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A RECIPE FOR AMAZING

Simulator quality AV transforms high-end hospitality

LynTec: Mexico's Anáhuac Mayab University in Mérida, Yucatán. The 450-seat auditorium was updated with better acoustics, an expanded stage, improved LED lighting and AV with greater seating capacity and significant upgrades backstage using the Schneider Electronics Square D platform.

Don't hide your light under a bushel

It is well-nigh impossible to have a good AV experience without appropriate lighting, whether natural or artificial. Yet too often it remains the poor relation, particularly in workaday environments, such as offices and classrooms. Paul Bray asks why, and finds out how lighting can be moved up the AV agenda.

Lighting does not normally fall within the AV remit, but it should do, believes Greg Jeffreys, managing consultant at Greg Jeffreys Consulting. "Good lighting is essential for video conference cameras and the hybrid workspace. Without good lighting even the best VC camera struggles, and the meeting's remote participants will get a poor impression of your space, no matter how good the room design is or how expensively it's equipped."

"Without good lighting, we all look very ashen on camera," agrees Barry Grubb, business development manager for TV, broadcast and film at 3LR Lighting. "Detail, textures and depth in a hi-res world are critical to the image or content being delivered. A good lighting designer, or someone with a good knowledge of lighting in the AV space, is worth their weight in gold."

"The role of lighting should be versatile, sometimes supportive by providing adequate illumination for clarity, and at other times taking a more prominent role to enhance the audience's experience," says Tom Riby, global sales and marketing manager for KScape by K-array. "Dynamic lighting, which changes dynamically in sync with AV content, can add depth and immersion."

Does the AV industry appreciate all this? Sadly

Cleveland Museum of Natural History: In windowless rooms, RAIL provided clear and bright lighting with a small K-array subwoofer and a KA02 amplifier under the table, ensuring clear and synchronised audio. RAIL's integrated Tunable LED lighting system has a lumen efficiency score of 98 helping Cleveland Museum's sustainability goals.

not, believes Grubb. "Regrettably, in the AV realm, the importance of quality lighting often goes unnoticed," he says. "Many applications equate it with standard home lighting, resulting in poorly colour-balanced images."

Jeffreys believes a structural problem is partly responsible. "For historical reasons, even the most high-tech companies are heavily siloed. Lighting is normally under the control of building or facilities management. Notwithstanding the fact that office lighting is often absolutely terrible, it's a sad fact that companies spend good money on bad lighting that can destroy display image quality and user experience. Bridging the silos between facilities management and AV/IT management will be the most significant enabler and pre-condition for things to improve."

Entering the lighting domain

There are signs that things are getting better, however. "We see more and more AV consultants bravely entering the lighting domain," says Riby. "Collaboration between AV and lighting professionals can enhance awareness, and training programmes and industry events can facilitate knowledge exchange."

When lighting a workspace, the secret is to focus on the basics first, Grubb believes. "What you need for AV applications such as a video conference meeting is well balanced, natural looking light. There's no need for special effects or mood lighting."

"When working in corporate applications, we've always looked at the functionality of lighting, and less at the accents of light to create moods, even though these are important," adds Riby. "The functionality in this case has been human-centric design in the form of tuneable white where we can improve the environment for employee health and well-being. It's also important to choose the right LEDs and optics to replicate the natural light outside."

"The thing is to be able to define a lighting 'schema' which expresses where the light should fall and in what quantity," says Jeffreys. "For every schema there are different lighting designs and configurations that could possibly deliver the correct results.

"It's really useful to think in terms of 'key' and 'fill' lighting, and 'specular' and 'diffused' luminaires (light fittings). Key lighting from above is used to provide some detail and contrast in rendering faces on camera, and diffused fill lighting is used to soften excessive shadowing. Specular luminaires include narrow angle spotlights, while diffused lighting is about delivering lower intensity light from large surface areas."

Reflected light should also feature in the equation, advises Jeffreys. "A large part of the delivered light is indirect, namely reflected from walls, floor, furniture, etc. So the colour and LRI (light reflection index) of surfaces should be considered in conjunction with the lighting itself. It's not widely understood how important the reflective properties of the meeting room table are. This is always a focus detail for me in my consulting practice."

AVIXA guide to lighting

For those wondering where to start, the AVIXA video conferencing lighting guide has some useful pointers that apply to basic office lighting as well as video conferencing, adds Jeffreys who also finds that guidelines such as the SLL Code for Lighting and the Illuminating Engineering Society's standards, plus health and well-being standards such as WELL v2, can provide essential guidance to architects and lighting designers.

Once the basics are in the bag, you can start to work on the finer detail. "Different lighting 'scenes' can be programmed so that the room's mood and mode change according to the different workflows or functions being employed," says Jeffreys. "An example would be segueing from a presentation with focus lighting on the speaker, to collaboration mode when the presentation is then discussed by the people in the room."

Had a heavy lunch? Good lighting design can be the antidote. "The other programmable element is colour temperature," says Jeffreys. "This can be controlled to track the course of daylight over the day to align with workers' circadian rhythms, or to use colour temperature to help workers stay alert during the afternoon lull."

It is important to consider appropriate components and systems that offer controls integration across

disciplines, believes Grubb. "The best lighting and AV designs will often fall short without the ability to work together in a cohesive way. These cannot and should not be designed in silos. Opportunities for scalable inputs and outputs are essential, regardless of data protocols and voltages. We rely heavily on a robust family of control systems, such as ETC's Paradigm, Echo and Mosaic because we sleep well at night knowing that whatever may be thrown at the project, anywhere along the way, it can be accommodated."

There are moves to combine AV and lighting control within the same products, such as KScape's Rail, an all-in-one architectural solution of tuneable white lighting with integrated pro audio, intended for applications such as video conference rooms, open office projects where noise cancellation is essential, and classrooms as a public address system.

"We're already implementing major smart lighting controls into our amplifiers at K-array, so that when system integrators set up a room, they can create the option to change the lighting characteristics, select the audio source and manage volume control," says Riby. "This can also be set up as a wall panel. This synchronisation is achieved through advanced control systems that enable seamless coordination."

"Lighting technologies also need to be able to integrate with building management and emergency lighting systems, fire alarm systems, public address systems, and more," says Grubb. "There are many codes which stipulate that audio and video default to a specific state during an emergency alarm scenario. Designers need to understand such codes, which could vary depending on the project location, including any local requirements. It's typical for the electrical engineer to look for guidance from the lighting or AV designer in these scenarios, as they often don't have the experience in specifying such speciality projects."

IPS AVL Power Control from LynTec for the FirstBank Amphitheater set in a former Tennessee Rock Quarry.

"The building and its ceilings need to be considered for load bearing, good power and data supply, plus ventilation," adds Grubb. "Health and safety is key."

From a power management perspective, lighting control and management has become just as critical as its AV counterpart, as LED fixtures continue to become the new standard, believes Mark Bishop, president of LynTec. "Thanks to LED fixtures not requiring a traditional dimmer rack, combining lighting and AV into a single power control system is easier than ever before, and it allows users a single point of contact for complete venue control of the performance systems."

From a power control and infrastructure standpoint, the process is very similar to an AV system. Three basic topics need to be covered before beginning designs and product selection: what are the electrical requirements from a circuit standpoint, what form factor (ie. rack-based, wall-mounted) will the system need to be, and how is the system going to be controlled? From there, designers are able to put together various systems to see what would best fit the customer's needs.

Many power control platforms now offer a number of control protocol options, such as DMX512, sACN, IP/HTTP and RS-232 that can be utilised for the audio, video and lighting systems to give a single point of contact for system control, adds Bishop.

Power down LED fixtures

It is important that every LED fixture is powered down completely after each use.

"Although LEDs are built to deliver incredible brightness, years of use, and cost savings over incandescent fixtures, they must be fully shut down to reap those benefits," says Bishop. "Otherwise, they can fail prematurely and drive up energy costs unexpectedly."

The other important consideration is choosing options that are future-proof and sustainable, believes Riby. "Lighting technology has to work well with wireless controls and provide ease of use for the end client. I believe Lutron and Casambi have been putting the right pieces in place to accelerate this technology further."

Lighting technologies continue to evolve rapidly, says Riby. "Specifiers and integrators should watch for innovations such as advanced colour mixing, gesture-based controls and IoT (internet of things) integration, which can offer new creative possibilities and energy-saving solutions.

"Over the next few years, we can expect to see advancements in smart lighting systems that can adapt to user preferences and environmental conditions. These developments will provide greater energy efficiency, customisation and user comfort."