visuals with Unreal Engine 5 Plugin



Following the highly anticipated launch of Epic Games' Unreal Engine 5 (<https://www.unrealengine.com/en-US/unreal-engine-5>), users of visual storytelling platform disguise can, with the help of disguise's new RenderStream plugin, immediately benefit from the game engine's next-generation photorealistic visual capabilities.

disguise has been working closely with Epic Games to develop and launch the latest version of their free, open-sourced proprietary RenderStream plugin that allows its user community to seamlessly integrate Unreal Engine into their disguise workflow with minimal configuration.

Through RenderStream, disguise users can create output streams on Unreal Engine projects allowing them to make real-time content changes directly from disguise's software interface Designer.

The new plugin also enables users to unlock new features in Unreal Engine 5 such as the Nanite virtualised micropolygon geometry system and a new Virtual

Shadow Map system, allowing them to create virtual scenes in extended reality (XR) with massive amounts of geometric detail.

To benefit from the latest features in Unreal Engine 5 within their disguise productions, users will need to have access to the latest disguise software release, r21 (https://download.disguise.one/?utm_source=Industry+press&utm_medium=Press+release).

Released just a week before UE5, r21 brought significant improvements to the disguise software UI and overall system performance, as well as new tools for colour workflows. Developed with the help of disguise's Live and Colour Insider groups and software beta testers, r21 addresses common user challenges and requirements across both live and virtual production environments, also unlocking a streamlined user experience.

[disguise/RenderStream Plugin](#)

KLOTZ AIS Presents PowerLink 19" PDR Series for 1:1 Sub-Distribution of 16A Loads



The new 19" PDR (Power Distribution Rack) comes with ScapeX compatible RMP power multicore and powerCON TRUE1 connectors, for sub-distribution of 16A loads for live stage applications without loss.

The series is specifically designed for the event industry, theatre and television production. Its robust 19" aluminium housing is powder coated, laser engraved and fitted with high-quality power and load connectors. With the PDR Power Distribution Series, the six discrete 16A circuits of a ScapeX compatible load multicore can be distributed to one powerCON TRUE1 socket each.

In contrast, six discrete 16A circuits, each supplied via a powerCON TRUE1 power cable, can also be bundled into one ScapeX-compatible 6-channel power multicore. In its maximum configuration (PDR12N.-SOC), up to 12 discrete 16A circuits can be distributed or bundled from or to two ScapeX-compatible load multicores on only 2 RU. The quality of the PDR series is tested according to VDE 0701-0702. PowerLink 19" power distribution units are available with either 6 or 12 channels.

KLOTZ AIS is also offering mechanically heavy-duty power cables of the PT1 and PT2 series. Based on the rubber-sheathed TITANEX cable, these ProAVM connection cables, specially developed for outdoor use, are the ideal choice when robustness and high reliability are required.

Fitted with lockable power-CON TRUE1 or PowerTwist TR1 connectors, these cables are not only dust- and water-protected according to IP65 but also comply with the BauPVO class ECA to EN50575 as well as the

IEC 60245-4 type 66 standard. A generous conductor cross-section of up to $3 \times 2.5 \text{ mm}^2$ provides a high current carrying capacity while the outer sheath made of cross-linked elastomer ensures flame retardancy, oil and ozone resistance as well as increased impact resistance. It works over an exceptionally wide temperature range of $-50^\circ\text{C} / +90^\circ\text{C}$ in installed operations. In combination with the PowerLink PDR power distributor, KLOTZ AIS offers an extremely reliable power distribution system that is just as suitable for demanding use at live events as it is for permanent outdoor installation.

To be able to deliver their customary "made in Germany" quality, all KLOTZ AIS power cables pass through the End of Line test desk for final inspection as the last production step before shipping. A comprehensive test for interruption, reverse polarity, short circuit as well as measurements of the protective conductor resistance and isolation resistance according to DIN VDE 0701-0702 verify flawless operation and compliance with safety standards.

KLOTZ AIS

Ayrton Reinvents Stage Lighting with Zonda 40W LED Fixtures

Zonda 9 Wash and Zonda 9 FX are the first luminaires in a new family of products devised for stage lighting. Equipped with a high-performance 40W LED source with RGB+W additive colour synthesis, these new products fit into Ayrton's Multi Sources 9 Series category.

Zonda 9 Wash

Zonda 9 Wash is equipped with a silent ventilation mode, built specially to accommodate the quieter environment often required by stage lighting. The careful colour mixing of the sources allows for perfect colour reproduction, and each concentric circle can be controlled independently to adjust the size of the emitting surface and the luminaire's power. A complete library of pre-programmed colours - created in collaboration with lighting designers - is instantly accessible.

Zonda 9 FX

Zonda 9 FX is a versatile fully-equipped luminaire designed for a multitude of applications. It borrows from the main features of the Wash version and offers infinite continuous rotation on the pan and tilt axes (I.R.S.). Individual control of each LED allows you to achieve 3D volumetric effects. Zonda 9 FX can produce a high-definition liquid effect from between its main lenses to create complex graphic effects, known as LiquidEffect. This effect can be used alone or in combination with the main LED matrix.

Zonda 9 Wash and Zonda 9 FX share the same proprietary optical system which consists of a wide, 384mm diameter, dial of 37 lenses in PMMA, combined

with 37 glass light guides with an output surface made of an optical microstructure. This LED/optical system combination can produce a powerful light output of 25,000 lumens and a perfectly homogeneous mixture of pastel and saturated colours, regardless of the colour mix chosen, with a CRI of <86.



The perfectly crisp separation between the light sources helps to reinforce the level of contrast. Endowed with a 50mm truncated transmitting lens with an optical surface equivalent to that of a 70mm round lens, Zonda 9 Wash and Zonda 9 FX can obtain a highly intensive beam with a zoom ratio of 14:1 and a wide zoom range of 4° to 56°.

A new optimised cooling system, simplified lens guidance systems, and smarter design of the internal structure have made it possible to reduce the size and weight of these luminaires considerably, in keeping with Ayrton's Slim-21 programme which miniaturises and reduces the weight of its fixtures.

Zonda 9 Wash and Zonda 9 FX will make their tradeshow début at Prolight+Sound (Hall 12, Stand D74-D75).

[Ayrton/Zonda 9 Wash](#)

NEUTRIK Extends powerCON TOP Series with TOP-L Power Connector



The powerCON TRUE1 TOP-L has been added to the market-leading powerCON TRUE1 TOP range of heavy-duty sealed power connectors for outdoor use in the harshest environments and most demanding applications.

powerCON TRUE1 TOP-L provides a connector compatible with the largest diameter power cables required for outdoor events and production applications, capable of accepting cables from 10 to 16 mm (0.39" – 0.63") in diameter, making them ideal for extra heavy duty type cables.

The connectors are certified to EN 60320-1, IEC 60320-1, and UL 60320-1 when applied to appropriate cables (H07RN-F3G2.5 and SOOW 12/3, SJOOW 12/3). This allows mains cables to be assembled per UL 817, CSA C22.2 No. 21, and IEC/EN 60799. Conforming to NEUTRIK's TOP standard, UL V0 and UL-F1-rated UV resistant materials, exceptional component quality and rugged construction are standard.

Features include breaking capability – CBC @ 16A 250VAC VDE (20 A 250 VAC) – and a patent-pending

design that meets requirements preventing disassembly by hand. New HTLACA and HTLACB assembly and disassembly tools are designed for use with these connectors, and facilitate faster disassembly for periodic safety testing, etc.

The NEUTRIK True Outdoor Protection (TOP) standard covers a comprehensive range of sealed power, signal, and data connectors for outdoor event and production applications in the most adverse climatic and environmental conditions, mitigating their negative impact on ultimate production quality. Appropriate heavy-duty, harsh environment applications include AV, PA, lighting, signage, and LED screens. The TOP series extends across the NEUTRIK powerCON TRUE1, etherCON, and XLR product ranges, with IP65 rating and certified outdoor protection to UL 50E like UV resistance.

[Neutrik/powerCON TRUE1 TOP](#)

ADJ Expands Stage Lighting Portfolio with Advanced and Versatile Fresnel



The Encore FR Pro Color combines motorized focus with a potent LED light engine that offers an enhanced colour-mixing potential and a high CRI. This versatile Fresnel fixture has been designed to illuminate all kinds of stages, including those found in theatres, Houses of Worship, and concert venues.

Positioned behind a 7" Fresnel lens, the unit's powerful and efficient 400-Watt LED light source delivers an impressive maximum total lumen output of 9237 (full-on, zoomed fully out). It combines Red, Green, Blue, Amber, Cyan and Lime LED chips to allow the creation of a huge gamut of colours as well as white light with a variable colour temperature of between 2400K and 8500K.

The inclusion of the Lime LED chip helps certain colours to appear more vivid and also boosts the CRI to more than 94. A high CRI is essential to achieve the best possible skin tones for performers and to deliver deeply rich subtlety to props and scenic elements. The unit's light source also offers an average life expectancy of 50,000 hours, removing the worry of a lamp blowing mid-performance and the inconvenience of having to replace it.

To aid with programming in a variety of different situations, the fixture offers a virtual CMY colour mixing mode which allows it to be controlled using

CMY colour palette tools alongside native CMY fixtures. It also features a Tunable White colour temperature control, which allows a single DMX channel to be used to fade through the fixture's white light colour temperature range. In addition, it also features 62 preset white colour temperatures, 60 virtual colour wheel presets, and 64 RGBA colour macros, in addition to full independent colour mixing control over the LED source's six primary colours.

The Encore FR Pro Color offers motorized zoom, with a variable beam angle of between 9 and 37-degrees, allowing the same fixture to be utilized to create a broad wash or tight pool of light at different moments in the same production. It features a robust hanging bracket secured by two convenient bar handles as well as a large rear positioning handle, allowing for the fixture to be conveniently focused and then tightly locked in place ready for a performance.

The fixture is supplied with a gel frame that can be used to neatly attach a Light Shaping or Diffusion Filter, should a wider beam angle or uneven coverage pattern be required. A set of 4-leaf rotating barn doors is also available as an optional accessory, which can be used to alter the shape of the light output. The fixture offers the choice

between five different DMX channel modes (requiring between 14 and 19 channels) depending on the type of control required. It also features both 3-pin and 5-pin DMX input and output sockets, allowing for easy integration into any existing lighting system. Power is supplied to the unit via a locking input socket and there is also a power output socket allowing for multiple fixtures to be connected to the same outlet.

Offering a variety of customizable operating modes, the Encore FR Pro Color can be easily configured for a variety of different applications to meet the preferred workflow of any lighting designer. It offers a choice of 6 preset dimming modes (Standard, Stage, TV, Architectural, Theatre, and Stage 2), 4 dimming curves (Square, Linear, Inv. Squa, and S. Curve) and variable dimming speed of between 0.1 and 10 seconds. To ensure flicker-free operation for TV, streaming, or video recording purposes, the LED refresh rate can be also adjusted using 68 presets which range from 900Hz to 25kHz.

An easy-to-use menu interface for DMX addressing and mode selection is facilitated through a 32-character backlit LCD on the side of the unit. The menu is navigated via four push buttons and is intuitively designed to make setup and alteration of operating parameters extremely quick and easy. For added convenience, it also features manual dimming and zoom control knobs that are located on the side of the fixture. Finally, a USB service port is included to allow quick and convenient application of future firmware updates.

With dimensions of 16.32" (414.5mm) x 14.18" (360.1mm) x 19.29" (490mm) [L x W x H], the fixture's compact form belies its potent output. Meanwhile, its easily manageable weight of 20.9 lbs. (9.45 kg) minimizes rigging load in permanent installations and makes it easy to manage when used for touring productions or one-off events. It is also CE and cETus approved, providing both peace of mind that it adheres to the strictest safety standards and assurance that it will be up to code when used as part of a permanent lighting installation.

ADJ/Encore FR Pro Color

NEXT Audiocom Introduces USB-Powered Digital Mixer



The M1 Digital Stereo Mixer is an ultra-compact and lightweight 4-channel digital stereo mixer with Bluetooth. Use it as a "traditional mixer" or as a USB Audio Interface for sound reinforcement and recording of small performances, podcasts, or lectures. This high-fidelity sound tool is specifically useful for musicians, DJs, producers, Internet broadcasters, gamers, and educators as it can also record directly to a USB stick.

Despite its small size, the M1 Digital Stereo Mixer incorporates 99 effects, phantom power (+48V), High-pass filter, EQ (bass, mid and treble), Hi-Z, line input, Bluetooth (v5.0), and direct play/recording from/to USB stick.

The M1 Digital Stereo Mixer is USB powered, enabling power through a power bank or even a battery-powered speaker with power bank function (such as MV6 or MV3). Thanks to the resistant, robust, and lightweight (less than 600g) structure of the M1, can be used in the most diverse situations, whether for voice or instrument control in live or recorded sound, and a portable audio system can be easily created.

With the integrated DSP, it is possible to have dedicated presets for different situations. Users select which preset is the most convenient for the application such as Ambience, Bathroom, Room, Plate, Spring, Hall, Warehouse, Cathedral, Gated Reverb, Chorus, Chorus Reverb, Phaser, Phaser Reverb, Flanger, Flanger Reverb, Rotary, Delay.

Next Audiocom/M1 Digital Stereo Mixer

LED VIDEOWALLS ...

Trestling the Convergence of Content and Technology

by Elton Noronha



Protec set-up of LED wall for the World Defense Show in Riyadh, Saudi Arabia.

Technological advancements in design and manufacturing have allowed present-day LED videowalls to not just morph into any desired shape or size, but also deliver stunningly captivating visual output that aims to quell this generation's addiction for 'immersive live entertainment experiences'. But there's way more than what meets the eye in bringing all this magic together, as experts reveal ...

Brief Overview of the Market

According to surveys and analytics conducted by multiple research firms in early 2020, the global outdoor LED screen market size is expected to reach approximately \$36 billion by 2026, up from \$15.9 billion in 2018, with the reason for such exponential growth cited as the increasing need for displays in an ever-evolving digital world owing to the fact that they're more eye-catching, more engaging, more collaborative and interactive, and thereby help brands and promoters push for more awareness of and interaction with audiences.

These displays use high brightness LEDs, and are designed using dual in-line package (DIP) technology, which makes them suitable for any weather, and the

content on the displays are visible from far off distances – be it daytime or night. These capabilities make it perfect for outdoor use, specifically within the field of live events, some of which span over daytime as well as night-time, thereby implying the need for displays that offer optimum performance irrespective of the lighting condition. An additional point of consideration that has led to the exponential adoption of LED display technologies within the live event space is that of the surge in energy consumption concerns, which by default makes LED based technologies a de-facto choice over conventional display technologies owing to their 'high energy efficient' status that affords greater cost and power saving for event producers as well as equipment rental service providers.

While high initial investments and unstable demand were noted as the major factors that limited the LED display market growth within the live event sphere in earlier years; a steady rise in sporting events, music concerts, exhibitions, seminars, ceremonies, and the likes, especially over the past two decades, demanded the extensive need for outdoor LED displays to augment audience engagement. This has, ever since, been the driving force behind the increasing dependency on such technologies within the industry.

The Nitty-Gritty of Videowall Technologies

Over the years, video wall technology has made a substantial impact on the way information and entertainment is consumed by audiences over a wide range of event environments.

But what exactly are videowalls?

A videowall is commonly defined as a high-end digital display that uses multiple monitors, panels or projector screens tiled together to create one large display screen; with the inclusion of three primary components:

Display screen: These could be monitors, panels or projector screens, with two of the most popular display technologies for video walls being LCD panels and LED panels.

Processor: The processor stores, processes and sends content to the display screen. A good processor will manage content from multiple sources — video cameras, computers and the internet.

Software: The software is what administrators control on the backend. It provides a real-time view of the display screen, available content sources, and tools to adjust the content's layout and appearance.

Once the appropriate setup of a videowall system is completed for your event, the eventual displayed output is capable of delivering fantastic picture quality in terms of brightness, colour and contrast. LED videowalls can be scaled to any size display you need for the space;

with few to no other display solution offering the kind of video distribution capabilities that video walls do. The panels within a videowall can function as a full-screen display to showcase the entire visual content, or the panels can be split into multiple display screens to distribute independent imagery, live stream feeds, announcements and more. For multi-screen solutions, the LED panels can be arranged into any orientation, shape and size needed. LED videowalls can be installed in non-traditional ways as well, with the possibility of having 'flex-wall' solutions for convex or concave wall applications.

Plus, evolutionary developments in LED panel technology now affords support 4K/8K UHD resolution that offers detailed, eye-catching videos and other forms of visual content. Furthermore, videowalls can be integrated with multiple control options; with some ultra-advancements allowing for control over the visual content in real-time using a smart-device, voice control or even gesture control.

Also, the installation of LED videowalls are noted to be rather quick and efficient, with the following options available for service providers having the option to set up either using ground support, or flying/rigging or wall-mounts, depending on the nature of the work site. Ground support combines a base, with a connecting bar and a truss ladder, which creates stable support, offering flexibility in height and width. On the other hand, flying or rigging method requires the ceiling to have a structure that supports the weight of the screen. And finally, some panels offer provisions to allow be mounted onto an existing wall/façade (usually at fixed installation sites i.e. building facades etc).

LED Videowall Technologies Enhancing the Live Event Experience

From live video feeds, to produced clips, to sponsored content; the ability of LED videowalls to offer the aforementioned wide range of capabilities, facilitates an enhanced live event experience for audiences by offering the following qualitative benefits:

Enhances Visual Experience: At music concerts, LED videowalls help improve the view for people who

aren't as close to the stage. At sporting events, these displays project the all the action and emotion of the gameplay and the players that compete on field. At an F&B event, these displays emphasize the delicious food and beverages available across various sections of the event. The opportunities are endless!

Keeping Audiences Engaged: Depending on which type of LED videowall is deployed at an event, organizers can do a number of things to increase crowd participation. For example, organizers can sync up social media feeds and encourage attendees to use a specific hashtag for a chance to be featured on the big screen, or to show off some of the other features at an event.

Keeping Audiences Entertained: While LED videowalls do play a very crucial role during the main event, innovative ways that it can be used before, after, and in between programmes has been one of the stand out features that have helped maintain audience involvement. For example, projecting content on LED videowalls during the downtime between performances has been the most effective way to keep audiences engaged and entertained during an event.

Keeping Audiences Updated: Organizers can also use LED videowalls to keep audiences updated about important information like directions to get to a particular section of the event, and other helpful information that can help audiences find where they need to go. More crucial though, is that the content can be updated in real time. So information like a change in location (performance stages at music festivals), or a new route path (like at a racing event), or important safety updates etc that need to be shared, can be done seamlessly.

Expanding Content Reach: Innovative deployment of LED videowalls has allowed organizers to expand the reach of real-time events to an even bigger audience – beyond the realms of the host venue. For example, some organizers have been known to set up large LED videowalls outside the venues like stadiums / arenas to relay real-time action of events like sporting games, political rallies etc, thereby offering access to a wider audience to engage in the event proceedings.

From the above, it becomes apparent that through the right mix of technology, content and engagement;

organizers can leverage LED videowalls to offer their audiences the chance to enjoy unforgettable event experiences! The mindful implementation of videowalls on-field though, is crucial to this; and unfortunately, there have been instances of common mistakes in the deployment of LED videowalls that ends up compromising the audience experience.

Fundamentals of Accurately Deploying LED Videowalls for Live Events

With the precise deployment of LED videowalls playing a key role in assuring a flawless visual experience for the audience, it becomes imperative for technical service providers to take note of the following:

Understanding the Space

Before even considering implementing a video wall, it's important to understand the space in which the videowall needs to be deployed. The physical dimensions of the space (for example, the dimensions of the stage if an LED videowall is to be used as the stage backdrop and/or stage façade), the various other elements that will be occupying the venue, the total audience capacity that the space is expected to accommodate, audience directionality (whether it would be static and facing in one direction i.e. like in concerts, or whether they would be moving in all directions along the floorspace like in exhibitions), depth of audience rows (like in concerts, rallies, sporting events), etc. These factors are particularly important as they play a key role in determining other key criteria for the eventual videowall solution to be deployed, like the appropriate size, brightness, pixel pitch, resolution and power requirements of the videowall to be deployed.

Understanding Pixel Pitch, Viewing Distance and Screen Resolution

Pixel pitch refers to the distance from the centre of an LED cluster/pixel to the centre of the next LED cluster/pixel. This is measured in millimetres, and directly correlates to your display resolution.

PITCH	MINIMUM RECOMMENDED VIEWING DISTANCE	DESCRIPTION	APPLICATIONS
1-3 mm	5 ft	Ultra-high resolution for close-distance clarity. Lowest pitch available on the market. Primarily for indoor use.	- Indoor tradeshows - Indoor HDTVs
4-6 mm	10 ft	Low pitch for high quality close and long-distance viewing. Great for both indoor and outdoor applications.	- Indoor/Outdoor fairs - Festivals - Concerts - Movie nights
6-10 mm	20 ft	Good pitch for outdoor events.	- Outdoor fairs - Festivals - Concerts - Movie nights
10-20 mm	40+ ft	Used for outdoor digital signage, 20mm is becoming less common due to advancements in technology.	- Billboards

Pixel pitch is important in determining minimum viewing distance required for an observer to see a clear image. In essence, the higher the pitch is, the farther the required viewing distance. So, by this analogy, it would be quite obvious to want LED panels with smaller pixel pitch all the time, right? Well NO, Not necessarily.

For example, a videowall larger than 100 inches (approx 8.5 feet) with a 4-millimetre pitch can easily contain more than 200,000 pixels, where as a videowall of the same size with 6-millimetre pitch would have fewer than 100,000 pixels. By having a smaller pixel pitch, you increase the number of individual pixels on the display; and the most important thing to keep in mind here is the fact that with the rise in pixels, comes a rise in cost (i.e. individual panels are more expensive to acquire and maintain, plus there is a need for more image processing units to ensure that rendering and final output is optimal). Therefore, if your audience isn't going to be extremely close to the screen at any point in time, then it makes better sense to deploy videowalls with larger pixel pitch and better visual processors to offering great quality visual output while saving on operational budgets.

The size of the videowall will depend on the shape and design that is chosen, the space available, and essentially, the distance of the screen from the audience. For example:

- P2.97mm: for an audience three meters away.
- P3.91mm: for an audience four meters away.
- P3.91mm Double: also for an audience four meters away but with panels twice the width.
- P5mm: For an audience at an optimal viewing distance of 5 meters or more.

Outdoor videowalls have conventionally been from P3.91mm to P5mm (fixed), with the latter differing from the P5mm by being a fixed screen and not being built by panels.

Understanding Brightness and Power

It is important to understand that direct sunlight / direct light (for non-natural sources too) can have very damaging effects on viewing quality if the inherent brightness of the LED videowall isn't set optimally. In a similar vein, if the screen is too bright, then the output may end up straining the audiences' sight when viewed in low-light situations or complete darkness. It is therefore, important to determine brightness output of the LED videowall in nits (the unit of measurement for LED brightness) depending on the kind of environment

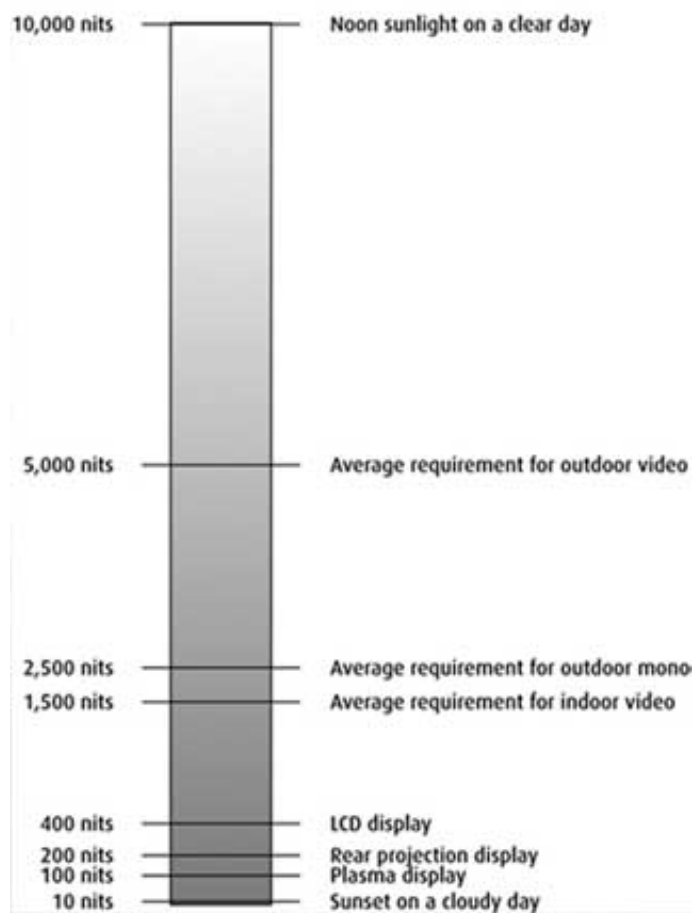
the system is being deployed into. As a general rule of thumb, the following is observed:

Indoor Brightness: 1,000 – 1,500 nits

Outdoor Brightness: 2,000 – 3,800 nits

Outdoor Brightness Under Direct Sunlight: LED panels may need to output as much as 5,000+ nits

More brightness comes with the added incumbency of higher power requirements. Let's say you have a 4-millimeter outdoor panel that requires a single 20-amp breaker for every five panels. So, for a video wall that is six panels wide by five panels high, you would have a power requirement of six 20-amp breakers. It is important for service providers to accurately gauge and suffice the power requirements of the videowall so that they maintain a high level of electrical safety when the system is deployed at the event site.



Standardized Use of LED Panels

Commissioning your videowall with LED panels that are

built sturdy and which boast of high resistance to heat, dust, and moisture/humidity/water, is extremely crucial when working at locations with extreme or unstable climatic conditions. At the same time, it is extremely crucial to ensure that the videowall is comprised of panels that are not only from the same brand, but also from the same manufacturing batch, so as to ensure perfect image matching in terms of colour, brightness and intensity.

Tailoring The Videowall Content

It is necessary to ensure that the visual content i.e. videos, images, audio, text and other content is optimized to suit the type of videowall being used...i.e. the resolution of the content needs to be adjusted to best suit the videowall. Fonts and images should be large and clear enough to easily understood, and every other type of visual content must be created and configured while keeping in mind its translation onto the large scale dimensions of the videowall.

Working With an Experienced Rental Service Provider

Experienced technology professionals who have proven expertise in commissioning videowalls of all scales for events of all kinds, are the best people that you can rely on when it comes to ensuring that the setup is done quickly, safely and accurately – keeping in mind optimum screen calibration and alignment, and ensuring display optimized content; in addition to being well equipped to respond effectively in the face of any technology crisis.

Leverage the Interactivity Quotient of Videowalls

While an interactive video wall isn't exactly a necessity, it can definitely enhance the audience experience and thereby improve the overall event engagement quotient. Easiest way to do this is by implementing interactivity in the form of feedback via an application on a mobile device that augments the content.

As a show technical director, it helps when you're able to view your video wall setup through the eyes of the intended audience; and think of ways that they can best benefit from a wall's interactivity. And displaying a mix of content types on the videowall is perhaps the best way to ensure greater engagement and interactivity – whether it's a virtual product demonstration, in-house network programming, social media feeds, audio-visual enhancements or static images.

Expert Insights

With 'immersive experiences' becoming the norm in today's event environment; and advancements in LED and videowall technologies allowing event producers and content creators to push the boundaries of how content is delivered to audiences – it comes as no surprise that almost every single event today – irrespective of its scale and application – demonstrates a marked dependence on LED videowalls as their preferred means of facilitating visual engagement with the audience.

The bridge between an event producer's aspirations of offering an immersive experience and the eventual event realism consumed by the audience, are the LED technology and equipment service providers that action on the creative vision with their technical expertise to put together impressive systems like LED videowalls and the likes, that offer enchanting and visually stimulating content for the audiences to enjoy.



Mumbai based Videowall India – a leading LED and video technology services provider for live entertainment events in India – has been one of the handful rental service companies that has endeavoured to stay ahead of the curve when it comes

to delivering leading LED technologies. **Anil Girkar – Director of Videowall India** – submits his views on the kind of impact that LED and visual technologies has had on the quality of live entertainment events in the country, as he comments, "Large scale events like music concerts etc have evolved exponentially over the years to now stand at a point where they need nothing less than the very best in visual imaging capabilities to offer an enthralling experience to the audience. And LED technologies have, thankfully, developed in quick pace in such a way that it allows us to offer an extremely impactful and nuanced limelight to such events through the various visual imaging systems that we commission, which forms a major ingredient of the overall event storytelling."



Agreeing to the notion, **ProTec's** recently appointed **Head of Video, Warren Ball**, expresses his thoughts, stating, "LED Technologies are now a crucial and integral part of the larger live event experience. Whereas once the use of IMAGs was tasked purely to relay

to larger audiences the advance of media server and as playback, technology now puts LED as the catalyst between of the artist and audience experience. The availability of not only finer pitch LED but also various types of panels including flexible, transparent and strips, give productions complete flexibility and clarity. And as displays straddle the gap between lighting and video, the offering to audiences becomes ever richer!" With operations in the United Kingdom, United Arab Emirates, and the Kingdom of Saudi Arabia, ProTec has built a stellar reputation over the years thanks to their ability to create visually mesmerizing events through the extensive use of LED videowalls and avant-garde visual technologies, among other crucial technical services.



Offering a slightly different point of view; **Sushant Mehrotra – CEO of IRS Communications** – a reputed Delhi based LED and video rental technologies service provider that has been at the forefront of commissioning some of the most

high-profile government promoted events, cultural events and corporate events in India; says, "The use of LED as a medium of backdrop and props has revolutionized the live event experience, so much so that the implementation of high-resolution LED video environments have now become the backbone of any award-winning or critically acclaimed production designs. And although we have come about to the age of finer pitch LEDs that hold the capacity to deliver absolutely spell-binding visual content; we must also acknowledge that in the right kind of setting and when



Photo courtesy of IRS Communications.

deployed in the right manner, older technologies like LED curtains or even LEDs with larger pixel pitches for that matter, can add qualitatively to the overall audience experience, as it offers more opportunity for nuanced lighting designs without making the overall visual appeal too overbearing for audiences. Basically, it's all about understanding the theme of the event, and how to understand which technologies will serve the event programme in the best possible manner."

Anil, Warren and Sushant all agree to the fact that advancements in technology does provide a long list of benefits which include improved performance value and an enhanced ability to for service providers to commission diverse and more technically challenging events.

As Sushant explains, "For us, the overall quality of the LED screen is the first priority. All other features and capabilities are secondary. That being said, I do believe the best part with new technology is that generally it allows for things to get done more quickly. Time is money. When you can get things done with more speed, you can increase both your cash flow and revenue. Advancements in tech usually make things work more

efficiently. This cuts down on errors made during events. By having the latest technology working for you, you will be better able to handle larger and more complex events."

Other key investment considerations involve assured technical support from the brand, in addition to the actual capabilities of the product / technology that can equip users with ability to increase performance output and enhance efficiency while remaining cost-effective solution to present to show producers. As Anil explains, "Equipment with sturdy designs (light weight diecast cabinet) and proper locking mechanism, modules with corner protection system in the cabinets, LED encapsulation, PWM ICs with high refresh rates of 3800hz & above, branded power supply, double data back-ups (2+2 each cabinet) for redundancy, and four-layer PCBs for longer life; these are some of the key features that I look for in any potential investment. At the same time, if the plan is to purchase an LED display for outdoor use, then it becomes imperative for the unit to offer at least 5000 nits brightness. Plus, in terms of processors, in today's world we have options that offer 4K and 8K processing capabilities within a single unit. This turns out to be a far more cost effective investment



Photo courtesy of Videowall India.

in the long run, as it discards the need to attach multiple processors in most on-field scenarios.”

At the same time, the three also concur on the need to invest in ‘future-proof’ technologies that offer the ability to provide new and innovative event experiences while staying ahead of the curve in terms of evolving technical requirements of events across the board. According to them, the product/technology needs to be proven in its performance value while also offering a high level of reliability, sustainability and longevity. These are noted as key investment considerations, mainly because products that are able to meet these criteria are often found to offer greater performance value with minimal investment in maintenance and upkeep, thereby enhancing ROI (return on investment) for the rental service company.

On the topic of maintenance and upkeep – the three experts agree on the innate need for keeping to a regular schedule of in-house maintenance of equipment. Warren elaborates saying “Maintenance is crucial, and it is essential to maintain thorough check-out and check-in procedures, in addition to SOPs to stick to a particular standard of service / performance. Additionally, regular large scale maintenance must be scheduled, and calibration of LED in addition to batch matching of shaders needs to be monitored.” To this, Sushant informs that his team at IRS Communications follow a strict maintenance protocol wherein LED equipment that

is deployed for an event would first be inspected by the QC team upon its return to the warehouse, and would be subjected to cleaning so that the lighting output from the diodes and lenses remain optimum, and that the heat management features continue to operate flawlessly. Similarly, Anil informs that the process of equipment maintenance at Videowall India has been simplified through a meticulous MIS, where technology enabled manpower mitigate any technical issues of a piece of equipment along with technical service team, with extensive tests on each individual electronic component forming the basis of a documented performance report. Great care is taken to ensure that none of the equipment or components fall prey to the effect of moisture or heating, with the in-house team looking into the regular upkeep of these aspects.

The Future of LED Videowalls & Associated Technologies

Thanks to advances in technology, the price of LEDs has dropped significantly over the years, which means that LED screens are now affordable in many situations and industries where they would have been well out of the available budget just a few years ago. And while the cost drops and improved feature sets have increased accessibility to LED videowalls, it must be noted that both network and cloud innovations have had key roles in lowering the costs of videowall controllers which are an equally important ingredient within the LED videowall



Photo courtesy of IRS Communications.

ecosystem. And the thing is, that there's still room for videowall controller costs to continue to drop. This, in experts' opinion, is likely to drive manufacturers as well as buyers away from proprietary hardware and hard-line cabling, and result in the creation of a more standard network infrastructure throughout the industry. An example of this could be that of Direct view LED displays, which currently are designed for indoor applications only. With advancements in technologies, it is estimated that dv-LEDs will eventually have a narrow enough pixel pitch to achieve 4K resolution on relatively small screen, thereby transitioning them into a consumer product as the technology becomes more widely available and the cost of production decreases. This also means that dv-LEDs will most likely transition into the outdoor application market as well, with features more suited to such applications and technological value that would be far more interactive and flexible in terms of its usability.

Warren in particular, believes that in conjunction with media servers, there will be a greater use of AR (augmented reality) in large live events, in terms of more immersive video and media. A key example of this can be found in the fact that several venues across the world, especially those that host art-fairs etc, have instituted massive LED video walls that play different

forms of 'perceptive' video content that allows spectators and attendees to interact with the display through mere gestures and movements. These movements are captured through a series of cameras inputs feeding into a complex network of computer processing that allow for the visual content to adapt in real-time according to movement of the individual.

Sushant sums his thoughts on the topic, exclaiming "LED Technologies of the future could change in many ways – from the size and scale of LED screens, to their design and overall output. It's sure that the LED industry will rely on innovation at the intersection of technology and design. Empowered by connectivity, these elements can help change the digital world. The possibilities for customer personalization will be immense. But they don't just stop at production. The wealth of digital data fed back from the product in use will provide designers and engineers with unprecedented understanding of performance and issues, so they can constantly perfect the design!"

[IRS Communications](#)

[PROTEC](#)

[Videowall India](#)



SCHOEPS



The smallest professional
studio condenser microphone
is now modular!

CMC 1 L

www.schoeps.de/cmc1lemo

schloesser@schoeps.de

+65 8777 2944

DUBAI

Creative Technology Middle East Impresses the World Through EXPO 2020

CTME partners with some of the world's best contractors to deliver AV integration solutions across multiple pavilions



After 182 days of unforgettable experiences, EXPO 2020 Dubai drew to a close in March 2022. Despite being delayed by the pandemic and opening a year late, the expo was hailed as a huge success. Showcasing what can be achieved when humanity comes together, EXPO 2020 welcomed 192 countries and over 24 million visitors during its 6-month run.

For Creative Technology Middle East (CTME), the journey with EXPO 2020 began when the company first partnered with some of the best contractors in the world to deliver AV integration solutions across multiple pavilions including DP World, USA, and Emirates National Oil Company (ENOC).

The pavilions hosted numerous live events throughout the expo with CTME supplying a dedicated team of event engineers and project managers for AV support. As a global supplier of AV equipment, CTME also provided full video control, media servers, and playback solutions across two of EXPO 2020's main stages – Dubai Millennium Arena (DMA) and Jubilee Stage which hosted some of the largest concerts with renowned local and international performers, including Christina Aguilera and Jason Derulo.

Andy Reardon, CTME Managing Director expressed, "Our journey started back in 2019 when we won the contract, direct from Expo 2020, to supply and integrate



the projection and audio installation at the Al Wasl Dome Plaza, situated at the heart of Expo 2020. We then won more pavilion contracts involving well know activation consultants' namely, Jack Morton (ENOC), The OpenLab (DP World), and Thinkwell (USA)."

Andrew Nu, CTME's Business Development System Integration said, "The contract for DP World Pavilion was awarded to our System Integration team in 2019

by DP World and we worked alongside The OpenLab, the creative agency for designing the Pavilion. CTME's award was due to our bids being based on technical understanding, delivery of service, and competitive pricing. To have been awarded this design and build contract by a government body is a proud achievement for CTME especially as this is a legacy District 2020 project."

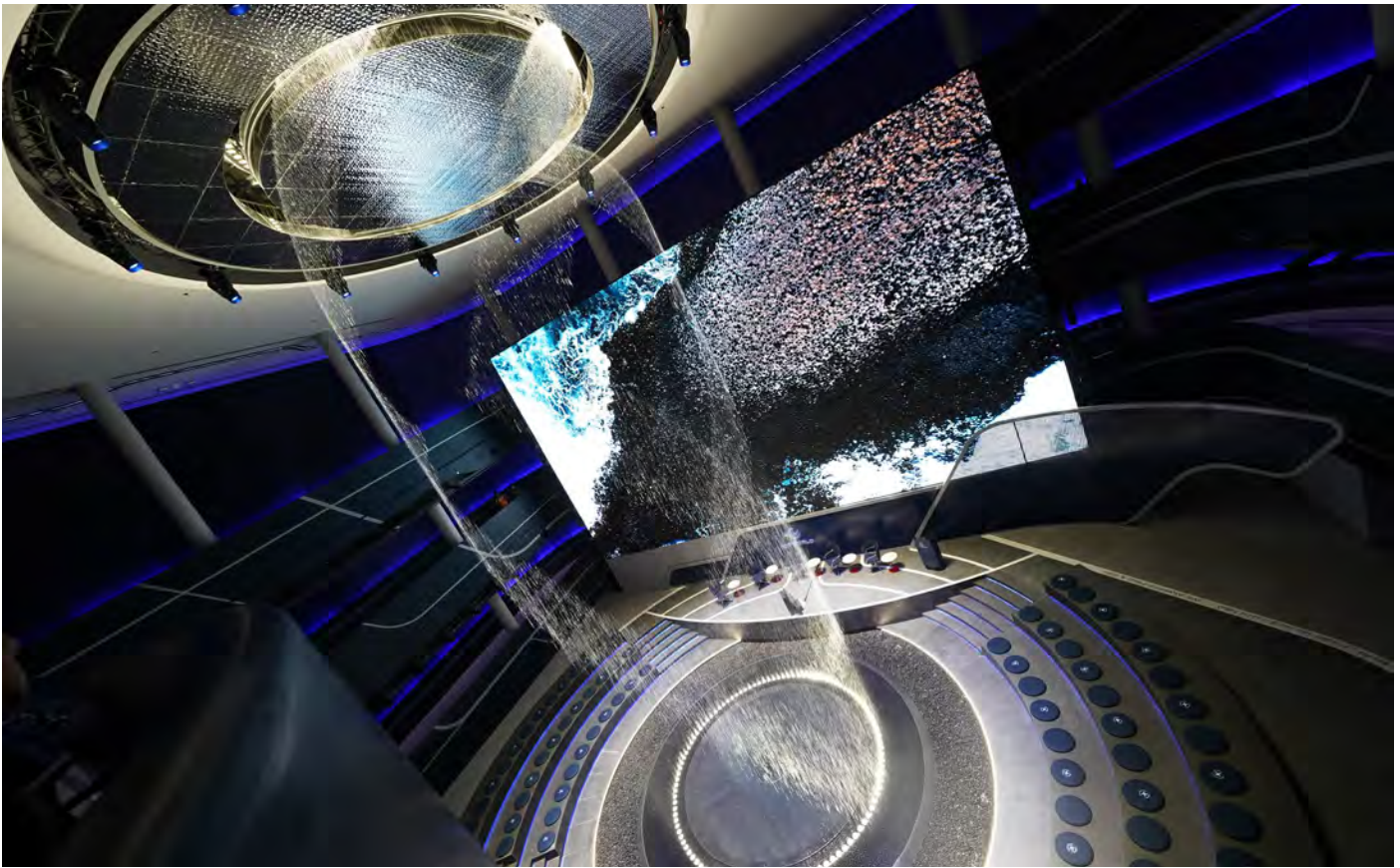
80% of the Expo 2020 Dubai infrastructure is set to become District 2020, a "human-centric future city". A mixed-use urban community that is an 8-hour flight away from two-thirds of the world's population.

DP World FLOW Pavilion

Based on the concept of 'Making Trade Flow', the DP World FLOW Pavilion gave visitors a unique look into the world of global trade through the power of flow. The Pavilion consisted of five floors, the lower four accommodating public visitors, and the 5th floor reserved for DP World Senior management to host VIPs and government officials.

All floors delivered interactive experiences and galleries that were designed to inspire, enthuse, and educate





guests on how trade impacts their everyday life. The central atrium consisted of 4 stories with a spectacular waterfall centrepiece. CTME installed the 18m x 10m Unilumin 2.9mm LED screen, L'Acoustics SYVA audio system, and a range of Varilite moving lighting fixtures around the space.

Danny Lord, Project Manager expressed, "One of the challenges was the coordination of the 18m X 10m LED screen in an open Atrium given a short-time frame. This took precision; it was rewarding to see the final result. The next challenge was ensuring the content ran smoothly across the 8K display. Days of off-site testing were conducted, alongside the site installation, at the CTME offices, to allow the content creators and CTME's technology specialists time to test the integration and content performance."

Visitors entered the Pavilion via a 4-story external escalator which took them directly to the 4th floor. Here, CTME installed a 44.5 sqm Unilumin 2.5mm LED screen underneath a glass table which had showcased acrylic models of shipping and transport deployed across the globe; including a scaled model of DP World's Box Bay,

a new and intelligent storage system.

The glass landscape table, driven by disguise pro4x4 media servers, was backed by a 50.4 sqm Unilumin 2.5mm LED screen, and 15" Litemax displays for a content ribbon on the table showing a history of transport and flow of goods by DP World.

Danny Lord explained the challenges, "The design of the glass screen on the table. Elements such as heat from the LED table and the LED backing wall onto the printed acrylic models had to be considered. The challenge was to ensure the LED didn't melt the models. Weeks of planning and coordination with the fit-out contractor and model makers ensured we met safety standards and kept the display intact."

As visitors explored the exhibit on level 4, they came face-to-face with a 10.8 sqm curved Unilumin LED screen displaying the plans for the Virgin Hyperloop system. A 21st-century transportation solution to deliver palletised cargo to the world, created through a partnership between DP World and Virgin Hyperloop.

Other technologies delivered by CTME included Lightware video over IP transmitters and receivers, Litemax LCDs, Iiyama HD 10-point touchscreens as well as Apple iPads. Audio was supplied by QSC ceiling speakers with subs powered by QSC 8-channel amplifiers.

Three of the Pavilion's five levels were inspired by the themes of Expo 2020: Mobility, Opportunity, and Sustainability.

In the Mobility Gallery situated on the 3rd floor, CTME installed a bespoke 14m wide Unilumin curved LED wall and a 6x2 array of LG narrow bezel LCDs. The interactive table was a large "touch screen" where up to 6 people could play games at any one time. Ultrasonic Audio Technologies' Acouspade speakers were mounted above each game participant, giving players directed individual audio in the position they were playing along the table.

On the 2nd floor, guests encountered various LG interactive screens with game-like content using Orbbec depth cameras to capture user interactions as part of the experience while Neumann speakers provided individual audio content to each user.

The Flowlab Gallery, on the 1st floor, was a large educational space for schools and universities, laid out as a game-show. CTME installed 2 x Epson 15K projectors, which were triggered through disguise and QSC Q-Sys, to display the gameshow content onto the front wall. Substantial show control integration programming was needed in the space connecting the custom game content, video playback, and external input triggers.

Peter Herring, Engineering Manager for CTME, said, "This was a design and build contract with the creatives giving us a vision; it was our responsibility to make it work. We designed cost-effective technology and at each step, we collaborated with the client, stakeholders, and creatives."

"Working on this project has been a pleasure," commented Project Manager Danny Lord. "We have a great team and a fantastic relationship with our client. Going back to DP World's tag line: 'Making Trade Flow', the entire Pavilion flowed seamlessly right from the moment you entered, flowing through the floors and ending at the beautiful atrium. The AV flowed throughout flawlessly."

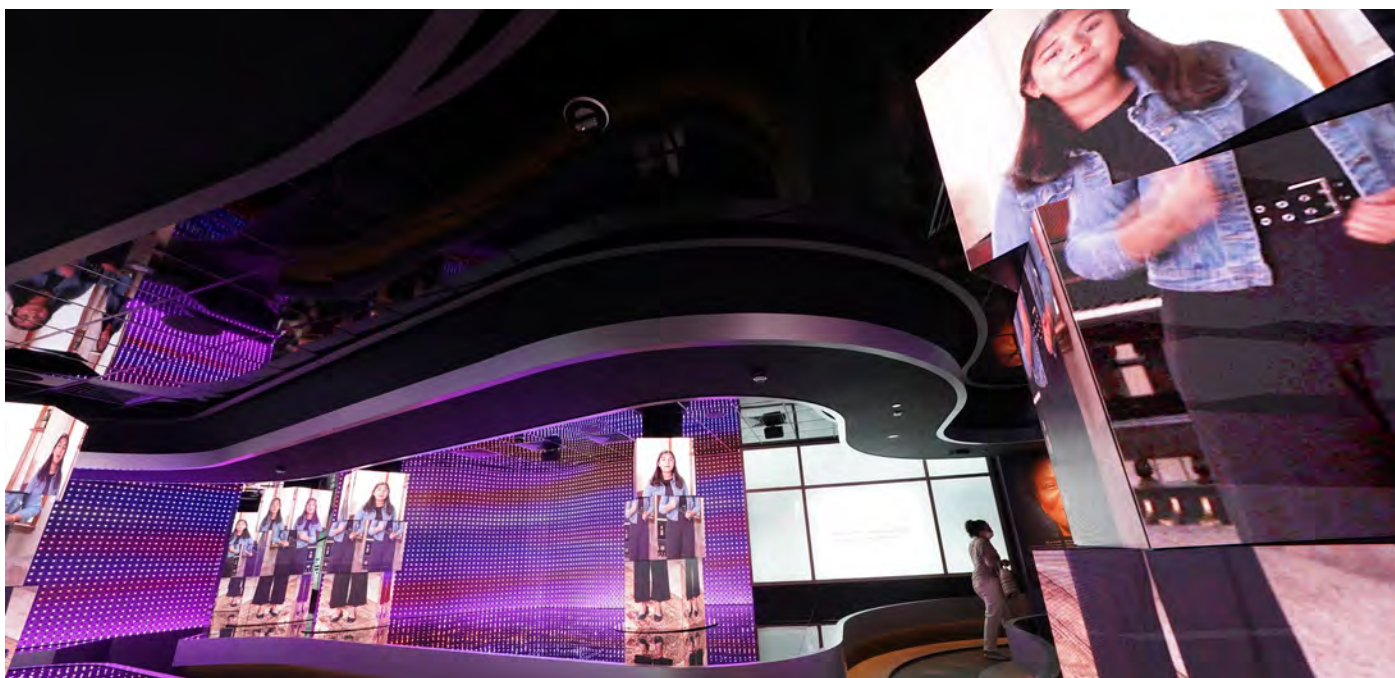
USA Pavilion

Thinkwell Group, a design and production agency, were looking for an AV integration partner for the USA Pavilion. They wanted an AV company that offered professional cost-effective services but also with whom they could establish a lasting partnership.

Peter Herring, CTME Head of Engineering explained, "From the start, Thinkwell were clear about what they wanted. They provided us with visuals and plans of their dream pavilion and continually engaged with us to see how we would deliver to their expectations. After meeting with Pete Ford, the Creative Director of the Pavilion, CTME were appointed by Thinkwell to provide systems integration of audio, video, lighting, and show control systems".

Herring continued, "Having robust designs from Thinkwell allowed our engineers to develop the technology based on Thinkwell's concepts. They knew what they wanted, and we knew how to deliver."





Visitors explored the Pavilion via a moving walkway that brought them to the first exhibition. Here the Statue of Liberty Torch took centerstage surrounded by a captivating projection experience showcasing history from the “Land of Opportunity”.

For the projection, CTME installed 16 x Epson projectors running off 7thSense media servers. 8 x projectors were mapped onto the torch while the other 8 were used to project onto the polar array that surrounded the space.

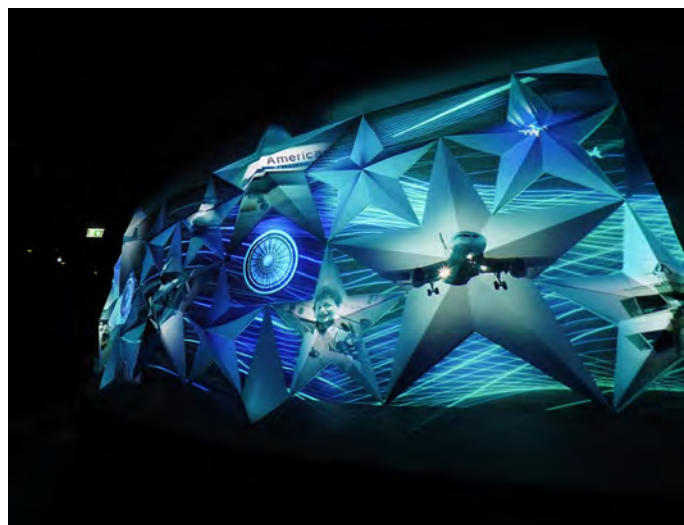
Moving out of this first exhibit, visitors made their way along the ‘transition area’ before reaching the second exhibit. The ‘transition area’ held important American artefacts, such as the first-ever English translation of the Quran that was given to Thomas Jefferson (America’s 3rd President). This Quran is over 280 years old and had never left the USA till the show. CTME had many meetings with The National Archives about UV protection for the priceless artefact.

Herring expressed, “It was a challenge to find the right type of lighting as The National Archives had a particular set of requirements. We used ETC lighting fixtures which had been specifically designed to light the precious artefacts.”

At the second exhibit, attendees were shown the impact of American innovation and how it has shaped the world.

This was achieved through projection-mapped content along a 30m long curved 3D embossed wall. CTME deployed Epson projectors running off a 7thSense media server to create the spectacular projection along with architectural lighting to highlight the experience. For the lighting, CTME used Vexica dynamic pixel lights, and ETC LED profiles.

The third exhibit space conveyed how American innovation has created opportunities all over the world, from the impact of the internet to smartphone technology and much more. The technology comprised of 12 x Unilumin cubes, Leyard EcoDot4 P80, and custom steel



fabrication to make up 4 sets of LED cubes stacked on top of each other that rotated 360°. Low-resolution LED mesh could also be found along the back wall, displaying content, while the floor and ceiling were covered in mirrors. The area was fed from disguise media servers with consistent ambient audio provided by QSC speakers as visitors travelled through the space. Atmospheric architectural lighting was provided by Vexica flexible LED strips, Chauvet Professional, and ETC fixtures.

The moving walkway ended once visitors entered the vast hall of the fourth exhibition. The previous three exhibition themes echoed through the space culminating in 'The sky is no longer the limit'. The space had 15 x Epson projectors with playback from disguise media servers, 72 channels of audio with the roof made up of 96 sqm LED panels. A full mechanical automation system transported the planets, moon, earth, and other astronomical features around the roof void.

The fifth exhibit showcased the USA's national parks and One Trillion Trees initiative, highlighted to illustrate the country's proactive response to climate change. CTME installed 51 x Traxon Technologies and 29 x ETC fixtures to light up the large canvases on the walls. QSC pendant speakers were used for the audio narrative as the guests travelled through the space.

In the sixth exhibit, live feeds from NASA's control centre were displaying images from Mars on an LG ultra-stretched screen.

Herring recalled, "I woke up one morning and saw a meeting invite on my phone from NASA. The whole experience was surreal. I had a meeting with NASA and Thinkwell's Creative Director. They gave plans around what they visually wanted the display to look like. This was enough for me to go back to my engineers and create their vision."

Another focal point was the life-size replica of the Mars Rover which was surrounded by content screens displaying live data from NASA. Outside of the pavilion was the life-size replica of the Falcon 9 SpaceX rocket which had content projected on it, telling the story of the USA's space race.



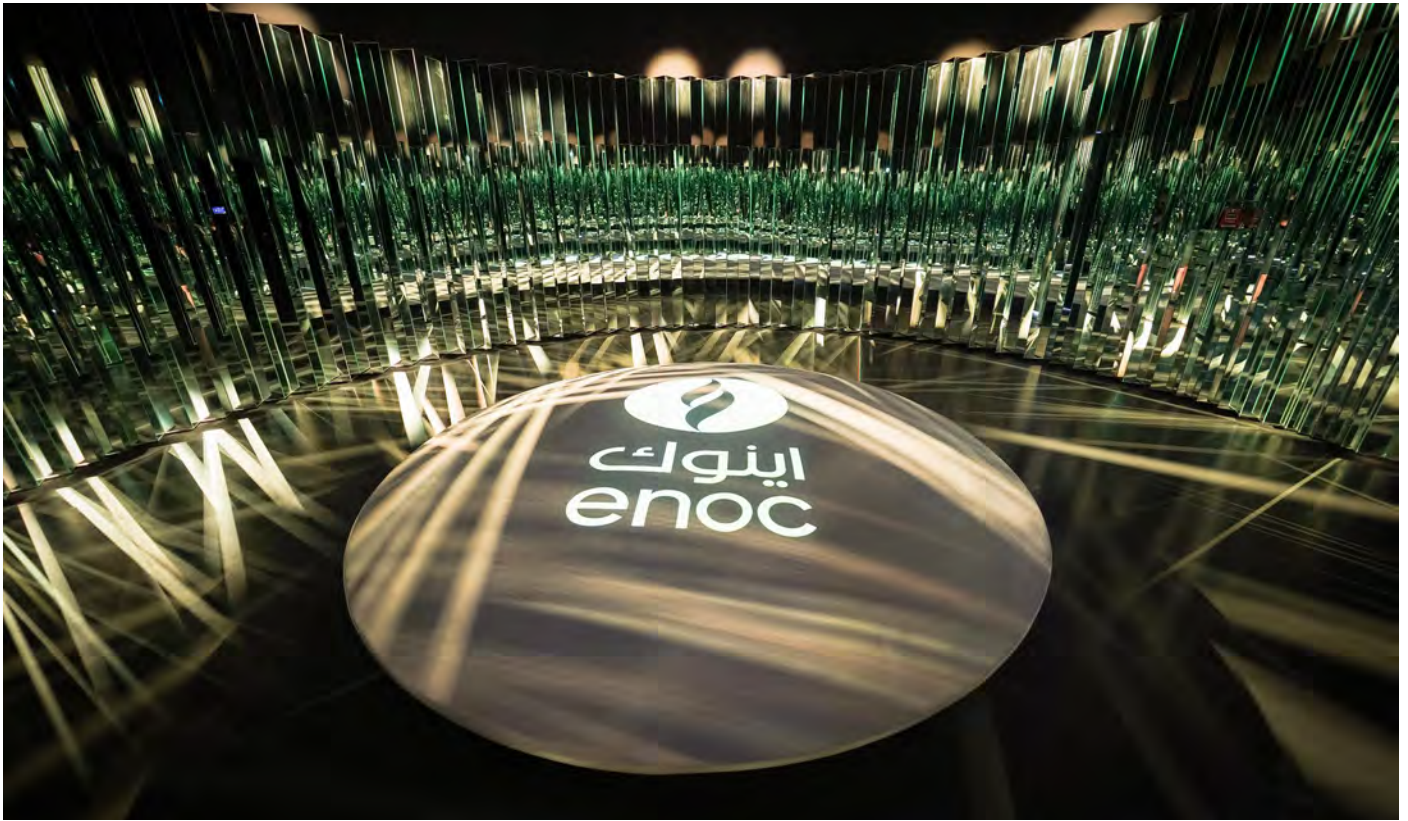
CTME installed Epson projectors and used Chauvet Professional lighting fixtures to illuminate the area.

Herring said, "In the planning stages, discussions took place where small lights would feature in the rocket garden but there was nothing to illuminate the actual rocket. Our engineers came back with a plan to install IP-rated moving heads that would scan up and down the rocket to create an iconic look."

CTME Project Manager, Danny Lord described the challenges faced by the team, "In the peak of summer, with temperatures soaring above 45°C, our engineering team installed 300-pixel dots on the façade of the building behind the façade stars. To mitigate the risks, we implemented our summer working plan to ensure that our staff worked safely and healthily. Working with a professional creative team was an absolute delight and seeing the result after two years was one of the biggest highlights for me."

"CTME brought our vision for the Pavilion to life," said Pete Ford, Creative Director for USA Pavilion. "They delivered it within budget but there's more to it than that, they brought fresh ideas, insights, and enthusiasm that become more than the sum of the project's parts, it created something better. From the minute that we met with Peter Herring and the CTME team, we knew that they were the right fit for this project. They helped us create something that punched above its weight and delivered real results not just for Thinkwell, but for the US Department of State. The US Pavilion at World Expo 2020, Dubai represented the best of the USA - and we created that together."

ENOC Pavilion



Another Pavilion that CTME worked on was the Emirates National Oil Company (ENOC) Pavilion. This pavilion's theme of 'Reimagine Energy,' drew from the design of oil storage tanks with five distinct structures or 'houses'. Each of these 'houses' took visitors on a multi-sensory journey through four narratives: Discovery – what energy is; Harness – what energy enables; Collaborate – what energy needs; and Reimagine – what energy promises.

The ENOC Pavilion occupied a plot of approximately 2,000 sqm and was built using 700 tonnes of steel. CTME was commissioned directly by ENOC and creative consultant, Jack Morton, to provide systems integration of the audio, video, lighting, and control systems.

CTME installed over 46sqm of exterior curved LED screen on the façade of the building used to attract guests to the Pavilion. Due to the façade already having been designed and built, CTME engineers only had 254mm of space to fit the LED screen within the gaps on the façade. The team took on the challenge and suggested a product that would fit the already designed and fabricated façade with ease, enabling ENOC to achieve its dream design.

Upon entering the Pavilion, guests travelled through a mirrored tunnel to arrive at 'House' 1, a dark cinematic space where visitors learnt about the history of ENOC through a video presentation shown on a 14m x 5m curved LED screen.

From there, 'House' 2 was a projection-based space





with Epson L1755 15k projectors. A large button in the centre of the 'house' activated the experience, triggering CTME's show control platform, delivered through disguise servers. The projection allowed visitors to interact with areas on the perimeter wall.

'House' 3 comprised of an interactive Unilumin Uslim2 LED central totem tower situated in the middle of the room surrounded by a circular 8m interactive Roe BM5 LED floor. The LED floor content changed as the visitors moved around it and 3D depth cameras mapped users onto the LED totem tower. Around the LED floor were 8 podiums that contained a holographic display that visitors could interact with using hand gestures.

The final 'house' housed 2 x Epson L1755 15k Lumens laser projectors blended onto a domed circular projection surface. The mesmerizing audio and lighting experience throughout the Pavilion was provided by of L-Acoustic and Chauvet Professional, respectively.

ENOC had another private space for government and industry stakeholders to host VIP events. The ground floor of the Pavilion was a versatile multi-purpose space

that could accommodate around 60 people. This space could be used without an operator though, when required for more complex events, there was a lighting desk, audio desk, and video switcher to operate the technical equipment comprising of Epson L1755 15k Lumens laser projectors, L-Acoustics Syva speakers, as well as moving light fixtures. This flexibility allowed the area to be used for simple presentations or more ambitious shows.

Andy Reardon, Managing Director of CTME concluded, "EXPO 2020 was an exhilarating journey right from the offset. Our dedicated teams worked around the clock to deliver state-of-the-art technical systems across all of our pavilions. The work at EXPO reflects our ethos of pushing the boundaries with new technology. This was achieved through creating the pavilions, delivering technical solutions across Jubilee and DMA stages as well as installing 252 laser projectors and 432 speakers for the immersive experience at Al Wasl Dome Plaza. As the journey comes to a close, we are absolutely delighted to see the results and be part of this impressive project."

Creative Technology Middle East

JAPAN

Naquyo Artists Harness d&b Technology to Create Immersive Fusion of Music and Art

The capabilities of d&b Soundscape altered the audio artists' creative approach in a positive manner



IMAGE Credit: Yoshikazu Inoue

d&b Soundscape technology comprised the core sound system for an inspired audio performance by the Naquyo sound artist collective.

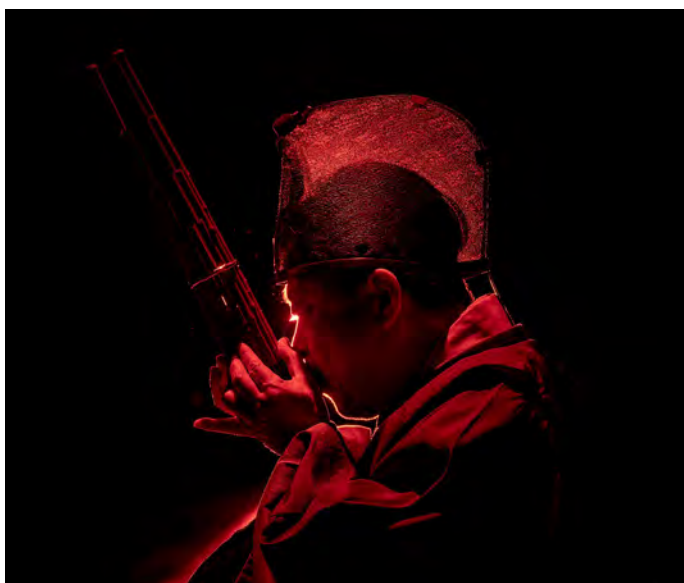
World-renowned ambient composer Kazuya Nagaya and musician Katsuhiko Orie collaborated with the d&b audiotechnik team to design a d&b Soundscape system that would enable them to perform pre-recorded and live triggered sounds and place them with pinpoint accuracy for an audience sitting on the stage within a 360° sound field.

The team aimed to recreate the sounds of Heian-kyō – the former name of Kyoto – 1,200 years in the past, transporting the audience to a bygone era. The Naquyo

– The Visionary Universe of Heian-kyō featured AV artist, Junichi Akagawa, and dancer, Kou Yamamoto, integrating the latest 3D audio technology for a spatial installation and live performance.

At the heart of the d&b Soundscape system was the DS100 Signal Engine, the audio system based on a Dante-enabled signal matrix. The capabilities of d&b Soundscape altered the audio artists' creative approach, using the 2 x Soundscape software modules: En-Scene for sound object positioning, and En-Space for in-line room emulation.

“En-Space is excellent; it allows the artist to concentrate more on the production,” said Audio-Visual artist, Akagawa. “In the traditional combination of stage and audience, there is a clear separation between the



audience and the performers. But this time, although we were the performers, the sounds we heard, the images we saw and the atmosphere we felt were exactly the same as the audience.”

Composer Nagaya added: “Working with En-Scene was a new experience. The whole sound design process was very simple – no boosting on the bandwidth, HF tweaks, or low cut on the channels thanks to the quality of the loudspeakers. Object positioning was tricky to start with, but I had great advice from Soundscape users. It was a learning journey and ended up working brilliantly. In fact, I cannot go back to producing on an L-R system.”

Selected sounds were also programmed to dancer Kou Yamamoto - aka nouseskou's - movements, tracked via 4 x sensors on his wrists and ankles. “The natural coherency of the sounds between the loudspeakers when the sound objects moved, and the natural reverb created by En-Space and the ease of OSC integration with other equipment, was noted,” said Kawamoto. “They were also surprised and thrilled with the d&b audio quality throughout the system.”

The main loudspeaker system consisted of 16 x d&b T-Series T10 2-way loudspeakers with 2x6.5-inch drivers and a 1.4-inch exit compression driver, used in a point source configuration. These were evenly spaced around the audience. In addition, 4 x T10s were hung as ceiling speakers. The subwoofers were d&b V-Series V-SUB 18-inch cardioid subwoofers, one on each of the four sides. These were driven by d&b D20 four-channel amplifiers,

and the team also used 2 x DS10 Dante–AES/EBU audio network bridges. The loudspeaker and subwoofer system was chosen with the guidance of Japanese d&b rental house, Treasure Island Corporation (TIC).

“We wanted to use the same model of speakers for all positions due to the nature of the performance, and we chose the T10 because of its small size and power,” said TIC’s Kawamoto. “The V-SUBs were chosen because we wanted to reproduce a natural low end in line with the composer’s expectations.”

Augmenting the experience was a lighting design that complemented the soundscape and sound triggers, and visuals via four large screens hung to emulate the north, south, east, and west of old Kyoto. The entire project was staged as a collaboration between Mutek Japan and the Kyoto Steam World Cultural Exchange Festival, and produced with the support of Uryuyama Gakuen Kyoto University of the Arts Department of Historical Heritage.

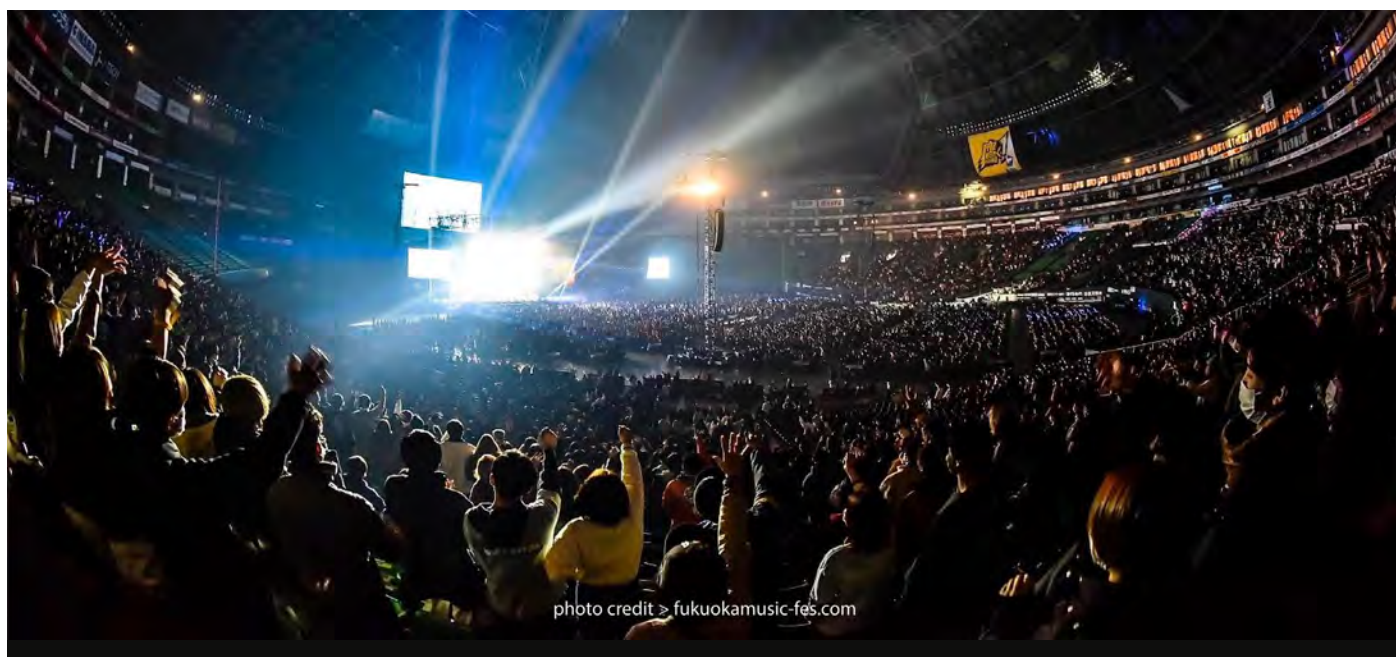
“Technology is an indispensable tool to explore the value of AV content and to constantly evolve,” said Shuichiro Iwanami, General Director of Mutek Japan. “The fusion of music and technology creates new possibilities for expression and the creation of valuable new experiences. d&b Soundscape allows you to ‘feel’ and ‘see’ sound as it unfolds before your eyes and offers a completely new sonic experience. We believe that by artists having access to this system, we can create a new attraction for digital music and artistic creativity.”

d&b audiotechnik

JAPAN

Outline Dominates the Dome

GTO and Butterfly overcome acoustic problems at Fukuoka PayPay Dome



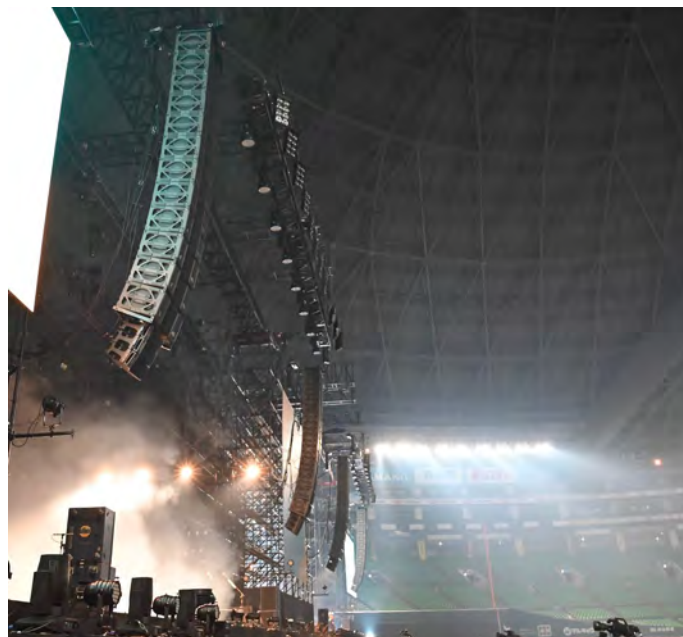
Standing on the shores of Hakata Bay, the Japanese city of Fukuoka is the country's sixth-largest city and second-largest port. As a centre for international commerce, the city plays host to the 52,000-capacity Fukuoka PayPay Dome, the first multi-purpose dome in Japan to incorporate a retractable roof. At a length of 188 m (over 617 ft), the venue also has the world's longest bar from which spectators can see the entire field.

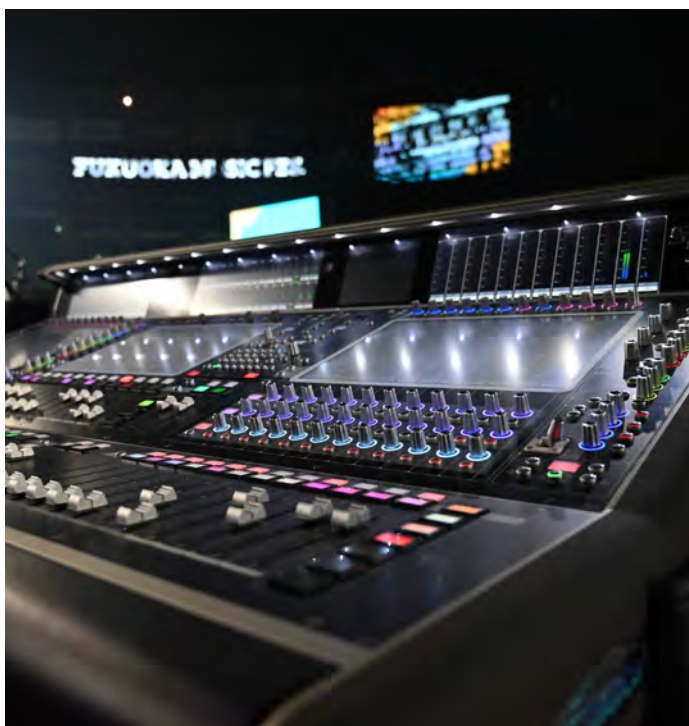
As well as baseball (the Dome is home to the SoftBank Hawks), other key sports events are staged regularly, and concerts have included high-calibre artists such as Michael Jackson, Whitney Houston, Madonna, The Rolling Stones, and Bon Jovi.

One of the most recent music events staged at the huge venue was the Fukuoka Music Fes., organised by Softbank Hawks, Space Shower TV, and apparel manufacturers BEAMS.

On this occasion, the total array of Outline loudspeakers fielded by the event's audio contractor Try Audio Japan

was impressive: each of the two adjacent stages had a main left and right hang, with 12 x GTO and 3 x Mantas as downfills, and outer side hangs had 24 x Outline Butterfly per side.





Each of the delay towers hosted 16 x Outline Butterfly elements and 8 x LIPF-082 lip fill speakers were mounted atop the 40 x DBS 18-2 subwoofers, aligned two-up along the stage fronts, which ensured a really beefy punch on the bottom end.

The Outline powerhouse featured T-Eleven, T-Seven, and T-Five power amplifiers. FOH consoles at bands' engineers' disposal were a pair of DiGiCo Quantum 7, a DiGiCo SD8, and an SSL SiX, while monitor land hosted 2 x Yamaha CL5 and a Midas PRO1

Tokihiko "Toku" Tokuda, Try Audio's System Engineer for the event explained the choice of speakers: "The venue has a very long reverberation time - 8 seconds at around 40 Hz - which could lead to a muddy mix. I believed that these speakers could deliver unbeatable clarity in this sort of environment, and we continue to choose this system because it has been well-received by clients at other reverberant venues."

Since reverb time was so long, raising the entire system's volume would have created areas of reduced intelligibility, so Tokuda needed to increase clarity and therefore put a lot of time into calculating the exact position and distance of the delay speakers. Since the



venue's reverb was at very low frequencies, he used Outline's OpenArray 3D software to simulate even the lowest frequencies.

Regarding other positive aspects of the Fukuoka Music Fes., the system engineers had no doubts, "I think the Outline system created an environment that was easy to mix and, even though the bands' engineers had little time to check it. They all found the set-up so easy to tune and so smooth that we were able to proceed right on schedule with the program, thanks also to the two stages set up side by side, on which the event's eleven bands alternated. In fact, after the event, enthusiastic satisfaction was expressed with the results achieved by all concerned."

Outline

NEW ZEALAND

Robe Helps Create a Big Picture for 2022 Halberg Awards

A less-is-more approach for the extravaganza proved that using Robe ESPRITES creatively and judiciously can produce a much higher impact visual than just piling on the numbers.



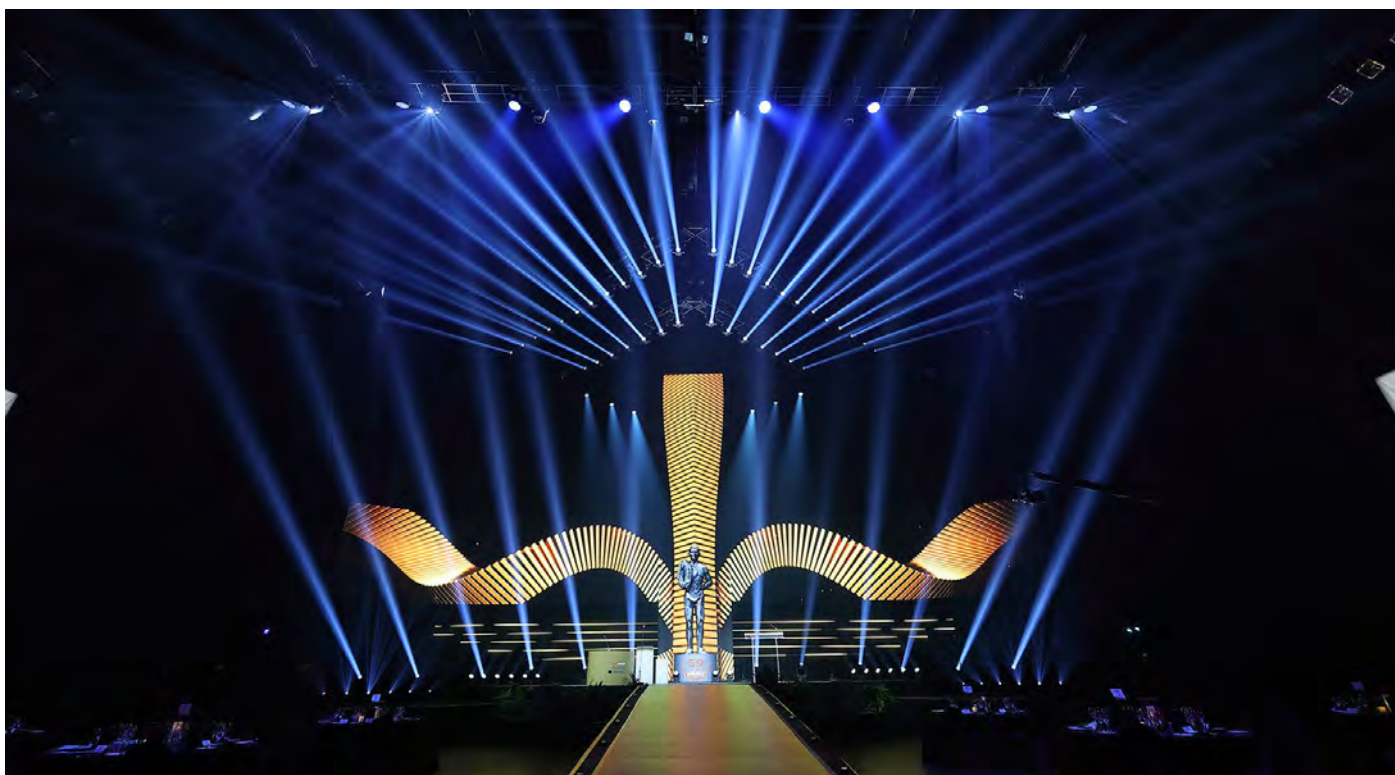
The Halberg Awards celebrate the country's sporting excellence. Named after Olympic champion Sir Murray Halberg, the event is a major fundraiser for The Halberg Foundation charity which enhances the lives of physically disabled New Zealanders by enabling them to participate in sport and recreation. The 2022 extravaganza was staged in Auckland, this time with a reduced live audience of 100 seated guests (usually 1000), a measure applied later on as the country went to a Covid 'red alert' level.

Broadcast live on Sky TV, the set, lighting, and visuals were designed collaboratively by LD Jason Steel working closely with Simon Garrett of Big Picture. While Simon has been involved with the Halberg Awards for many

years, he joined Big Picture, part of the NEP Live Events group, 18 months ago. NEP Live Events group then acquired leading New Zealand rental and production company, Spot-light Systems, at the end of 2021, bringing more Robe fixtures to the inventory to which the ESPRITES have just been added.

This event was the first chance for Simon and Jason to properly use 20 x ESPRITES on a major live show that included nearly 100 Robe fixtures.

The starting point for lighting the diamond-shaped stage was a dramatic and elegant 25m wide cross-shaped 6mm LED video surface, curving gently round at the



ends, a monolithic structure that set the aesthetic tone and look of the event.

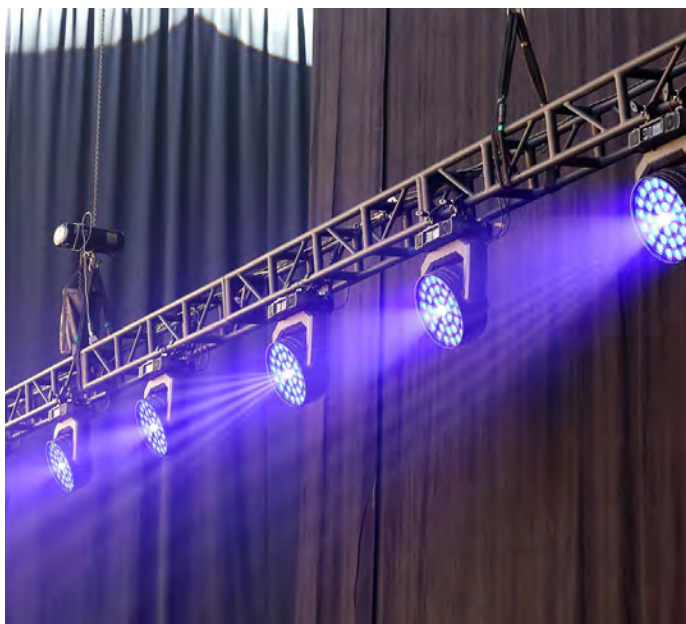
The stage was built with wings at 45° and featured a large ramped central runway. Its sculptural architecture and minimalist design were a big move away from the projection-based concepts that characterised the show over the last decade. Directed by Matt Quin and produced by Scott Cleater, the new set design brought

a fresh, crisp, contemporary vibe that looked classy in reality, and epic on camera.

With only 16 tables in the vast arena space, lighting and visuals played a major role in enhancing the dynamics and energy of the show, and in ensuring that this translated on camera, and therefore to the hundreds of thousands of TV viewers.

The ESPRITES were positioned on two chevron-shaped trusses above the stage, alternated with LEDWash 600s, and used for multiple tasks, from primary key lighting on the talent to washing the stage to illuminating two large banners down the room. They also worked well for creating cool gobo/breakup washes and animations above the tables which filled the arena for wide shots.

Simon has always liked Robe's fixtures for being reliable, innovative, and cost-efficient. "The light output is great," he enthused. "It's strikingly flat and even, which meant we could save time on programming all the front washes and specials. They are very bright for the size, and we found we could cover the entire stage with only six lights! They were also great for picking out the banners and other core set elements needing accurate shuttering, so basically, GREAT workhorse fixtures ... that are also nice and quiet!"





Simon noted multiple features in addition to the quietness which make ESPRITES ideal for broadcast, camera, and television environments. With the trusses trimmed at 14m, with approximately a 20m throw distance, the ESPRITES delivered an impressive 140 footcandles at 5000K, which was pulled back to 80 footcandles for this telecast.

Also in action on the 2022 Halberg Awards were 12 x Robe Tarrantula LED wash beams, 6 x BMFL Blades, 24 x MegaPointes, 16 x LEDBeam100s, and 16 x LEDWash 600s, all running via a grandMA3 console programmed by Jason.

The 24 x MegaPointes were all on the floor, deployed in two offstage banks – left and right – and a linear row across the back, and utilized for power effects and beam work. The two angled banks of MegaPointes were each augmented by a row of little LEDBeam 100s further onstage mirroring the exact angle.

The Tarrantulas were on the back overhead truss where their fat beams and flower effects were perfect for reverse shot eye-candy. Together with the ESPRITES, MegaPointes, and LEDWash 600s, they formed the backbone of the rig with the 6 x BMFL Blades on the



back upstage truss providing additional strong backlight. Other lights on the rig included 80 x LED pixel battens which supported the clean digital look created by the LED cross and the space around it.

The new lights were delivered by Jands(<https://www.jands.com.au/>), Robe's Australian and New Zealand distributor, with Simon commenting, "We all know the challenges presented by the global supply chain due to Covid, and it was great to see Jands and Robe working together to get the stock delivered to us."

Robe

INDIA

Reynold's Sound & Lighting Reinforces Two of Bangalore's Most Memorable Post-pandemic Live Concerts

Reynold's deploys d&b audiotechnik KSL line array systems for both concerts

by Elton Noronha



Bangalore has garnered an indelible reputation of being a city that absolutely loves dance music of all kinds. Therefore, it came as no surprise that city locals had their eyes set on revelling in the glory of the return to open-air live concerts, when Sunburn announced that two of international dance music's biggest sensations i.e. KSHMR and Alan Walker would be gracing the city as a part of their individual India Tours in March 2022 and April 2022 respectively.

Arguably India's premier dance music intellectual property – Sunburn has built a legacy of delivering impeccable music experiences for fans. And with these two events, the organizers abundantly emphasized the importance of a flawless experience – both for the artist, as well as the audience. This, according to insiders, comprised the key reason behind the organizers

entrusting Reynold's Sound & Lighting – one of the leading service providers for equipment rental and technical solutions in India – with the responsibility to capably reinforce the artist performances in Bangalore for KSHMR as well as Alan Walker.

With KSHMR being the first live open air concert to grace Bangalore after the pandemic – the gig, which was hosted at the vibrant open air space of the city's iconic Phoenix Market City mall on 19th March 2022, estimated a turnout of almost 3000 audience members, with all safety considerations in place for the event. Noting the scale of the gig in itself, the Reynolds team commissioned a thorough analysis of the venue to gauge the scale of inventory needed for the gig; followed by detailed discussions with the organizers' production team to secure their thoughts, ideas and experiential

expertise. Reynold's used a mix of Vectorworks and MA-3D softwares to help consolidate various designs and plots to narrow down on one cohesive technical infrastructure that would prove to be the lifeblood of a truly unforgettable performance experience for the audiences.

Team Reynolds decided to deploy the compact yet extremely powerful and efficient KSL line array system from d&b Audiotechnik; with a total of 24 line array modules deployed in standard L-R hangs and complemented by a total of 12 units of the SL subs (again from d&b Audiotechnik!) to assure impactful low-frequency fidelity. The entire audio system was controlled from FOH position through the ultra-efficient SD9 full-format mixing console from DiGiCo; while the artists on-stage were provided with 2 sets of the industry standard Pioneer DJ Nexus 2 systems comprising CDJ2000 DJ controllers along with the DJM900 DJ mixers, to spin their magic and have the crowds groove to their tunes.

In addition to the music, the sights of dazzling lights and captivating visuals added to the immersive environment. The Reynolds team deploying multiple units of the Mythos 2 fixtures from Clay Paky, expertly blended in with multiple units of the PR 330 super sharpies to create spectacular lighting designs and effects that left the audiences in awe. The flagship GrandMA3 (full-size) lighting control console from MA Lighting enabled the lighting design experts to show-off their prowess, with the assurance of an additional grandMA2 console also available on stand-by if the need ever came up. The stage was also adorned with almost 600sqft. of world-class LED videowalls (4.8mm pitch), allowing audiences to dive in to every bit of the performance.

When probed about the challenges that the team encountered in reinforcing the event, **Selwyn Remedios – Director of Reynolds Sound & Lighting Services Pvt Ltd** – emphatically professes, “The sheer excitement of getting back to open-air live events after 2 long years of dealing with the pandemic was such an awesome experience that we honestly did not view anything that came our way as a challenge. We were absolutely ready to overcome anything. That being said, in all honesty



- Nothing beats the feel and energy of a live concert – and the overall experience of our first major gig after the pandemic was brilliant!”

On to the Sunburn Arena event with Alan Walker on 15th April 2022; and team Reynolds were fully aware that this particular gig would be more much larger in scale as compared to the KSHMR concert. With the plush 'Mall of Bengaluru' at Leela Bhartiya City as the host venue – the event anticipated an audience capacity of over 10,000 individuals, which in turn asserted the need for a more elaborate and expansive technical set up.

Alan Walker's person team of technical experts conjured the principal design and pre-planning of equipment needed for the gig, which meant that team Reynold's once again resorted to their trusted combo Vectorworks and MA-3D softwares to precisely chart out the audio, lighting, A/V and trussing schemes for the show in accordance with the specified tech rider.

Similar to the KSHMR concert, team Reynolds once again deployed the KSL line array system from d&b Audiotechnik as the FOH system; this time with 24 line array modules in standard L-R hangs and complemented by a total of 14 units of the SL subs. Owing to the larger expanse of the venue (longer in length!), the team had to deploy additional delay reinforcement in the form of 4 units of the KSL modules on each flank of the venue; with scaffolds from internationally acclaimed brand Layher being used to safely support the FOH and delay loudspeaker systems respectively. The intransigent D-LIVE full-format mixing console from Allen & Heath was chosen as the desk of preference to mix and balance the gig; while the artists on-stage were once again provided



Alan Walker at the Sunburn Arena

with multiple sets of the industry standard Pioneer DJ Nexus 2 systems comprising CDJ2000 DJ controllers along with the DJM900 DJ mixers.

Additionally, Reynolds also put together the world class fabrication truss around the stage (measuring 18m x 12m x 12m) which hosted an astounding array of countless lighting fixtures that lit up the stage in a magical fervor. 24 units of the Clay Paky Mythos 2, along with 35 units of the PR 330 Super Sharpies, 24 units of the 6000XE moving head wash, 24 units of molefays (audience blinders), and a whopping 44 units of Collider RGB Strobes came together to form the extensive stage lighting infrastructure. The audience was, undoubtedly, immersed into a frenzy of colours and bright lights that accurately depicted the mood and emotion of every single soundtrack; thanks to the impeccable control over the lighting design afforded by the GrandMA3 (full-size) lighting control console from MA Lighting.

Another major point of distinction at this event was the sheer magnitude of LED walls that were deployed at various points on and near the stage to mainly support video playback – with the Reynolds team

deploying a total of over 2000sqft. + of world-class LED videowalls (4.8mm pitch) that comprised the main stage backdrop, the DJ console fascia and the IMAG (image magnification screen), with crystal clear video output assured through the use of a pair of Novastar 4k Prime all-in-one-controllers that afforded accurate LED screen configuration along with precise video processing and control and among a host of other crucial capabilities.

Speaking about the experience of commissioning the technical reinforcement for the event, Selwyn recounts, “Apart from the slightly dulled moments where there was heavy rain and strong winds, I believe we pulled together brilliantly to deliver a flawless event thanks to the high quality and dependable world-class equipment that we deployed, and of course, our diligent in-house team of expert engineers. The results were phenomenal, as we all witnessed the capacity crowd going wild to the beats dropped by the opening acts and ending it all on an absolute high with a breath-taking set by the one and only, Alan Walker!”

Reynold's Sound & Lighting

SAUDI ARABIA

Protec Takes Command at World Defense Show 2022

Despite multiple challenges, event equipment rental company, Protec delivers spectacular solutions for the very first fully integrated defence exhibition.



Spanning across an 800,000 sqm site, the inaugural World Defense Show (WDS) featured three large exhibition halls, outdoor exhibit spaces, dedicated demonstration and display areas, a purpose-built 3km-long runway, and space for static aircraft displays. The theme for the show was 'interoperability' between the major defence services in any given location – air, maritime, land, cyber, and space. Some 600 defence and security exhibitors from 42 countries along with 80 military delegations from 85 countries, took part in the expo which was set up by Saudi Arabia's General Authority for Military Industries.

Protec has been the cornerstone of the events industry in the Middle East since 1999. With the company's

experience and technical expertise, it was entrusted by WDS to handle the full theatrical and stage management along with complete scenic, staging and technical production of the Opening Ceremony and a 'Command & Control Center' experience for the expo.

While poor weather conditions including dust storms and high wind speeds forced the cancellation of the Grand Opening Ceremony and some of the planned aerobatic displays, unique attractions generated high levels of interest at the future-focused defence event held in Riyadh, Saudi Arabia.

Eddie Andradé who project managed the Opening Ceremony and the 'Command & Control Center'



explained, “We ploughed through various challenges and had everything set up and ready, including 4 x 12m by 7m mobile LED screens, scenic elements, audio, seating stands, live cameras, pre-filmed and edited video content, and of course, days of rehearsals to get the Opening Ceremony together but the weather gods just weren’t interested. It was a real shame we couldn’t go ahead with this show,” he said.

Adding, “We did, however, proudly deliver all the shows for the ‘Command & Control Center’ experience which was well-received by all the stakeholders of WDS and the visitors to the expo. This was a unique theatrical production with an intense intermingling of technical content and live performances. The conceptual design and AV solutions were designed by our Technical Director, Nick Groves, who topped his own incredible creative talent and technical expertise. Talent like his, along with the dedication and hard work of the entire Protec team both, on and off-site, constantly fending off various challenges, made this production the success it was and quite memorable.”

The first-of-its-kind ‘Command & Control Center’ was a dedicated interoperability demonstration area, with shows that ran up to 5 times per day. The Command, Control, Computers, Communications, Cyber, Intelligence, Surveillance, and Reconnaissance (C5ISR) ‘Command & Control Center’ featured a theatrical 30-minute audio-visual spectacle, combining live actors with highly engaging advanced virtual environments and constructive simulations.

Housed in Protec’s SUPAdome, the interactive, immersive ‘Command & Control Center’ showcased Artificial Intelligence (AI) and Machine Learning (ML) algorithms employing super-computers operating alongside more traditional operational data manipulation technologies. It captured a ‘12-hour period of a national response’ when confronted with an imminent ‘strategic crisis’, simulating the future of interoperability at the highest levels. The show itself involved 31 actors and 3 stage management crew along with a director and producer and 9 tech crew, led by Nick Groves.



Elaborating on the choice of the SUPAdome, Groves explained, “This modular superstructure, was a perfect venue solution. It was customisable, extendable, and incredibly weather resistant. It also had impressive rigging capabilities with rigging points throughout the high roof, and each arch was able to support 3 tonnes. This structure’s dimensions with the complete 8-bay extension is an impressive 36m wide x 84m long with 15.8m of headroom and an internal weight load capacity of over 40 tonnes. The versatility of the structure means that it can be used in different configurations to suit multiple event formats, from being used as a concert roof to a gala, theatre or as a corporate venue for events and exhibitions. For the ‘Command & Control Center’, we used a 3 bay extension (out of the possible 8 bays) to cover an area of 36m x 54m with a bespoke entrance feature.”

Working closely with Nick, Production Manager, Pieter Smuts said, “The advantage of us supplying our own structure (and equipment) directly from Protec’s local Riyadh facility meant that we weren’t waiting on shipments or on another supplier to build the venue, so setup ran smoothly. The venue itself is unique – designed with event loads in mind and providing more weight loading than conventional temporary structures

(marquees), we were able to implement the technical aspect without the usual restrictions, which in turn enhanced the final product.”.

The load-in and build for the ‘Command & Control Center’ took over two weeks with three days taken for dismantling. The structure itself took five days with technical installation running concurrently and taking an additional 3 days. Adequate time was needed for the live element rehearsals, so it was important to hand over the finished structure as quickly as possible.

Along with the venue solution, Protec supplied a comprehensive technical and staging package for the ‘Command & Control Center’, including an L-Acoustics PA with a DiGiCo console, 180m2 of curved Absen 3.9mm PL series LED screen, disguise (d3) media server, effects lighting, monitors, rigging, staging, tiered seating stand, and fit-out to create an engaging and immersive experience for the audience.

Groves continued, “We had to work on the project for several weeks prior to its confirmation providing conceptual designs, technical designs, animations, and graphic elements. CAD services provided the finalised site overlays. Full and final designs were supplied by



Protec as well as full implementation on site. Content was created for the Command Centre screens by us, with 22 individual feeds required for the command centre desktop screens. Disguise (D3) was utilised for the main 30m x 6m screen matrix.”

One of the big challenges from Protec’s point of view was the venue location – some 70km outside of Riyadh. Restrictions on truck movements meant logistics needed to be carefully planned to ensure equipment was on-site when required. This meant equipment being loaded from Protec’s local warehouses – 2.5 hours away and - delivered 12 hours before installation. The site was also very exposed – being a working airfield – so the crew was subject to ever-changing weather, in particular sandstorms regularly.

WDS Project Director for the Opening Ceremony and the ‘Command & Control Center’, Nick Mattingley was quick to acknowledge his positive experience with Protec, “Against stiff competition, Protec were awarded both the Opening Ceremony and ‘Command & Control Center’ features at the World Defense Show. Their commercial offer was strongly supported by their regional knowledge and demonstrated competence for previous shows of a similar nature. Their tenacity and diligence throughout

this very difficult project is highly commendable, their solutions-based approach ensured every obstacle was met with options right up to the last minute. The final product, particularly the Command and Control Center, housed in Protec’s SUPAdome, exceeded everyone’s expectations. It was a pleasure working with the Protec team.”

Nick Groves concluded, “What do I take away from the event? As always, so many things. But I want to focus on the team - the crew. There were challenging times – long hours, bad weather, tight deadlines, last-minute changes, etc. All were met head-on with a smile and without a single complaint. To be part of that camaraderie, that family of true professionals you cannot feel anything other than absolute pride. There was never a moment ‘when near enough was good enough’. The whole team strove for perfection and in chasing perfection you will always catch excellence.”

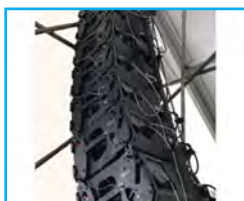
Protec



Enquire

**10K fEEbEE LED RGBACL Engine
€ 830.00**

10K fEEbEE LED RGBACL Engine:
Retrofit into original ETC Source 4
luminaire. Protocols: DMX/RDM . 5-pin
XLR in/out. PowerCon connection.
Coloured RGBACL. Min CRI 98 3200K
S4 19°6m 2822 Lux 1.8m dia; Min CRI 98
5200K S4 19°6m 2822 Lux 1.8m dia.



Enquire

**DAS Audio AERO20A System
€45,000.00**

For sale a used DAS Audio AERO20A
Line Array System Set, all is in excellent
condition and the price shown is for the
complete package.



Enquire

**Sennheiser Package
€7,375.00**

For sale a used Sennheiser Wireless
Microphone System 2000 Series in
excellent condition. The price is for the
set. Package includes 4 x Sennheiser
EM2050 Receiver (2ch each), 4 x
Sennheiser SK 2000 Bodypack, 4 x
Sennheiser SKM 2000 Handheld, 4 x
Sennheiser MMD 935 Capsule. The
system is in CW Frequencies (718-
790MHz)



Enquire

**L-Acoustics dV-DOSC Package
€31,530.00**

For sale a package of 12 x Used
L-Acoustics dV-DOSC includes 4x
triple flightcases, 2x dV-BUMP (with
dVBUMPBAREX) and 4x dV-SUB.



Enquire

**Soundcraft Vi2000
€12,300.00**

For sale a used Soundcraft Vi2000
digital live console in excellent condition.
Price is for 1 x piece and includes
flightcase and cover.



Enquire

**Martin Audio PSX and X12B Package
€11,075.00**

For sale a package of 2 x Martin Audio
PSX Active Subwoofer and 2 x X12B
Blackline passive source point speaker
systems. Brand new, and price is for the
package.



Enquire

**Robert Juliat Merlin
€7,285.00**

For sale used Robert Juliat Merlin 3°/12°
Followspot Lighting Fixtures in excellent
condition. Price shown is per piece.
Includes flightcase. 2 in stock.



Enquire

**GLP Impression X4 BAR10
€1,450.00**

For sale used GLP Impression X4
BAR10 Lighting Fixtures in good con-
dition. Price shown is per piece. Only
sold in sets of 4 in quad flightcase. 20
in stock.



Enquire

**Avid-Digidesign Venue Profile
System
€8,745.00**

For sale a used Avid-Digidesign Venue
Profile System in excellent condition.
Price shown is for 1 x Piece and comes
with flightcases.



Enquire

**Avolites ART 48-Way Racks
€4,665.00**

For sale used Avolites ART48-Way
Dimming Racks in good condition. The
price shown is per piece. Patchcords
included. 6 in stock.

**PRICE MIGHT DIFFER AT
WEBSITE DUE TO DYNAMIC
PRICING MECHANISM**