

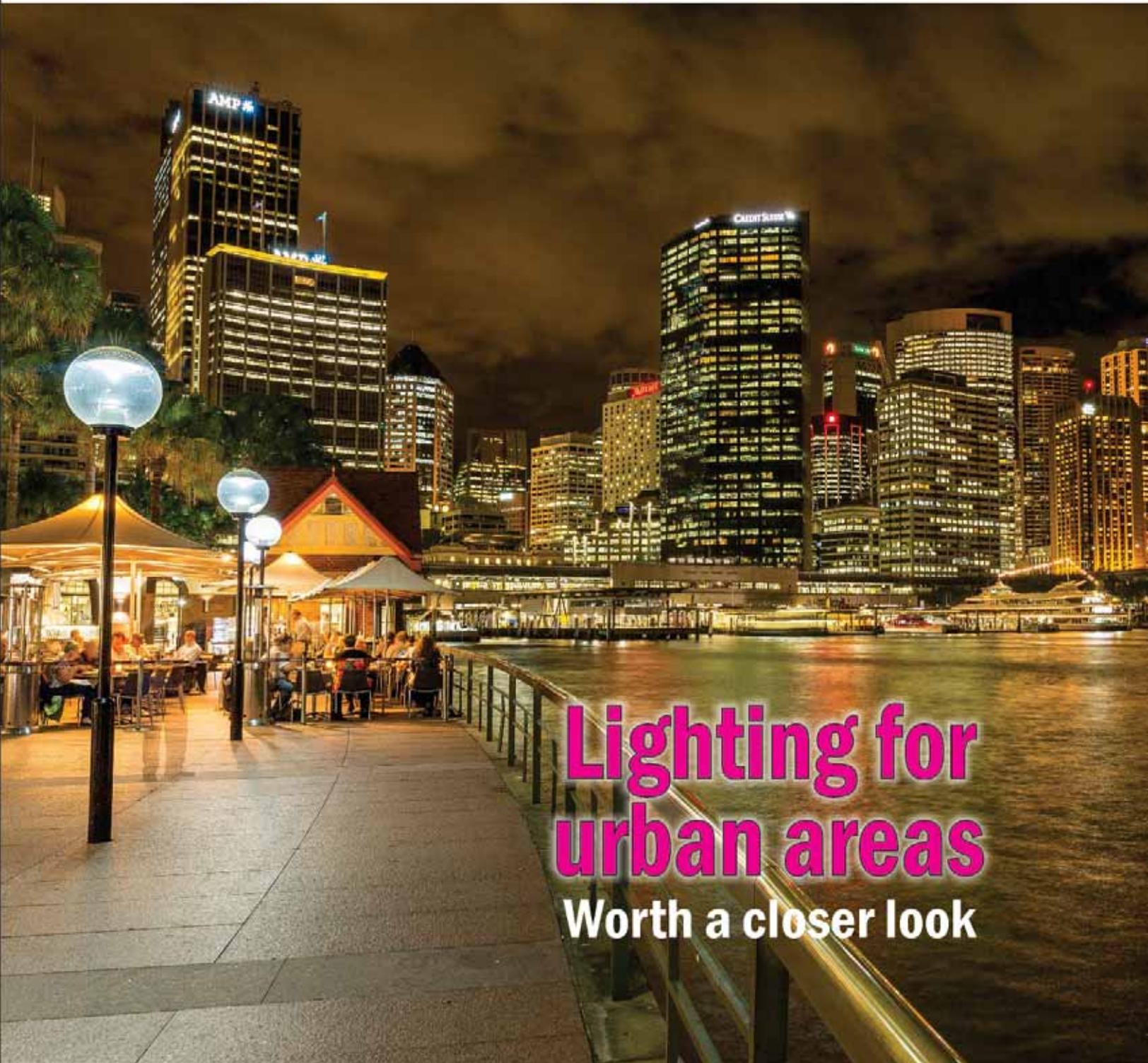
INDIA'S FOREMOST MAGAZINE ON THE LIGHTING INDUSTRY

Lighting India

₹ 125

Vol. 13 No. 3

May-June 2018



**Lighting for
urban areas**
Worth a closer look

 A Chary Publication



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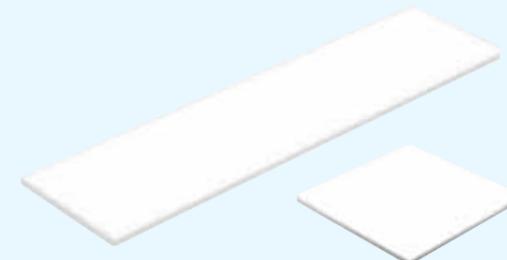


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Hello and welcome once again to *Lighting India*. If it's June, it's time for lighting exhibition in China. As usual Lighting India was present at the lighting fair in Guangzhou as a media invitee. This year there was an increase in the number of visitors to the fair and with more than 2,600 exhibitors demonstrating the latest in lighting and LED products, it was a place to be in for any lighting enthusiast.

Lighting industry has come a long way since the evolution of LED lights almost a decade back. The industry has been evolving at a fast pace. In fact, so apt was the theme for the fair this year -

"Think light: Embracing changes" that it really described what is going on in the lighting industry. I must say, with every passing year, Chinese companies showcase more and more innovative lighting products. Human-centric lighting was another important aspect of lighting display this year. Many different industry sectors now want to work with the lighting industry and be involved in smart lighting products. The challenge, however, would be how to connect and work together.

With the electricity demand growing very rapidly in our country and lighting alone consuming almost 18% of the total generation, India is definitely an attractive place for LED manufacturers, especially as the LED market is projected to register a CAGR of almost 30% in the next 3 years.

Coming to this issue, we have some excellent articles ranging from the market for LED lighting products in India to use of LED in decorative lighting space. Going further you will find a detailed analysis of the importance of outdoor lighting and its role in safety and security of public places.

We also have an interesting piece on urban lighting, wherein the author discusses the energy efficiency aspect in urban lighting and how it can be achieved by proper design. Talking of urban lighting, I must say Guangzhou has come a long way in the past 20 years. Nowhere, in modern world, apart from Hong Kong which is an old city, can you find the urban lighting as dynamic as in Guangzhou. Along the promenade of the Guangzhou Pearl river, some 20-odd buildings are beautifully illuminated and at night the façade lighting with animations projected on the buildings reflect onto the river to give a dazzling effect. A sight to watch definitely for any lighting person.

Hope you enjoy going through this issues. Do send in your comments to me at miyer@charypublications.in

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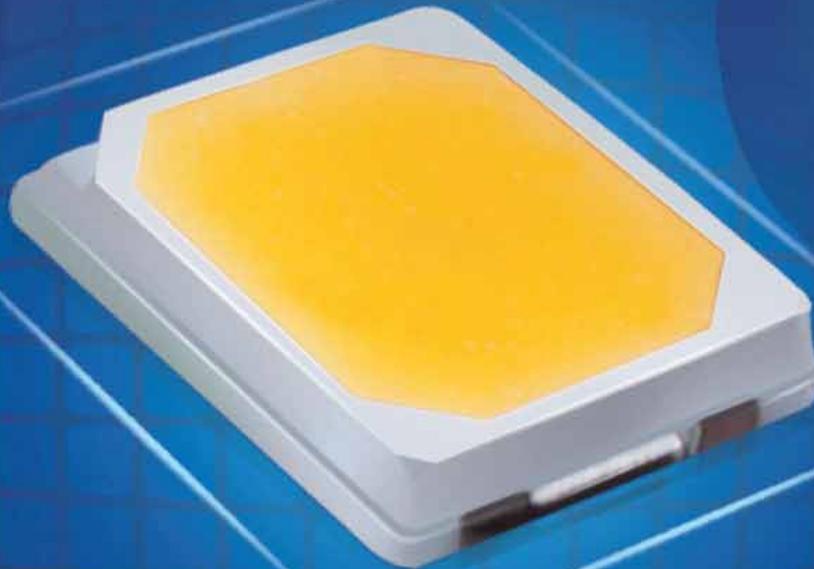
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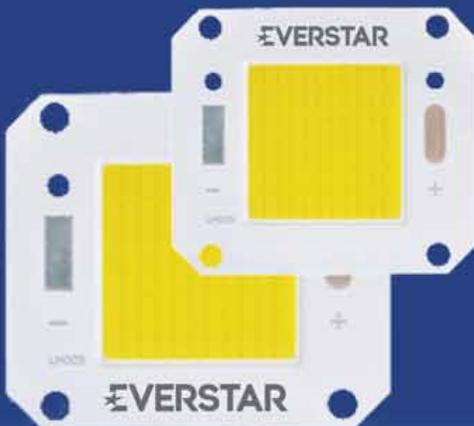


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Lighting for urban areas: Worth a closer look

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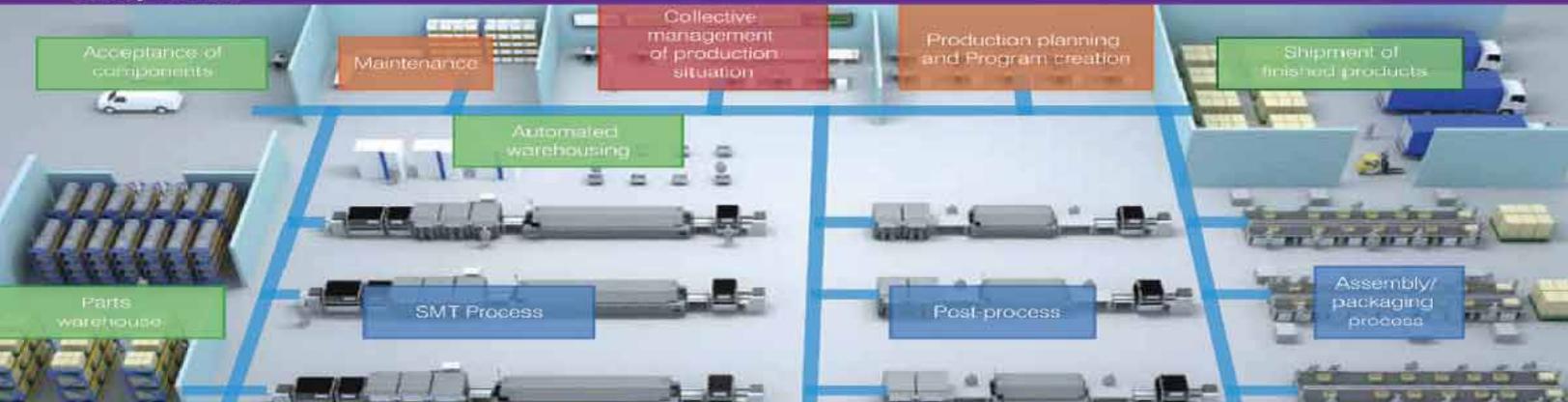
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Cree revitalises bulb line to provide consumers with exceptional light

Cree, Inc. has revamped its complete line of consumer LED bulbs, including more than 30 products ranging from A-Lamps and candelabras to reflectors and downlights. Developed with consumers preferences in mind, the upgraded line is engineered to work better and last longer, with light that delivers exceptional colour quality. The launch comes in conjunction with The Home Depot's recently redesigned bulb aisle that aims to help consumers easily navigate, understand and choose LED light bulbs.

"The new line of bulbs delivers the best value for consumers who are looking for long-lasting, true-to-colour LED lighting that will enhance their home," said Phil Primato, senior marketing manager of Cree. "We have simplified our packaging into an easy-to-understand white box that explains the value of exceptional lighting."

Cree's LED bulbs can improve the appearance of home décor, increase comfort and even affect mood. For homeowners looking to modernise their space through a remodel or gain more light in their home, it is as easy as changing the light bulbs. The entire line of these high-quality bulbs includes over 90 colour-rendering index (CRI) light, making the hues in your home appear more vibrant, rich and natural. In addition, the bulbs offer full dimming capabilities and Cree's '10-year, 100 per cent satisfaction guarantee'.

Designed to be in your home for decades, the bulbs exceed the ENERGY STAR minimum lifetime for most products, up to 22 years or 25,000 hours for bulbs and up to 45 years or 50,000 hours for retrofit downlights. ■

CP Electronics halves energy consumption in Russian warehouse

CP Electronics, the UK's leading provider of lighting control solutions, announces that its innovative partnership with a Russian lighting company brought a 50 per cent saving in energy usage to a brand new warehouse in Tyumen, Russia. DEUS LLC and CP Electronics worked with the X5 Retail Group at its 30,000 sq.m. distribution centre, providing a lighting system that was fully compatible with DEUS' own DALI control system.

Previously, X5 Retail Group was struggling to control lighting at tall heights in its warehouses. The company required detectors that would mount up to 15-metre to work with its current control system. The entire system also needed to operate off-line utilising the presence detectors and to maintain the lighting set point of 250 lux even where the luminaires are located at heights of at least 12-metre. The joint CP-DEUS relationship allowed X5 Retail Group to be fully flexible and adaptable to whatever lighting scenes were required.

CP Electronics has extensive experience in providing bespoke solutions to lighting Original Equipment Manufacturers (OEMs). Nikita Betyaev, Business Development Director and co-founder of DEUS LLC, explains how the partnership began. She said, "We started working with CP Electronics in 2017 as we were particularly impressed with the standard 5-year warranty of CP's products. We also found the flexibility of products like DALI Network (DNET1) to be particularly beneficial." ■



Penn Elcom launches new range of rack-mounting power distribution

Penn Elcom launches its new PDU16 range of premium rack-mounting power distribution: the PDU16-UN, the PDU16-EU, the PDU16-PC and the PDU16-AV. Newly designed as core products in a versatile range of professional, industrial and commercial racking options offered by the UK manufacturer.

The innovative 2U high horizontal mounting PDU16 series has been developed to offer more flexibility and well-engineered solutions in response to customer demand in the highly competitive 19-inch rack market. Features include a high-clarity, back-lit LCD monitoring display on the front of each unit showing essential operational feedback and data including voltage, current, power in watts and energy level.

This convenient monitoring functionality includes a visible overload alarm, alerting users as to when the level (in Watts) of power being drawn is / or is about to be exceeded, the value being displayed will flash on and off.

The wattage power level threshold can be user-defined and pre-set, and this data will be stored when the unit is powered off.

The PDU16 series offers a variety of different outlet socket formats to cover a dynamic range of applications including all types of AV, audio and lighting installations - from clubs to museums - to touring, rental & staging.

PDU16-UN (universal) main in/outs on Circuit A are a panel mounting 32A 240V IP44-C-FORM input socket feeding through to a 16A IP44 C-FORM output socket via an illuminated circuit breaker. ■





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Morgan Stanley switches 600 branches to energy-efficient lighting

Morgan Stanley is collaborating with GE's energy-focused start-up Current to upgrade lighting at more than 600 retail branches. The companies are evaluating energy savings opportunities with a turnkey LED lighting and digital controls solution that is expected to reduce lighting-related energy consumption by up to 50 per cent in some branches, also improve operational productivity and enhance the customer experience.

"This collaboration is a great example of a leading financial institution and real estate management firm coming together to reduce energy, improve operations and position themselves for the future," said Maryrose Sylvester, President and CEO of Current, powered by GE. "Forward-thinking companies everywhere are realising the added value of combining LED technology with digital controls, sensors and software to deliver both energy savings and operational productivity."

Morgan Stanley's leadership approach to energy efficiency is guided by a commitment to reduce energy usage by 20 per cent by 2022 from a 2012 baseline. According to the Department of Energy, only 12 per cent of U.S. commercial and retail buildings had transitioned to LED lighting solutions as of 2015. Lighting represents approximately 40 per cent of energy consumption for commercial buildings.

Current's LED retrofit solution is now being deployed on a rolling basis across Morgan Stanley's Wealth Management offices. Beyond LED-related energy savings, Current's Daintree network is also being evaluated and, if implemented, will provide a digital controls solution that wirelessly integrates with building sensors and devices to manage occupancy, daylighting, scheduling, thermostats and plug loads. ■

Deco Lighting launches 'Power over Ethernet' technology

Deco Lighting introduces DECO PoE (Power over Ethernet) integrated technology, debuting in the Vector interior architectural luminaire. According to the company, DECO PoE, powered by Molex's NCS Network, will bring a newly-conceptualised system to commercial building spaces that provide easier installation and smarter building monitoring than static LED lighting fixtures.

Intended to simplify the way lighting systems connect to an IP-based infrastructure for smart control, DECO PoE introduces a new paradigm where energy-saving LED luminaires evolve into a service and become an Internet of Things (IoT) building asset that can be controlled synergistically with other building functions.

Integrating Deco's Vector luminaire with next-generation NCS networked lighting controls, transforms the lighting fixture into a beacon for data collection and a center for distributing energy, environmental, and occupancy information. "DECO PoE not only provides unmatched overall system integration capabilities but will also deliver a platform that optimises cost and provides dynamic energy savings with adaptable functionality," the company claims.

Ben Pouladian, President and Co-Founder at Deco Lighting says, "We believe that the next generation of luminaire selection begins with the CIO or CTO of every organisation because lighting is no longer a binary product that simply produces light; it's now woven into the fabric of building intelligence." ■



Kone turns its elevator walls into interactive displays with LEDs

Finnish engineering company Kone is outfitting an elevator with walls made from a thin, flexible, illuminating material that provides the car's artificial light while also functioning as an information display board and a giant interactive touch screen.

The interactive media surface panel deploys LEDs, embedding the single-point light source within a flexible material.

The project is part of the EU's Horizon-backed InScope consortium, which besides Kone includes Signify (formerly Philips Lighting) among other industrial companies, plus research institutes from five countries.

Funded by the EU, the InSCOPE project provides an open-access pilot line service that promotes innovation in printed electronics. For the pilot line's first showcase, the InSCOPE team successfully integrated sensing, lighting and haptic (touch) feedback functionalities to create an interactive media surface panel for the Kone Corporation. Consisting of a smart LED media grid, the showcase panel is implemented in an elevator car where it performs multiple functions including people guidance, decoration, and advertising.

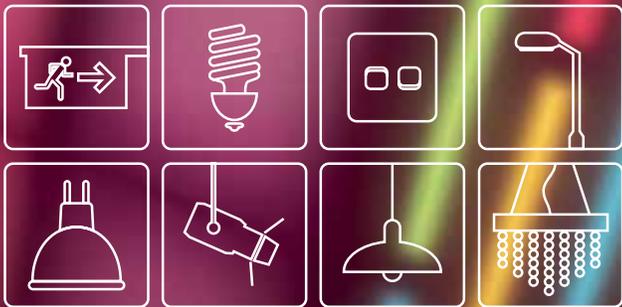
"We were looking for large scale production using printed electronics solutions, and the InSCOPE project has given us the opportunity to study, share visions and needs based on these technologies," said Jukka Korpipihete, senior lighting design specialist at Kone. ■



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Havells India to make add investment in Promptec

Havells India announced that the Executive Committee of the Board of Directors of the Company, in its Meeting held today on 21st June, has approved the exercise of 'Call Option' in terms of the Shareholders' Agreement dated April 22, 2015 amongst the company, Promptec Renewable Energy Solutions Pvt Ltd (Promptec) and the Promoters of Promptec.

With exercise of this Call Option, Havells India will now invest up to 100 per cent in the Paid-up Share Capital of Promptec, by way of purchase and/or acquisition of remaining Equity Shares.

Promptec, a subsidiary where the Company presently holds around 69 per cent stake, is a Bangalore-based entity engaged in marketing and manufacturing of LED products including street lighting, office lighting and solar lighting. ■

Osram invests in horticultural startup

Osram's venture capital arm, Fluxunit, has acquired a stake in Canadian startup Motorleaf, an artificial intelligence company focused on bringing actionable, data-driven insights to greenhouse and indoor farm operators. By providing a digital agronomist, Motorleaf's yield prediction tools help greenhouse operators meet contract obligations, better plan weekly operations and forecast production capacities in real time.

For horticultural applications, Osram already supplies specially developed lighting solutions designed for cultivating plants in greenhouses or indoor farms that stimulate and manage plant growth. Adjusting light in the context of overall environmental growing conditions to the specific needs and characteristics of a plant has a strong impact on actual yield and quality of the plants produced. ■

Fraunhofer introduces flexible OLEDs for wearables

Since 2016 partners within the European joint project PI-SCALE are working on the introduction of a joint pilot line in order to give access for the manufacturing of flexible OLED for SMEs in Europe. At Wearable Europe 2018 the Holst Centre from the Netherlands, VTT Technical Research Centre of Finland and Fraunhofer FEP introduces a novel OLED wristband. This bracelet is representing one of the first wearable products with flexible organic electronics from the European pilot line.

Fraunhofer FEP was responsible for the anode deposition on barrier web, which has been produced by the project partner Holst Centre as well as for the OLED-deposition by using evaporation processes. The OLED-deposition at Fraunhofer FEP can be done in Roll-to-Roll (R2R) and Sheet-to-Sheet (S2S) processes. The Finnish experts of VTT integrated the ready-made OLED into a bracelet and developed the compact power supply for the whole system. The successful integration of the flexible OLED components into 3D injection moulded structures was challenging.

Markus Tuomikoski from VTT explains: "We used injection moulded structural electronics for the integration of the OLED. To meet the demands of a wearable device, the conception and realisation of a compact power supply system was necessary. In the end we realised a combination of flexible electronics and flexible OLED within our plastic moulded bracelet uncomplicated thanks to the positive joint work of the partners." ■



Legrand India opens its experiential centre in Lucknow

Legrand India, one of the global leaders in electrical and digital building infrastructure, inaugurated its state-of-the-art experience centre Innoval in Lucknow.

Innoval will host its India group company products – Legrand, Numeric and Valrack. Globally Innoval is present in multiple locations - France, Greece, Chile, Brazil, Colombia, Dubai, and made its first-time entry in the Asia Pacific region with its launch in Mumbai and then in Ahmedabad.

Commenting on the occasion, Sameer Saxena, Director - Marketing, Legrand India said, "Legrand has a vast offering of electrical and digital infrastructure products across several business verticals; many of which highly technical to understand. The idea behind Innoval was to break this down for the customer, by curating the products within a framework of an experiential and interactive narrative that is simpler to comprehend. It was first time in India that any B2B brand is taking step towards B2B experience zone for their customer in highly technical segment."

Jean Charles Thuard, CEO and Managing Director, Legrand India added, "We are planning to launch multiple experience centres across India and we took first step with a successful launch in Mumbai last year followed by Ahmedabad. With our launch in Lucknow we plan to reach out to our customers and business partners in Lucknow." ■



Software technology that simulates LED devices could save time, money during development of more efficient and powerful light sources

A Purdue-affiliated company is developing a new time and cost effective software technology that could offer a more efficient and realistic way to model and simulate light emitting diodes (LEDs) in order to achieve more powerful and more efficient LED light sources often used in general lighting, automobile lighting and consumer electronics.

Tillmann Kubis, a research assistant professor, and Gerhard Klimeck, a professor, both in Purdue's School of Electrical and Computer Engineering, in Purdue's Network for Computational Nanotechnology and Purdue's Center for Predictive Materials and Devices, along with Junzhe Geng, a graduate student in Klimeck's nanoelectronic modeling group, co-founded the company LEDcentral LLC to commercialize the technology. LEDcentral's goal is to improve the design of LEDs efficiency and output power.

"The most efficient LED light bulb on the market right now has a rather dim output, so what we are trying to do is develop a way to have high output power and still achieve high efficiency. Right now that is not possible because of what is called the efficiency droop. It's not fully understood where the droop comes from or how to solve it, so that's where our software model comes into play," Kubis said. "Currently, we're specifically interested in blue LED lights, which are the

basis for white light bulbs. We aim for our models to help industry develop more powerful and more efficient LED technology."

"Instead of fabricating hundreds of devices, you can simulate thousands of them, and then pick the best 10 you actually care about," Kubis said. "Additionally, if you have experimental data that you don't fully understand, we can explain why the behavior is observed. We are able to explain experiments that have happened and predict experiments that have not. Users can run our technology on a local computer and we also have user interfaces so that it's easy to use for a person who isn't trained in the software." Kubis said conventional models may be insufficient and expensive.

"The models existing in industry and academia are based on classical approaches where electrons are considered particles; however, their behavior should be studied on a multiscale paradigm, i.e. atomistic resolution on a micrometer length scale," he said. "Models on the nanometer scale do a fairly good job, but important LED properties are missing. Additionally, the attempts to model the physics on a quantum level are usually very expensive. The quantum mechanics are captured and the small scale is fully covered, but these attempts are not very efficient." ■

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Siemens drives digital transformation in buildings with acquisition of Enlighted

Siemens Building Technologies Division is acquiring Enlighted Inc., a provider of smart IoT (Internet of Things) systems in buildings, headquartered in the Silicon Valley. The company is a successful player in the smart building industry, bringing an advanced digital sensory system to market. Both parties have agreed not to disclose financial details. Closing is expected in the third quarter of 2018. Enlighted will be managed as an independent legal entity and wholly-owned subsidiary of Siemens Industry, Inc.

“Enlighted has a strong footprint in revolutionising building intelligence by developing a multi-sensor-based IoT platform, using the power of data,” said Matthias Rebellius, CEO of Siemens Building Technologies. “With this move we are demonstrating our commitment to drive digitalization in the smart building industry.”

Enlighted analyses and visualises the collected sensor data to drive down operating costs and improve the inner life of a building. These sensors can be installed in every light fixture with the ability to collect data 65 times per second to detect environmental and occupancy changes and react to lighting and HVAC (heating, ventilation, air conditioning) needs in real-time. Based on an advanced smart lighting control application, today, the Enlighted platform can lower lighting costs of a building up to 85 per cent when combined with advanced LED fixtures. In addition, the platform is able to locate people and assets within a building and analyse the occupancy of floors and rooms. Finally, in combination with Siemens solutions, the Enlighted platform can optimise the energy efficiency of HVAC systems. The interaction between buildings and humans is crucial to increase productivity, energy efficiency and comfort in a building. ■

Moshe Kimchi enjoys Halo RGB and MegaPointe

Moshe Kimchi is an Israeli lighting designer whose company, Moshe Kimchi Lighting Design, based in Jerusalem, has recently invested in Robe technology, with an initial purchase of 60 x Halo RGB LED rings, quickly followed by 18 x MegaPointes.

As most of Moshe Kimchi’s work also includes designing the project as well as supplying the lighting kit, he has a slightly different take on projects than companies more focused on purely rental operations. As such, he’s always looking out for new, interesting and different lighting concepts and effects which will enhance his creativity and enable him to deliver fresh and different looking shows. This is what attracted him to the Halo RGB!

The fixture is a circle of encapsulated bright micro-pixel LEDs which can be DMX controlled or fed with video sources and used to produce ephemeral and magical effects. It can fit on the end of a standard PAR 64 can, giving the legendary rock ‘n’ roll fixture a new contemporary lease of life or be used as a stand-alone effect.

Moshe first saw the Halo RGB product video, realised the great potential of this fixture for his work and made the purchase via Robe’s Israeli distributor, Danor Theatre and Studio Systems. ■



Photos: Louise Stickland

2G Robotics launches new lighting solution at OI 2018

2G Robotics, one of the global leaders in underwater laser scanners and imaging solutions for the offshore energies, geosciences and defence industries, announced launch of their newest lighting and imaging solution at Oceanology International 2018.

The new LED Strobe Panel, named the NOVA, provides ultra-bright and even illumination enabling users to capture crisp stills images on even the fastest of AUVs.

The system was originally designed for integration with HUGIN AUVs, produced by Kongsberg Maritime, and will now be released to the public for use on a wide variety of AUVs. Kongsberg was integral to the early development stages of the NOVA and has since made an initial purchase of 4 systems.

The design of the NOVA was based upon the proven 2G RAY, a single underwater LED currently being used for marine research and offshore energy inspections. The NOVA combines 36 custom-oriented LEDs to produce a powerful 450,000 Lumen output, making it the brightest lighting solution currently on the market.

Attendees to Oceanology International 2018 were able to experience the NOVA first-hand at 2G’s booth. ■



Anil Kumar Jha takes over as Chairman, CIL



Anil Kumar Jha

Anil Kumar Jha took over as Chairman-cum-Managing Director of Coal India Limited (CIL) on 18th May. Prior to the assumption of CIL's apex post, Jha headed Mahanadi Coalfields Limited (MCL) – the second largest coal producing company among all CIL's subsidiaries - since 1 November 2015 as CMD.

He succeeds Suresh Kumar, Additional Secretary, Ministry of Coal who was vested with the additional charge as Chairman of CIL. Jha, a Post Graduate (M. Tech) with Distinction in Mine Planning & Design from Indian School of Mines, Dhanbad began his career in 1983 in Central Coalfields Ltd. He had held many important assignments and senior positions in CCL. He was also General Manager, Argada.

Jha, a Post Graduate (M. Tech) with Distinction in Mine Planning & Design from Indian School of Mines, Dhanbad began his career in 1983 in Central Coalfields Ltd. He had held many important

assignments and senior positions in CCL. He was also General Manager, Argada. Shri Jha had a 14-year stint in Central Mine Planning & Design Institute (CMPDI) - the Ranchi based consultancy arm of CIL - planning opencast and underground mines.

For a while he worked as Director (P&P) in MOIL Limited where he was the Nominated Owner and Head of Production, Planning, Projects, Quality Control and Mine Safety Divisions and other allied departments including Personnel and Industrial Relations.

Jha has over three decades of experience under his belt in mine planning, production, management supervision, direction and control of underground as well as open cast coal mines.

He is the recipient of 'Best Chief Executive' Award conferred by GeoMine Tech for outstanding performance of MCL during 2017-18. He has presented many technical papers in national and international seminars and workshops. ■

Dr. InderJit Singh becomes Coal Secretary



Dr. InderJit Singh

Dr. InderJit Singh, assumed charge as Secretary, Ministry of Coal on 14th June. He took over the charge of Secretary which fell vacant after superannuation of Susheel Kumar on 30th April this year. In the interim, Secretary Mines, Anil G Mukhim had been holding additional charge as Secretary, Coal.

Prior to this appointment as Coal Secretary, Dr. Singh was posted as Secretary (Coordination) in Cabinet Secretariat. Dr. Singh is a Ph.D in Economics from Punjab University. In the past he has also held positions in Ministry of Commerce, MNRE at the Centre and other significant portfolios in the State cadre. ■

BHEL appoints new Director (Industrial Systems & Products)



S. Balakrishnan

On his appointment as Director on the Board of Bharat Heavy Electricals Limited (BHEL), S. Balakrishnan, 57, has assumed charge as Director (Industrial Systems & Products) of the Public Sector Engineering and Manufacturing Enterprise.

Prior to this, as Executive Director, he was heading the Heavy Power Equipment Plant (HPEP), Ramachandrapuram - one of the major units of BHEL at Hyderabad. Earlier he was heading the company's Industrial Products (Electrical & Mechanical) business at Industry Sector, Delhi, as General Manager In-charge.

Balakrishnan is a Mechanical Engineering

graduate from University of Indore, Madhya Pradesh and acquired his Masters Degree in Stress & Vibration Analysis from Bhopal University. He started his career with BHEL as Engineer Trainee in 1982 in the company's Trichy unit and subsequently moved to BHEL, Bhopal, where he worked in various capacities in the areas of A.C. machines, nuclear turbines and transformers at BHEL's Bhopal Plant.

Balakrishnan brings with him 35 years of diverse experience in the areas of electrical machines, transformers, gas turbines, steam turbines, pulverisers, heat exchangers, oil rigs, etc. ■

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Arup's 'Mathematics' wins prestigious international award

Diversified engineering firm Arup's 'Mathematics' exhibit at the Winton Gallery in London's Science Museum, UK, received the Award of Merit at the 35th Annual International Association of Lighting Designers (IALD) International Lighting Design Awards, which took place in Chicago, USA, on 9 May.

The IALD Lighting Design Awards celebrate the most innovative and inspiring work found anywhere in the world of architectural lighting design, honouring lighting projects that display high aesthetic achievement and technical expertise.

Arup's design for the Winton Gallery, described as "stunning" by one of the judges, captures and enhances Zaha Hadid's architectural vision. It brings advanced mathematical concepts to the everyday visitor experience through the integration, exploration and unexpected use of colours and lighting typologies within the visual metaphor of an airplane's turbulent flow. Unprecedented in a gallery setting, the blend between purple and blue creates a breath-taking and unforgettable experience for visitors.



"Close collaboration with the architects and the client was essential to the successful completion of the project. Regular workshops were put in place, where sketches, 3D interactive models and tests on samples were crucial to delivering the client's vision," the firm acknowledges.

Arup's LightLab was used with the design team to test label and architectural lighting options that allowed them to evaluate lighting equipment and details. ■

Phoenix Design is Red Dot: Design Team of the Year 2018



This year's title of honour "Red Dot: Design Team of the Year" goes to Phoenix Design with its teams in Stuttgart, Munich and Shanghai. Founded in 1987 by Andreas Haug and Tom Schönherr, the interdisciplinary

team with its international gearing has been especially convincing with its consistently innovative, top-notch design achievements. On 9 July 2018, the Phoenix Design Team will be officially awarded the title at the Red Dot Gala and will receive the "Radius" trophy on stage at Essen's Aalto-Theater.

Since its founding, the Phoenix Design Team has won roughly 200 distinctions in the Red Dot Award: Product Design, including 13 Red Dot: Best of the Best awards, which is the highest in the competition. In the past five years alone, the design studio was the recipient of 41 Red Dots and three Red Dot: Best of the Best distinctions. For its consistently top-class achievements and the impetus it creates, the Phoenix Design Team will now be awarded the title of "Red Dot: Design Team of the Year 2018". ■

Solis Tek Digital Lighting bags award for indoor lighting

Solis Tek, a vertically integrated cannabis technology innovator, manufacturer and distributor, announced that its Digital Lighting System was awarded Most Efficient Indoor Light Systems at Terpenes and Testing World Conference 2018.

Solis Tek offers an extensive line of



digital lighting equipment and accessories to help achieve higher yields and maximise quality. Solis Tek lighting products include complete light system fixtures, controllers, digital ballasts, reflectors, CMH double ended lamps, digital splitters, accessories and digital controllers. ■

LED market to reach \$96.71 bn, globally, by 2024: Reports

Asia-Pacific is anticipated to exhibit the highest CAGR during the period, forecasts Allied Market Research (AMR).



Picture Credit: <https://ledlightinginfo.com>

The global LED market was valued at \$33.10 billion in 2017 and is projected to reach \$96.71 billion by 2024, registering a CAGR of 15.9 per cent from 2018 to 2024, says a recent report titled 'Global LED Market by Type and Application: Global Opportunity Analysis and Industry Forecast, 2018-2024', published by Allied Market Research (AMR).

Light emitting diodes (LEDs) are used in variety of applications. A few years ago, application of LED was limited to certain specific lighting needs and had not entered the mainstream general lighting applications. Entrance of LED in applications such as general lightings have given a strong thrust to the market. LED is expected to take over the conventional CFL and CCFL lighting market due to advanced features. Moreover, it is a cost-effective solution for all lighting as well as other application purposes such as backlighting in large screen displays, automotive lighting and many others.

At present, Asia Pacific dominates the market, followed by Europe. In 2017, according to the AMR report, the US is expected to remain dominant in the North America market, while China is projected to lead the overall market in Asia Pacific.

Increase in government focus on energy saving solutions, increase in utility rebates, and Growing display and large screen backlighting market are the factors that drive the market. In addition, growth of smart lighting and high

efficacy LED boost the growth of the LED market. However, high initial cost restricts the growth of the market.

Key findings of the AMR report on global LED market include:

- The residential segment generated the highest revenue in the global LED market in 2017.
- In 2017, the general lighting segment contributed to the highest revenue in the application segment.
- Asia-Pacific is anticipated to exhibit the highest CAGR during the forecast period.

"In 2017, the general lighting segment dominated the global LED market based on application, in terms of revenue. Furthermore, based on end-user, the residential segment contributed to major revenue share of the global LED market, followed by architectural in 2017. LED is gaining popularity as a strong replacement for traditional incandescent bulbs. Falling cost of LED lamps is the reason for the increasing use of such lamps. LED lighting is gaining pace in developed countries and people are gaining awareness in developing nations too. This makes general lighting a lucrative source for the global LED market," Rahul Kumar and Richa, Semiconductor & Electronics at AMR.

The key players profiled in the report are Nichia Corporation, Osram GmbH, Lumileds Holding B.V., Seoul Semiconductor, Samsung Electronics, Everlight Electronics, Cree Inc., LG Innotek, Lumens Co., Ltd. and GE Lighting Solutions. ■

Decorate Your Home with LED Lights

Lighting our homes is one of the most essential things that we consider when we think of decorating our homes. Decorative lighting has gained momentum in the recent past. Be it just about illuminating or transforming spaces, decorative LED lighting plays a pivotal role in uplifting the look of a space.

The LED lighting industry is expected to witness a huge leap, not only in the near future, but in the long run as well. The prospect of this business is driven purely by aspirational needs of the mass. While there is a need for smarter and more connected lifestyle, the rising consciousness towards energy-efficiency also paves the way for a great future of LED lighting industry. The evolution in customer

preference is the lead towards receiving an impetus for LED lights. LEDs have long been used in the automobile industry and as indicator lamps in many devices, along with exterior lighting, but nevertheless, their presence in the decorative segment is creating a niche.

Novelties in lighting solutions are emerging every day to give wings to our concepts of contemporary decorating





needs. This is mostly due to its ease of application, its longevity and its eco-friendliness. New technologies have also helped in this emergence simply because the concept of smart lighting complements modern lifestyle.

The decorative lighting market in India is changing rapidly, moving from using conventional products to LEDs. This transition is driven by a cumulative number of initiatives for energy conservation. Growing cognizance about energy-efficient products and further advancements offered by the industry are also in sync with the overall vogue of decorative market trends.

Lighting is a significant component of interior and exterior design. It has the capacity to mould the common perceptions of style, spaciousness, and serenity of a particular place. The

right lighting fixtures in a space enhance the desired ambience, utility, and beauty, featuring a design that's elegant and at the same time splendid without being opulent.

Modern lighting fixtures, along with numerous LED options, can transform the disposition of any space. These lighting fixtures do not have to amalgamate with the background. More than ever before, they serve as fashion pieces. Like a beautiful chandelier or a large pendant lamp can be overwhelming and serve as a focal point to transform any type of space. Chandelier lighting creates a mood or an effect, expressing grace and elegance. Whether traditional or contemporary, these are the perfect ways to accentuate the desired panache in a distinct space. Along with chandeliers, a well-placed pendant light or cluster of pendants can make



a strong statement, providing an interesting contrast to any space. Such fixtures are often desired in living rooms, in hallways and in dining areas. In both the cases, the effect will have an unparalleled sumptuousness. A basic room or a hallway can be transformed into a tranquil retreat or a dramatic passageway with a decorative wall sconce or torchiere. Incorporating LED lamps in these would add up to the energy efficiency of these fixtures, along with their decorative aspect.

Similarly, cove lights can be used as a form of indirect lighting, fabricated into ledges, recesses, or valences in a ceiling or high on the walls of any space. It directs light towards the ceiling and adjacent walls to create just the right amount of drama to stand out in an elegant way. This could be used for aesthetic accent specially to highlight decorative ceilings. Though in the beginning, LED strip lights lacked the

versatility needed for the distinctive decoration, but they are very much in trend nowadays. Highlighting a shelf or a small wall unit with these lights is a nice way to add depth to the existing décor.

Among other types of efficient lighting, LED tape lights are highly versatile, along with the accent lighting which is very useful in creating a more soothing ambience.

Kitchen, being the most important corner of a house, looks prodigious in LEDs. Using these fitting underneath any wall mounted storage unit can flood the countertops with light. In addition, it will give the kitchen a more sophisticated and metropolitan feel if feature LED lights are installed at ankle height under the floor mounted units. This will let the light spill in the kitchen area, creating an incomparable look. The styles and finishing of these task lightings often complement the most popular faucet styles, making the



lights, adjoined between trees or other supports can delineate a space and provide a soft effect. Candles are always a pleasing addition, and LED-powered candles are the safest and simple ways to line a path. Along with other benefits, LEDs are the best option to use in decorative fixtures as they draw less wattage and because their bulbs last much longer, they do not require frequent replacements.

White lights used to be the best options in the market for outdoor lighting but now colour filters in LEDs offer a palette of colours to compliment plantings and heighten lawn décor. The filters can be used with white lights to bring out extra warmth or to create a cool tone. This landscape lighting incurs dramatic juxtaposition, focussing attention on landscape highlights.

Therefore, LED lighting has opened up immense possibilities in the decorative space not only by catering to all kinds of consumers' needs but also lowering energy consumption levels. The look of these energy efficient lightings has evolved into decorative fixtures, sconces and outdoor lighting that also reduce operating costs. These enhance the overall lighting experience with the ability to monitor or sense and thus improve the connectivity, coupled with the convenience of longer life and improved aesthetics. Along with control gears or dimmers, LEDs can provide multiple lighting options and varied pulse according to the mood of its

consumers. Their sustainability even after bulk usage makes them the finest choice for all kinds of lighting needs.

Different lights have different impact on a space and that is why it very important to choose the perfect light. The vogue of any décor depends on the overall texture of walls, furniture and ambience, accompanied with the correct placement of lights. Combining these aspects with the perfect tone of LEDs unanimously can craft a more poised and sophisticated look for any defined space.

The definition of decorative lighting is forever evolving primarily due to more creative ideas of designers and architects and in-keeping with the demand of the industry. The desire for a more specific and unique appearance among the users is also emboldening new segments of lighting. Here LED, being more flexible than any other lighting choice, can be the all-time key for every need in the decorative market segment. ■

selection even easier in energy saving cabinet lights.

For a refined crafted look, ambient lighting should be in proportion with task and accent lighting to change an ordinary room space into one of distinction. Colour temperature is one of the many vital things to have an enhanced effect of lighting. It is often observed that a warm white colour light works best for living rooms and bedrooms, and bright white for kitchens and workspaces. Thus, various white light shades of LEDs make the seamless match. Decorating a space with lighting is a task as there are other contributing factors like wall colour. A perfect combination of these factors will complement the overall lighting experience.

Outdoor or exterior lighting is very much effective in an overall decoration process for any space. Modernised exterior lighting is both functional and attractive. These can create a mood or ambience in the yard if placed carefully. It can also draw attention away from the problematic areas of any architectural arrangements, highlighting the special features. Usually LED flood lights or bulkheads are perfect for outdoor decoration like this.

Small lights, accumulated together, concealed in plantings or walkways are very attractive in these types of lightings. They can add a modest accent to the landscape features. LED strips or panel lights are quite a decent option for this. String



Anirudh Kajaria
Business Head
Century LED

Lighting Design for An Avant-Garde Patisserie

Creating the right lighting concept for such experimental interior design was no easy task – especially as Bamas' creations themselves shine in all kinds of different colours... Together with BÄRO, the planners found the ideal light balance for their retail concept.



The Bamas branch in the seaside resort of Biarritz features a completely new design concept: here customers find avant-garde shop architecture rather than nostalgia.

Pâtissier and chocolatier Thierry Bamas is a master of his craft. He has won numerous awards, for example at the Gelato World Cup in Rimini and competition titles such as “France’s best craftsman”. Thierry Bamas sells his sweet creations in several shops in the Basque region of France – and in the latest branch he presents his future vision for the world of fine pastries and sweet delicacies.

The branch in the seaside resort of Biarritz features a completely new design concept: here customers find avant-garde shop architecture rather than nostalgia, created by the interior designers from MoMa in Lyon. Futuristic refrigerated cabinets and a ceiling sculpture with a similar design dominates

the room, their prismatic surfaces made of the seamless solid surface material Krypton gleam in fruity orange. Bright wall and ceiling panels featuring openwork graphic ornaments are defining features of the interior design. Contrasting with this are the flooring and the fronts of the sideboards in a natural wood look. The transparent shop front made entirely of glass creates an open atmosphere and presents the futuristic interior to passers-by like a large display case.

Spectrally optimised for rich, fresh colours

Creating the right lighting concept for such experimental interior design was no easy task – especially as Bamas’



Futuristic refrigerated cabinets in fruity orange and a ceiling sculpture with a similar design dominate the room. Bright wall and ceiling panels featuring openwork graphic ornaments are defining features of the interior design.



Direct light on the horizontal display cases comes from Pendiro ID suspended luminaires which illuminate the products on display brilliantly, appetisingly and without glare.



The second light component is vertical light from Ontero ID luminaires with WallBeam optics which evenly illuminate both the vertical display cases with their confectionery and also the ornamental wall panels themselves.

creations themselves shine in all kinds of different colours: from the gold and brown tones of the pastries and chocolate to the fresh colours of different fruits, cremes and glazes. Together with BÄRO, the planners found the ideal light balance for their retail concept.

The light colour predominantly used is the LED special light colour PearlWhite. Its advantage: the special spectral composition generally increases the colour saturation and makes colours appear neutral, natural and fresh.

The courage to experiment

Direct light on the horizontal display cases comes from Pendiro ID suspended luminaires which illuminate the products on display brilliantly, appetisingly and without glare. With their elegant technical shape and suspension on two slender power supply cables they make a design statement and their presence helps to structure the room.

The second light component is vertical light from Ontero ID luminaires with WallBeam optics which evenly illuminate both the vertical display cases with their confectionery and also the ornamental wall panels themselves. Master craftsmanship and the courage to experiment: Thierry Bamas' work combines both – and the design and lighting concept of his newest store convey this very well. ■

Courtesy –

Interior Design: MoMa architecture et design, Lyon (F)

Refrigerated units: Jeka AG, Arlesheim (CH)

Photos: BÄRO

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The future of intelligent lighting for commercial office

Current by GE Solution combines LEDs and IoT to save 80% lighting energy at Blackbaud's global headquarters in Charleston, South Carolina.



As Blackbaud Inc., one of the world's leading Cloud software companies powering social good, prepares to turn on the lights and welcome employees to its new 172,000 square foot world headquarters, an innovative lighting platform from Current, powered by GE will enable dynamic IoT business applications for the future. Blackbaud announces that it is creating an infrastructure that will deliver 80 per cent lighting energy savings as compared to fluorescent and add sensor technology that will improve office productivity by making the space responsive to human and environmental factors.

Together with JLL commercial real estate management, Current by GE engineered a portfolio of LED fixtures to present a sophisticated look for the eco-friendly campus, along with its Daintree wireless control system that provides daylight harvesting capabilities by using natural light to offset electricity use. Energy demand will also be reduced with zonal controls and the ability to dynamically reduce Current's LED fixture output. The wireless solution is helping Blackbaud reduce installation costs and will save an additional 20 per cent in energy costs versus a standard LED solution.

"As a company that embraces sustainability as a priority, Blackbaud not only wanted to build out a collaborative workspace but one that uses resources efficiently," said Jon Olson, Blackbaud's Senior Vice President and General

Counsel. "GE's solution really stood out because of its compatibility with third-party sensors and software, making it easy for us to integrate other smart building devices and network architecture as needs arise."

The Blackbaud world headquarters will bring together 1,400 Charleston-based employees, incubate emerging nonprofits, and teach students to code through Camp Blackbaud. As the global technology leader serving the social good community, Blackbaud focuses on solutions that are cost-effective and future-proof.

"It is a pleasure to partner with JLL and Blackbaud to build a campus that showcases the potential of IoT-enabled lighting in commercial buildings," said Maryrose Sylvester, President and CEO of Current by GE. "This forward-thinking approach to energy savings is a testament to the culture and mission of Blackbaud and its work around the world."

As Blackbaud begins to fully use the new space, the company plans to explore apps and other tools that can enhance the employee experience through its intelligent office environment. Examples from similar office installations have included technology like occupancy sensors that improve the use of meeting rooms and smartphone apps that allow employees to adjust room temperatures. Blackbaud employees will begin moving into the world headquarters in early June. ■

What's in Store for LED Manufacturers?

A Sneak Peek into the LED Lighting Industry

Gautam Seth, Joint Managing Director, HPL Electric & Power Ltd elucidates why India is becoming an attractive market for both domestic as well as international LED players.



LED lighting is eco-friendlier and are up to 80 per cent more efficient than traditional lighting such as fluorescent and incandescent lights. Today people are realising these benefits and are moving towards LED lighting realising that. The market has witnessed a phenomenal growth over the past few years and the trend is expected to continue in the coming years. Further, there is an increased focus by the government towards energy conservation and efficiency, boosting the demand for LED lights. The Government of India has expressed increased interest in converting existing streetlights into LED and this is expected to increase demand for LEDs in coming years.

India is an attractive market for both domestic as well as international LED players. The reason for this is the benefit that they provide in terms of energy saving and conservation. The new applications which are coming are related to connectivity, better controls, and application of sensors and moving

towards wireless technology. When it comes to an individual, what they are looking for is more convenience and comfort, apart from the cost. The efforts towards wireless technology and application of controls which help in controlling the light intensity are things which will benefit them. For a commercial outlet, the aspects related to energy saving, conservation and cost benefits become supreme. Here as well, connectivity and control will help in providing customised lighting solutions.

What is LED?

LED is a two-lead semiconductor light source which emits light when activated.

This effect is called electroluminescence and the colour of the light is determined by the energy band gap of the semiconductor. LEDs find application in environmental and task lighting, with several advantages over incandescent light sources including lower energy consumption, longer lifetimes, improved physical robustness, smaller sizes, and faster switching.

LEDs may be broadly classified into three categories:

- Miniature LEDs, used as indicators.
 - Mid-range LEDs, used in light panels, emergency lighting, auto tail lights.
 - High-power LEDs, used for lighting purposes.
- LEDs for lighting applications constitute the major market, although LEDs are also used in various forms across industries such as automotive lighting, railway signals, backlighting, displays and signage and medical appliances.

LEDs are now used in applications as diverse as aviation

lighting, automotive headlamps, advertising, general lighting, traffic signals, camera flashes, and even LED wallpaper. However, LEDs also find applications in various forms across industries, including automotive lighting, railway signals, backlighting, displays and signage and medical appliances.

Due to the low domestic manufacturing capabilities, over 75 per cent of LED lighting products are imported and the remaining 25 per cent accounts for low value-add assembly activity. More than 10 per cent of the LED lights assembled in India are exported to countries like Europe, the United States, Australia, Asia-Pacific, the Middle East, Latin America and South Africa.

Market for LED lighting in India

The GDP in India is forecasted to be 7.62 per cent between 2016 and 2020, driving economic growth and improving spending capacity of consumers. The growing interest in newer technologies and solutions, increasing awareness created by LED suppliers through product promotion and advertising is expected to increase adoption of LEDs.

Further, large scale promotion of energy efficiency by the Government has fuelled growth of the LED market in India, resulting in the residential segment adopting LED lighting, which offers higher energy savings of around 60-75 per cent, as compared to older technologies namely, CFL, incandescent, metal halides or sodium vapour lamps. Moreover, growing interest in intelligent and smart lighting is expected to change market dynamics with the announcement for the establishment of smart cities, which will increase demand for LED lighting, based on intelligent and connected infrastructure. Further, under the 'Make in India' initiative, 100 per cent foreign investment under the automatic route has been permitted in construction, operation, and maintenance in specified rail infrastructure projects, which is expected to fuel demand for LED products for local consumption.

The Indian LED lighting market is expected to reach Rs 31,010 crore in 2020, growing at a CAGR of 62% between 2016 and 2020. The Government of India's increased interest in converting existing street lights into LED is expected to increase demand for LEDs in coming years and the deteriorating power situation across the country and limited budget allocation for starting power projects have directed the government's focus towards 'energy conservation and efficiency'.

The global LED lighting market is expected to cross revenues of Rs 150,000 crore in fiscal year 2015 with a market penetration of over 30 per cent in the overall general lighting market space. The global LED lighting market is likely to grow at a CAGR of over 40 per cent until 2020.

Govt measures and initiatives to improve market demand and manufacturing ecosystem

The Government has announced policies such as the Modified Special Incentive Package Scheme to encourage and subsidise investment in indigenous value addition. The Bureau



of Energy Efficiency (BEE) and EESL, working with electricity distribution companies, have developed a business model to sell subsidised LED lights to households at Rs 10 against the market retail price of approximately Rs 400. All existing Government schemes to distribute CFL lamps are being modified for distribution of LED lamps. The Government of India has been making efforts to adopt LEDs for street lighting in key cities and also for architectural lighting applications for national monuments. The Ministry for Renewable Energy and the BEE have also been driving initiatives such as distribution of solar LED lanterns in villages to promote energy-efficient lighting in the country.

HPL stepping forward

HPL manufactures a wide range of LED lamps (including down-lighters), luminaries and LEDs at varied wattages. The company provides its customers energy efficient indoor commercial and domestic luminaries with superior design. Their lighting products are suited for use as task lighting, which is intended to be functional and concentrated, HPL LED Glo bulb which not only saves electricity but a revolutionary product in terms of design, longer life and suitable for accent lighting, which is intended primarily for decorative purposes. The LED lamps have been certified to be in conformity with the Indian Standard Index by the BIS standards under compulsory registration order by MEITY - Ministry of Electronics & Information Technology.

HPL's LED lighting range includes consumer lighting, industrial lighting, commercial lighting, and outdoor lighting. HPL is one of the few manufacturers in the country that has pretty much backward integrated state-of-the-art manufacturing with two manufacturing facilities in Gurgaon and Jabli and one each in Kundli, Sonapat and Gharaunda. R&D centres in Gurgaon and Kundli facilities are approved by the Department of Scientific and Industrial Research (DSIR) and Ministry of Science and Technology. These have in-house tool rooms and testing facilities and are manned by 105 engineers. ■



Gautam Seth

Joint Managing Director
HPL Electric & Power Ltd.

Anolis illuminates Sports Park in Sweden

Kungshamn is a picturesque coastal harbour town in the Sotenäs Municipality in Sweden's Västtra Götaland province. The local city population of just over 3000 more than doubles during the summer months with an influx of tourists who visit to enjoy the sailing and water sports, appreciate stunning coastline and naturally beautiful surroundings.

The Sotenäs Kommun (town council) issued a tender to design a complete new sports park in the city centre offering a variety of playing and development areas for children and young people, from beginners to professionals.

Gothenburg based creative landscape architects, Landskapsgruppen AB, received the assignment based on their framework proposal for the space. Innovative ideas and integral lighting scheme for the space which features Anolis luminaires was then also put forward.

The Kungshalms Näridrottsplats (local sports ground) is open to anyone wanting to practice a variety of sporting activities from skateboarding to football to basketball and is adjacent to a brand-new sports training hall.

When it came to lighting the environment, Landskapsgruppen's head lighting designer Karin Janssen chose Anolis ArcSource 48 Integral MCs as the primary fixtures to illuminate the park at dusk and bring it to life after dark, ensuring that those using the space can

continue their activities safely. ANOLIS is an architectural lighting division of ROBE lighting s. r. o.

"We needed a high-quality luminaire that would also help create a relaxed and inclusive ambience in the park," explained Karin. "The idea was for it to be a place where everyone is welcome to come and play or practice. Naturally there were the safety considerations, and it was important for the lighting to look good when dimmed and necessary to prevent light spillage or pollution for the nearby residential developments."

They wanted a colour changing fixture to create small pools of different hued light in the designated four lighting zones and Anolis is renowned for its excellent smooth and refined colour mixing. In addition to the whites, a good selection of blues and greens was required for the pre-programmed colour schemes that shift subtly throughout the evening.

The idea of using these shades came from bioluminescence which is a common phenomenon in the ocean along Sweden's west coast. Organisms like plankton, fireflies and angelfish can glow by releasing light-emitting molecules and an enzyme generally called the 'luciferin' which reacts with oxygen and creates the light.

Karin worked closely with her colleague and landscape-architect Rasmus Lagerström who designed the park, and





A Pharos system is used for control, with data transmitted wirelessly to the fixtures utilising embedded Lumen Radio receivers which talk to a transmitter located on the building. A repeater rigged on one of the lighting poles ensures a good signal throughout the area. All the setup and addressing of the fixtures was done wirelessly using RDM (Remote Device Management), a function of the fixtures which also monitors wireless signal strength to ensure there is a good covering across the area.

The lights switch on automatically as dusk falls and cycle through a series of pre-set looks and scenes as the evening progresses.

White 'activity' settings are also pre-programmed, triggered by a series of motion sensors around the park, so anyone walking through will have their path automatically lit.

Karin and Rasmus specified Bellalite's Johan Zachrisson as the programmer as part of their tender application due to his familiarity with the lights and control system, and the results are being appreciated by the many users for which the park has already become a valuable local asset. In addition to sports training, it has become a community meeting place and a central location and hub for other events happening in and around the town and the locality. ■

(Photos: Harald Nilsson)

they also consulted a number of lighting experts including the projects division of Bellalite, Anolis Swedish distributor, to determine what would be the best options.

Everyone pooled ideas and considered throw distances, required lux levels, colour temperatures and the robustness and reliability of the fixtures for a tough outdoor environment, particularly in the winter ... and the IP67 rated Anolis ArcSource 48MC Integrals ticked all the boxes as the best option.

The 16 x fixtures are all rigged on 8-metre-high poles positioned around the park and powered from local mains. The installation was completed by local electrical company Kungshalms El.

Winning Over Cancer



Tejas Doshi, Co-Founder and Chief Design Officer at Light & Beyond, is a professional member of IALD. After winning over cancer, has gone to great lengths to become India's first and only, Asia's second and World No. 17th certified lighting designer. Today, he has studios in India, Austria, Ukraine & The USA. Having over 15 years of experience in lighting design &. Having executing numerous international projects across UAE and Europe, he aims to take India on the global map. Here, in a conversation with Lighting India, Doshi talks about his inspiring journey so far.



What led you to lighting designing? Could you tell us about your journey in this niche domain?

As a child, I was always fascinated by toys with lights. I would dismantle and reassemble them, over and over again till it worked. As I grew older, I became curious. I still remember the day when I had fixed the power button of the television at home out of mere boredom. I found the first chance to lay my hands on it when my parents had gone to a party and I dismantled the TV in awe and wonder.

Fortunately, in Gujarati and Marwari families, it's a tradition to train kids at a young age. And I was not an exception. I was being trained to become a businessman who would handle one of the family businesses but I was never interested in mass-market products. I always liked niche products. As such, I started interacting with architects and interior designers in a bid to comprehend their views and aesthetic values.

One of them gave me a site in its completion stage whilst the fixing of lights was happening. In those days, interior designers used to prefer MR16 12v 50 w halogens. The interior designer who was designing the apartment had placed them in rows and columns, and I felt that she was overdoing it, but kept quiet, as I was young and new.

Fortunately or unfortunately, she couldn't turn up for a mock up meeting but clients were there at the site and I had to ask an electrician to fix the dimmers and show dimming of



lights. When the client asked for my opinion, I honestly told what I felt. Sensing my ingenuity, he gave me a chance. I rearranged the lighting and asked electricians to switch off the ones I didn't want. I began aiming them towards the wall where the art was supposed to come, aligning them with the furniture. After the final setting, I started showing them different scenes by dimming and switching off lights. The client was mind blown and asked me to start playing with lights as career.

What drove you to commence your own company?

After being diagnosed with cancer in 2002 and winning against it, the idea of Light & Beyond was born. I started this company with my wife in 2009. Before this, I wanted to explore my market, learn mindset of people and ways in which installations were done back in India etc.

Light & Beyond was born to spread awareness about good lighting design. Make people understand that less is more. Make people connect with nature. Our entire thinking process of designing lighting for a space is based on our spiritual inclinations. Why? One may ask. It's because we are designing for humans and humans need to feel good when they see or enter any space. Good lighting is always felt before being noticed.

I am grateful that I was accredited with CLD (Certified Lighting Designer) in 2016 and became India's first and only,



Asia's second and World No. 17th CLD. For me this certification was synonymous with unequivocal global endorsement. As a lighting designer, I had to establish proficiency in at least five of the seven domains of practice that served as the yardstick of performance in this regard.

The seven domains namely goals and outcomes, collaboration, ingenuity, synthesis, science, stewardship, and human experience can be practically described as a



comprehensive quantification of all the virtues that a professional in this field should demonstrate. Talking and writing about one, two or three qualities that every lighting architect should exhibit is one thing and to literally spell out seven daunting – (read specific) virtues is quite another.

I mean how can you divorce his ingenuity from his knowledge of the environmental impact of lighting i.e. that's what 'stewardship' here is all about. How can one rule out the need to prioritise human experience in the whole process? How often do we realise the importance of all these virtues until and unless it's not an esteemed program like CLD spelling it out for us?

That certification for me has never really been a stamp of 'global authority', but a means to rediscover myself in my professional space. To be able to demonstrate proficiency associated with at least 5 of these 7 domains was exhilarating! Yes, CLD has really helped me carve a niche in my own and international market. This March, I was named in 40 under 40 hottest lighting designers in the world by Lighting Magazine, UK.

How it feels being in the prestigious list of '40 Under 40'?

Notably, 40 Under 40 remains a prestigious international program acknowledging the most promising individuals contributing to the lighting design industry. This highly renowned program collaborated with global lighting brand Osram to honour the new breed of tech-savvy, ever curious, diverse and driven professionals. Founded in the year 2016, it seeks to inspire a whole new generation of passionate



lighting designers to keep pushing the horizons for unmatched brilliance.

To be a part of such an illustrious line-up of awardees (class of 2018) is humbling and gratifying at the same time. To document my feelings in words would be a daunting prospect. I feel way more enthused to touch people's lives with the work that I do. Heralding a change in the way people perceive lighting designs has always been a conscious endeavour. With the passage of time the pressing challenges that I've already talked about have started waning. With this award, I clearly see them dwindling into obscurity. This popular award will make more Indians wake up to this innovative and efficacious concept!

What are some of your landmark projects?

Light & Beyond was created to serve the needs of the architects and interior designers. Our work covers a diverse range of projects in India, Europe, UAE and the US. We've deployed creative and unique lighting and sound experiences at museums, show apartments, amusement parks, master planning of islands, master planning of cities, restaurants, boutique hotels, branded retail stores and ultra lounges. We are doing many projects to name the few Astitva by Primarc, The Altius by Empress & Amaya Realty, The Novotel, Kolkata, Private Residence in UAE, Restaurant in UAE, Irish Pub in Vienna, Valentino in Vienna, Private Residence Vienna, Sant Kutiya Gurdwara , Kolkata etc. We did Tricolour for The 42 is the new and upcoming project in Chowringhee, which is also the tallest project in Eastern India. The idea was to show how we can communicate through lighting to people silently even when the building is under construction. We are also doing Birla Planetarium in Kolkata - Asia's largest and World's second largest planetarium. The most exciting project we are working on is the master planning of an island along with super luxury yacht.

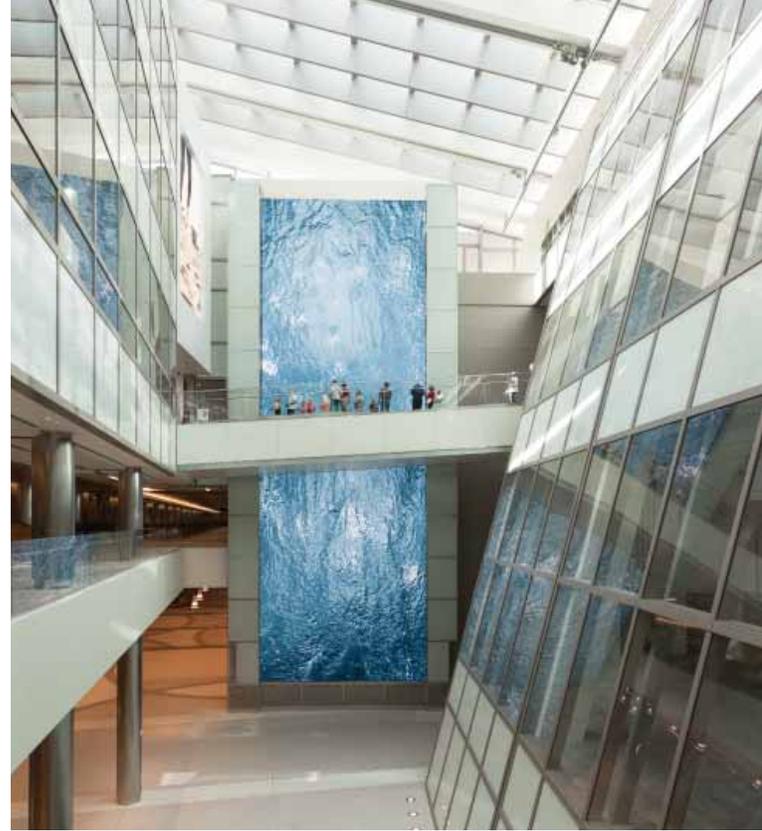
Would you like to share any message for the budding lighting designers?

Be honest, be ethical, be professional, give your 100%, never give up and always think from a customer's point of view. Keep practicing and keep learning from your mistakes. Use quality products because your name is attached to the project. Keep educating yourself and be well versed all the new technologies. ■

Moment Factory

Collaborates in the transformation of Los Angeles International Airport

Moment Factory was commissioned by Los Angeles World Airports (LAWA) to work in collaboration with Marcela Sardi of Sardi Design and Mike Rubin of MRA International as the executive multimedia content producer for seven iconic media features at the New Tom Bradley International Terminal (TBIT) at Los Angeles International Airport (LAX). The result is the largest immersive multimedia system of any airport in the Americas. Moment Factory focused on the passenger experience, the iconography of Los Angeles, and the destinations served by the new terminal, creating four hours of original video content, as well as multiple interactive capsules, using the latest in high-resolution imaging, 3D effects and even technologies that react directly to people's movements and real-time airport information.





The overall objective of the media installation is to enhance the passenger experience and bring back the romance and magic of travel. The adventure begins the moment passengers step into the New TBIT, harking back to a time when travel was exotic, whether flying to foreign shores or arriving in L.A. The latest in multimedia entertainment meets the essential functionality of the airport, turning the terminal into a spectacular, welcoming place to spend time: passengers can simply look around them to indulge in lively vignettes of old Hollywood, calming images of far-off destinations and visuals that lead the imagination to dream big and discover new lands.

Creative collaboration for a massive transformation

A project on such a scale requires massive collaboration: the seven iconic media features were designed by Sardi Design and MRA International; Fentress Architects designed the terminal and supported the media intervention and execution

Credits –

Client: **Los Angeles World Airports (LAWA)**
 Project Director: **MRA International**
 Feature designer / Creative Producer: **Sardi Design**
 Architect: **Fentress Architects**
 Systems Designer: **Smart Monkeys**
 Executive Content Producer: **Moment Factory**
 Content Producer: **Digital Kitchen**
 Systems Engineer: **Electrosonic**
 Photo credit: **Moment Factory**

of the project; Smart Monkeys Inc. was the system designer and engineer; Electrosonics integrated the whole system; and Moment Factory was the executive content producer.

With its expertise in architectural media installations, immersive interactive installations and stage productions around the world, alongside a keen sensitivity to the visitor experience, Moment Factory's team took into account the modern architectural features and multi-story dimensions of the airport terminal to conceptualise and produce media content that strikes an optimal balance between soothing beauty and engaging entertainment. Among many production feats, Moment Factory sent film crews to three continents and worked creatively with dancers, actors and even parrots, turning the studio into a virtual tropical paradise. Over 12 months of work by the firm's multi-disciplinary team went into building the multimedia ecosystem, visualising each animation via physical maquettes as well as 3D computer models, and adjusting all components to achieve seamless, engaging works of multimedia art and design.

Seven architecturally scaled media features

1. The Time Tower, a 72-foot, four-sided functional clock tower built around the main elevators, completely clad with screens that come alive with everything from an animal-packed jungle to an original tribute to the silent-film era. The Time Tower also includes an interactive surface that reacts to the gestures of passengers by triggering customised, real-time visual effects.
2. The North and South Concourse Portals, two features comprised of 10 interactive 28-foot-tall columns of visuals and sound effects that continually change to reflect departing flights and the movement of passengers as they walk by. The Portals, with content evoking mosaic tiles, watery reflections, totem-like pillars and stringed instruments, suggest transformation and the movement
3. And wonder of travel. Their content's themes are inspired by LAX destinations such as Tokyo, Paris, Sydney and beyond.
4. The Welcome Wall, an 80-foot-tall LED display of refreshing, lively images that greet passengers as they arrive in Los Angeles.
5. The Bon Voyage Wall, a feature designed for departing passengers, presents an array of slow-motion filmic images of people and places in Los Angeles, inspired by photographer Phillippe Halsman's Jumpology series.
6. The Story Board, a 120-foot composition of multiple LED screens, displays visual narratives of Los Angeles, destination cities and the far corners of the Earth.
7. The Destination Board, a generative video "data cloud" displaying flight information & visual data on destination cities.

Facts & figures

- Moment Factory created over 4 hours of original video content (Over 30 original-content multimedia productions, 3-9 minutes in length).
- The team also produced generative and interactive content: 16 cities come to life on the portals, with generative visuals and audio effects based on passengers' movements and flights' departure schedule; an interactive activation was produced for each of the 26 capsules on the Time Tower with real-time clocks and interactive touch effects at the base.
- The Time Tower is the world's largest interactive feature with an interactive base that triggers content across 6,480 square feet of LED surfaces.
- The total output of the IEMS is more than 105 million pixels (8 times an Imax theatre): That's 19,075 square feet of video, enough to cover the length of the 81-storey Eiffel Tower with a 6-metre wide display.
- Moment Factory's X-Agora software powers interactivity and generates dynamic real-time multimedia effects - 8 X-Agora servers and 20 X-Agora players run the interactive components of the IEMS.
- Production techniques: Documentary filming, time-lapse, ultra-high-speed filming in laboratory-like conditions, live-action shoots with actors and elaborate sets, on-location filming, pure 3D productions, 3D composited with live action, interactive real-time 3D and video effects, and more.
- More than 300 people contributed their skills, including Moment Factory's core team of over 60 multimedia artists, project managers and programmers.
- Over 12 months of full-time work on conceptualisation, design, production, post-production and a rigorous review and approval process, which called for presentations to LAX management and executives, the airport's CEO, the Board of Airport Commissioners and the Mayor.

About Moment Factory

Moment Factory is a new media and entertainment studio specialising in the conception and production of multimedia environments combining video, lighting, architecture, sound and special effects to create remarkable experiences. With over 300 achievements since its inception in 2001, Moment Factory has developed a unique methodology in the production of multimedia experiences. Productions span the globe and include such clients as Cirque du Soleil, Disney, Madonna, JayZ, Sony Pictures, Microsoft, Euronews, the Atlantic City Alliance, the City of Barcelona, and the NFL. ■

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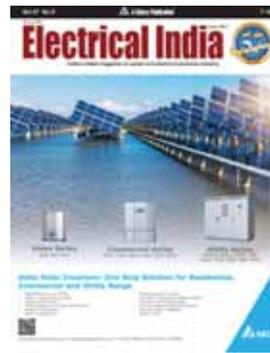
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Osram LEDs to grow NASA's food products

Smart horticulture lighting system prototype used in NASA ground research to help provide space crews with a reliable source of fresh food.



Germany-headquartered lighting major Osram announced that it is providing the National Aeronautics and Space Administration (NASA) with a customized version of its proprietary connected horticulture research lighting system, Phytofy RL.

The smart lighting software, coupled with a unique setup of connected grow light fixtures, will supplement the lighting technology used in NASA's Food Production. Research focused on production of salad-type crops for crews during space travel. All software, hardware and LEDs in Phytofy were developed by Osram. Osram has developed a broad portfolio of horticulture LEDs that irradiate the specific wavelengths needed for optimum growth of a wide variety of plants and flowers, allowing the light to be adapted specifically for the needs of various crops.

"Osram is developing smart, innovative lighting technologies that can improve food production in a variety of environments, even unique environments like space," said Steve Graves, Strategic Program Manager of Urban & Digital Farming, Osram Innovation, Americas Region. "We are excited about the possibilities Phytofy RL will bring to a wide variety of horticulture applications, and our teams are excited to continue learning and refining its setup before ultimately bringing this exclusive solution to market within the next year."

NASA was introduced to Osram through Hort Americas, which works closely with leading manufacturers to provide North American greenhouse growers, vertical farmers and researchers with the most technically advanced and cost-effective products to help them reach their yield, quality and

project goals. Members of NASA's food production research team presented Hort Americas with a list of features they wanted from a lighting fixture, Hort Americas then used its network to help NASA team up with Osram to learn more about the Phytofy RL horticulture lighting technology, which is unlike anything commercially available.

Phytofy's unique features

- A UV channel which provides researchers with the ability to add a brief UV light to see how plants react and change.
- More LEDs, which means a higher Photosynthetic Photon Flux (PPF). PPF measures light emission by calculating how many photons are coming out of the light every second. This is an important metric for plant researchers so they can determine the most efficient and effective light recipes.
- An Irradiance Map – Researchers can see the irradiance using Osram software, so there is no need for them to measure irradiance separately before changing the light setting.

Osram's smart horticulture lighting system is being piloted through a series of collaborations with universities and research labs around the world that are using the technologies and sharing insights. At NASA, Phytofy RL will allow researchers to easily adjust lighting conditions to optimise plant growth in various conditions and then replicate those settings in the Advanced Plant Habitat on the International Space Station, meeting the sophisticated needs of space food production. Installation of Phytofy RL within a growth chamber at Kennedy Space Center in Florida was completed recently, with plans to move the configuration to one or more of the Center's walk-in plant grow rooms.

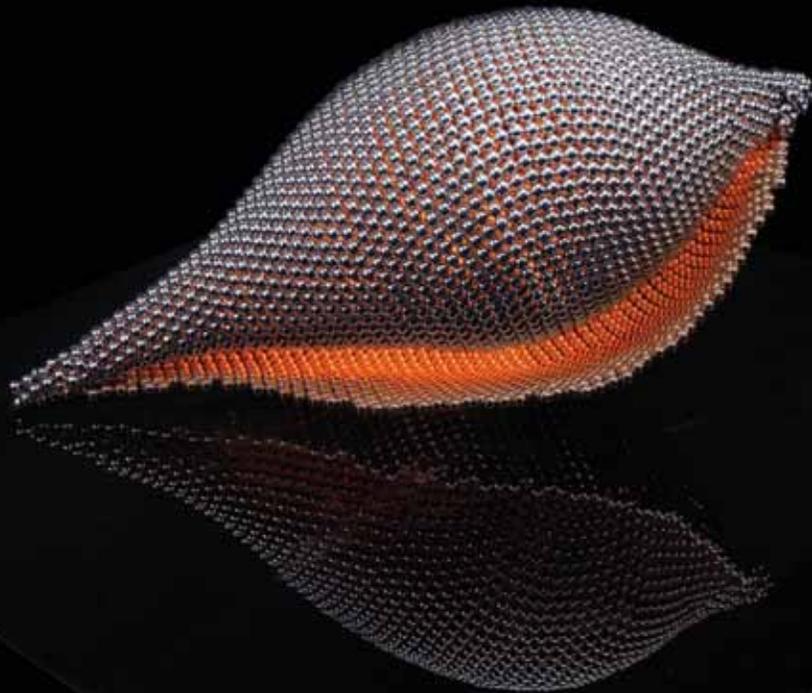
Via radiation with light of different wavelengths, the growth cycles of plants can be controlled and accelerated, allowing the plants to be harvested either more often or as required. Special light recipes optimise not only yield and growing time but also can increase the amount of vitamins and nutrients in the plant, and can enhance certain tastes and flavours. LEDs not only provide tailor-made bioactive lighting, but are also very efficient.

Apart from NASA, the company said it is closely working with industry and research professionals to provide products and systems that optimise crop development, allowing reliable supply to industries such as retail food and flower markets, food processing facilities, and pharmaceuticals. ■

SOGANI

by Vibhor Sogani

The first Indian design brand to showcase in high-end modern design lighting at Light + Building 2018.



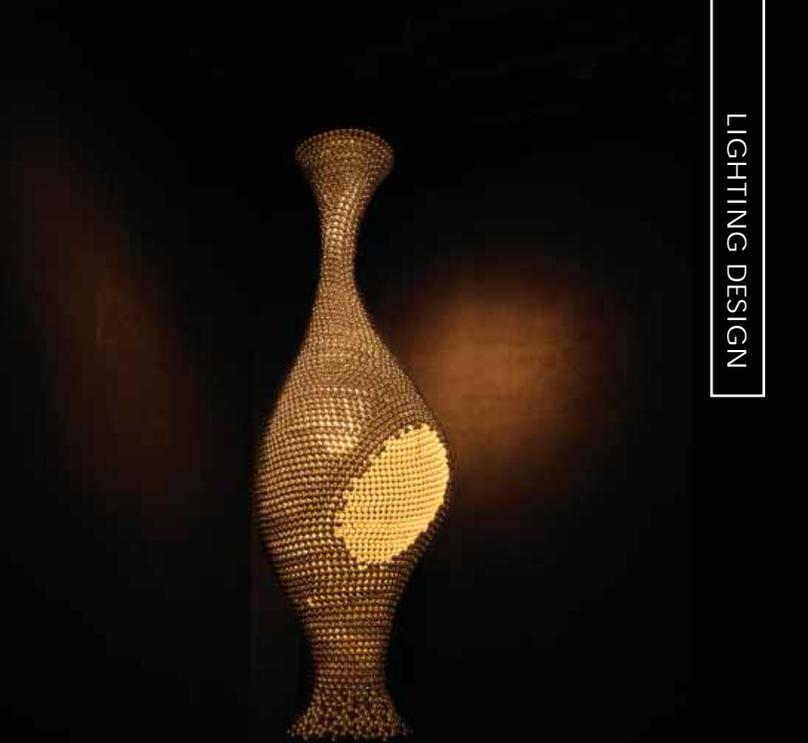
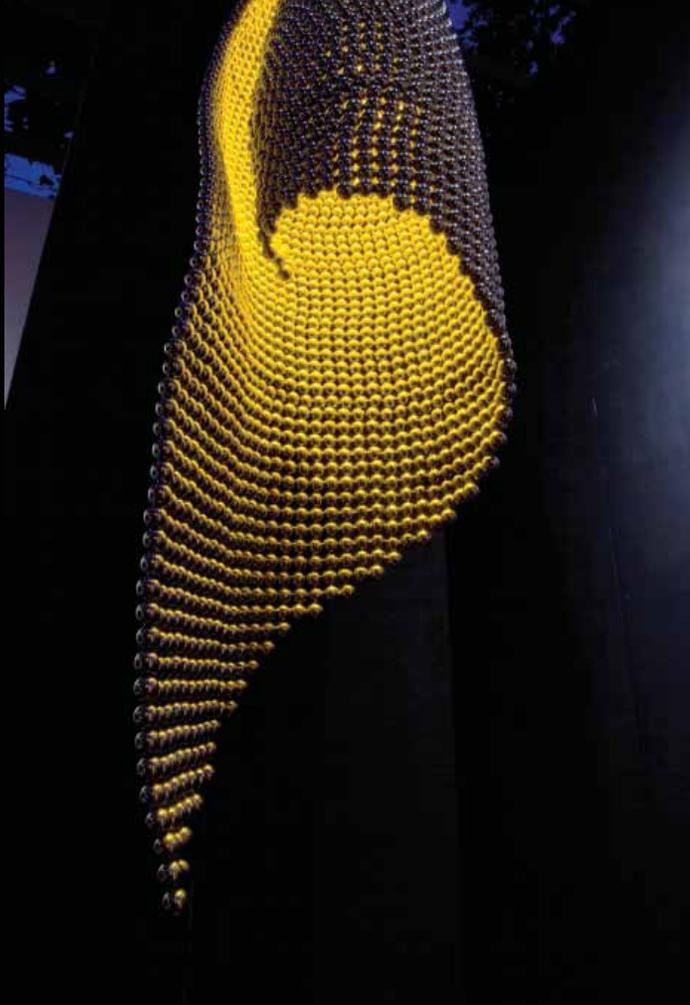
A signature brand of lights and light installations, SOGANI by international award-winning artist and designer Vibhor Sogani - with an experience of 25 years in the design fraternity - now comes to Germany to unveil 3 new collections of light installations, each of which is bespoke and unique.

At brand SOGANI, quality craftsmanship and creative design solutions that add value and beauty to everyday life are quintessential. Along with avant-garde aesthetics, the designs fuse innovative use of material with state-of-the-art technology to create lights that are bespoke and sculptural. Personalised and exclusive, each piece is customised to suit the desired space and lifestyle. The studio's eclectic repository of over sixty indigenous designs continues to grow as it explores broader avenues of concept light installations.

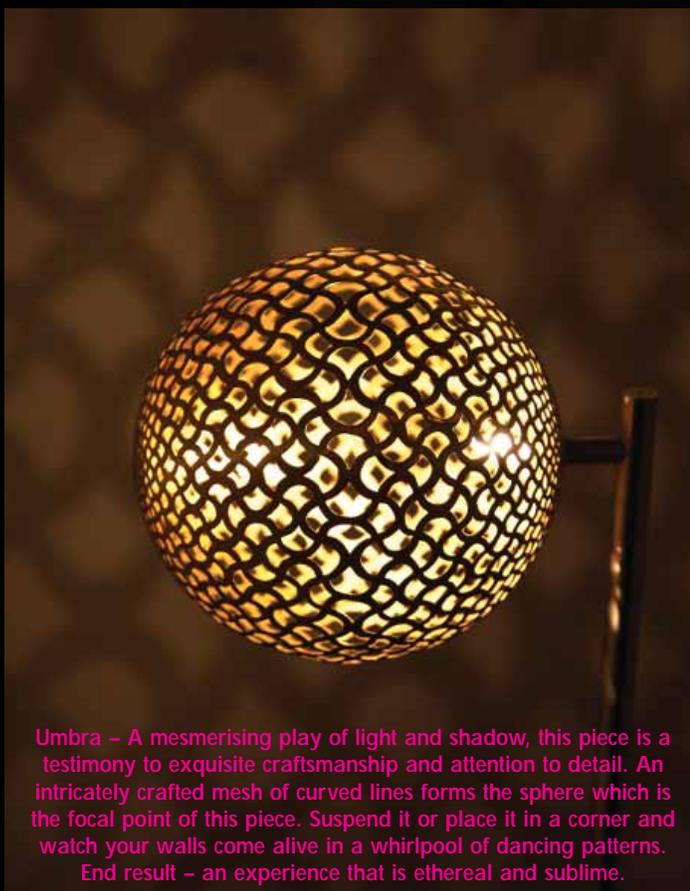
About the Designer – Vibhor Sogani

Vibhor Sogani, born in Rajasthan, specialised in industrial design from the prestigious NID, Ahmedabad. Since 1992, he has been engaged in various commissioned installations, design projects and conceptual art assignments. Over the years, Vibhor has exhibited his works in various design and art shows. Famous for India's largest and most visible public art installation, the 'Sprouts', a 40-ft high stainless-steel installation spread over 6 acres of greens in the heart of Delhi.

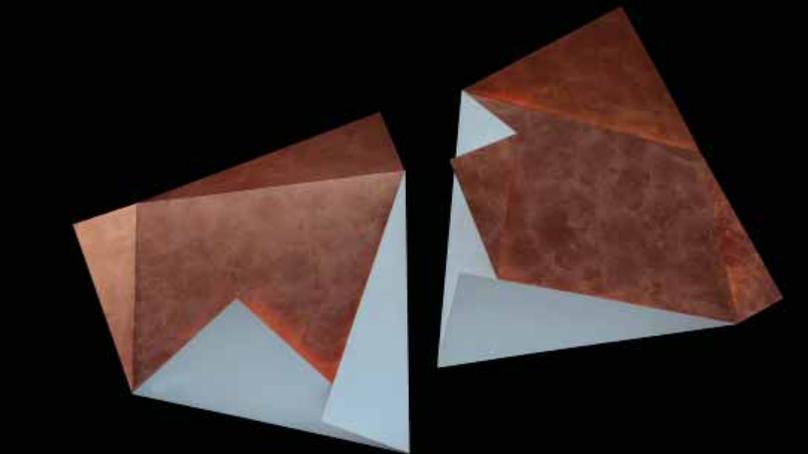
Recipient of many honours, his works have won him multiple awards including the EDIDA awards and 'Singapore Indian Icon of the year 2014' award. Vibhor has been nominated by the Government of India as a governing



Casa - Inspired by nature, this piece captures the essence of life. Fluid curves combine with the solidity of the lustrous beads to create a shape that entices observers, to come closer and delve into the mysteries it holds within.



Umbra – A mesmerising play of light and shadow, this piece is a testimony to exquisite craftsmanship and attention to detail. An intricately crafted mesh of curved lines forms the sphere which is the focal point of this piece. Suspend it or place it in a corner and watch your walls come alive in a whirlpool of dancing patterns. End result – an experience that is ethereal and sublime.



The 'FOLD' Series - When form takes centre stage, geometry gives way to a viewing experience that is akin to meditation. Crafted from a single sheet of metal, each individual fold is the result of deliberate and meticulous thought. Subtle and bold, each piece is a part of the larger visual lexicon. The mirror-finished pieces with copper leafing form an ocular symphony that can transform into a centerpiece or a corner piece in any living space.

member of the 'India Design Council'. Under the brand SOGANI, Vibhor Sogani launched his signature collection of luxury accessories, lights and light installations. His portfolio, projects and shows are published regularly in media both in India and abroad. ■

Credit: www.vibhorsogani.com

Snohetta designs Europe's first underwater restaurant

At the southernmost point of the Norwegian coastline by the village of Baly, Snohetta has designed Europe's very first underwater restaurant. With its immediate proximity with the forces of nature, the restaurant, which will also function as a research center for marine life, is a tribute to the Norwegian coast and to Lindesnes – to the wild fauna of the sea and to the rocky coastline of Norway's southern tip.



Under's namesake holds a double meaning: In Norwegian, "under" can just as well be translated into "wonder." Half-sunken into the sea, the building's monolithic form breaks the water surface to lie against the craggy shoreline. According to Snohetta, more than an aquarium, the structure will become a part of its marine environment, coming to rest directly on the sea bed five metres below the water's surface. With metre-thick concrete walls, the structure is built to withstand pressure and shock

from the rugged sea conditions. Like a 'sunken periscope', the restaurant's massive acrylic windows offer a view of the seabed as it changes throughout the seasons and varying weather conditions.

Environmental Considerations

Under has been designed with sensitive consideration for its geographic context and aquatic neighbours. The sleek, streamlined form of the building is encapsulated in a concrete shell with a coarse surface that invites mussels to cling on.



Over time, as the mollusk community densifies, the submerged monolith will become an artificial mussel reef that functions dually to rinse the sea and naturally attract more marine life to its purified waters. Muted lighting from the inside of the restaurant and installed on the seabed will help stage the wildlife flourishing on the sandbank outside the 11 x 4-metre panoramic acrylic window.

The restaurant will also welcome interdisciplinary research teams studying marine biology and fish behaviour. Researchers from Norwegian research centers will among other seek to train wild fish with sound signals and will research whether fish behave differently throughout the shifting seasons. The researchers will also help create optimise conditions on the seabed so that fish and shellfish can thrive in proximity to the restaurant.

Visitor Experience

Informational plaques will be mounted alongside the trail leading guests to the restaurant entrance at the water's edge.

This informational path tells a story about marine biodiversity and the Norwegian coast, weaving the narrative of the site into the overall restaurant experience, and ends at a ramp up to the restaurant. Here, the entrance is clad in untreated, locally sourced oak that will eventually fade into grayish tones, harmonising with the raw concrete. On a day of rough sea, you can feel a hint of fresh, salty ocean spray against your face as you enter the restaurant.

The building comfortably accommodates 80-100 guests. As visitors begin their journey through the restaurant they descend through three levels. From the entrance, where the tidepool is swallowed by the sea, guests enter the wardrobe area. Visitors are then ushered down one level to the champagne bar, which marks the transition between the shoreline and the ocean. This physical transformation is emphasised by a narrow acrylic window cutting vertically down through the restaurant levels. From the bar, guests can also look down at the seabed level of the restaurant, where



two long dining tables and several smaller tables are placed in front of the large panoramic window.

Materiality

The restaurant's colour palette follows the logic of the different stories of the construction. While the champagne bar is characterised by colours inspired by the coastal zone, with its subdued colours evoking the sediment of shells, rocks and sand, the dining room is submerged in darker blue and green colours inspired by the seabed, seaweed and rough sea. The warm oak of the restaurant interior contrasts with the rough

concrete shell, creating an intimate atmosphere. Materials are chosen not only for their aesthetic qualities, but also for their sustainable characteristics and ability to create a good indoor climate. Advanced heating pump technology that utilises the stable seabed temperature functions to heat and cool the building year-round.

Through its architecture, menu and mission of informing the public about the biodiversity of the sea, Under will provide an under-water experience inspiring a sense of awe and delight, activating all the senses – both physical and intellectual. ■

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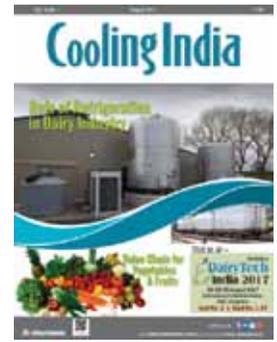
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“BIG players rely on BAG products”

Digitalisation of light is now becoming increasingly popular as it enables low power consumption of the LED lighting. **BAG**, one of the major players in LED components and electronics gears, is moving ahead in this area and plans to introduce more and more products, informs **BS Praveen, CEO and MD, BAG Electronics (I) Pvt Ltd.**

Q BAG solutions create a strong basis for reliable lighting electronic products. Could you tell us more about your target market segments?

A BAG's core strength is lighting related electronics. BAG has been in the lighting field for over 100 years and the organisation has a thorough understanding of the needs of the lighting industry. This enables us to make products that are robust in any environment. Our target customers thus, are those who are looking for fit and forget lights, those who cannot afford any breakdown. Our products generally go into office, commercial, industry, retail, hospitality, and high end residential sectors. The cost of failure is high in these sectors, and thus the big players in this area rely on BAG products.

Q What's your take on the digitalisation of light? How is the LED market evolving with digitalisation?

A Digitalisation of light is basically the integration of lighting devices with communication devices. This is now becoming very popular mainly due to the low power consumption of the LED lighting. BAG is moving ahead in this area and will soon be coming with more and more products. Some of the examples of such products are Power over Ethernet (PoE) lighting, integrated sensors, lighting with wireless communication, smart street pole etc. With the development of smart cities, this area is getting a further boost. Human-centric lighting is another product that has evolved due to the advent of LED lighting. This basically addresses the undesirable effects of long exposure to monotonous artificial lighting. This is catching up across the world fast and BAG already has offerings of these products.

Q How is your business shaping up post acquisition by Osram early this year?

A BAG India has not been acquired by Osram, or for that matter anyone else. Osram has acquired BAG Europe and BAG Philippines. BAG India continues to be part of Trilux group of Germany, as it was before. As such there is no change in our business in the Indian subcontinent.

However, in order to avoid any confusion, we are adding 'India' into our logo.

Q OEM Systems Group has made a name for itself in the global lighting space. How do you see its brand awareness in Indian subcontinent?

A OEM Systems Group brand awareness has improved significantly in the recent years. OEM Systems Group is an umbrella brand over and above some brands including BAG. This enables the companies under this brand to provide one-stop solution to our customers, especially in the current era of multi-technology product offerings. Today the lighting arena has become complex with the addition of communication, and other technologies into its products. As such there are different companies having specific expertise working together to come up with the products needed by the current day environment. In order to simplify the integration of such technologies and also take responsibility for that integration, the concept of OEM Systems evolved; and this is now catching up well with various customers in India.

Q How is the acceptance for high-end lighting products in Indian lighting market?

A Our products generally go into high-end lights that demands high level of performance. In the last few years the demand for high-end lighting products has increased in the Indian market. The high-end products are of two categories – one's that have high level features like dimming, connectivity etc; and others that need high level of reliability and performance like in commercial, industrial and retail areas where the cost of failure is high. Customers are now looking for both kinds of high-end products now. This is partly due to the general expectation having increased for performance and features, due to growth in living standards, and partly due to the prices of high-end lighting coming down, as a result of LED technology. BAG has products to support both kind of high-end products and they have high acceptability in the market. ■

Lighting for urban areas: Worth a closer look

Lighting is a major energy consumer. Therefore, there are enormous potential in terms of achieving energy efficiency. This article explains how use of advanced lighting technologies can lead to significant cost and energy savings.

Lighting is the most visible form of electricity consumption and lighting load in our country is very high – about 17-18% of total load. By increasing the efficiency of lighting system, there can be significant energy saving and reduction in peak load. There is a scope for reducing about 30 to 35 % of the morning and evening peak demand.

Best practices in lighting systems may be achieved by:

- Installation of energy efficient fluorescent lamps (T-5) in place of conventional fluorescent lamps (T-12).
- Installation of Compact Fluorescent Lamps (CFLs) in place of incandescent lamps.
- Installation of LED panel indicator lamps in place of filament lamps.
- Installation of high frequency (HF) electronic ballasts in place of conventional magnetic ballasts.
- Use of high efficacy light sources for reducing the energy consumption for lighting .
- Solar lighting systems are providing to be a viable option



Picture Courtesy: www.pixabay.com

in rural India because the technology involves no moving parts, low maintenance, and simple to operate.

Following factors should be considered while urban lighting system is to be design:

- Use of high-efficacy light source
- Use of more efficient luminaries
- Selective switching
- Utilisation of daylight
- Luminaries of higher space to height ratio
- Higher reflectance surfaces of the room
- Visual task analysis
- Task oriented lighting.

In order to achieve the energy efficiency in urban lighting systems, following points can be considered:

- Use of LED lamps for indicating lamps will reduce the energy consumption.
- Use of CFLs in place of incandescent lamps, reduce the lighting energy by 70%.
- Use of mirror optic fluorescent lamps increases the lighting level considerably.
- Use of HPSV lamps in place of MPSV lamps reduce the energy consumption by 60%
- As the lighting level is inversely proportional to square of the distance, optimising the height of lamp will aid in reduction of lighting energy.
- Use of electronic ballasts for discharge lamps, reduce energy consumption by 20%
- Installation of intelligent lighting controller helps in controlling the lighting energy.
- Use of photo sensor switch for streetlight controlling helps in conserving the lighting energy.
- Installation of auto cut-off switch to put off lights during lunch hours at the office buildings will reduce the lighting energy.
- At streetlights, in many places, the reflectors inside the HPSV fitting are damaged, it is suggested to replace the fittings with anodised aluminium reflectors. This will improve the lighting level by 20 to 25%.
- Use of energy efficient lamps like CFL, LED, T-5 fluorescent lamp, etc lead to enormous amount of energy savings which is estimated as 50 to 80%.
- Electronic gears of conservation of energy like electronic ballast saves energy within the range of 10 to 20%.
- Solar lighting systems such as lanterns, streetlights, home lights, etc. can be effectively used, especially in areas of where lighting is required for shorter duration. This will not only lead to energy conservation but also encourage use of non-conventional and environmental friendly energy system.

Energy efficiency in buildings and street lighting are becoming important in today's era. An intelligent urban platform including system management, information assurance, and application services between utility and consumers can play a critical role in order to achieve energy

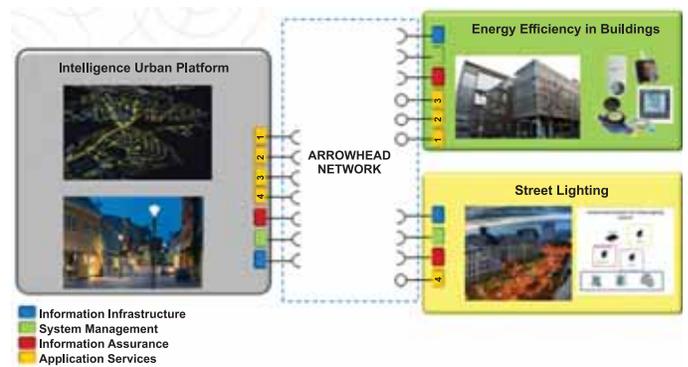


Figure 1: General block diagram of urban lighting platform

efficiency in these areas.

Energy efficiency in buildings requires data concentrator-plus-real time platform. The integration of the real time platform software on the data concentrator allows real time data acquisition processing and distribution capabilities.

Intelligent urban platform delivers following energy data:

- Real time data monitoring
- Hourly, daily and monthly data aggregation.
- Temperature, luminosity and humidity data average
- Energy data comparison with previous periods
- Cost/CO₂ energy consumption equivalence are required to collect for energy efficiency in buildings.

As per the architecture (Fig 2), multimodal data collection is required and further monitoring and analysis is required. For an intelligent urban lighting, let two clients have been implemented in order that end-users can interact with the lighting solution. Lighting maintenance staff (web-based client) may communicate with lighting operator (desktop-based client). Analysis of the lighting can be done by different lighting conditions and wireless communication interface can also be done. After laboratory deployment, with different lighting conditions, and demonstrator framework, it can be put up in real scenario. Smart lighting will be based on environmental parameters and energy consumption (2-5 street lamps) in real scenario. After testing of algorithms processing mobility information its integration with other inter-domain services through the platform (15-20 street lamps) can be done.

Recent steps taken by India for urban and rural lighting

Pradhan Mantri Sahaj Bijli Har Ghar Yojana – 'Saubhagya' – a new scheme was launched by the Prime Minister Narendra Modi to ensure electrification of all willing households in the country in rural as well as urban areas for lighting on 25th September, 2017.

The objective of the 'Saubhagya' is to provide energy access to all by last mile connectivity and electricity connections to all remaining un-electrified households in rural as well as urban areas to achieve universal household electrification in

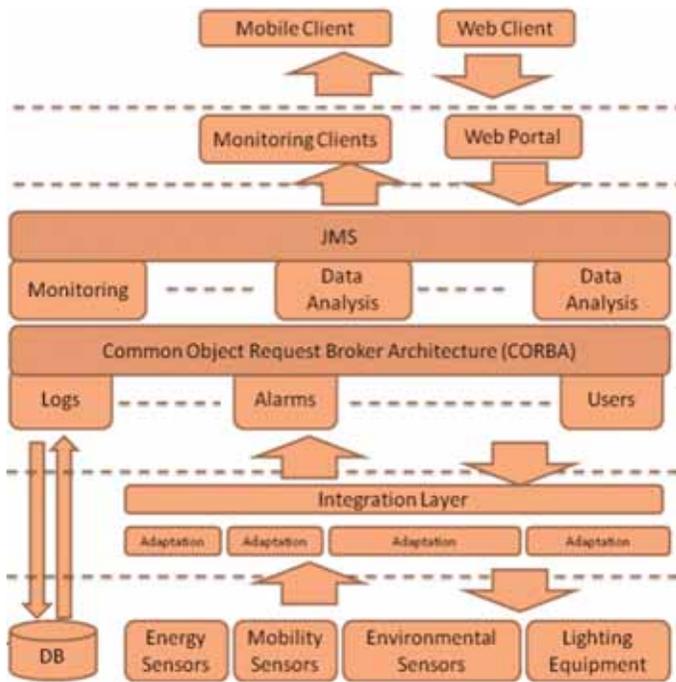


Figure 2: Intelligent urban platform

the country.

The electricity connection to households include release of electricity connections by drawing a service cable from the nearest electricity pole to the household premise, installation of energy meter, wiring for a single light point with LED bulb and a mobile charging point. In case the electricity pole is not available nearby from household for drawing service cable, the erection of additional pole along with conductor and

associated accessories shall also be covered under the scheme.

Similarly, in urban areas, Integrated Power Development Scheme (IPDS) provides for creation of necessary infrastructure to provide electricity access but some households are not yet connected mainly on account of their economic condition as they are not capable of paying the initial connection charges. Therefore, Saubhagya has been launched to plug such gaps and comprehensively address the issues of entry barrier, last mile connectivity and release of electricity connections to all un-electrified households in rural and urban areas.

Project proposals shall be prepared by the State DISCOMs or power departments and sanctioned by an inter-ministerial monitoring committee headed by Power Secretary. The electrification works under the sanctioned projects shall be executed by respective DISCOMs or power department through turnkey contractors or departmentally or through other suitable agencies capable of doing this work as per norms.

In order to hasten the process of release of connections to urban households, camps would be organised in urban or cluster of villages for identification of beneficiaries using modern IT technology with a Mobile App or web portal. Application for electricity connections shall also be registered electronically and requisite documentation including photograph of applicant, copy of identity card and/or details such as Mobile number, Aadhaar number, bank account number etc. shall be completed on spot in the camps, so that connections are released at the earliest. The Gram Panchayat or public institutions in rural areas shall also be authorised to collect application form, complete documentation and also



for distribution of bills, collection of revenue and other activities, as applicable.

Urban Jyoti Abhiyan (URJA) is also addressing the issue of urban lighting.

Digitalising urban lighting

In implementation of streets or walkways are minimally lit until a vehicle or pedestrian triggers a sensor signal, thus causing the lights to peak for a brief period. The selection of conceivable systems is large, ranging from presence detectors and video cameras to interlinked lighting and energy infrastructures that take traffic volume as well as the feed-in of renewable energy sources into account. The main aim of these new lighting concepts is to save energy.

LED plays a key role in any discussion about the future of public lighting. The beaming chips mark the transformation from electric lighting to electronics. While in traditional light sources gas is discharged or a glowing filament radiates light and heat, solid state lighting technology like LEDs and the organic OLEDs is based on electroluminescence. Diodes are especially advantageous for lighting control and system solutions because they can be gradually dimmed from zero to one hundred percent or quickly switched on and off. In contrast, gas-discharge lamps take minutes until they reach their full level of brightness, therefore making high switching frequencies impossible.

Recent technical developments serve to promote the digitalisation of public lighting. Along with these technical innovations socio-political questions arise that reach far beyond such functional aspects as security, or the need for a certain light colour or product design. The growing demand for 'intelligent' control systems and high-quality light give rise to more general questions like: Which criteria should be followed to evaluate public lighting? What is the basis for discussing and negotiating the various concerns?

'The right light at the right time in the right place', is a goal that lighting designers, city planners, manufacturers and politicians share. But it is not yet clear who is to judge and decide which light is considered to be the best suited one. Light sensitivity varies not just from person to person but also in a cultural sense. What methods should be used to identify

the 'right light', and where and when it can be dimmed or even switched off?

Looking at a particular urban space, the question of appropriate lighting is as complex as the specific local situation. Public lighting infrastructures can only be linked and controlled when, in addition to the organisational and technical hurdles, urban spaces are also considered as meaningful places that fulfil social functions. Aware of the challenges ahead, light planners and developers are showing an interest in social science research on the night time city and the night time activities of users of public spaces. There is the need for sociological research in order to develop scripts for digital lighting solutions. So, the digitalisation of public lighting may also offer a new and challenging field for social and urban studies.

Conclusion

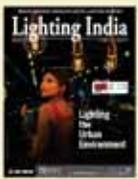
In this article, authors have given brief information about energy efficiency aspects. In the second section, an intelligent urban lighting platform is provided with block diagram. If the urban lighting scheme is designed properly, it can enhance energy efficiency and provide sustainability in lighting sector. The importance of energy efficiency in lighting sector is also explained. In the last section, recent steps taken by the Indian government in terms of India for urban and rural lighting is also explained in brief. ■



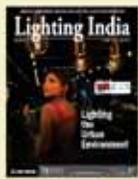
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Safety & Security Benefits of Outdoor Lighting

Outdoor lighting is a prerequisite for improved visibility and safety of drivers, riders and pedestrians, analyses Shrikant Mahankar, Senior Analyst at MarketsandMarkets.



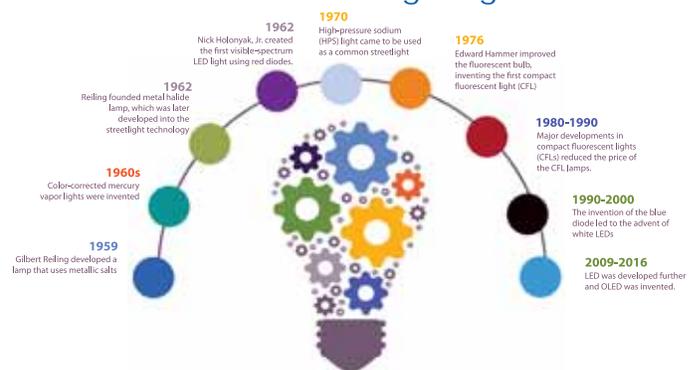
Picture Courtesy: www.billion.com

Outdoor lighting plays a vital role in ensuring the safety and security of public places, streets, pathways, and walkways. To ensure the safety and security of these places, it is necessary to use the right lamps and appropriate fixtures with proper luminance. It also becomes necessary for lighting systems to follow the lighting standards and guidelines to ensure the safety of people, property, and public spaces. Outdoor lighting system is a prominent requirement for applications such as highways, roadways, airport perimeters, architectures, and other public places. LEDs are increasingly implemented in the outdoor lighting application to control the growing energy consumption of lights. Most countries such as the US, the UK, and Germany are replacing their conventional streetlight lamps with advanced LED lights and luminaires.

LEDs powering outdoor lighting

Of the various light sources available for outdoor lighting, there is a very high demand for LEDs because LED lighting consumes 85 per cent less energy compared to traditional light bulbs. Governments across countries such as the US, the

Evolution of lighting



(Source: White Papers, Expert Interviews, Industry Journals, and MarketsandMarkets Analysis)

UK, France, and Germany are promoting the use of solid-state lighting across applications. The US government has been promoting the use of LED streetlights over conventional streetlights owing to their advantages such as reduced power consumption, long-lasting fixtures, and less maintenance cost and CO₂ emission. In 2013, more than 600 cities in the US

planned to install LED streetlights. LEDs offer multiple benefits over traditional conventional lamps for outdoor lighting. Some of its major benefits include high energy-efficiency, high efficacy, long working life, and robust weatherproof designs. LED lamps are expected to hold the largest market share for outdoor lighting in the near future because of its benefits over conventional lamps.

LEDs have witnessed exponential growth in the outdoor lighting market for the last few years. Thus, it is necessary to understand their evolution and adoption.

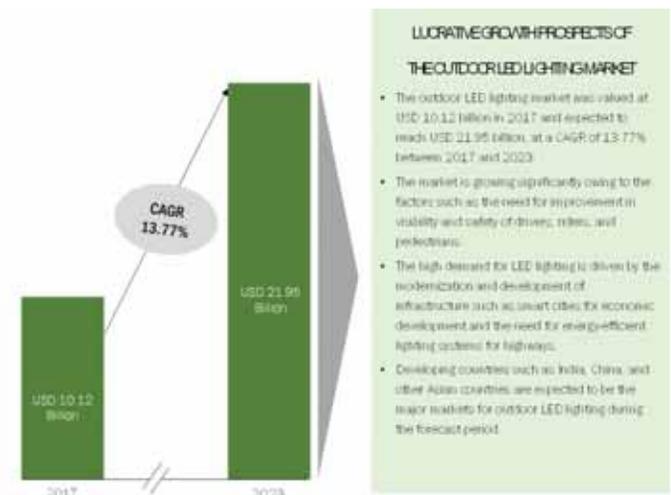
Benefits of Using LED Light Sources over Other Lamps in Outdoor Lighting:

- **Longer lifespan:** The longer life span of LED lamps leads to lower carbon emissions and lower maintenance cost. LEDs are said to last six times longer than other light sources. LEDs have operational efficiency of approximately 100 hours, which is much higher than that of other light sources such as halogens as well as incandescent and fluorescent lamps. The long lifespan of LEDs results in the use of fewer lights. Hence, fewer resources are needed for manufacturing processes, packaging materials, and transportation.
- **Ecologically friendly:** LED lights are free from toxic chemicals, while other light sources such as fluorescents and halogens that are used in street lights contain toxic chemicals such as mercury, which can harm the environment. Due to the lesser carbon emission and use of environmentally friendly materials in LEDs, governments worldwide are also emphasising on their implementation in the outdoor lighting application.
- **Energy- and cost-efficient:** LEDs enhance the light levels and quality of illumination, reduce light energy consumption significantly, and require less maintenance. Moreover, rebates of up to 60 per cent of the project can be achieved with the implementation of LEDs. In outdoor lighting, LEDs offer energy savings of 50 per cent to 90 per cent compared to HIDs, the most common alternative. LED is also eligible for tax savings (according to the Energy Policy Act). The growing advancements in LED lamps are expected to increase the energy efficiency further. Thus, LEDs would hold the largest market share in terms of applications in outdoor lighting.

Growing market of LED lamps

According to MarketsandMarkets, the global outdoor LED lighting market is expected to grow from \$ 10.12 billion in 2017 to \$ 21.95 billion by 2023, at a CAGR of 13.77 per cent during the forecast period (2017–2023). This growth is attributed to drivers such as the need for energy-efficient lighting systems, declining prices of LED lamps, and the high demand for environmentally friendly lighting solutions as a result of modernisation and the penetration of LEDs as a light source in general lighting applications. The architectural and outdoor lighting segment of the LED lighting market is expected to hold an around 20 per cent share of the total LED market.

Outdoor lighting market to present attractive opportunities between 2017 and 2023



(Source: Investor Presentations, Annual Reports, Press Releases, Expert Interviews, and MarketsandMarkets Analysis)

Key trends of outdoor LED lighting market

- **Controllability of LEDs:** LEDs offer control solutions for large areas, ranging from streetlights to architectural applications. They not only enable users to operate the lighting of the system easily but also offer an energy- and cost-effective solution. The combination of individual optics with LEDs is expected to increase the efficiency of the light and offer more precise illumination. For instance, Eaton's Galleon LED luminaire offers 16 different optics, all optimised to provide a range of distributions. Even distribution of light is crucial for the outdoor lighting application to ensure the safety and security of an individual. Due to the higher adoption of control systems in LEDs, the market for the software segment of outdoor lighting is expected to grow at a CAGR of 14.58 per cent from 2016 to 2023.
- **Replacement of light sources:** Owing to the growing awareness regarding energy-efficient lamps, users across the globe are replacing their traditional lamps with new LED lamps. This is expected to lead to sustainable growth in the LED market in the coming years. The halogen and fluorescent lamps used in street lights, architectures, and public spaces are either retrofitted or replaced to leverage the benefits of LED lamps.
- **Internet of Things (IoT)-equipped lighting systems offering financial advantage:** A survey conducted by Continental Automated Buildings Association (CABA), dated March 2017, indicated that the lighting systems equipped with IoT can offer several financial advantages. The data tracked and generated through IoT can help understand how buildings are performing and can suggest ways to identify opportunities to optimise energy consumption. In addition to the financial advantage, IoT-

equipped lighting systems are also expected to offer benefits such as space utilisation, improved efficiency and productivity, and enhanced comfort.

- LED lighting for the outdoor entertainment sector is expected to witness significant opportunities in the second half of the forecast period. This includes concerts, award functions, sport tournaments, and other performance arts, which, in addition to basic lighting, include modern stage lighting as well as special effects such as lasers and fog machines.
- Europe: Incandescent lamps have been phased out and halogen lamps have been banned. This is driving the adoption of LED in the region.
- North America: Incentives from the government are encouraging users to shift from traditional to conventional lighting.
- Asia Pacific: Developing economies, such as India and China, are adopting LEDs at the highest rate for outdoor applications. The smart cities initiative by the Government of India further drives the demand for LEDs as an energy-efficient lamp source.
- Middle East and Africa: Greater adoption of LEDs expected during the second half of the forecast period owing to the growing awareness and reducing prices.
- Latin America: Outdoor sport events, such as Olympics, are expected to drive the market during the forecast period.
- Revenue forecast, by end-use application: Public places (including airport perimeters, parking structures, stadiums and area floodlighting, and entertainment) are anticipated to witness the highest growth rate, while the highway and roadway segment is expected to hold the largest market share by 2023.
- Regional revenue forecast: 2014–2023 (North America, Europe, Asia Pacific, Middle East and Africa, and Latin America)—APAC is expected to be the largest and fastest-growing market.
- The demand for smart controls for street lighting system is expected to grow in the future. Street lights are expected to be able to perform multiple functions in the future including notifying of or registering a change in traffic volume and feeding that data into an intelligent transport system (ITS).
- The need for improvement in the visibility and safety of drivers, riders, and pedestrians would ensure the installation of light sources providing distributed illumination.
- Solar panels and solar-equipped luminaires are expected to replace the lamps in streetlights. The use of solar power with LEDs is expected to be a more energy-efficient solution. Featured companies in the LED outdoor lighting market

include Philips Lighting Holding B.V. (Netherlands), General Electric Company (US), OSRAM Licht AG (Germany), and Cree, Inc. (US).

Future opportunities for LED outdoor lighting

LEDs are expected to rapidly replace conventional lamps. Moreover, the installation of solar panels in lighting modules and connected lighting would further help in the conservation of energy in outdoor lighting systems. LED-based solid-state lighting (SSL) systems are relatively easier to control and are expected to witness greater evolution in the future. The central control of outdoor lighting with the involvement of a variety of datalink- and physical layer protocols may be used to provide a complete solution for smart streetlights.

Prospects across end-user applications

- Highways and Roadways
 - Replacement of high-pressure sodium (HPS) lights with LED lights
 - Smart city projects installing LEDs with solar panels
- Architectural
 - Ambience to shape public buildings at night
 - Artificial movement of lights to create shapes and edges to attract users
- Public Spaces
 - Demand for modern stage lighting in an increasing number of outdoor entertainment activities
 - Need to increase operational efficiency for airport perimeters to facilitate luggage check-ins
 - Installation of heavy floodlights in stadiums

Future needs smart outdoor lighting

The increased competition among players manufacturing outdoor lighting is resulting in the development of new advanced technologies to offer comfort and ease to the users. A major development in this path is the focus on making things increasingly connected. The drive for connected lighting is the future trend among the outdoor lighting manufacturing companies. The latest development in LED is organic LED lighting (OLED). This next generation of solid-state lighting technology—OLED—is creating an interest among the manufacturers and consumers, which is expected to drive the implementation of this technology in outdoor lighting in the future. ■



Shrikant Mahankar
Senior Analyst
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ERCO introduces Bluetooth-capable luminaires



Individually switching and dimming luminaires, setting up light scenes and transitions and integrating sensors: all made possible with the Bluetooth control offered by ERCO as a new option with selected luminaires for track – an ideal solution for e.g. presenting exhibition spaces in lively and ever-new ways with low levels of complexity. © ERCO GmbH, www.ercos.com

Individually switching and dimming luminaires, setting up light scenes and integrating sensors – all made possible by the new, wireless method of control now offered by ERCO in the form of Bluetooth-capable luminaires. Only a smartphone or tablet with the Casambi app are needed for setup and operation, intuitively and simply making available a level of design flexibility and convenience functions that in the past required complex light control systems. The luminaires and mobile device form a radio network completely without the need of further hardware or installations. ERCO thus introduces a technology that opens up completely new fields of application for professional design with individually controlled light.

In today's large-scale projects such as office buildings, museums and conference centres, light control systems are usually planned in from the start. However, wireless light control solutions are becoming increasingly popular that can be simply installed and even upgraded, quickly set up and also operated by non-technical personnel. The application frequently focuses on a limited room situation, but can be

expanded if needed. Typical examples of such applications are exhibition spaces, art galleries, boutiques, restaurants and residential situations. With Bluetooth-capable luminaires in its Optec, Parscan, Oseris and Pollux spotlight ranges, ERCO now offers the ideal solution for such projects – an innovative approach for using light highly simply, cost-efficiently and at a professional level as a scenic and dynamic tool of design.

Bluetooth – integrated in the control gear

ERCO technically implements this concept by integrating Bluetooth technology from the Finnish company of Casambi directly into its control gear developed and produced in-house. The luminaires equipped in this way communicate with each other as well as with compatible smartphones, tablets and Smartwatches via the Bluetooth LE radio standard, with luminaires then being controlled over the Casambi app on the mobile end device.

The range of functions on the app includes switching and dimming single luminaires, grouping luminaires and setting up light scenes. Intuitive operation is provided by a visual user interface from ERCO with a simple, clear design. The luminaires form a so-called 'mesh network' that can also include the compatible products of other manufacturers, and such mesh networks can be independently set up in any quantities and linked with applications on the internet via gateways.

Available for a wide range of luminaires

Thanks to the ERCO system of luminaires a wide selection of Bluetooth-capable luminaires for track are already available. The product ranges Optec, Parscan, Oseris and Pollux offer various, attractive design options at wattages to 19W. These ranges feature interchangeable lens optics with rotationally symmetric light distributions of narrow spot, spot, flood, wide flood and extra wide flood, oval flood axially symmetric light distribution and wallwash asymmetric light distribution. This in turn provides lighting designers with a flexible tool kit for presenting rooms in a professional and nuanced way with efficient visual comfort. The "ERCO individual" service also allows Bluetooth-capable variants of specific luminaires in the ERCO portfolio to be requested for the particular project. ■

Lighting Links Modern Athens Restaurant with Its Historic Past

Innovative lighting company, Soraa, was honoured to partner with lighting firms L4A and Okapi Light to help a contemporary Mediterranean restaurant blend a modern aesthetic with a long-standing Athens neighbourhood steeped in history and tradition.

Zurbaran is a Mediterranean restaurant that opened in March of 2017 by renowned chef Hippocrates Anagnostitelis in the historical neighbourhood of Kolonaki in central Athens. The trendy neighbourhood still features some of Athens' classic Greek architecture and is home to museums and historical sites like the Benaki Museum and Kolonaki Square.

Creating a beautiful, modern restaurant environment, while still paying homage to the incredible history and tradition of Athens is no small feat. Soraa was chosen to provide the lighting products that would bring the architects' inspiration to life.

"Light has an amazing power to transform a neighbourhood like Kolonaki allowing it to capture the energy of a modern, vibrant Athens while connecting it to the rich history of

everything the city was and represents," said David Smith, Director of International Sales at Soraa.

Architects, Maria Kokkinou and Andreas Kourkoulas, created a space that helped cement the restaurant as part of a new architectural trend called 'Urban Athens'. To help bring these elements to life, lighting design companies, Okapi Light and L4A used light to play an important role in the design process, giving the team the ability to capture a perfect mix of past and future in a way that feels warm and inviting.

"The warm lighting in Zurbaran along with the hanging lights floating over the tables emulate stars. The rough textures of the concrete walls soften with the light, while the very industrial structure of the bar embeds lighting within it, showing a cubic play that fills the space with colours," said Mariza Galani, co-founder and lighting designer at Okapi





Light. "We had a vision when we set out to create our restaurant and bar that meant every aspect in its design was looked at with a critical eye," said Charis Spyrou, with Zurbaran Athens. "The lighting gave us the flair and distinction we were looking for which means our food and custom drinks look amazing and our patrons feel like they are truly experiencing something special", he further added. ■

All Photos: © Mariana Bisti (www.marianabisti.com)

A petrol and service station illuminated to be seen from afar

A petrol and service station of the future has opened near to Munich, Germany. The station offers a diversity of new fuelling options. The inverse gabled roof seen from afar is illuminated by ERCO.

The Fürholzen petrol and service station is located on the A9 motorway from Nuremberg to Munich. For vehicle fuelling it offers a variety of different fuels ranging from electric and gas to hydrogen. The site also has a shop, restaurant and washroom facilities, and the adjacent parking area also provides parking for more than 250 cars, trucks and buses. The petrol and service station is managed by the Southern Bavaria motorway directorate and operated by Tank & Rast GmbH. The total investment was approximately

35 million euros. Following a construction period of just a few months, the new port of call for travellers was opened on 1 September 2017.

An innovative service station with original character

The innovative character of the fuelling concept is reflected in the contemporary design of the complete facility. The Munich offices of Allmann Sattler Wappner were responsible



for the architecture. The defining element consists of a long, curved gabled roof inversely folded upwards and running from the filling area through to the shop, restaurant and terrace. Interior design by the Austrian designers W2 Manufaktur integrates the dynamic shape of the building to translate it into a room-defining element with folded wooden formwork. Traditional Bavarian elements have also been stylishly reinterpreted. Leather armchairs, tables made of tree slabs and metal plant partition walls for example served as sources of inspiration. An inviting, cosy atmosphere was created despite being reduced to the essentials. Seating areas offer travellers an area of shelter to rest for a few minutes and at the same time provide views into the spacious interior.

An inverse gabled roof as a decorative landmark, set in scene by ERCO

Weiser.Lighting from Troisdorf were responsible for the lighting design, and special focus was placed on uniformly illuminating the underside of the inverse saddle roof. In this way the characteristic feature of the petrol station is emphasised, is visually highlighted when viewed from the motorway and is also pleasantly eye-catching in the expansive landscape. ERCO supplied suitable lighting tools for the outdoor, indoor and entrance areas. In the petrol filling area the roof is illuminated by Lightscan facade luminaires with wide light distribution mounted to supports, a connected load of 48 watts and LED output of 5040 lumens. Quintessence recessed luminaires were installed in the entrance area with IP65 protection, flood distribution, connected load of 18 watts and LED output of 1890 lumens, and Pantrac ceiling washlights in the indoor area with wide distribution, a

All Photo: © ERCO GmbH, www.erco.com
Photography: Moritz Hillebrand



connected load of 24 watts and LED output of 2520 lumens.

Rich-contrast lighting of the interior areas with spotlights

The shop is illuminated to attract attention with use of bright-dark contrasts. In this way visitors can easily find their way around and quickly find the right products. Parscan spotlights from ERCO were used with spot distribution. The eating zone also features accent illumination – a large extractor hood marking the open cooking area is particularly eye-catching. To achieve this effect the lighting designers specified Parscan spotlights, here with flood distribution.

Vine stems with a play of light and shadow via grazing light

Vines were planted along two sections of the timber-clad building facade. The walls are illuminated with grazing light. As soon as the plants have grown and spread across the complete area their leaves will create a highly expressive play of light and shadow. Site ground-recessed luminaires from ERCO achieve this effect. ■

LED Expo 2018 sees 13% rise in exhibitor numbers

The event remains on top with its constant growing numbers and exclusive knowledge forum.



Reinforcing relevant topics like eco-friendly lighting, IoT and sustainable lighting, the 18th edition of LED Expo 2018 attracted professional and focused business visitors from the industry and government regulatory bodies alike.

LED Expo 2018 Mumbai was shining bright but in a cost-effective way as the 18th edition of this prominent fair showcased three days of pure business and networking at Bombay Exhibition Centre, Goregaon East, Mumbai. 244 exhibiting companies from 5 countries displayed a galore of advancements in LED lighting, components and other related

technologies attracting 9,600 professional business visitors to connect, compare and source the best quality products that suits the Indian market.

Talking about the consistency in its position to lead the LED revolution, Raj Manek, Executive Director and Board Member, Messe Frankfurt Asia Holding Ltd shared, "With this edition accounting to 13 per cent growth in exhibitor numbers and international participation, once again, LED Expo has sustained its position as a principal platform for our important buyers and sellers. Helping us achieve our vision is the constant support we receive from the government regulations, associations and professionals benefitting from our show. With this trust, we will continue with our efforts in bringing the latest innovations from different parts of the world to enhance growth in the overall lighting sector of India."

The Indian LED market is booming with government and commercial sectors going the energy efficient way to cut down on their total spending. Eco-friendly lighting is a technology that remains as one of the top choices of these focused buyers. Talking about the overall experience on displaying these environmental friendly lights was Vishal Narang, Proprietor, AV Enterprises, who shared, "We want to help India in the green revolution. LED Expo has always given us more than expected. With regular participation at LED we have managed to find distributors from places as far as Kolkata. This year too, we have found distributors from different parts of the country,



helping us expand our business.”

Exhibitor stalls were occupied with business visitors from the industry as well as other allied sectors like electrical contractors, architects, and interior designers. The quality of visitors and the keen interest taken by them to source the right product to benefit their sector was a clear indication about the immense growth in the use of LED products in the Indian market. With robust initiatives by Maharashtra Energy Development Agency (MEDA), Unnati Jyoti by Affordable LEDs for All (UJALA) and the Indian Railways trying to change the face of Indian lighting industry, many government officials were also seen in attendance looking out for new technologies at the fair.

Niren Dhariya, Vice President, Electric Merchants Association said, “India is a big market for LED lights due to its energy saving capabilities. We visit LED Expo mainly to update ourselves with the latest innovations that has entered the market. Our objective was to check advancements for our industrial market and we have found a few products like film proof LEDs and IP67 which are not easily available in the India that we would be sourcing from the exhibitors.” LED Summit highlighted the use of smart lights and LED transformation of the Mumbai railways

Day two of the trade fair kicked off with LED Summit in the presence of several stake holders of lighting industry. This premier forum for the industry was packed with back to back sessions and insightful discussion on new trends and innovations, new technologies in components and the end user’s perspective.

Talking about Smart Lighting - Beyond Light, Sudeshna Mukhopadhyaya, Chief Design Officer, iBahn Illumination Pvt Ltd shared, “Smart Lighting solutions are changing the urban lighting solution scenario. Lighting world is going through a lot of change in technology which is seeing innovations like Human Centric Lights, Wireless Smart Devices, and products which are running the households using IOT and Bluetooth Mesh Technology. These technologies need to be implemented quickly to benefit end users and to make cities and villages smart.”

The topic ‘End user perspective’ saw talks by the representatives of Central Railways and Best Undertaking where they spoke about the work done to implement LED lighting for the city. Sanjay Waghmare, CESE (Central Railways) shared: “Central Railways recently completed the process of using LED at all 432 their platforms. This will help us save more than two lakh units of electricity worth Rs 3.72 crore. Future plans are to complete 100 per cent LED lighting at railway offices, yards, workshops, and railway quarters. We have started converting the entire local as well as long distance trains to be fitted with LED bulbs and fittings. Railways are at the forefront of the LED revolution and aim to be LED compliant by the end of 2018.”

Delegates attending the summit were eminent representatives from companies like Bharat Petroleum Corporation Ltd (BPCL), Emerson Electric, TUV India, Thyssenkrupp and amongst others. Talking about the high points of the summit was Harshwadan P P, Managing Director and CEO, HCE who said, “The topics on technical aspects of LED and standardisation were very interesting. Information on smart lighting and the development of sensors is a very good business opportunity for us and we would like to carry forward the technology and develop it further.”

Crowded aisles, serious business discussions and a productive knowledge forum like LED Summit sums up the three days of India’s leading fair for LED lighting, components and technologies. With the industry moving towards IoT, it will be interesting to see the technologies displayed in the next edition of LED Expo 2018 scheduled to happen from 6 – 8 December in Delhi. ■



GILE witnesses increase in visitor numbers

Adopting a theme of “Embracing Changes”, the fair showcased a plethora of innovative lighting and LED products and solutions as the show reaffirmed its position as the most comprehensive and influential lighting event in Asia.



Guangzhou International Lighting Exhibition (GILE) celebrated another successful edition as more than 165,000 visitors (5 per cent increase from 2017) descended on the China Import and Export Fair Complex in Guangzhou from June 9 – 12. A total of 2,602 exhibitors demonstrated the latest in lighting and LED products and solutions across 19 halls and 195,000 sq.m. of exhibition space. The main thoroughfare at the exhibition – The Pearl Promenade – was also a hive of activity as the THINKLIGHT: Embracing Changes Forum enticed thousands of visitors to a programme of talks from some of the world’s leading authorities in lighting concepts, technology and design.

While heavy rain and storm clouds greeted participants on their arrival in Guangzhou, spirits could not be dampened inside the fairground as the summer sunshine returned in time for the opening day of the 23rd edition of the show. Adopting a theme of “Embracing Changes”, the fair showcased a plethora of innovative lighting and LED products and solutions as the show reaffirmed its position as the most comprehensive and influential lighting event in Asia.

Commenting on this year’s exhibition, Ms Lucia Wong, Deputy General Manager of Messe Frankfurt (Shanghai) Co Ltd, said, “Embracing change has never been so important for the lighting industry and I am truly

Key figures at a glance

– Visitors –
Over 165,000 (2017: 156,898)
– Exhibitors –
2,602 (2017: 2,428)
– Exhibition area –
195,000 sq.m. (2017: 180,000 sq.m.)



pleased to have seen such earnest and forward-looking ideas and approaches on display at the fair. The rise in visitor figures demonstrates the renewed industry-wide confidence and positive future outlook for the lighting community. The global transition to connected lighting has the potential to improve the quality of our lives and it will undoubtedly bring previously distinct industry sectors together. GILE will continue to serve as platform that supports these innovations and nurtures future developments."

One of the highlights of this year's fair was the success of the THINKLIGHT: Embracing Changes Forum. Divided into the THINK and ACT Forums, more than 80 renowned speakers shared their insights into the future of lighting over the first three days of the show. Exploring many conceptual and strategic ideas, the THINK forum examined lighting's potential while those on the ACT stage examined current applications and real-life business studies.

Reflecting on the importance of gathering such influential and highly regarded speakers to the show, Philip Beesley, Professor, School of Architecture, University of Waterloo, commented, "I think that an exhibition like this can not only emphasise industry and commerce but also culture and deeply felt common values in the lighting industry. This forum has brought together a cultural gathering of research and careful thought. It is an extraordinary intellectual festival that could have a tremendous impact on participants."

Smart lighting, lighting design in smart cities, human-centric lighting, OLEDs, miniaturised LED drivers and horticultural lighting were just a few of the topics broached in the presentations delivered on both stages. ■



Comments from exhibitors

GILE is an important fair to facilitate the development of the lighting industry in China. It is a place where lighting companies of various size and scale gather in one place.

– Jack Liu, Sales Director, MLS Co Ltd, China

GILE is an effective trading platform for us and this year we have found dozens of new customers... As a global company with colleagues based all over the world, this is a good platform for us to engage with everyone in the industry.

– Eric Teather, President, WhiteOptics LLC, USA

Comments from buyers

I am happy to see there are more decorative lighting products at this edition as its demand is increasing recently, especially in Singapore. I will definitely return next year as GILE is a very professional trading platform to source new products and make connections with new business partners.

– Y.P. Yion, Founder, YP LED Supplies, Singapore

Our company provides integrated lighting solutions for human-centric lighting... We are very happy to have found two serious potential partners to produce products for us.

– Raimar Geffken, President Director, PT Ralum, Indonesia



Light India + EBTI: High demand for exhibition space

Light India and Electrical Building Technology India will serve the platform for various companies and brands that cater to the light and building technology industry.



Glimpse of Electrical Building Technology India 2016

With the government's focus on smart cities and the construction of individual smart buildings, demonstrating the country's great potential, the crucial role of IoT infused lights and energy efficient lighting systems becomes even more visible. The overall dynamics of these interdependent sectors are clearly shared by Light India and Electrical Building Technology India (EBTI) as the next edition is already 75 per cent booked, four months before the show, the organisers of the event informs. They add, "Looking at the demand for exhibition space shooting up, it will be no surprise Light India and EBTI will very soon be fully booked."

Scheduled from 11-13 October 2018 at New Delhi, the co-located shows will host some of the biggest brands like Bajaj, Havells, Hallonix, HPL Electric, Savarochi, Anchor by Panasonic, Kakatiya, Jaguar, Prolite, Silvan, Orient Electric, Surya Roshni, Opulus to name a few. The best of advanced lighting technology in lamps, accessories, luminaires, and decorative categories to top-class building and home automation systems, light control systems, hotel intelligent systems, power supply, instruments, gauges and tools from the electrical engineering sector will be showcased by companies from India, Belgium, China, Hong Kong, Korea, Taiwan, Turkey, and the UAE.

The co-existing shows will display an array of latest solutions from these booming sectors opening to a plethora of networking and buying opportunities. Building connections with trusted and well-known brands, selecting solutions from different cost-effective options available, checking out new product launches to understand the future trends of the

industry are just some of the benefits that the business visitors will gain with their attendance. The shows that will become a vibrant meeting point for interdependent sectors like smart building automation and lighting will be highly resourceful for industries and professions like architects/interior designers, building and construction industry, energy service companies, hotel industry and government and public utility representatives.

The overall economic growth of the country and projects like the LED revolution and smart city development have created a need for better infrastructure, greener buildings, occupant comfort and energy efficient sources. Catering to industry's demand, according to the event organisers, Light India and EBTI will help link both sectors facilitating various companies and brands to find the right markets.

Falling under the category of building and energy shows headed by Light + Building, India's leading shows for light and building automation has received strong support from associations like Electric Lamp and Component Manufacturers Association of India (ELCOMA), Global Lighting Association (GLA), Chinese Association of Lighting Industry (CALI), Japan Lighting Manufacturers Association (JLMA) and Taiwanese Lighting & Fixtures Export Association (TLFEA). Messe Frankfurt and ELCOMA together will be hosting a series of technical seminars where technology specialists and industry experts will discuss about the future trends entering into the market and problems faced by the industry. Alongside the seminars, the shows will also organise workshops done by various international lighting associations who will address different issues in the lighting and relevant sectors. Technology transfer would be another focus for the deliberations in these workshops.

With a series of successful past editions, a strong line-up of seminars and workshops, and support from national and international associations, Light India 2018 and EBTI will help strengthen the robust growing prospects of the industry. ■



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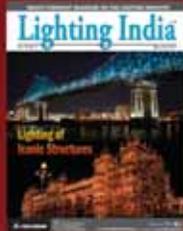
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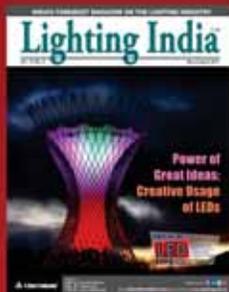
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Event Calendar

Landscape Industry Trade Show

Venue: Battersea Park, London
Date: 18 - 19 September 2018
Website: www.landscapeshow.co.uk

Light India 2018

Venue: Pragati Maidan, New Delhi
Date: 11 - 13 October 2018
Website: www.light-india.in

HKTDC Lighting Fair Autumn Edition

Venue: Hong kong Convention & Exhibition Centre
Date: 27 - 30 October 2018
Website: www.hktdc.com

LED Expo, Delhi

Venue: India Exposition Mart Ltd. Greater Noida, Delhi
Date: 6 - 8 December 2018
Website: www.theledexpo.com

The advertisement features a modern office interior with a grid ceiling. A large, square, recessed luminaire is shown in a close-up, angled view at the top left. The office desks are equipped with computers and office chairs. On the left side, three different luminaire models are displayed: a square recessed luminaire, a circular recessed luminaire, and a circular surface-mounted luminaire. The background shows a clean, professional workspace with large windows and glass partitions.

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(LxWxH): 360 x 39 x 21 [mm]



(LxWxH): 360 x 30 x 21 [mm]



(LxWxH): 280 x 39 x 21 [mm]



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BAG NCD (Non-Isolated) Series 400mA - 800 mA - 70W - 100W 4 Products



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(LxWxH): 280 x 30 x 21 [mm]

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