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TECHNOLOGY AND APPLICATIONS OF LIGHT EMITTING DIODES

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ARCHITECTURAL LIGHTING

Houston museum leverages QuarkStar optics to uniformly light art walls

Startup QuarkStar has announced that its Edge-X technology has been installed throughout the new Nancy and Rich Kinder Building at the Museum of Fine Arts, Houston (MFAH). The relatively diminutive optical element can spread LED light uniformly over large areas such as walls while allowing the solid-state lighting (SSL) fixture to be essentially hidden in a room's architectural features or recessed into the ceiling. Meanwhile, a multi-channel LED light engine enables the museum lighting to match the abundant natural light that the building design draws into the public spaces and galleries.

Photo credit: Image courtesy of QuarkStar.

The folks behind QuarkStar, including CEO Louis Lerman, are a patient and persistent bunch. The company history stretches back a decade or so and we first encountered a private demonstration of QuarkStar technology at Strategies in Light around the 2014 timeframe. The company had legendary LED pioneer Roland Haitz on its technology team before Haitz passed away in 2015 (http://bit.ly/3aHhF8w). Other team members include Eric Bretschneider, who has been a regular speaker at our events, and Bob Steele, who founded Strategies in Light. From the start, Lerman insisted the team would change the way light was delivered, placing photons spatially only where desired.

The QuarkStar plan all along was to license its technology to one or more lighting manufacturers. And a number of such manufacturers have experimented with the optics, and perhaps are even in confidential development of products that use the technology. Meanwhile, QuarkStar has continued to turn up at industry » page 6

SSL BUSINESS

Osram starts divesting digital lighting

The long-anticipated dismantling of Osram's smart lighting operations appears to have begun, as outgoing CEO Olaf Berlien (shown) said the company is selling a portion of its Digital division and indicated that a broader sale could follow as Osram focuses increasingly on chip-level operations under new owner ams. The divestiture could eventually include Lightelligence, the once-ballyhooed centerpiece of Osram's fading Internet of Things (IoT) lighting initiative.

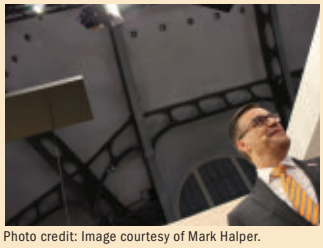

Photo credit: Image courtesy of Mark Halper.

Osram looks intent on retaining horticultural lighting, which Berlien described as being in good shape, led by the profitable Fluence by Osram based in Austin, TX. In addition to IoT and horticulture, Digital includes entertainment lighting and architectural lighting.

The announcement came as part of the company's financial results for the first quarter of its 2021 fiscal year, when » page 6

UV DISINFECTION

Signify CEO's UV-C update: Commercial market 'an education,' home market brisk

It's been over half a year since the lighting industry began ramping up ultraviolet C-band (UV-C) products aimed at ridding offices and homes of the novel coronavirus, yet the rumblings we've been picking up at *LEDs* suggest that uptake in the commercial market so far has trended more toward experimental one-off deployments rather than broad, full-scale commitments.

So our ears perked up when the boss of the world's largest lighting company, Signify, addressed the issue during a conference call with analysts assembled online to discuss the year's financial results and business performance (https://bit.ly/3ds44qf). » page 8

Houston from p. 4 events with very compelling demonstrations. For example, at LightFair International in 2019, QuarkStar displayed an interesting cylindrical optic that protruded from a fixture recessed in a ceiling (http://bit.ly/2YeIbTS) and also a version of the Edge-X technology.

The Edge-X concept includes a linear LED light engine that is mated to the optic. A relatively-thin, planar lightguide-like element carries the beam from the light engine to the far edge of the optic. While most planar lights disperse a beam perpendicular to the plane of the guide, the QuarkStar guide is intended to contain and transmit the beam to the edge. At the edge, the lightguide mates to the optical diffusing element that is a bit wider than the guide itself. The shape of that diffusing element delivers the desired beam pattern. We published a description and photo of the optic in a feature article back in 2019 (http://bit.ly/2vuRGSq).

The performance of the optic is more easily described in the context of the museum application. QuarkStar designed the Edge-X technology into a linear wall-wash luminaire called the Q-Wall. The company considered partnering with a lighting manufacturer to build the fixtures, and had five potential partners bid on the project. Ultimately, the QuarkStar team made the decision to build it themselves for several reasons. The buildout afforded the company the opportunity to continue to evolve the product. The company had equipped a Canadian manufacturing facility capable of manufacturing UL-certified products. The challenging museum project required near-continuous interaction with the museum team that would have been problematic with a third party involved. The museum walls are 16 ft high. The Q-Wall luminaire uniformly washes all 16 ft of a wall section with a single luminaire. Litelab directional spotlights with zoom optics allow visitors to discern fine details of the works on display.

The museum architects had designed coves stretching several feet from gallery walls and running linearly the length of the wall to enable the wash effect (see our cover). Consultancy L'Observatoire International handled the lighting design, and a spokesperson said the Q-Wall luminaires were located 4 ft 10 in. from the wall to be able to uniformly wash the entire wall. Moreover, a clip-on scrim was added to the optic to, as a L'Observatoire spokesperson said, "smooth the optics, needed to achieve the quality of light required for museum-level lighting."

QuarkStar has said it could actually accomplish the wall-washing effect with 1 ft of space. Moreover, the Edge-X technology enables the luminaires to be recessed and hidden in a ceiling, although that technique was not applied in the museum. The optics would only require a 1-in.-wide linear aperture in the ceiling to do their magic.

"This is what QuarkStar's Edge-X enables," said Lerman. "Rather than being forced to design around a fixture, an architectural vision such as the Kinder Building was able to integrate the fixture invisibly while delivering an experience nearly indistinguishable from standing near a window or under their innovative cloud-inspired skylights."

QuarkStar was selected for the project by L'Observatoire International and Willard Holmes, MFAH COO. The Q-Wall products are installed to light 20,000 ft² of wall space. The building was designed by Steven Holl architects in partnership with Kendall Heaton.

The three-story museum was envisioned to bring as much natural light into the space as possible. The third floor is lit by the architectural skylights mentioned by Lerman that act almost like a lightguide to direct light to flow down walls. The artificial light on the lower two floors was intended to match the feel of natural light on the upper floor. That desire led QuarkStar to deliver the two-channel light engines that can vary CCT during the day to match light from the skylights. The system includes 3000K- and 5000K-CCT channels. And the lightguides mix the light uniformly before it reaches the edge. ◂

MORE: https://bit.ly/3udLTua

SMART CITIES

Tridonic launches comprehensive SSL building blocks for smart city networks

SSL enabling technology manufacturer Tridonic has announced the Siderea platform of building-block products that developers can easily use to quickly design smart outdoor lighting products. Moreover, the portfolio includes compatibility with the Paradox Engineering Smart Urban Network platform, so development teams can enable their companies to offer a turnkey smart-city system for installation in small towns with a few luminaires or in large urban areas. The modular approach to outdoor LED-based lighting products is largely standards based and future proof.

Tridonic has manufactured some modular SSL products and of course its parent Zumtobel makes lighting products and offers connected systems. But Tridonic is

Osram from p. 4 Osram managed through cost savings — including measures it took in Digital — to report €6 million (US$7.3M) in after-tax earnings as sales declined 3.8% to €840M ($1B) from €873M ($1.1B) a year earlier, when after-tax earnings were €1M ($1.2M). The quarter ended on Dec. 31.

The quarterly results were the last for Berlien, who left the company at the end of February. Austrian sensor company ams is installing its chief financial officer Ingo Bank as Osram's new top day-to-day boss (https://bit.ly/2OVUIsz). Bank is a former Osram CFO.

The chip priority predates ams' long and winding pursuit of Osram, but strengthened as ams has moved in. Premstaetten, Austria-based ams took rudimentary ownership of Osram in July (https://bit.ly/3dGr5pF), and strengthened its grip in November.

LEDs first reported back in August 2019 that connected lighting could well become a casualty of an ams takeover, since ams, at the time still pursuing Osram, described IoT as "non-core" to its mission (http://bit.ly/2PcZh1f). The lighting industry in general — not just Osram — has encountered slow uptake, with many customers deploying one-off connected lighting implementations while not yet committing to wider rollouts. We have an article on p. 22 in this issue that explores how market messaging and value proposition could increase the adoption of connected lighting and controls. ◂

MORE: https://bit.ly/3dslWA5