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Lighting India ^{₹ 125}

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September-October 2014

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PUBLISHER'S LETTER

The latest technology in artificial lighting in the current scenario has a huge potential. Current lighting products and systems in nursing homes in general underestimate the importance of a proper lighting project enhancing users mental and physical health. The article 'Lighting for elderly users in domestic environments' refers to lighting and mood considerations and creating a knowledge base for improving consciousness in architectural lighting design of both residents and nursing personnel environments.

With LEDs providing options for designers of a wide range of commercial and industrial lighting solutions, it is important that correct decisions are made with regard to thermal management. The right choices can save money, reduce weight and minimize design complexity. This article 'A tailored approach to LED thermal management enhances design while reducing costs' looks at the options available and provides guidance on best practice.

Lighting design is a challenging profession. New light sources, new fixture designs and new strategies for control all vie for attention, with ongoing advances in LED lighting performance. Talking about controllable systems the article, 'The Tradeoffs of Control Methods' remarks about new development in the lighting world, energy-saving capabilities and benefits to the end-user making systems a necessary component of good lighting design. Among other interesting article the issue contains report of Light India 2014, where Lighting India participated.

Do send in your comments at miyer@charypublications.in

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Client - WWG Wirtschaftsfoerederungs- und
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Editor: Mahadevan Iyer

EDITORIAL



Energy Saving Potential of LED in Lighting sector

Light Emitting Diode is emerging as preferable technology in Indian Lighting market, displacing incandescent and fluorescent lighting because of its 40-60% more energy efficiency in applications. Ministry for Renewable Energy and BEE carried on initiatives such as distribution of solar LED lanterns to promote energy-efficient lighting. The challenge still is its high cost. Though, first LED lamp made in India in 2010 was sold for Rs 1200, today prices are hovering around one-fourth of that price.

LED also comes as miniature light source that can be custom designed. The prominent are features. LED bulb uses half as much energy as a CFL to produce same amount of light. Ensuring quality and reliability; reducing price and creating awareness of LED lighting through its technology is a gigantic task. Its popularity among outdoor and indoor lighting is its eco friendliness, and as a green and cool light source.

Nowadays, there is considerable competition pricing LEDs and Luminaire products lower than prevailing in the market. India has ample of opportunities for street lighting and outdoor lighting applications. In this context, Indian LED lighting market is at a point of significant growth with prices falling as the trends indicate. The awareness campaign, labelling procedure, standardisation and increase coming from residential and commercial sector would further reduce cost of LED bulbs thus driving LED demand significantly.

Gopal Krishna Anand

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GE Lighting installs its Albeo Product Line in new Multi-Modal facility at Pune



GE plans to set up a manufacturing facility at Chakan, Pune, with an investment of around Rs 1,000 crore. Spread over an area of 68 acres, the unit will manufacture a range of diversified products for sectors such as energy, aviation, oil and gas and transportation. At GE's Multi-Modal facility at Pune which was recently inaugurated by Jeff Immelt, GE Lighting had supplied its state of the art ALBEO High Bay LED product line. ALBEO is an award winning luminaire series that utilizes innovative heat-sinking and cutting-edge LED technology to deliver a wide range of light outputs that replace 250W-1,500W HID and four-to-eight lamp T5/T8 high intensity fluorescent (HIF) fixtures in high and low bay applications. Currently, 460 Albeo fixtures have been installed in the facility. A dimming option was also installed to suit different work environments and conserve energy especially in situations where lower lighting is required. The Pune facility chose GE's 242 W Albeo high bay lighting which is known for its energy efficiency, ease of installation & customizable configurations. Currently, 460 Albeo fixtures have been installed in the facility. A dimming option was also installed to suit different work environments and conserve energy especially in situations where lower lighting is required. GE, given its EHS priorities was looking for an energy-efficient lighting solution that would reduce the environment impact, provide a comfortable ambiance and create a safe working environment especially in the production areas. The ceiling height of this facility was between 13-18 m and the required lux levels was between 250-300 lux. ■

Philips drives Greater LED adoption with new range of LED lamps

Philips Lighting India, the country's leading provider of lighting solutions, continued its push to drive greater LED adoption by the Indian consumers with the launch of new range of superior performance LED lamps – Stellar Bright and Ace Saver. With this expansion, Philips is offering more choices to consumers and encouraging them to adopt Philips' proven technology which will enable 40% energy saving and offer 90% more brightness compared to CFLs. Sumit Joshi, Business Head – Light Sources and Marketing Head, Philips Lighting India, said, "Philips is committed to provide consumers with 'more light per watt' and LED enables that. With LED technology, Philips is focusing on enhancing people's lives with light. With rapid urbanization, LEDs, given their long life, low maintenance, superior color rendering and above all energy efficiency, are the answer to our need for sustainable lighting solutions. We feel that LEDs will capture 45 per cent of the India lighting market by 2017-18". "LED is already contributing significantly to Philips Lighting India revenues – it's share has grown from being almost negligible in 2011 to being close to 25% today. Globally, LED products account for 34% of Philips lighting sales. This is a catalyst for our push to grow the LED lighting market in India. With this new product portfolio, we want to offer consumers affordable lighting solutions that allow everyone to switch to LED", Sumit Joshi added further. The new product like Stellar bright is the brightest LED batten by Philips for home segment, is a replaceable LED tube with a life term of 15 years with 40,000 hours. Stellar Bright priced at Rs 2,990.00 delivers up to 2100 Lumen. ■

PHILIPS

Anchor Electricals unveils LED lighting Solutions for Indian Market

Anchor Electricals (A Panasonic Group Company), announced the launch of its new professional LED lighting solutions for its consumers. The latest offerings from the house of Anchor offer reliable lighting solutions for all kinds of commercial, retail and hospitality sectors. With the launch of this range of solutions, the company is aiming at tapping lucrative opportunities present in the solutions business. Along with an already established expanding residential LED luminaire portfolio, the company aims at growing its presence as a lighting solutions provider. The new range of the LED lights by Anchor have been aesthetically designed conforming to the highest engineering standards and are equipped with the latest technology to match the taste of consumers. They come equipped with specially designed heat sink, anti-glare diffuser and separate energy-efficient electronic drivers, thereby offering a long service life, unique structural design and peerless safety of operation. The new solutions feature product series- the SmartArchi Series of high-end architectural luminaires and the PROiD Series of integral-type LED base lights especially designed for the Indian consumers. The SmartArchi high-end architectural luminaires focus on the superiority of light and high quality lighting design. This Made-In-Japan series with the concept of "Giving freedom to architecture" features a total of 92 models in the lineup designed for wide range of offices and stores. Launching the new LED range, Kiyoshi Otaki, Managing Director, Anchor Electricals Pvt Ltd said, "With environmental issues and energy deficiencies becoming a grave concern, energy conservation is now begun to be seen as a necessity. Aligned with the Panasonic's objective of serving the needs of individuals in every space, Anchor by Panasonic's new LED Lighting solutions takes the experience to another level and thus expands its solutions business to offer a holistic range of energy-efficient lighting solutions." Takaki Oguri Jt. MD gave an overview of Anchor's entry in the solutions space, he mentioned, "To cater the aspirational needs of the entire socio-economic spectrum, we have expanded our verticals and ventured into Automation, Solar and lighting business. ■



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HPL launches a brand campaign with its marquee LED

To forge a stronger connection with the consumer, which goes back to almost six decades, HPL launches a brand campaign with its marquee LEDs as the centerpiece with the brand idea, Ab Roshan Ho Khushiyaan. HPL Group, has been amongst the most reliable and committed electrical equipment company in the country. Be it switchgears, lighting products, electronic energy meters or wires and cables, HPL has gathered a whole lot of plaudits for its exceptional products and technology. Working on the insight that celebration and lights always go hand in hand, the HPL campaign is an evocative carnival of human emotions with the modern marvel of lighting, the LEDs. Lalit Seth, the Chairman said, "For some time, we were waiting for the right moment to make a splash and tell our consumers what we have been all about. People do not have any idea about our all-pervasive footprint and with this emotional piece of communication we hope we will set the record right. Our distributors, retailers and our consumers who have shown their faith with us for many years will only find more confidence with this campaign". On why LEDs has been the lead product for this brand launch, Gautam Seth, Director HPL adds, 'LEDs is the future of lighting but we did not want to make that message cold and distant. This is a touching story of a grandfather who is too proud to tell anyone that it is his birthday and uneasy with the fact that the entire family seems to have forgotten the date. The finale with the fitting support of this heritage brand not only captures his overwhelming relief but even his surprise and happiness in a manner that is grand and befitting.' Here Lighting is used to reflect the small joy and happiness of Life. The communication has been handled by Underdog, a communications start-up based out of Mumbai headed by Vikram Gaiwad and Vistasp Hodiwala and the commercial has been handled by Eklavya Motion Arts. ■



12th China Products Exhibition at BEC, Mumbai

The 12th edition of "China Products Exhibition" will take place from December 18-20, 2014 at Hall V, BEC, Goregaon (East), Mumbai. The Exhibition is considered as the definitive international sourcing platform for Indian businesses. The 2014 China Products Exhibition will bring together the ingenuity of the Chinese manufacturing industry along with the modern, contemporary design creations from Hong Kong. This year, too, India will see a Style Hong Kong pavilion formed by Hong Kong Trade Development Council (HKTDC) where companies from HongKong will showcase their range of stylish and contemporary products. The current edition is covering an extensive range of products across a wide section of industries like Consumer Electronics & Durables, Fashion Accessories, Home Appliances, Household Goods, Hardware, Machinery Tools, Lighting & LED products, Toys, Watch and Clocks, etc. The Exhibition will help Indian enterprises in their pursuit to source a variety of goods to provide better products to consumers and industry. The Indian retail and E-tail industries are growing fast due to rise in domestic consumption. The show offers an excellent opportunity for brands and companies to develop businesses in the area so services and manufacturing along with the growing consumer market. The trade show is being organized by China Council for the Promotion of International Trade, Guangdong Provincial Committee, Sub-councils, HKTDC, Department of Foreign Trade and Economic Co-operation of Guangdong Province and Macao Trade and Investment Promotion Institute. The Exhibition is supported by the All India Association of Industries, India-China Chamber of Commerce and Industries, Indian Merchants' Chamber, Small and Medium Business Development Commerce of India (SME Chamber of India) and managed by Worldex India Exhibition & Promotion Pvt Ltd. ■



Eaton's Zero 88 Bypass Cabinets power today's Mixed Lighting Installations in Theatrical and Live Performance Spaces

Power management company Eaton announced its theatrical and performance lighting controls Zero 88 product line, now offers new Chilli Pro Bypass lighting cabinet. These professional 24-channel, slim line cabinets feature 24 Eaton bypass switches for use when direct mains power is needed in place of theatrical dimming. Available in both 10A and 16A variants, individual channels can be set for dimming or to deliver mains power for intelligent lights, light-emitting diode (LED) light fittings and other stage specials. Chilli Pro Bypass cabinets save wiring and simplify set up to make it easier to connect lights exactly where they are needed. For peace of mind, the bypass switches, user interface and all breakers are also protected by a lockable, hinged cover with viewing window to check bypass status. Chilli lighting control cabinets are a comprehensive range of high density wall mounted convection cooled dimming and power control devices. Quick to install and set up, easy-to-operate and maintain, the 18-button user interface and backlit LCD screen on each cabinet ensure simple convenient set up for DMX patching, preheat, top set and dimmer curves. A choice of responses to DMX failure, backup memories, built-in chases and an alarm input trigger complete this versatile package. Chilli cabinets are the workhorses of any hard working professional performance venue. Eaton's electrical business is a global leader with expertise in power distribution and circuit protection; backup power protection; control and automation; lighting and security; structural solutions and wiring devices; solutions for harsh and hazardous environments; and engineering services. Eaton is positioned through its global solutions to answer today's most critical electrical power management challenges. Eaton is a power management company with 2013 sales of \$22.0 billion. Eaton provides energy-efficient solutions that help customers effectively manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. Eaton sells products to customers in more than 175 countries. ■



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Luminus announces XNOVA Cube Tiny 1W SMD LED with Wide Emission Angle for Illumination Applications



Luminus Devices, Inc., a global manufacturer of high-performance LEDs and solid-state light sources, announced

today the launch of the XNOVA Cube, an innovative 1 watt SMD LED with a 170 degree viewing angle, which provides designers with the ability to improve system efficacy, reduce cost, and simplify omnidirectional products. Unlike traditional mid-power LEDs, which were originally designed for LCD backlighting, the XNOVA cube is engineered specifically for illumination applications with high quality of light requirements, has the industry's widest viewing angle, emits more light than any midpower LED, and delivers all this from a compact 1.9 by 1.9mm package. "The XNOVA Cube has opened-up new design options for our customers in the highly competitive panel lighting, linear and omnidirectional lamp markets," said Jim Miller, Executive Vice President of Sales and Marketing for Luminus. "They are able to reduce LED count by as much as 30% and at the same time cut power consumption by 10%, which enables further cost reductions in drivers, thermal systems, and optical components." Luminus Devices will be showing their XNOVA illumination product line at the Hong Kong International Lighting Fair, October 27-30, 2014. ■

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CLD announces Merger with Iberian Lighting

UK based lamp and LED lighting specialist CLD Distribution has taken a major share holding in bespoke lighting manufacturer Iberian Lighting – also based in Hastings – in a dynamic merger that unites CLD's rapid expansion into LED lighting technology with Iberian's vast experience in the design of specialist commercial and architectural products. Iberian, this year celebrating 50 years of successful business, is renowned for designing some of the world's largest, funkiest and most stylish lampshades and custom feature lighting elements. CLD has a fast-growing technical department dedicated to the development of LED lighting technologies and producing an increasing range of LED luminaires aimed at a wide range of commercial and industrial applications. CLD's MD, Rob Platt states "The merger amalgamates both these specialities. With CLD's strong sales force and Iberian's talented and imaginative creative team the two companies have a perfect synergy with one another. "The move will offer an even more diverse and comprehensive range of tailor made solutions to clients and a greater choice of LED products for Iberian to be able to integrate into their designs. It was a really logical decision to bring the two together". CLD / Iberian fusion is also in line with the Penn Elcom Group's ambitious medium term expansion strategy which includes growing its lighting divisions and offering clients a complete solution for lighting requirements from LED and other environmentally friendly and energy saving light sources, right through to over-sized and odd-sized shades and bespoke luminaires. Iberian's MD Les Allitt comments, "With the advance of LED, we were becoming increasingly technically focussed and had also outgrown our existing factory space. With our existing close relationship with CLD Distribution, it made sense on all levels to join forces". ■



Fineline enjoys Eden Sessions

Bristol based lighting and visuals rental specialists Fineline supplied lighting, LED screen, rigging and crew to the 2014 Eden Sessions, a diverse series of music performances staged at the Eden Project in Cornwall, UK, one of the most atmospheric and magical settings in the country. For the second year, Fineline worked closely with Andy Cotton of TAO Productions, who production managed the events and co-ordinated all technical aspects. The Sessions ran over 5 weeks and featured a star-studded line up including Skrillex, Dizzee Rascal, Katy B, Ellie Goulding, Elbow, The Pixies and others. Fineline's Rob Sangwell explains that they designed a highly flexible and practical 'house' lighting rig, designed so all the touring bands could come in 'underneath' with their respective touring packages. Lighting for each gig – although based around the fixtures available in the house rig – also emulated the artist's touring lighting schemes as far as possible. The stage at Eden is beneath an elegant, distinctive crescent shaped tensile roof, and so all rigging has to be integrated with this. A hybrid design has been evolved to facilitate the 17 metre wide by 14 metre deep super-truss mother grid that is part ground-supported and part-flown. This in turn provides all the required lighting and video rigging positions. "It took a bit of working out initially," explains Sangwell, "But now the concept exists it is proving an ideal and very adaptable solution". Once the mother grid was in place, they sub-hung their three x 15 metre lighting and one 15 metre wide video trusses below, plus a drapes truss at the back, with allowances made for accommodating additional artist 'specials'. For lighting, the house rig lighting comprised 18 x Robe 600E Spots, 18 x Robe LEDWash 600s and 12 x Robe Pointe multi-purpose luminaires, together with a healthy splattering of 2, 4 and 8-lite blinders, 16 x Martin Atomic strobes and 16 x ETC Source Four Profiles at the front for essential key lighting. There were also around 72 PAR cans on the rig for general washes and stage cover, as well as for support acts, etc. ■



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Robe for Eminem X Rihanna Monster Tour



Lighting Designer Daniel K Boland specified 64 x Robe ROBIN Pointe moving lights for the much talked about Eminem X Rihanna 'Monster' stadium tour which played six sold-out dates in three key cities across the U.S. - at the Rose Bowl, Pasadena, MetLife Stadium in New Jersey, and Comerica Park in Detroit. The tour was a massive success and a unique performance collaboration for fans of two of the world's highest profile artists. Boland has worked with Eminem for almost 10 years, so when the show's set design by Bruce Rodgers was approved, he created a lighting plot that would "cover all bases" for both artists. He already knew what Eminem would like in terms of look and feel, and when it came to lighting Rihanna, he considered many parameters including that she would be accompanied by dancers, all of which would need imaginative and appropriate lighting. Once completed, the lighting design was submitted to management and also approved. The dramatic set comprised two large angled 50 mm semi-transparent LED panels stage left and right, flown about 40 feet high on the downstage edge and 10 feet on the upstage edges. There were also three video 'spines', two on the offstage sides of the LED panels and one in-between these two panels, rigged on high speed motors which moved during the show. The majority of the lighting was hung on these spines, and there were also two tracking video trucks onstage, utilised for closing the space down mid-stage in front of the band. The Pointes were positioned on the two offstage video spines, and utilised for dramatic aerial effects. They also had the potential for cross-lighting the performance space. Boland chose Pointes initially as he needed a fixture with a good zoom - particularly if they were to be used for cross lighting - although in the end, they weren't used for this application. ■

Orient Electric unveils new range of luminaires, targets large civic and industrial projects

Orient Electric, part of the diversified Indian conglomerate CK Birla Group, unveiled new range of professional luminaires at Light India exhibition organised by ELCOMA at Pragati Maidan, New Delhi. Orient Electric's newly launched LED centric portfolio offers a wide range of lighting products for modern office, retail, warehouses, healthcare, outdoor and industrial lighting. The range also includes outdoor lighting, street-lighting, floodlighting and landscape lighting solutions. Speaking on the occasion, Puneet Dhawan, Senior Vice President and Head of Lighting business, Orient Electric said, "Future of lighting is very bright with changing lifestyle and awareness on efficiency and environment. We expect the lighting industry in India to grow at least by 15% CAGR for next 4-5 years. We have aggressive plans to meet the emerging needs with smart lighting solutions". The new LED range stands for 4P's; People, Power, Planet and Performance. The lighting solutions comply with photo-biological norms for eye safety, energy savings, and perform optimally in trying temperature conditions in cold storage and boiler rooms. This new range will cater to large segments including government and civic agencies. Orient Electric has been a regular supplier to various government departments such as MES, Railways and Municipalities. It is also working on numerous industrial projects for private players. The most popular products are the new generation LED down lighters and panels which are showing high growth trends. They owe their popularity to overall quality and appeal in terms of good light output, high quality, attractive finish and aesthetics. Orient Electric leverages on its expertise in design of electronic drivers and competence in manufacturing to offer superior quality products to the consumers. It has manufacturing units for lighting at Noida and Faridabad and has a competence centre at Noida which develops the electronics for the lighting products. ■



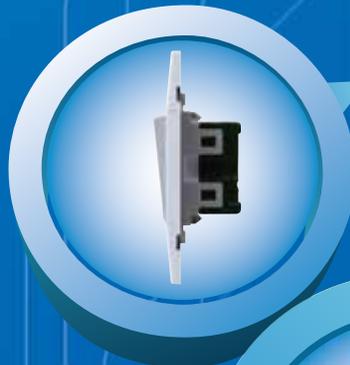
Felix Lighting invests in Robe CycFX 8

California based sales and rental company Felix Lighting, headquartered in Los Angeles with a recently opened office in San Francisco, has added 40 x Robe ROBIN CycFX 8 moving LED batten fixtures to its rental stock, which also includes Robe Pointes. The CycFx 8s were initially purchased for the Sunday Night Football introduction with Carrie Underwood on NBC, featuring lighting designed by Benoit Richard, and were part of a specification that also included 47 Pointes. The new CycFX 8s are now part of Felix Lighting's rental stock where they are already proving popular. Account Representative Charlie Malings said, "We decided to purchase the CycFXs - as opposed to cross rent them for the event - based on research and what we are hearing on the industry grapevine. They are a welcome addition to our rental inventory and have been constantly in demand since they arrived here!" Felix's team was impressed by the output and features of the CycFX 8. The one-meter linear strip is a unique fixture that can be tilted 270 degrees. It has an array of high-powered RGBW LEDs together with fabulously smooth color mixing, an 8 to 67 degree zoom and the very fast motorized tilt movement enables creation of spectacular 'wave' effects along a line of fixtures. Individual control of each LED makes the fixture map-able, and means that multiple CycFX 8s can be built into a variety of matrix-style designs. Malings, with 30 years experience in entertainment industry lighting and production, said he is always looking for 'smaller, brighter, lighter fixtures' and he appreciates Robe's commitment to putting these core design values at the heart of its product development. He added, "The support from Robe US, and Heather Busch and Thommy Hall in particular, has been exceptional," & this level of service was another factor in Felix's decision to invest in this product. ■



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Global LED lighting market to reach US \$25.7 billion in 2015

The global LED lighting market will reach \$25.7 billion dollars and its market penetration will increase to 31% in 2015 as the overall lighting market grows to \$82.1 billion, according to a new report by LEDinside, a division of the Taiwan-based market intelligence firm TrendForce. Europe is the largest LED lighting market. It comprises 23% of the global LED lighting market despite its high electricity prices and lack of large-scale subsidies for LED lighting users, said Joanne Wu, an assistant manager at LEDinside, adding that Europe's demand for LED lighting for commercial and architectural lighting applications is increasing. China comprises 21% of the overall LED lighting market. As the manufacturing base of most LED lighting producers, China boasts a complete LED supply chain and many cost advantages. Traditional lighting manufacturers, lighting OEMs, emerging LED lighting manufacturers, and LED packaging manufacturers all are expanding their LED lighting businesses. This year, developing viable channel distribution is a top priority for vendors in China. Looking ahead to 2015, the lighting market in China should continue to grow on the back of stable demand for lighting. However, since the market is highly competitive and there is little variation in product quality among different manufacturers, vendors will compete mainly on price, making the probability of a price war high, Wu said. The United States holds 19% of the overall LED lighting market. Currently, there is a push in the industry to obtain certification from the US Environmental Protection Agency Energy Star and the DesignLights Consortium (DLC), a US-based non-profit organization. Japan has just 9% of the global LED lighting market. Indeed, the Japanese LED lighting market is relatively mature. LED commercial lighting is already common in Japan's schools, hospitals and retail chain stores. Still, the outdoor and industrial LED lighting segments have considerable potential to expand. Emerging markets, including Asia Pacific, the Middle East, and Latin America, comprise 28% of the global LED lighting market. Looking ahead to 2015, growth prospects in these markets are especially promising because of rapid population growth, favorable government policies and an abundance of private-sector LED lighting projects. ■

Adlib at Creamfields 2014

Adlib supplied lighting, sound and rigging to two main Arenas and the Hospitality / VIP area at the 2014 Creamfields EDM festival staged at Daresbury Estate near Warrington, UK. Working for creative and technical production specialists LarMac LIVE and renewing their long term working relationship with Cream - the brand synonymous with Liverpool cool since its launch as a club concept in the heady rave days 1992 - this was the third high profile Liverpool-centric event for Adlib in as many months. It followed hot on the heels of The Giants Spectacular and the 7-week International Festival of Business. Creamfields 2014 saw a glittering array of the biggest, best and most popular DJs in the world joining the lineup. Adlib were working in Arenas 04 (hosted by Pete Tong / London Warehouse Events), 05 (Revealed / Super You & Me) and the VIP (Hospitality Audio System). Leading Adlib's team on site was Crew Chief Kevin Byatt, and everything was co-ordinated from the office / warehouse end by Dave Eldridge - this, plus as much detailed advanced planning as possible, was key to ensuring that it was another smooth operation on site. Both arenas involved major overnight lighting / visual changeovers - and the glorious inclement UK weather (with extreme rain on the Friday) - made working conditions additionally tough on site. The production values at Creamfields 2014 in all arenas site-wide were also stepped up several gears this year, reflecting the global success of the event and the concept, which was enjoyed by a sold-out crowd of 70,000. ■



CORE Lighting PinPoint at PLASA 2014

Wireless battery powered lighting manufacturers CORE Lighting report an excellent PLASA 2014 exhibition at London's ExCeL Centre, which they seized as an opportunity to launch the new little PinPoint fixture. CORE's extremely cute and highly dynamic little PinPoint - made in the UK as with all their product range - attracted huge attention! Already in production, the tiny IP65 rated wireless pin-spot / birdie weighs just 700 grams while its single LED lightsource outputs a punchy 300 lumens. The head is connected to the base of the PinPoint via a flexible stainless steel 'gooseneck' for maximum focusability, and the brushed aluminium housing gives a contemporary, streamlined finish which looks fabulous in any environment. Further options are added with the base capable of vertical or horizontal orientation making it ideal for sitting on shelves. In another touch of innovation, the base is magnetic for easy clamping to metal objects of all types - including lighting, sound and video mixing consoles and control equipment - where it can provide working light in awkward and challenging spaces. PinPoint is designed to be used as feature lighting for events of all types and specifically to tastefully highlight table centrepieces, floral arrangements and other scenarios that need tight, detailed spot-lighting. The standard battery life when fully charged will give an impressive 14 hours of illumination, and an extremely expediently sized flightcase of 10 units offers total portability for a PinPoint system including an integral charging facility. PinPoint is an exceptionally versatile and cost-effective solution which is invaluable to anyone involved in staging or supplying events. "Reaction to the PinPoint was excellent," reports CORE's Phil Ion, adding that the PLASA stand - located in the 'village' of distributor White Light - "Saw a steady flow of traffic, especially busy on the Monday and Tuesday, and there was a lot of interest across the full product range". In addition to the PinPoint, CORE showed its flagship POINT30, ColourPoint and FLOOD30 fixtures at the show - all of which were well received. The ColourPoint is a lightweight lithium battery powered LED event up-lighter with full wireless DMX control. It is IP65 rated for outdoor use and offers a powerful 2000 lumen output ideal for lighting up to 3 storeys of architecture / buildings / space, medium sized trees and foliage and excellent for powerful wall-washing in marquee tents & buildings. ■



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Achieving High Quality Light Dimming with Texas Instruments LED Drivers

Energy efficiency is driving consumers to replace standard incandescent lamps with LED-based retrofit lamps. More over energy efficiency LED-based solid-state lighting (SSL) offers many other potential benefits such as extended life time, very good color rendering, less infrared radiation, no mercury etc, but the technology comes with new challenges. Lighting designers and engineers must understand the unique properties of LEDs to realize optimal performance. It is better to consider a variety of factors including the application type, required dimming performance and control preferences before selecting LED product.

The growing popularity of LED light sources is rooted in energy savings, long life, and new fixture options that enable it to be used in almost any application. A 25W LED lamp can replace the light output of a 100W incandescent lamp, deliver a useful lifetime averaging 50,000 hours (compared to 10,000-20,000 hours for fluorescent lamps and 3000 hours for halogen lamps) these advantages ensure a strong future for LEDs but there are challenges associated with using LEDs to meet market expectations. Compatibility between LED lamps, drivers, and legacy controls can be confusing, if they are specified improperly performance will suffer. Issues with compatibility are probably the greatest source of frustration among lighting designers and their customers. Mock-up installations are expensive and time-consuming to smooth the pathway of a project, customers are look for lighting manufacturers who have already done the appropriate testing and research and can ensure successful LED lamp, driver, & control installation.

Many consumers have turned to dimmers or automated dimming controls over standard light switches because dimmed lighting can

reduce energy use and offer ambiance. When using an energy-efficient LED lights, the customer generally expects an experience similar to what incandescent lamps provide but correct combination of controls, drivers and LED sources are necessary. Although some LED lamps are marked as compatible with incandescent dimmers, there are various degrees of what can be defined as “compatible.” Dimmable LED lamps tend to interact quite differently when used with these legacy devices. A number of undesirable results may occur when you use a dimmable LED lamp with an incandescent dimmer, including reduced dimming range, flickering or fluttering of the lamp, inconsistent performance based on the number and assortment of lamps being controlled by one incandescent dimmer.

Dimming LEDs, similar to the process with incandescent sources, saves energy at a roughly 1:1 ratio. This means that if you dim LEDs down to 50% of their light output, you save nearly 50% of the associated energy use. While it is true that LEDs are already very efficient compared to almost any other light source, you save even more energy by dimming them. Dimming LEDs also makes them run cooler, extending the life of the electronic components in the driver, as well as the phosphor in the LEDs. This will potentially double or triple the useful life of the LED lamp or module. The problem, however, is that nearly all dimmers in the market were designed for standard incandescent lamps. Unfortunately, the market expectation of dimming performance isn't being achieved by LED products over incandescent lamps with existing triac or phase-cut dimmers.

Here we are analyzing the compatibility issues and the solutions currently industry is offering. The solutions must meet the current technological needs while being mindful of both past and future technological challenges.

Facts and Challenges

Dimming methodologies can impact flicker. In the output of an LED driver the percentage of ripple at twice the line frequency is the parameter that corresponds to the flicker in the light output. Many LED drivers produce dimming by switching the LED light on and off at a relatively high frequency with the process called pulse-width modulation (PWM) dimming or digital dimming. The human eye is completely oblivious to these high frequencies and simply perceives less light. Dimmable LED drivers exist that simply modulate the light on and off at twice the line frequency at low dim levels, the result can be a lot like the light output of old magnetic ballasts where the flicker may be easily perceived. In addition, if used with a triac dimmer, which doesn't dim positive and negative half-cycles equally, it may introduce a line frequency component to the PWM that will be perceptible to anyone. Other LED drivers produce a uniform DC current level, which is then adjusted downward to produce

dimming. This methodology is sometimes referred to as analog dimming. For task and office lighting, this approach is the most trouble-free kind of dimming to use, though it's likely to be more expensive than digital dimming.

There are applications where LED lamps will operate with an incandescent dimmer, in general, an incandescent dimmer will provide inconsistent performance with SSL. The incandescent lamp by nature represents a simple resistive load with a linear response to the dimmer set point. Standard incandescent dimmers work particularly well with this type of load by switching on at an adjustable phase angle after the start of each alternating current half-cycle, thereby altering the voltage waveform applied to lamps. By switching instead of absorbing part of the voltage supplied, minimal power is wasted, and dimming can occur almost instantaneously. In contrast, LED lamp loads can vary greatly across different manufacturers and designs. But most can be characterized by a diode-capacitor power supply feeding a constant current source. The diodes rectify the applied AC voltage, allowing it to charge the storage capacitor, while the LED elements draw a constant current from the power supply that is related to the desired dimming level and brightness.

LED light loads are significantly different from incandescent lamps in which the applied voltage and the current flowing into the load are related. In incandescent lamps, the applied voltage across the load and the resulting current flowing through the load are related linearly by Ohms Law ($V = IR$). In this case, the resistance sets the scale, and the current waveform follows the voltage waveform, differing only by scale. In LED loads, the applied voltage and resulting current flow are not related by a simple linear relationship. In the diode-capacitor power supply model of the LED lamp, current flows from the applied voltage to the load only when the magnitude of the applied voltage exceeds the stored voltage on the power supply capacitor. The stored voltage on the power supply capacitor, in turn, depends on the current drawn by the LED elements themselves, which is a function of the LED brightness. Therefore, the current flowing from the supply to the lamp depends both on the instantaneous value of the input AC voltage waveform and the brightness of the LED lamp. Changing the intensity or dimming level of the LED lamp affects where in the AC line cycle the load begins to draw current. This inflection point also affects the amount of current that surges into the lamp.

Wiring, Dimmers and Regulations – Contributes to Light Flickering

Wiring:-The inconsistency issues among dimmers and lamps are that most of the existing residential wiring infrastructure was built without a neutral wire at the switch box. The absence of the neutral wire is referred to as two-wire lighting control while the inclusion of a neutral at the switch

box is referred to as three-wire lighting control. The need of supporting two different wiring scenarios poses certain challenges that lighting-control designers need to account for in planning to control a broader range of lamp types with a single dimmer.

Some dimmers are designed to work with one type or the other only, while some are designed to work in both types of installations. But, for all dimmers, even those that are designed for both two-and three-wire installations, there are significant differences in performance between these two installations in terms of how the dimmer circuitry is powered and how the dimmer synchronizes with the line voltage. When used to drive incandescent lamp loads, these differences are mostly negligible. But, when used to drive LED loads, they present significant challenges to stable dimming and lighting control. Regardless of the circuit type, all phase-controlled dimmers need to synchronize with the AC line in order to work correctly. Without the ability to sense the AC line and its zero-crossings, a phase-controlled dimmer would not detect the correct timing for switching the AC voltage, and it would lose its ability to control and dim the lamp load. The end result is flickering and fluttering of the light output.

In three-wire installations the line, load and neutral wires are connected to the wall control electrical box. The line wire comes from the AC power source and supplies power for both the dimmer and the load. The load wire is connected to the lamp load and provides a return path for the power delivered to the load. The third wire, the neutral connection, provides the essential return path for the dimmer even when the load is disconnected or is in a state that doesn't draw any current. The neutral is an important feature of three-wire installations. It ensures that the dimmer device has a direct connection to the AC power source regardless of the state of the load. This third wire not only ensures that the dimmer has power to drive its own internal circuitry even when the load is disconnected or off, it also provides a clean signal of the incoming AC power source for detection of zero-crossings and synchronization with the line. Both of these are essential for stable phase-controlled dimming, and are easier to obtain in three-wire designs.

In two-wire installations only two wires are present in the electrical box, the line wire and the load wire. In this case, the dimmer is simply placed in series between the line and the load. With only two wires, the dimmer must rely on the current passing through the load to both power its own internal circuitry and to detect zero-crossings for synchronization with the AC line. When LED lamps perform poorly with a dimmer, often times the blame is placed on the dimmer circuit. But the source of the problem really lies in how the LED load current differs from the incandescent lamp in two-wire applications. If the load current is regular, as in the case for incandescent lamps, then stable line synchronization and ample power for

the dimmer's internal circuitry are both easy to obtain. With LED lamps, however, the load current is much smaller and much less regular, and line synchronization becomes difficult. Similarly, the load current of LED lamps in their off state can be so small, that even obtaining a few milliamps to supply the internal dimmer circuitry can be challenging. Without adequate supply and stable line synchronization, lamp flickering may result.

Triac Dimmers

In AC phase control widely used form of brightness control is the familiar triac-based dimmer that is present in many residential applications. Triac dimmers operate by cutting out a portion of the AC waveform.

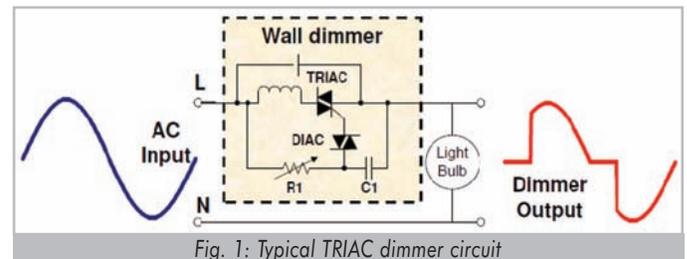


Fig. 1: Typical TRIAC dimmer circuit

During the start of AC cycle TRIAC will be off and during the operation cycle (refer Fig 1) C1 charges through R1 and light bulb, when voltage on C1 exceeds DIAC threshold voltage the TRIAC starts conducting. R1 is a variable resistor which controls when TRIAC turns ON, dimming function and defines the conduction angle.

The most common type cuts out a portion of the leading edge of the AC waveform, as shown in Fig 2. The dimmer senses each zero-crossing of the AC input, and waits for a variable delay period before turning on the triac switch and delivering the AC to the load. The AC input to the light therefore has a bite out of the leading edge of each half sine wave. This forward phase dimming typically operates on two wires & avoids the labor associated with adding a third wire.

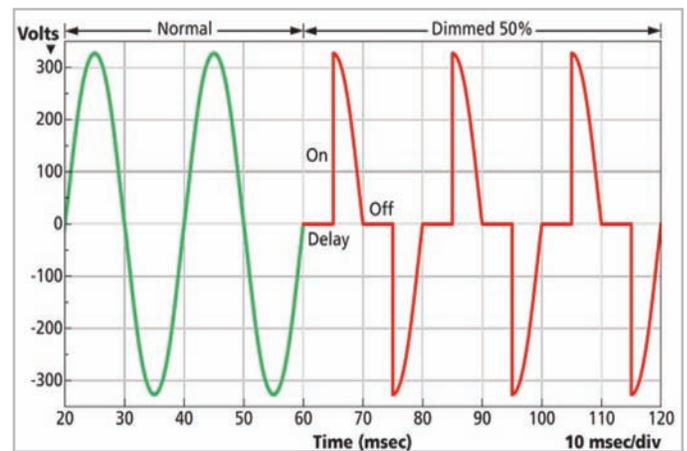


Fig. 2: Forward-phase dimming cuts the front edge of each half-cycle of the AC line input

A second similar type of dimmer operates in the reverse manner, by cutting a portion of the trailing edge of each half sine wave, as shown in Fig 3. This type of dimming is sometimes called reverse phase control, and is designed for use in electronic low voltage (ELV) applications. Reverse phase dimming is considerably more expensive but minimizes electromagnetic interference (EMI) issues.

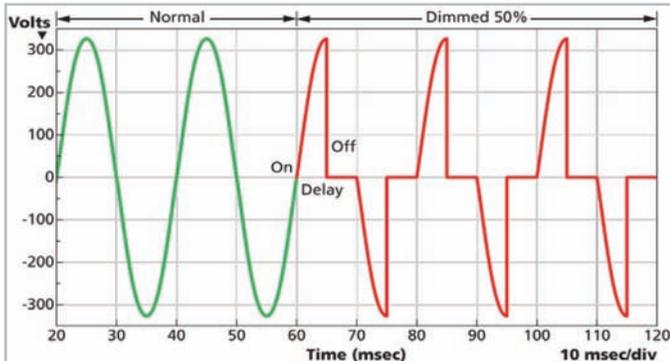


Fig. 3: Reverse-phase dimming cuts the trailing edge of each half-cycle

Phase-control dimmers were originally developed for incandescent lighting, where the lamp brightness is directly dependent on the average power in the AC input. By cutting out a portion of the waveform, the power is reduced and the

lamp becomes dimmer. However, this is not the case with LED lighting, because LED luminaires contain a power supply and driver whose primary function is to supply constant current to the LEDs regardless of the AC input voltage. If you connect a constant-current or constant-voltage power supply to the output of a phase-control dimmer, the power supply will attempt to compensate for the missing portions of the AC waveform. As the amount of phase-cut increases, the power supply will maintain its output voltage by drawing higher input current, and the LEDs will remain at normal brightness. Eventually, when the dimmer setting is very low, the power-supply feedback circuits will no longer be able to compensate and the power supply output will collapse.

Performance of phase dimming circuits depends on certain TRIAC parameters, which are critical and should match the spec requirements.

- To turn on the Triac, a gate signal is required and must exceed specified IGT and VGT requirements.
- Latching current (IL) is required to maintain the Triac in the on state immediately after the switching from off state to on state has occurred and the triggering signal has been removed.
- Then, Holding current (IH) is the required to maintain (hold) the Thyristor in the on state.

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For an LED luminaire to respond correctly to a phase-control dimmer, it is necessary to add several functional blocks into the driver electronics. A sensor block monitors the AC input waveform and generates an output signal proportional to the amount of phase cut and feeds to PWM controller and then drives the MOSFET. There is also the issue of how dimming information is conveyed to drivers. The driver selected must have the ability to work with the dimmers deployed in an application, especially in retrofit scenarios.

Regulations

Compatibility issues between lamps and dimming devices are certainly due lack of dimming performance standards within the lighting industry and how each uniquely corresponds with LED drivers. This lack of standardization can be seen not only in varying characteristics between manufacturers, but also by product within some manufacturers' product lines. Complications arise from the fact that any given lamp can require a set of electrical and electronic characteristics – current, voltage and control signals – that are vastly different from any other lamp. While one lamp may be able to be dimmed by a particular dimming device, others cannot.

Under current UL standards, notably UL 14725, intended to regulate the safety of dimmers, an LED lamp driver is categorized as an “electronic ballast.” One notable issue addressed by UL 1472 is in-rush current which is generated at the startup of many LED lamp loads. High in-rush current can result in failure of switch contacts, which is a safety hazard in many field applications – such as dimmers – where the switch is serving as the disconnect means. To evaluate the safety of the combination of dimmer and electronic ballasts, UL has taken the systems approach by requiring dimmer manufacturers to provide information on the intended electronic load (i.e., CFL, LED or electronic ballast) for each dimmer. UL listing investigation will involve the use of the specified electronic ballasts or a synthetic load exhibiting the same in-rush and steady-state characteristics in the overload, endurance and temperature tests.

Texas Instruments LED Driver solutions to overcome current dimming challenges

As energy efficient lamps continue to penetrate the lighting market, the availability of new lighting controls that meet the specific needs of these lamps is increasing. Consumers can take fuller advantage of all of the benefits of the newer, more energy efficient lamps by using TI's industry-leading TRIAC dimmable offline LED driver solution which is perfect for any application where an LED driver must interface to a standard TRIAC wall dimmer. TI's new TRIAC dimmable LED driver delivers a wide, uniform dimming range free of flicker, best-in-class dimming performance, & high efficiency all while maintaining ENERGY STAR® power factor requirements in a typical application.



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- Overall lower isolated solution cost.
- Power Factor Correction.
- Valley switching to improve efficiency and EMI performance
- Improved dimmer hold circuitry
- Addition of thermal fold-back to protect LED arrays.

The LM3447 is a versatile power factor correction controller IC designed to meet the performance requirements of a residential and commercial (phase-cut) dimmer compatible LED lamps. The device incorporates a phase decoder circuit and adjustable hold current circuit to provide smooth and flicker free dimming operation. A proprietary primary side control technique based on input voltage feed forward is used to regulate the input power drawn by the LED driver and achieve line regulation over a wide range of input



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QPASS and limited by resistors RHLD1 and RHLD2, as shown in Fig 4. It should be noted that the additional current drawn has no effect on the rectified input voltage and therefore does not interfere with the input power regulation control scheme. To provide high efficiency, the hold circuit is enabled only when the presence of an external dimmer is detected based on the FLT2 input. The ENHOLD signal is asserted and hold operation is permitted when VFLT2 falls below 1V. The hold operation is halted when VFLT2 rises above 1.2V. During dimming, the hold current is drawn during the interval when rectified input voltage is below the VHOLD(TH), based on the external resistor RAC. The FET turn on is controlled by an internal comparator with a reference of 400mV (higher than angle detect reference), such that hold current is always asserted before angle detect threshold VADET(TH). The hold circuit operation is summarized in Fig 5. The hold trun-on threshold, VHOLD(TH) is given by

$$V_{\text{HOLD(TH)}} = R_{\text{AC}} I_{\text{VAC(HOLD)}} = 95 \times 10^{-6} R_{\text{AC}}$$

The hold current is based on the BIAS voltage and set by the sum of resistors RHLD1 and RHLD2,

$$I_{\text{HOLD}} = \frac{13.5 - V_{\text{GS(PASS)}}}{(R_{\text{HLD1}} + R_{\text{HLD2}})}$$

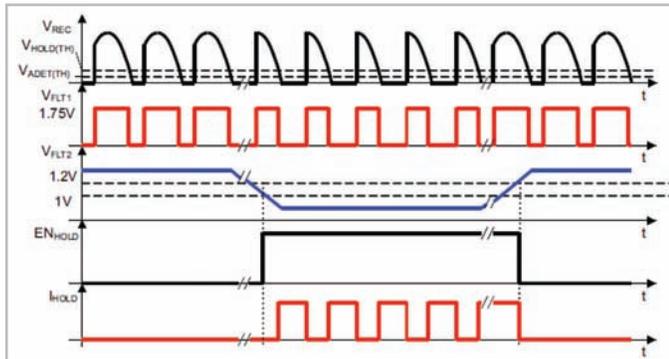


Fig. 5: Angle Detection circuit and Holding Current Circuit Operation

In selecting the hold current level, it is critical to consider its impact on the average power dissipation and the operating junction temperature of pass transistor, QPASS under worst case operating conditions. The current should be limited to a safe value based on the pass transistor specifications or the ABS MAX rating of LM3447 (70mA). For best performance, it is recommended to set the hold current magnitude between 5mA and 20mA. A capacitor, CHLD of 2.2 μ F to 10 μ F, from RHLD2 to GND is connected to limit the rate of change of input current (diin/dt) caused by the step insertion of holding current. This prevents TRIAC based dimmers from misfiring at low dimming level.

Angle Decoding Block

The LM3447 incorporates a linear decoding circuit that translates the sensed conduction angle into an internal

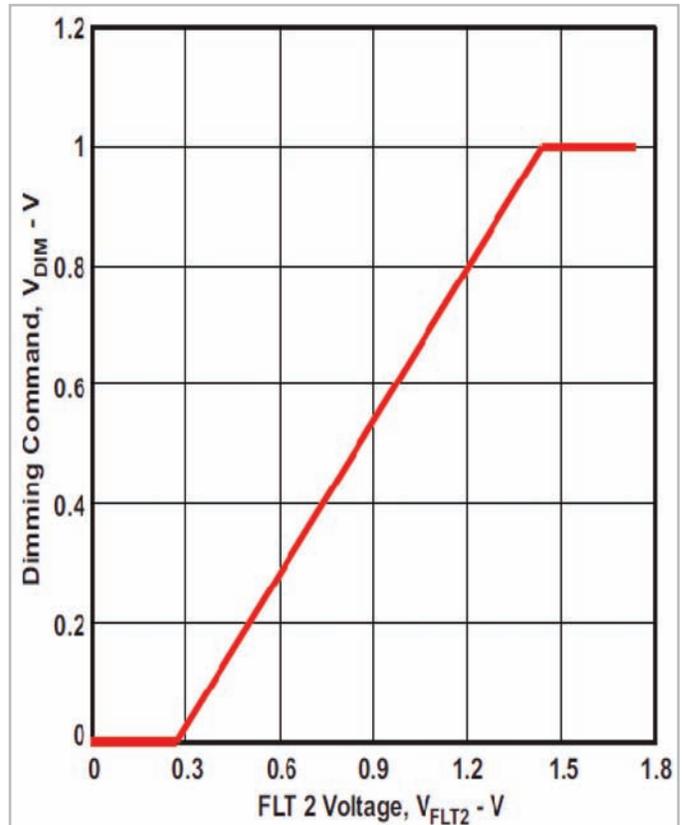


Fig. 6: Relationship Between VFLT2 and VDIM

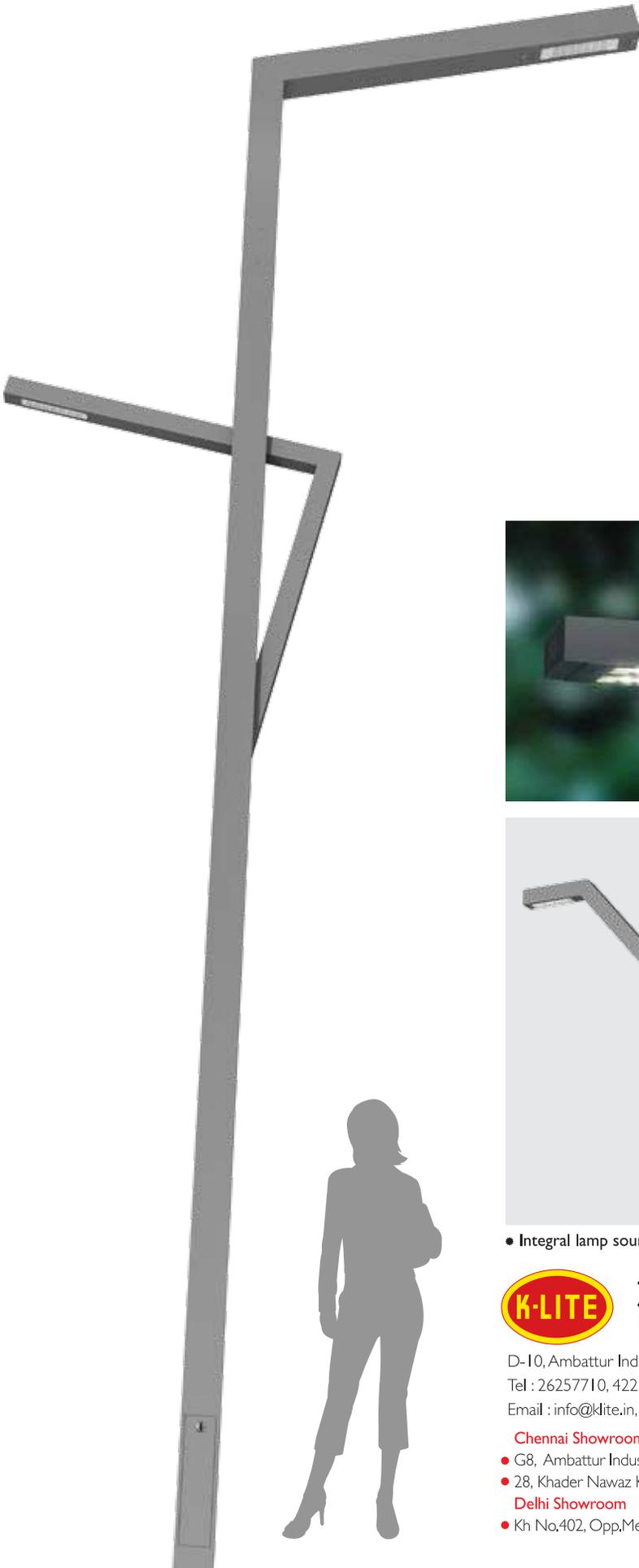
dimming command, VDIM. The conduction angle information, represented by the PWM signal at FLT1 output, is processed by an external low pass filter consisting of resistor, RFLT and capacitor, CFLT, which attenuates the twice line frequency component from the signal. The resulting analog signal at FLT2 is converted into the dimming command by a linear analog processing circuit. The piecewise linear relationship between the FLT2 input and the dimming command is shown graphically in Fig 6. The dimming command, VDIM is-

- Held constant at 1V for VFLT2 ranging from 1.75V to 1.45V (conduction angle 180 $^{\circ}$ to 150 $^{\circ}$)
- Linearly varied with gain of 0.877 for VFLT2 ranging from 1.45V to 280mV (conduction angle 150 $^{\circ}$ to 30 $^{\circ}$)
- Saturated at 13mV for VFLT2 lower than 280mV (conduction angle less than 30 $^{\circ}$). ■



Shinu Mathew, Analog Application Engineer, Texas Instruments (India), working as Senior Application Engineer in Texas Instruments India Pvt Ltd, vast experience in Semiconductor, Renewable Energy, Power Conversion Design and Manufacturing & also in Renewable Energy & Power Conversion Designing and Manufacturing. He has PGD in Marketing Management, PGD in Advanced Power Electronics and a Power Electronics Diploma.

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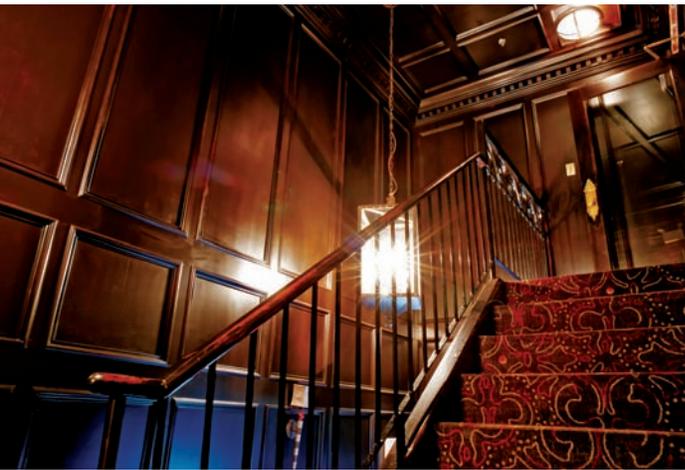
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Custom Lighting from Bloom Lighting Group delivers a local flavor at Ruth's Chris Steak House

Since its birth in New Orleans, Ruth's Chris Steak House has grown into a widely-praised collection of local steak houses. Over several decades Ruth's Chris has acquired a reputation for upscale dining in a warm and comfortable environment in its locations across the USA and around the world.

Broadmoor Design Group was engaged to renovate the Metairie location. They utilized custom lighting from Bloom Lighting Group.

Broadmoor Design Group has provided design services for many of the restaurant's locations, and the firm was again engaged for the renovation of the Metairie, LA location.

"We wanted to achieve a noticeable contrast between before and after the renovation, while maintaining the recognizable Ruth's Chris feel," explained Donna Trotter, Project Director at Broadmoor Design Group, "The existing design had little decorative lighting, so we felt this was an area we could make a noticeable impact."

Colors are important in the restaurant, and the reds and blacks of the Ruth's Chris logo feature prominently in the furniture and lighting throughout. These combine with antique silver and dark bronze accents against a backing of rich wood detailing.

"As with all of the Ruth's Chris locations we work on, we wanted to bring local and regional influence into the restaurant," said Donna Trotter, "this is reflected in the materials we chose and the lighting elements we included."

Drawing on local culture for design inspiration, the firm turned to Bloom Lighting Group to help create custom lighting elements to provide the sense of elegance, playfulness and whimsy that the restaurant is known for.





The lighting in the main dining area is typical of the local French influence. Pendants with a distinctive concave brass body are suspended with a dark bronze rod and accompanying decor chain. A dark bronze patterned frame surrounds a faux alabaster shade, and a stylized fleur-de-lis sits below the intersection of antique silver leaf center lines.

The fleur-de-lis is finished with a red glass decorative ball, a nod to Mardi Gras beads, and a design element that is constant on the lighting fixtures throughout the restaurant. Each fixture spans 36" and is fitted with four E12 sockets.

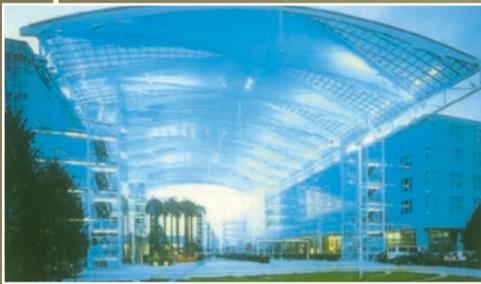
Distinctive pendants line the seated area around the bar. Suspended by a smooth chain with a dark bronze finish, these fixtures have an antique silver decor part and faux silk pleated shades. Decorative red balls sit above and below the shade, and a dark bronze finial completes the fixture at its lowest point.

This design element is carried to the bar itself where wall sconces share the same style of faux silk shade mounted atop a dark bronze lamp stem and backplate. Ten antique silver leaf half balls adorn the perimeter of the back plate.

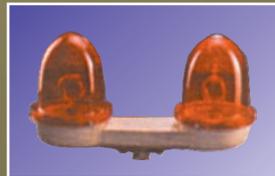


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There is a private dining room in the bar area with two lighting types. A circular pendant hangs 38" from the ceiling and is reflected in two mirrors to form a center piece. The dark bronze chain, antique silver leaf decor part, faux silk fabric shade, red glass balls and dark bronze finial are all elements that are familiar from the lighting in the bar area. This fixture is 16 1/4" in diameter, has two E12 sockets and is finished off with a frosted acrylic diffuser.

Also in the private dining area, wall mounted lamps provide extra personality. A tapered stem design alternates between

dark bronze and antique silver leaf hoops. A small red glass ball finishes off its narrowest end while a larger ball provides the transition to the shade. Again, a faux silk shade is used.

A nostalgic lantern fixture hangs in the stairwell. Reminiscent of lighting seen in New Orleans' French quarter, it features elements that carry through the design theme from elsewhere in the restaurant. Predominantly finished in dark bronze, a custom made rectangular chain descends to carry a six lamp candelabra base encased by four clear glass panels. The fixture also features antique silver leaf half balls like those on the wall sconces in the bar, and the fleur-de-lis and red glass sphere below the lamp as in the main dining area.

This same style of lantern is replicated above the exit at the foot of the stairs with a four lamp wall mounted version. The stairwell area is completed with a circular pendant at the top of the stairs that has a similar style to the lighting in the main dining area. ■

Project Details

Location: Metairie, Louisiana, USA

Completion: 2013

Designer: Broadmoor Design Group,
Mandeville, Louisiana

Photography: Christie Froom Photography



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Lighting for elderly users in Domestic Environments



New Light Vision (NLV) is an ongoing research project run by Design Group Italia (DGI), D'Alesio&Santoro (D&S), Light Contract - gruppo Flos, Politecnico di Milano - Laboratorio Luce.

The main objectives of NLV are two:

- To develop a product line of light fixtures to be installed in environments with elderly users;
- To create a knowledge base for improving consciousness in architectural lighting design of such environments as Serviced Residences or Nursing Homes.

New Light Vision (NLV) is a research project run by Design Group Italia (DGI) and D'Alesio&Santoro (D&S) - whose partnership on Lighting Design is now called Yradia.

The other partners in the projects are Light Contract (LC - Flos group) for the technical and marketing aspects, and Politecnico di Milano (POLIMI) for the scientific aspects of lighting and light measurements.

NLV starts from two Assumptions

- Light has a proved and measurable impact on mental and physical health of each person;
- Elderly persons have specific needs regarding lighting - mostly caused by the decay of perceptive and cognitive functions.

NLV starts also from this Consideration

Current lighting products and systems in nursing homes are not expressly designed for the reference users, and in general they drastically underestimate the importance of a proper lighting project enhancing users mental and physical health. This situation is even worst in the winter months, when most of the guests time is spent under an artificial lighting environment.



Basically, we noticed that, both residents and nursing personnel, are only referring to the winter/summer parameter when referring to lighting and mood considerations.

For what we have seen in a year of direct and participated observations, most of the lighting design of these environments is under every expectation; lighting in general is livid and too uniforming, based on surpassed and borrowed technologies and fixtures. Also, lack of even basic culture of lighting is noticed in every occasion. The above referring to both entry-level and hi-end architectures and services. We believe that the latest technologies in artificial lighting in this scenario has a huge potential - for users benefit and market wise.

The Process

At the beginning, two research programs have been launched: one to identify and create the scientific background, the other to analyze the context of intervention, to better identify the opportunities for innovation.

A third phase is dedicated to creative workshops in order to develop product concepts, starting from research results.

After that, thanks to the Observatory Team expertise of DGI and to the marketing functions of LC, a quick market analyses is run to identify brands & products benchmarks - which proved to be a few of them - and the formal and aesthetical languages which inspired the design of the products. We are new in full technical and aesthetical development, close to the final configuration of a product.

After one year and a half, finally a 1:1 scale and working prototype is currently under testing and validation in the Lighting Laboratory of the POLIMI.

Scientific Research

POLIMI initially compiled a selection of scientific papers on effects of lighting on the autonomic nervous system and on the perceptive system of elderly persons.

The state of the art of research in this directions is advanced, and solid and rich documentation is easily available. To give one of the most known examples, it is demonstrated that the "quality" of natural and artificial lighting has an high relevance in contributing to the sleep/awake cycle, to the general mood and to the attention factor.

This is true for persons of every age, but in elderly people these are critical factors - even more if they live in non-proprietary domestic environments, which is cause for trauma after the separation from the originally domestic landscape.

POLIMI's work contributed to define the following topics, on which the whole team started to focus the subsequent work. These are only some, as an example:

- Hyper sensibility of the elderly eye to high contrasts of luminance, due to the decay of the crystallin and the related scattering problems;
- Glaring or temporary perceptive black-out due to fast transitions from dark to light and vice-versa, caused by the reduced adaptivity of the eye, which now requires "smoother" transitions, both in intensity end exposure time;
- Confusion & temporary disorientation due to sharp shadows, compromising correct environment detection;
- Importance of the region of the Spectrum across 460nm (+/- 100nm), which is contributing to the correct circadian cycles regulation - critical in the Alzheimer patients;
- Connection between white color temperature of light and correct colour discrimination, where increasing emitting source's CCT is crucial due to reduced crystallin permeability to the shorter wavelengths.

Ethnographical Research

DGI along with D&S conducted an on-field research which featured the direct observation of ten (10) Nursing Homes throughout Italy - mostly in Lombardia, Emilia Romagna and Veneto. Eight of them have been visited undercover: we presented ourselves as typical "customer", looking for the best solution to relocate our parents.

This approach soon proved to be interesting to investigate on how the structures and their services are presented to customers, and on how the culture or proper lighting is spread among the personnel and the decision makers.

The typical, thorough tour of the architecture offered to us - or requested by us - served to benchmark the lighting design, technologies and fixtures which are used.

Two of them (ASP Giovanni XIII in Bologna, Orphea in Casier) accepted us to carry a structured research activity, featuring participated observation and personnel involvement.

Two researchers spent one day in each of the structures - 7AM to 7PM - to shadow-watch, outline and analyze the "typical day" as spent by guests (elderly or impaired people) and operators. In the beginning, winter time was chosen for those observations as the worst-case scenario, although in a span of 4 months they went back to repeat the same observation in an environment with much more natural light.

These activities proved the original Consideration who gave the spark to the project.

The approach to lighting design in those type of assisted residences is purely functional and "bureaucratic", tending to answer to only those two questions:

- How much light do I need to be code-compliant?
- How much can I save in terms of initial investments, maintenance and power absorption?

We also frequently saw designs which do not have compliant at all. All of the factors that a correct lighting may have to be a real benefit to guests, personnel and management were simply ignored: lighting dynamism, color temperature consistency, color rendering index among all.

The ethnographical research featured also interviews to technical experts in architectural development and plant engineering - of contexts where our product will be provided.

Concept Development

Based on considerations on research, the team then decided to focus on one specific ambient: the bedroom. and the so-called "common areas" such as corridors or lounges. This is where most of the benefit will be achieved.

The product briefing has been defined after a series of creative brainstormings and may be summarized as follows:

- To design a lighting fixture that will be ceiling mounted (half-recessed, pendant, surface mount) and to be used in the aforementioned areas;
- Emissive pattern will have a direct and indirect flux. High levels of overall flux are required, but low luminance indexes are compulsory;
- Priority visual task is ceiling itself, which is where guests sight is direct when they are on bed;
- Considering that most of the rooms are double, a function of flux directionality is required especially for night-time interventions;

- Fixture to be equipped with SSL, Dynamic White, CRI>90 light engine - to drastically improve the existing context;
 - Same light engine to be used in different luminaire shapes. "Dehospitalization" of fixture aesthetic impact is a must;
 - On-board electronics to provide Dynamic Light programs during daytime and Soft-Start functions to enhance guests reactivity in light-dark transitions.
- D&S, as the team's lighting specialist, developed a concept in respect of those required functions.

Design Development

A team of DGI's product designers then developed a product portfolio based on this briefing, where aesthetics and luminous performance meet in the best possible compromise. Further directions came in from LC, which is the company interested in marketing the final product.

Prototype

LC is currently having care of manufacturing and refining the first working prototype of the fixture, which is now in POLIMI's laboratories for photometric analysis and validation.

The tests will give crucial information for further optimizing the system, which is a phase expected to end by end of current year. The process may be faster due to a concrete proposal of provision and installation of a pilot series of these fixtures, coming from a specialized player in nursing architectures.

Conclusions

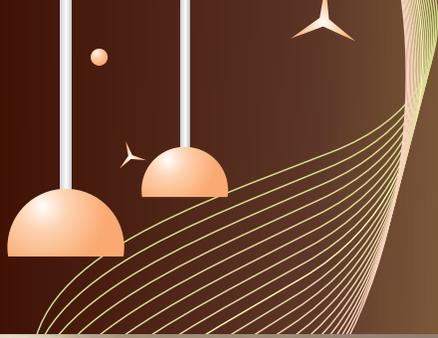
In the coming future, the described Approach in designing lighting for a well defined target of elderly users, which is mainly aimed to improve users visual and psychological comfort in the built environment, may be extended to other targets too - office, retail, transition spaces among all.

Starting from the elderly, which is somehow a borderline user-case, these considerations on lighting performances may extend to a much extended users scenario: people which are active, qualified, with an high level of awareness on quality of life. People which hopefully will have lighting culture. ■



Carlo D'Alesio is a Lighting Designer from Milano - Italy. He co-founded D'Alesio & Santoro (www.dalesioesantoro.it) and Yradia (www.yradia.com), two agencies providing design services consultancies dedicated to Architectural Lighting, Product Design and Engeneering and Marketing and Strategy advisory for the lighting business.

Team members: P. Santoro, F. Casotto, E. Angelini



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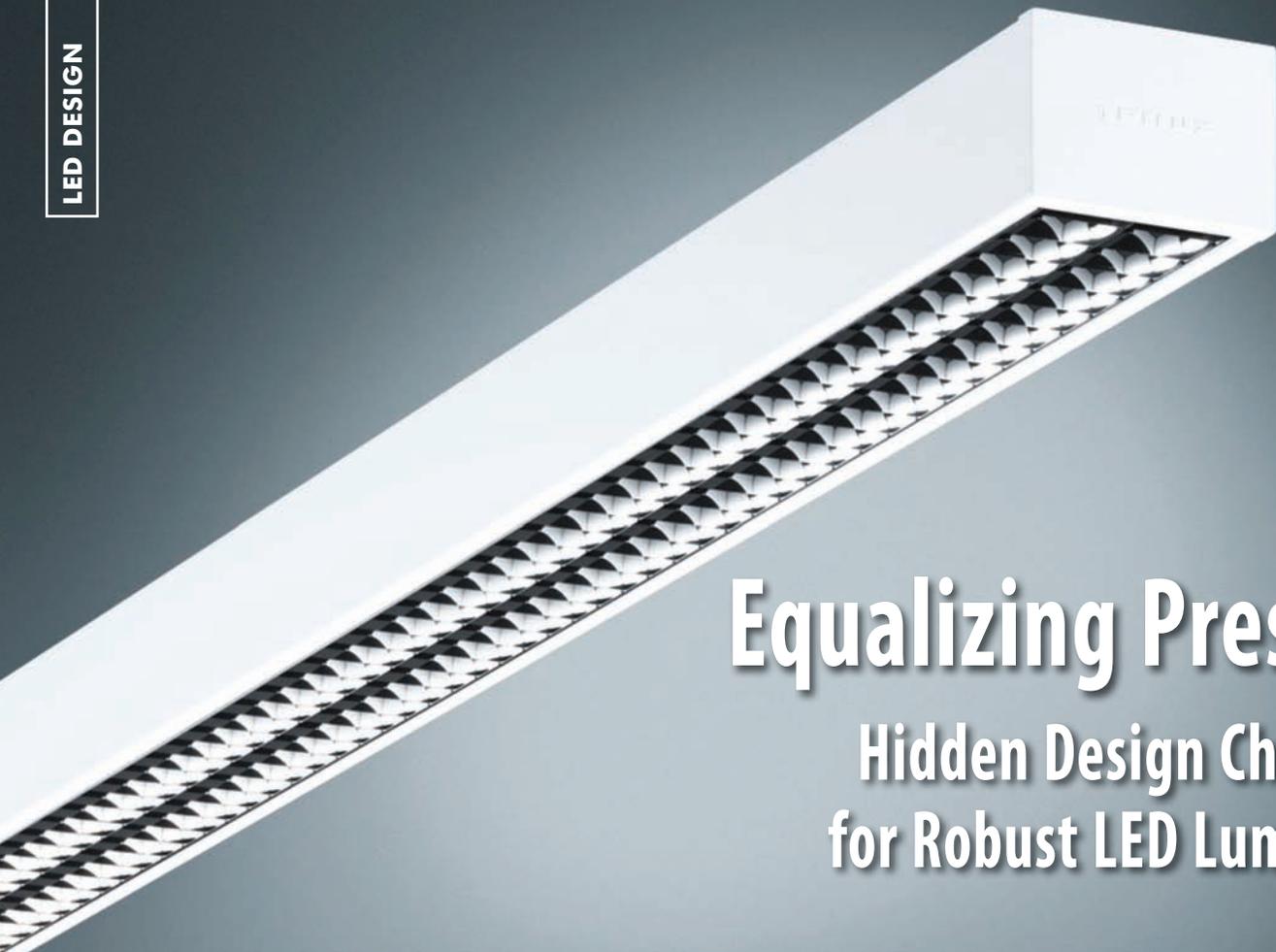


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Equalizing Pressure

Hidden Design Challenge for Robust LED Luminaires

Much of the lighting for both commercial and residential applications is being upgraded to light-emitting diodes (LED). The advantages of LED luminaires are numerous: they are fully RoHS-compliant and provide up to 85 percent energy savings; they can generate as much as 100,000 hours of light and are one of the most environmentally friendly and reliable solutions for outdoor lighting applications.

Although the LEDs themselves can last for more than 20 years, this service life only provides added value to the lighting system if the electronic components and power supply drivers are as reliable as the LEDs. Also, LEDs do not usually fail catastrophically; the lumen output gradually decreases until the LEDs are classified as having failed. All of the components in the luminaire must be able to withstand the harsh conditions of the environments in which they are installed, whether in the tropical climates of the Caribbean or the extreme cold of Alaska.

Challenges of Harsh Environments

According to a study performed by RTI International, the leading causes of solid-state LED luminaire failures are issues with drivers, such as capacitor and interconnect failure, electrical stress, and ingress of moisture or other chemicals. Traditional power supply drivers come with a five-year warranty, and tests have shown that these power supplies have a high failure rate. These issues are often caused by seals, joints, and connection points being compromised by

challenging environmental conditions. Most engineers protect the drivers and electronics by enhancing the durability of the luminaire housing in one of three ways — integrating more rugged O-rings or gaskets to improve seals, increasing the thickness of the enclosure's walls to minimize movement of the housing around the seal, or installing additional bolts around the O-rings or gaskets to maintain a more durable seal. However, even with these added features, the seals can begin to fail and become a leak point, providing a path for water to enter and eventually cause condensation on the lens and reflectors. These failures occur because sealing the device prevents its ability to handle pressure fluctuations, both positive pressure and negative pressure (i.e., vacuum). As these pressure fluctuations occur, they put significant stress on seals and other connection points, which in turn compromises their effectiveness. Over time, the frequent expanding and contracting of the seals causes their weakest point to begin to allow water and contaminants to enter the housing, which can lead to corrosion, shorts, and potential failure of the electronics.

Temperature changes — whether external, internal, or both — are one of the most common cause of pressure differentials. External temperature changes can be dramatic (e.g., a sudden thunderstorm on a hot summer day) or more gradual over the course of different seasons. Daily temperatures can drop as much as 10 to 20 degrees Centigrade from day to night, and seasonal temperatures can differ 40 degrees or more between summer and winter. As the temperature rises, the air inside the luminaire expands, putting positive pressure on the seals, joints, and connection points. As the temperature drops, the internal air compresses and creates a vacuum, again putting pressure on the seals. A 30 °C change in temperature would create approximately ten percent of volumetric flow of air in or out of the luminaire. A quick drop in the outside temperature can create a vacuum of 0.5 psi or greater inside the enclosure. When a vacuum occurs, water and contaminants can enter the housing. In mild cases, corrosion is accelerated and in severe cases, catastrophic failure could occur. The corrosion can shorten the life of the luminaire by damaging wiring, leads, and other electronics contained within the power supply driver and the LEDs.

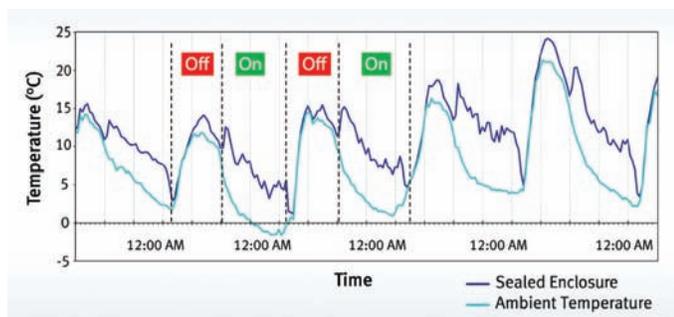


Fig. 1: Temperature fluctuations inside a sealed luminaire

As a luminaire turns on and off, the changes in the temperatures result in sudden pressure differentials (Figure 2). The housing tries to relieve the pressure by drawing air inside, which increases stress on the seals (a process sometimes referred to pressure equalization).

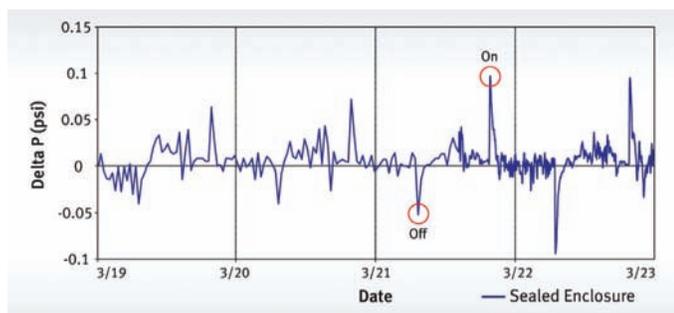


Fig. 2: Pressure differentials caused as luminaire turns on and off. The inability for the luminaire to hold pressure indicates the existence of leak path.

“Dealing with pressure differential is a hidden design challenge for robust LED luminaires, although preventing moisture ingress and venting products properly can deliver long reliable lifetimes”, states Sumit Setia, WL GORE Protective Venting India Sales Associate.

Altitude changes are another common cause of pressure buildup. Although luminaires are usually stationary once installed, altitude issues occur as the luminaires are shipped from the manufacturing facility to the installation site. Because most shipping containers on cargo plane are not pressurized, luminaires can be exposed to significant pressure differentials during take-off and landing, decreasing from almost 15 psi (1,034 mbar) when on the ground to about 3 psi (137.9 mbar) at an altitude of 40,000 feet (Figure 3).

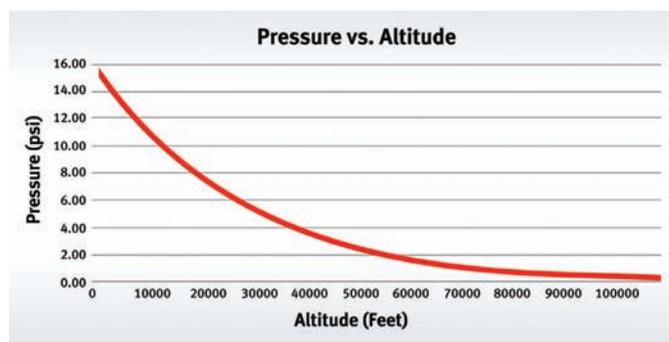


Fig. 3: Pressure experienced during altitude changes

A third cause of pressure differentials is the thermal shock experienced when the luminaire is exposed to rain, snow or washing cycles. Figure 4 shows the impact on a luminaire’s internal pressure from a water spray using an IEC 60529 Standard IPX5 nozzle at a distance of approximately three meters for three minutes, with a tap water flow of 21 liters/minute. Rapid recovery of pressure indicates the failure of gasket to hold the vacuum, drawing water along with air in at the leak path(s).

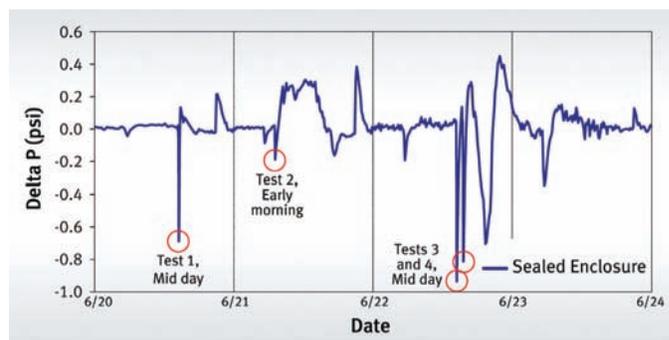


Fig. 4: Pressure differentials caused by tap-water spray using an IPX5 nozzle

Condensation — Another Consequence of Pressure Differentials

In addition to the potential damage to electronics if water and contaminants enter the luminaire, moisture vapor from the water can cause condensation on lenses and reflectors, decreasing light efficiency and the aesthetic quality of the luminaire (Figure 5). The relative humidity inside the luminaire determines the potential for condensation occurring on the lenses and reflectors. When the relative humidity inside the luminaire reaches 100 percent, condensation occurs. Once this happens, the condensation will remain unless there is a path for the moisture vapor to escape. Sealed enclosures do not provide this path; therefore, once condensation occurs, it will remain on the lenses and reflectors for extended periods (Figure 6).



Fig. 5: Condensation inside an LED luminaire

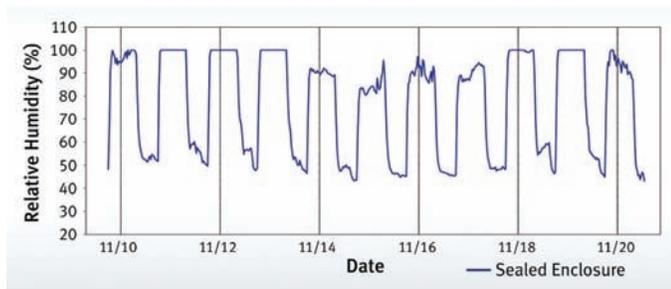


Fig. 6: Condensation events inside a luminaire

Preventing Pressure Differentials

The challenge for maintaining constant pressure inside a luminaire is to allow air to flow freely in and out of the luminaire while blocking water and contaminants. Drilling a hole in the housing or creating a hole with a tortuous path definitely addresses the pressure differential issue; however, this open system concept allows contaminants, including dust, dirt, water, and even insects, to enter the enclosure and compromise the electronics. Many engineers consider hermetic seals or potting compound to be the best way to protect electronics. However, hermetically sealing the device requires the use of non-permeable materials — which means no plastic — and the housing is welded shut. This option is unrealistic for most luminaires because the enclosures would be too heavy, not serviceable, and very expensive. Like hermetic seals, potting compound eliminates the ability to service the electronics, is expensive and heavy, and requires specialized equipment in the manufacturing process.

Installing a felt element, sintered vent, or mechanical valve is another alternative. The felt element and sintered vent address the pressure differentials, but like tortuous paths, they allow water and contaminants to enter and clog the air path. And the mechanical valve is a one-way solution — allowing air to escape only if internal pressure increases to a certain point, but remaining closed if a vacuum occurs.

Finally, a vent made of expanded polytetrafluoroethylene (ePTFE) — a two-way breathable membrane — continuously equalizes pressure inside the luminaire housing while maintaining an environmental seal. Expanded PTFE is a unique, microporous membrane that is inherently waterproof and chemically inert, and can be coated to provide oleophobicity. Its node-and-fibril microstructure is open enough to allow gas molecules and vapor to pass through it easily, but the openings are so small that liquid and other particulates are repelled.

Venting to Improve Reliability and Durability

Equalizing pressure using an ePTFE vent reduces the potential for seals to fail and for moisture vapor to condense on the lenses and reflectors. W. L. Gore & Associates, Inc., has performed extended life testing on two commercially available LED luminaires to evaluate the effect of using ePTFE venting products as a solution to improve reliability and durability by relieving pressure. The vent is integrated into the power supply chamber of the luminaire. It is extremely difficult to leak-proof any entry point of an enclosure, because the gasket elastomer and the wire gland relax over time (Figure 7). A sealed housing may pass ingress testing at the factory but fail rapidly in real life when challenged by a wide range of temperatures.

Depending on the quality of the seal, negative 34 mbar (approximately 0.5 psi) is commonly accepted as the point at which a vacuum can cause a leak in a sealed enclosure. Although the on/off cycle of a luminaire causes temperatures to rise and fall in both a vented and a sealed enclosure, the amount of pressure placed on the seals



Fig. 7: Leak path in sealed luminaire

and joints is significantly different (Figure 8). The testing indicated that pressure in the sealed luminaire spiked as much as 0.09 psi when the light was turned on and dipped approximately -0.1 psi when turned off. However, the vented luminaire showed a change of only ± 0.01 psi. Comparing the relative humidity inside the sealed and vented luminaires after an IPX5 water ingress test demonstrates the significance of pressure differentials. Following the water spray test

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Several Others.....

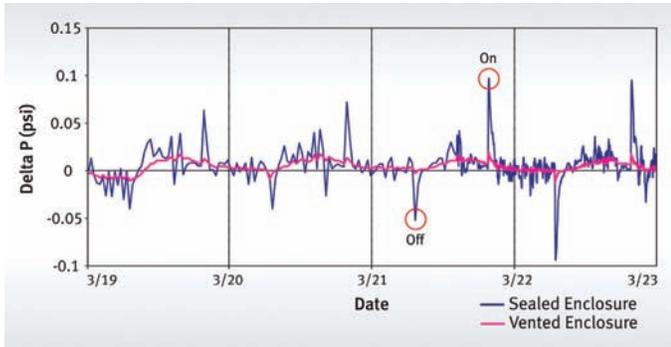


Fig. 8: Impact of pressure on vented and sealed housings

performed by Gore, the relative humidity in a sealed luminaire remained significantly higher than that in an identical luminaire that was vented (Figure 9). Over the course of ten days, the relative humidity of the sealed luminaire almost always remained at 100 percent, which indicated condensation inside the luminaire caused by water entering during the test. Although the relative humidity in the vented luminaire rose after the shock test, it decreased as the moisture vapor escaped from the enclosure and there was no evidence of condensation.

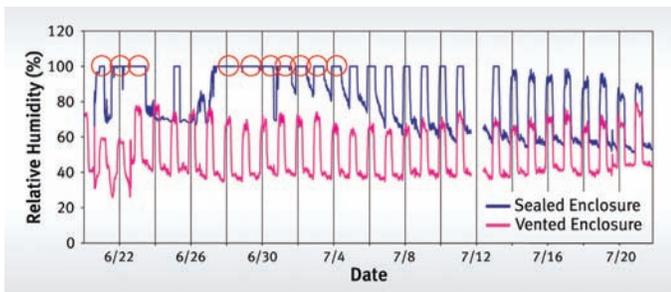


Fig. 9: Extended periods of condensation in a sealed luminaire

Conclusion

Pressure differentials compromise the housing seals, joints, and other connection points in LED luminaire systems. Leaving these pressure fluctuations unchecked can reduce long-term performance of the power supply drivers and other electronics. They also lead to condensation on lenses and reflectors that can decrease light efficiency and the aesthetic quality of the luminaire. As demonstrated through the real-life IPX5 testing done by Gore, integrating an ePTFE vent into the luminaire’s housing equalizes pressure by allowing continuous airflow in both directions. This two-way airflow prevented water from entering as the pressure changes inside or outside the enclosure. Also, the vent reduced condensation events inside the luminaire because moisture vapor was able to escape before condensing. ■

Courtesy:

Gary Y. Chan; W. L. Gore & Associates, Inc.

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Green technology has a very positive impact on the environment and it is very cost effective. The rise of environment friendly technologies is closely linked to the resource-conscious mindset that has emerged since the global oil crisis of the 1970s. In achieving the strategy for sustainable growth objectives, environment friendly technologies and energy efficiency will be a key as they apply cutting edge knowledge & non-technological innovations to improve existing products, processes & business models.

LED lights are the most energy efficient and eco-friendly by nature. The field of lighting has witnessed dramatic technology developments in the past few decades, especially in the sub-fields of solid state lighting and other energy efficient lighting technologies. India's demand for energy is forecast to grow exponentially in line with India's urbanization over the coming decades. Industries are rapidly embracing energy efficiency as the key to increasing their energy security and improving their economic productivity and competitiveness. The usage of electricity is increasing day-by-day to meet growing energy demands. These days energy efficiency assumes greater importance because it is most economical and reliable way of meeting the particular global local climate change. Hence utilization of energy for productive lighting is important and happens to be an important portion of the modern society. Today, energy efficiency is at the forefront of our company policy. Concern about global climate change and the environment has brought the issue of energy efficiency front, GlacialTech is more focusing on producing high energy efficient products which have low energy loss and high efficiency for instance we have LED Drivers which have efficiency higher than 90-95% like our LS series and RS series, these models are with higher efficiency and minimal loss of energy, this helps lamps to perform better & the total lighting system efficacy increases.

LED lights are multilayered semi-conductive materials forming lattice that allow nano phosphors to stick on the surface through a process called solid adsorption. The LEDs are pollution free and provide viable lighting option. LED Lights have super long life span of up to 80,000 hours and

have no filaments so it can withstand a greater intensity of vibration and shock than standard lights making them durable with less risk of breaking and need to replace. LED Lights will start at full brightness, instantly; every time; therefore there is no need for backup lighting and they are also an eco-friendly form of lighting as they do not contain mercury or other harmful gasses.

When we talk about the benefits of LED lights, the first thing that comes to our mind is the longer life-span, more durability, no hazardous materials to clean up if you break one etc. The long operational life time span mentioned above means also that one LED light bulb can save material and production of 25 incandescent light bulbs. These lights are ecological-friendly as they are free of toxic chemicals. Most conventional fluorescent lighting bulbs contain a multitude of materials like e.g. mercury that are dangerous for the environment. LEDs are extremely durable and built with sturdy components that are highly rugged and can withstand even the roughest conditions. As they are resistant to shock, vibrations and external impacts, they make great outdoor lighting systems for rough conditions and exposure to weather, wind, rain or even external vandalism, traffic related public exposure and construction or manufacturing sites.

LED's are currently a very well known trend in the lighting business, but the industry is experiencing a high number of players and it is very competitive. Therefore it is not easy to gain new business prospects, especially for the SME's like Glacial Light. So our approach is to offer more functional lighting solutions by improvising the technical background in our product line, offering high-end and eco-friendly lighting

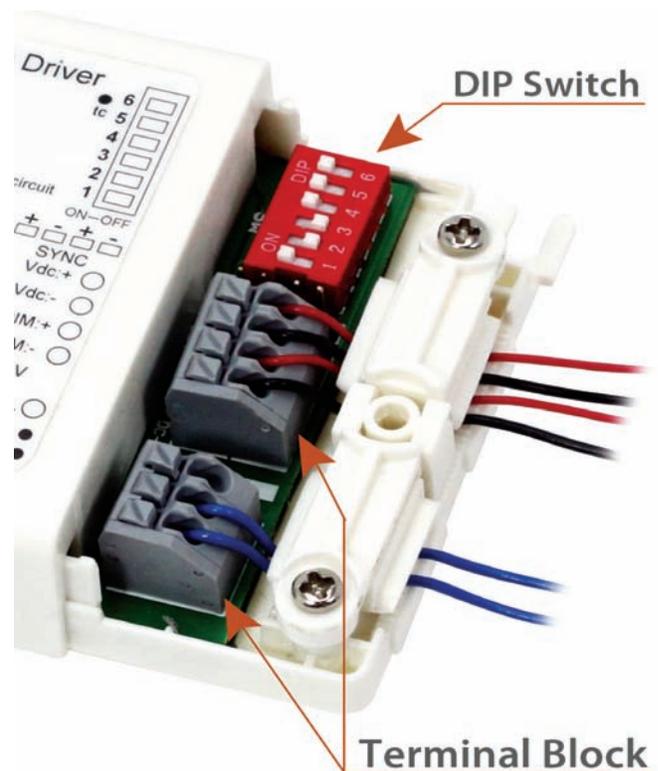


with higher wattage, and strengthening our marketing strategies. GlacialTech recently comes up with innovative products of LED Lights in market:

- Thermal Heat Sinks:** GlacialTech is currently developing cold forging technology for LED thermal modules. Cold forging produces heat sinks that have better heat dissipation than die-casting and aluminum extrusion. Using AA1070 aluminum, thermal conductivity can be improved 2.36x compared to die casting from 96.2 W/mK to 227 W/mK. GlacialTech's unique copper/aluminum cold forging seamless joining technology greatly enhances thermal conduction and reliability when copper is embedded to make sure the two materials are joined together seamlessly during the manufacturing process. The two materials work together to improve heatsink performance. The copper component conducts heat quickly from the bottom to the entire transverse surface. The high thermal conductivity of the aluminum fins lets heat dissipate quickly. GlacialTech's new copper/aluminum cold forging technology is the most cost effective and lightweight thermal solution when space is at a premium.
- DALI Interface Converter with PWM and DC Output:** GlacialLight, a division of the Taiwanese technology manufacturer GlacialTech Inc., is introducing the GL-DA02 DALI interface converter to its product lineup. As an open standard, DALI is internally recognized as the premier new lighting control interface and is cross-compatible across lighting components from different manufacturers. Highly scalable, it simplifies wiring compared to conventional lighting control systems, making installation easier and reducing maintenance costs. DALI can not only control lighting but also monitor it, allowing for intelligent lighting systems that maximize service life and save energy. Compared to legacy solutions, a DALI network is more precise and allows fine grain control over the individual components in a complete lighting system. GlacialLight's DALI Interface Converter is fully IEC62386 (102, 206) compliant. Taking a digital DALI signal, it can output

either PWM, 0-10V DC, or 1-10V DC signals and is suitable for controlling 3-in-1 (DC/PWM/Resistor) LED drivers. Dimming can be set on a linear or logarithmic curve. With a built-in relay, devices down the line can be turned off completely, giving complete lighting control and reducing energy costs. As an indoor digital lighting control system, the GL-DA02 convertor is well suited for applications including office buildings, conference rooms, factories, and intelligent home lighting.

- GP-LC7028-Q5D:** GlacialPower, a division of technology manufacturer GlacialTech, announces today a new dual-mode LED driver powering LED lighting from 7W to 20W. Featuring either constant current or constant voltage operation, the LED driver mode and power output can be easily adjusted to fit a variety of lighting and signage applications. Power input and output lines are connected via robust and easy-to-use clips.
- 2-in-1:** The GP-LC7028 LED driver is two LED Drivers in one, with easy DIP switch configuration to either constant current or constant voltage mode for enhanced functionality. It can be easily customized to specific LED lighting needs with 8 modes of constant current operation from 250mA to 700mA, and constant voltage modes from 12V, 24V and 28V output available. For constant current mode with 1-10V dimming and push dimming can also easily be enabled with a dimmer.
- GP-LC Series:** GlacialPower, a division of Taiwanese technology manufacturer GlacialTech, announces two new





wall mount LED adapters for desk lamps, floor lamps, strip lighting and other indoor lighting applications under 9 watts. The 8W GP-LC3536-0A and the 9W GP-LC7021-0A are compact wall mount power supplies providing constant current for LED lighting. These fully-isolated LED adapters feature a compact two-prong design with Overload Protection (OLP) and Short Circuit Protection (SCP).

Universally Compatible: GlacialPower's GP-LC LED adapters are worldwide compatible, with universal AC input from 90 to 264V AC power accepted. Input plug adapters can be customized to US or EU electrical outlet standards. The power supply output plug to the device can be selected by the customer to suit their needs.

- **Low Bay Lights GL-BL50:** GlacialLight, the lighting division of GlacialTech Inc., is introducing the Arcturus series of GL-BL50 Low Bay Lights. These dimmable 50

watt LED low bay lights come in three colors, and an artistic design making them suited for a variety of indoor environments. Shopping malls, restaurants, offices and even homes can all benefit from the even lighting and contemporary styling of the GL-BL50. The GL-BL50 is compatible with international mains voltage from 100-240V and comes in a variety of configurations for almost any indoor environment. A choice of 3 color temperature options are available– Warm White(3000K), Neutral White(4000K), and Cool White(5000K). The GL-BL50 can be hung with a pendant rod, cable, or chain type installation. IP54 rating means it's tough enough for restaurant, garage, or kitchen use. And, we hope to see better results for the coming year ahead. ■



Nikhil Malhotra, Regional Sales Manager of GlacialTech Inc., Taiwan, handles India Subcontinent and Middle east market for GlacialTech. He has focused interest in LED power supply, Indoor and Outdoor LED Lighting Technologies and providing customer service excellence and focused environment. He is Masters in Technology Management from Taiwan's famous National Chung Hsing University and having a good mandarin language skill.



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SPAR Supermarket



Corridor crossing the traditional grid parts

SPAR decided to open its new supermarket at a shopping mall called MOM Park, situated in the heart of a wealthy district of Budapest. They had the idea of building up a unique interior, which provides a high quality customer experience. To chose the designer of this flagship store, they invited architects and interior designers to take part in a non-open competition, and submit sketches of ideas. LAB5 architects won because of the look and feel of a market space, with a friendly industrial atmosphere. Luckily later 90% of the original ideas could have been realised.

This retail draws mainly three kinds of costumers, so the layout is organised accordingly. One can be shopping very quickly even not entering across the gates, which is very convenient for example for the people running to the movie theater. There is a "short route" for quick daily shopping, and a "long route" for weekend buyers.

Shapes and the ceiling

All the forms in the interior are inspired by the flow of costumers. The ceiling is guiding and attracting you from the entrance to the back zone, and then shows different alternative ways to go on. The block before cashiers is more like a traditionally organised supermarket, so it doesn't have

suspended ceiling, and the layout is based on a regular grid. Due to the condition of the modest internal height, we wanted to gain the space above the suspended ceiling zone, so we didn't put a ceiling, unless it was really necessary, and where we put it, it was used in a free-form way, for being presented as an individual, expanded object. Where we could use solid white surface, and where we had to put additional elements (lights, sprinkler, etc.) we used optical ceiling.

Because of different use, there are two zones where the optical part of the ceiling converts into a 3D form by flowing down to the ground. At the bakery products warm feelings are strengthen. At the wine section, the lamellas of the ceiling are continuing down to the ground to form a space of a cellar, and to indicate at this point the quality and the culture of the product. Generally saying, as the ceiling is the element that can be seen from everywhere, it became one of the main elements of orientation and impression.

Shelves and counters are forming rounded islands together, just as if they were standing at a market.

Materials and colors

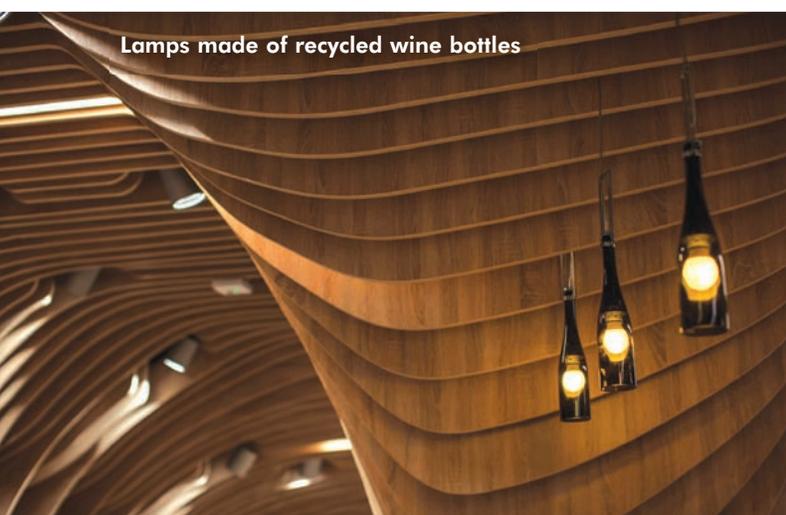
The Dutch word "Spar" meaning pinewood gave the idea of using "wood-like" materials at the ceiling or at the winery.



Free standing wine shelf



Free standing wine shelf



Lamps made of recycled wine bottles



The lamellas of the suspended ceiling are flowing down to touch the ground



Lamellas turning down behind the bakery products



Vegetable island with playful lamps giving the fresh feels at the entrance



Lamellas forming cellar vaults at wine products



Cashiers

It also helps to create a more cosy atmosphere in spite of the emphasized industrial look of the majority of the elements.

Acryl (corian) was chosen for the finishing of all rounded furniture, as they had to be white, shiny, clean, durable, and supporting the "fluid" effect. Due to many contradictory specifications we couldn't apply concrete for the floor as we planned, but the single colour solution of grey tiling is perfect for the goal.

Maybe because of the fact that we are architects and not interior designers originally, we were seeing this retail as being one part of the big shopping mall, so we used the colour brown of its public spaces, on many elements (floor, ceiling, rear of shelves, etc.), and no other colours (beside grey and white). ■

Credits:

Company Name: LAB5 architects

Photographer: Zsolt Batár

Design: Leading interior designers: Linda Erdélyi, András Dobos, Balázs Korényi, Virág Anna Gáspár

Our colleagues: András Debreczeni, Zoltán Szegedi, Tamás Tóth, Zoltán Vámos

Signage design: Zsuzsi Tolnai, Rita Halasi

Engineering (back zones and co-engineering):

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Client: SPAR Magyarország Kereskedelmi Kft.



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Orient Electric is part of USD 1.6 billion diversified CK Birla Group. Orient has been a household name in the Indian fan Industry for over 60 years. With its state-of-the-art manufacturing facilities in India and operations spanning over 30 countries in Asia and Africa, the brand has earned the trust of millions of customers worldwide by providing high-quality, innovative products. With its existing strengths of performance, reliability and innovation, the brand has expanded into the lifestyle product segments which include lighting and home appliances besides fans. Orient Electric is now a one-stop shop for lifestyle home solutions.

Puneet Dhawan,

Senior Vice President and Business Head, Orient Electric in an exclusive interview to **Lighting India** remarks, we are also providing outdoor lighting solutions covering Streetlighting, Floodlighting and Landscape lighting applications etc.

New and larger Competence Center for electronics in Noida

How challenging is the position of Vice President and Business Head for you now at Orient Electric?

Any position of responsibility is challenging but one needs to have a passion and drive in the sphere where he or she works in. I have been in the lighting industry for over 24 years so I can safely say I am married to the world of lighting. Orient Electric is a known brand in India but in lighting we

are fairly new therefore it is a very challenging assignment for me.

What is your view about lighting industry in India?

Future of Lighting is very bright with changing life style and awareness on efficiency and environment. The industry today is led by LED lighting solutions which is going to drive the market. We expect the lighting industry

to grow at least by 15% CAGR for next 4-5 years. Demand for LED fittings is growing very rapidly at the rate of 50% per year. Street lighting products are in high demand as due to Government initiatives and advocacy. Many civic and municipal organisations have gone for installation of LED products. During last one year consumer segment has also shown high demand for LED downlighters and lamps for use in

homes and small commercial establishments. New industrial set ups are also preferring LED products now and there is significant increase in number of projects especially in Cement and Textile industry demanding Indoor Linear LED fixtures (replacement of traditional FTL fixtures) and High-bay and Well Glass LED fittings in place of HID Lamp fixtures.



With your rich experience in Lighting Industry, do you think awareness about lighting as profession is very less in India to meet the global standards?

Lighting as a profession has not been a specialized discipline in India till recently. Even today only few engineering colleges have specialized courses on lighting, mostly the subject is covered under the electrical trait. But with advent of LED this is going to change; largely because the development and progression of LED technology in India is not far behind than that of western world, so we can quickly catch up. India has not been known for electronics and manufacturing so there has to be a concerted effort in bridging the gap and making India an electronics manufacturing hub and this can only happen when we have trained and experienced manpower in this field.

Are there any plans to expand the state-of-the-art manufacturing facilities in India & its operations providing high-quality, innovative products?

With the emerging LED technology the need for manufacturing in India will increase as we have a huge consumption base. You will see more and more organized players in the market who will have to invest more on manufacturing and developing competence in electronics to gain competitive advantage in a long run. The cost of LED product will subsequently also come down which

will be beneficial for the end consumer. As I said, we need a concerted effort by the government at the states and the centre and the industry together to make it happen. We at Orient Electric have invested heavily in manufacturing and developing competence in electronics and that has helped us in many ways.

Could you brief about product range and also share feature of the best product brought out by Orient Electric which commands major lighting market share?

Orient Electric's product portfolio is mainly LED centric and offers wide range of LED lighting products covering the consumer and professional lighting segments including Modern Office and Industrial segments. Besides this we are also providing outdoor lighting solutions covering Streetlighting, Floodlighting and Landscape lighting applications. Our most popular products are the new generations LED downlighters, spotlights, lamps and panels which are showing very high growth trends. They owe their popularity to overall quality and appeal in terms of good Light Output, High quality and attractive finish and aesthetics.

Could you update us with the latest developments that are taking place in the product and its applications sector? Which are all products that are highly in demand?

Use of LED products is on a rise not

only in case of new fitments but also in case of replacements. Our high demand products are LED Down lighters, Panels and LED Focus/spot lights and LED Lamps. In the professional segment Modular indoor fixture for offices, street light, and Highbay light for Industry are showing a growth trend.

As a Business Head at Orient Electric what tactics do you adhere to upscale the revenue annually?

Market penetration has been our core focus and building on primary and secondary sales. We have come out with our new branding as Orient Electric with a positioning of "switch to smart" and we are constantly working on building the brand. The larger message that we want to convey is that our company is not a product-centric one, because being that would be looking in the rear view mirror. We are now an outward looking company that makes what Gen-X wants. Our focus also has been on developing competencies in electronics therefore we are building up a new and a larger Competence Center for electronics in Noida which would be functional from January 2015.

What do you envision in the coming next two years?

Our focus will be to grow at 2 to 3 times that of the market and increase market share every year. I envision that we will be a dominant LED lighting player in the coming times. ■



ADATA LED Lighting is part of ADATA Group, the Global Technology Leader with sales of over \$1.5 Billion majorly into IT Hardware & LED Lighting. ADATA designs, develops, manufactures & markets LED products for Indoor & Outdoor Applications. ADATA brand is present in over 100 countries with its IT & LED Lighting products.

Balaji Shinde,

Vice President, ADATA Technology India Pvt Ltd in an exclusive interview to **Lighting India** states, our goal would be, to be amongst the Top 5 emerging LED Lighting players in India.

Looking at Channel expansion by appointing city wise Distributors

Being a lighting industry professional for last 15 years, what is your perception about the lighting industry in India?

Lighting Industry has been growing at 11% over the past few years. With the advent of LED as a light source for general illumination, lighting industry is witnessing a leap in lighting technology. The use of LED as a green energy source for general illumination, has propelled the growth rate to more than 45%. Going

forward, the LED lighting market is projected to be US\$ 500 mn in the next 3 years, with outdoor lighting share being above 50% of the total LED market.

Could you briefly share details about ADATA Technology and its foray into LED lighting business?

ADATA Lighting is a part of ADATA Group, the Global Technology Leader with sales of over \$1.5 Billion and is majorly into IT Hardware & LED

Lighting. ADATA designs, develops, manufactures & markets LED products for Indoor & Outdoor Applications. Its LED products line includes LED Troffer Lights, LED Tubes, LED Bulbs, LED Par Lamps & Outdoor product offering like LED Street Light, LED Floodlights & LED High bay apart from CKD/SKD Solutions. ADATA Products are of the highest quality & meet all international standards. The company was established in 2001 with state-of-the-art manufacturing

facilities in Taiwan & Suzhou along with Testing & R&D Centre in Taiwan. Globally, ADATA brand is present in over 100 countries with its IT & LED Lighting products.

How do you position ADATA lighting as a LED player in the current Indian market scenario?

India has a perennial issue of power shortages which is further aggravated with high electricity costs. With the increasing awareness about energy conservation and use of green technology, LED is emerging as the key driving force in the rapidly growing lighting industry. The existing capacity would be hard pressed to keep pace with the increasing demand for LED. ADATA with its strong global R&D support, excellent product quality and huge manufacturing capacity in Taiwan and Suzhou, would be in a position to meet these challenges. Leveraging its technology and manufacturing core competence would be the way forward to establish ADATA as a major player in the Indian LED lighting industry.

What LED market segments do you plan to focus in India ?

As we see it, there are three major market segments that ADATA would be focusing on namely OEM/ODMs, Projects, and Trade Channel along with Emerging E-commerce platform.

How do you plan to market ADATA lighting products in India?

We are already present in the market for LED through our strong IT Distribution Partners. Going forward we will also look at Channel expansion by appointing city wise Distributors, who will cater to Projects/Retail requirements. For our OEM/ODM products we will promote through existing Lighting Companies looking to expand their LED Portfolio.

What potential do you currently see for your OEM /ODM LED solutions in India?

We are already working with a few Lighting Companies for OEM /ODM solutions, where we would be customizing some products to meet their specific requirements. With rising demand for LED products & subsequent capacity constraints, we believe ADATA with its Global Technological expertise & manufacturing capacity would be able to bridge this gap.

Could you share the benefit you derive from ADATA being a Global IT hardware technology company.

ADATA due to its strong Brand Presence in IT Hardware segment is present over 50 countries and is known for its Quality, Performance, and Reliability & Service. Similarly with our LED products we want to ensure that we meet the expectation of the customers with our Value Added Products & Solutions.

Could you tell us something about new product innovations at ADATA?

At the recently concluded Hong Kong Light Fair in October 2014, ADATA globally launched its New Bluetooth Enabled LED RGB 8W Bulb. This New Innovation marks a major shift in the way we operate lighting for Consumer/Retail & Commercial Applications. This Bluetooth enabled RGB Bulb would enable our customers to Control the Light output and the color to suit the different Ambiance conditions with a simple smartphone user interface.

How does ADATA plan to scale up in the next three years?

At ADATA we intend to Position our Brand strongly in India by expanding our Dedicated ADATA Partner Network across Key cities in India apart from this we would also step up our Presence on booming Online E-commerce Portals to reach out to Consumers across India. Given the current Global Transformation to LED, many of Established Conventional lighting Players are finding this market transition difficult, especially with the arrival of New LED Entrants bringing in Advance Technology & Global Manufacturing Scale. In this changing scenario our goal would be, to be amongst the Top 5 emerging LED Lighting players in India over next three years. ■

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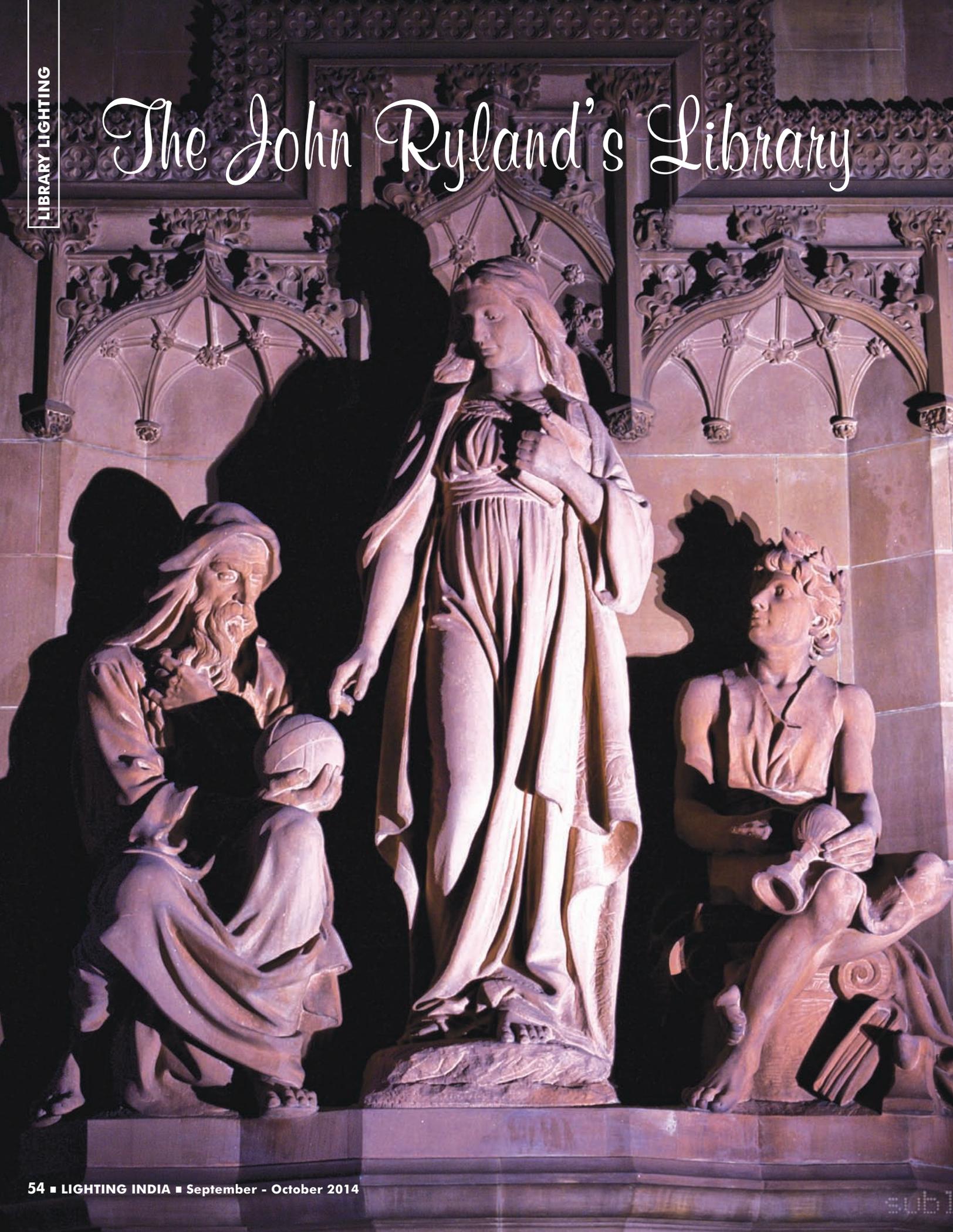
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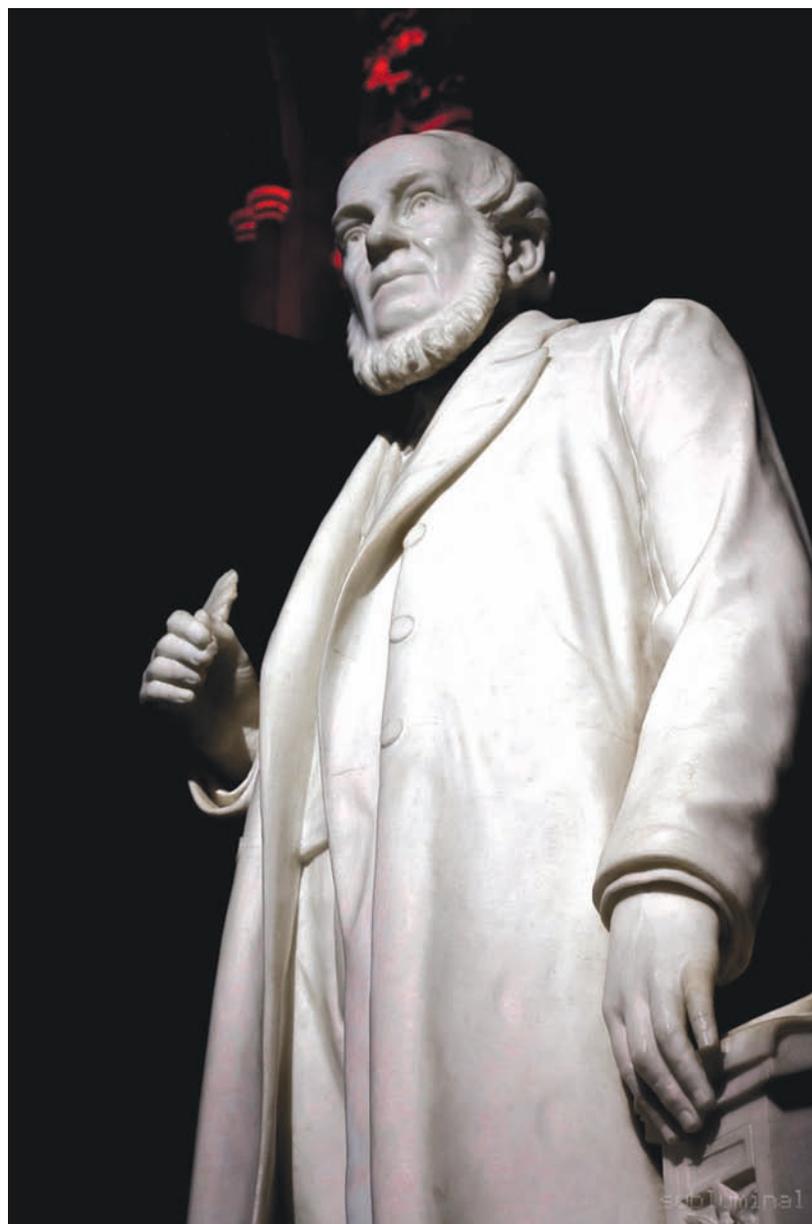
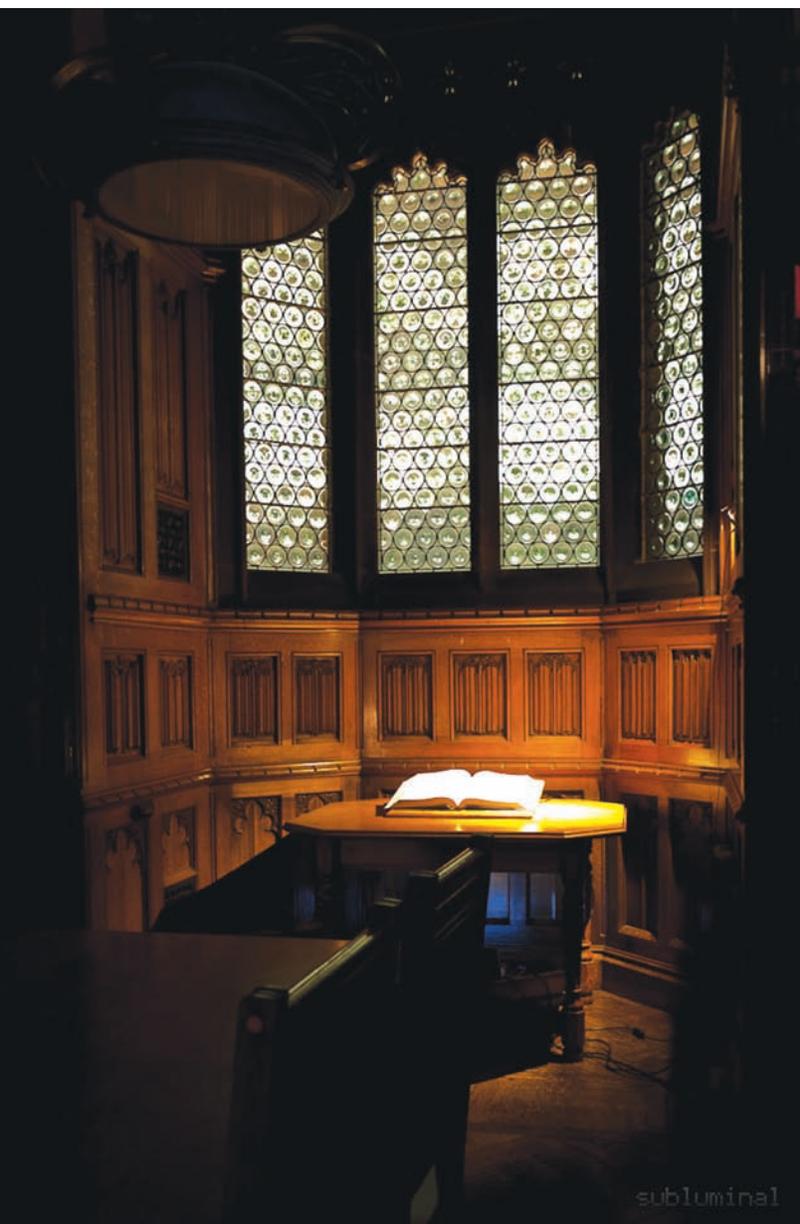


The late Victorian, neo-gothic architecture of John Ryland's Library situated in the heart of Manchester created the ultimate interactive theatre for the first Subluminal event. A design collective comprising light, sound and electrical designers; the Subluminal team aspire to set new boundaries of collaborative design and create beautiful, transient installations.

The event attracted members of the design industry and public whilst drawing attention to the value of the sensory narrative within the built environment through the medium of light and sound. The event brought a new level of appreciation by granting the audience access to the library where light and sound came together to create spectacle. During hours of daylight, the hundreds of visitors walk

through the Library daily and are wowed by the majestic architecture. Over three consecutive nights, the Subluminal team demonstrated how light and sound can shape and enhance an environment that is established and celebrated. The lighting design introduced the attendees to architectural elements that are unique to John Rylands Library, and brought to life a space that could be appreciated in a way never been seen before. Elements of sound intrigued and inspired emotions by immersing visitors in a vivid and memorable sensory experience.

Starting the Subluminal experience, guests entered through the historic entrance of the library where a warm light highlighted the vaulted structure, contrasted with areas of complete darkness creating an eerie atmosphere.





Leading up the wide staircase and towards the upper level reading room, a bellowing voice read quotations of light and shadow from literature that were projected onto a 58 foot high wall.

The upper level Main Reading Room was flooded with a saturated red light. Contrasting light and shade filled the ceiling picking out the smallest of details whilst highlighting the gothic arches overhead. Lower down, single beams of light illuminated historical books and enticed those present to move toward them as the speech emanated from hidden directional speakers. A statue of John Rylands illuminated with a cool white beam of light greeted the audience and explained the history of the building.

From here, the audience were invited to enter the basements, getting there was not for the faint hearted; a tight spiral staircase dimly lit with LEDs led the way. As the staircase descends each step grows smaller. A deep bass rumble emanated from below the building which became more apparent during the descent. A sub-bass soundtrack

◀ Contents of the magazine :

- Latest news and views from the HVAC & R industry
- Interviews with eminent people from the industry
- Case studies and analytical reports
- Technical articles
- Book reviews on the industry
- Events on the happenings on the cooling industry around the world
- New technologies that breaks world wide

... and much more.

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- Air Distribution
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- Boilers
- Building Automation
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- Chillers
- Cold Stores
- Compressors
- Condensers
- Condensing Unit
- Contractors
- Controls
- Cooling Towers & Parts
- Dampers & Parts
- Ducts & Accessories
- Energy Saving
- Environmental
- Evaporators
- Exhaust
- Fan-Coil Units
- Fans
- Fire
- Freezers
- Instruments
- Insulated Doors
- Insulation
- Pumps
- Refrigerants
- Refrigerators
- Solar
- Thermal Storage Systems
- Transport Refrigeration
- Valves
- Water Coolers
- Water Treatment

... and related accessories

◀ Reach :

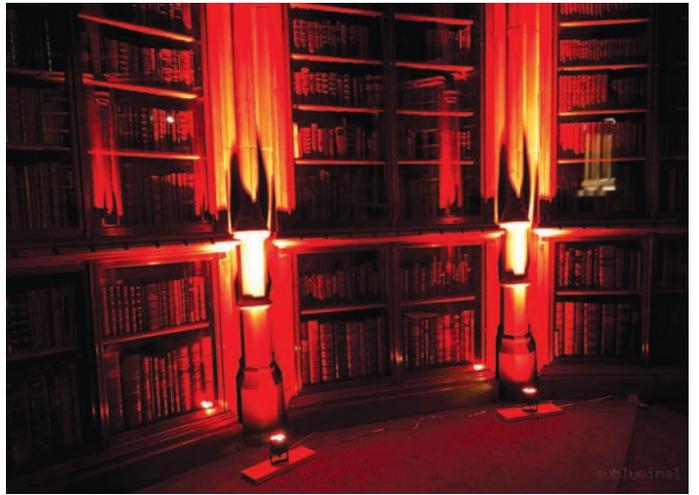
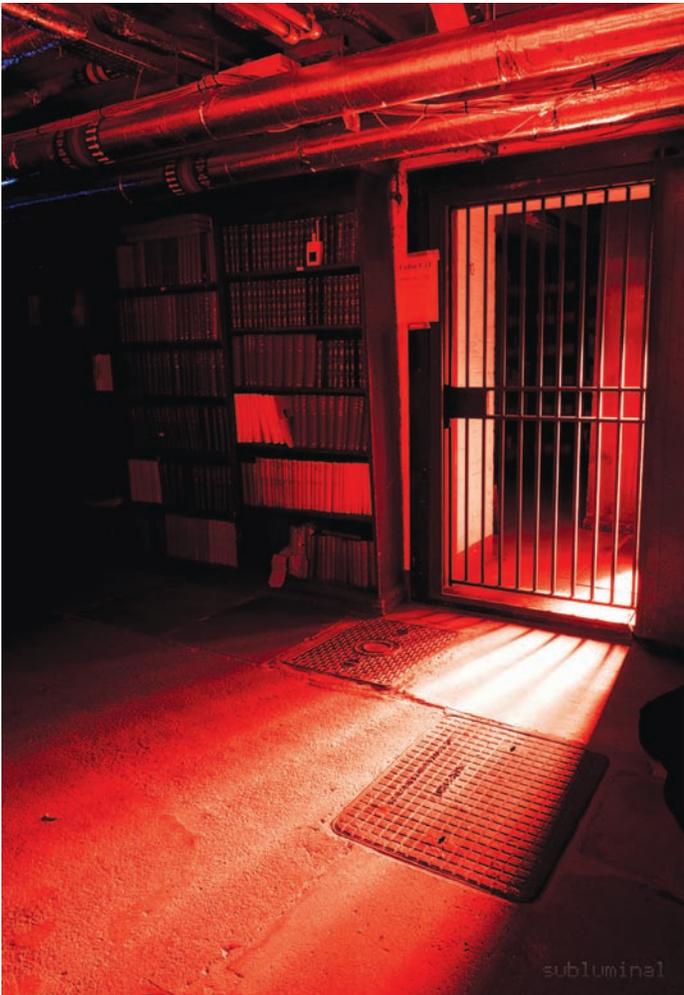
Professionals like :

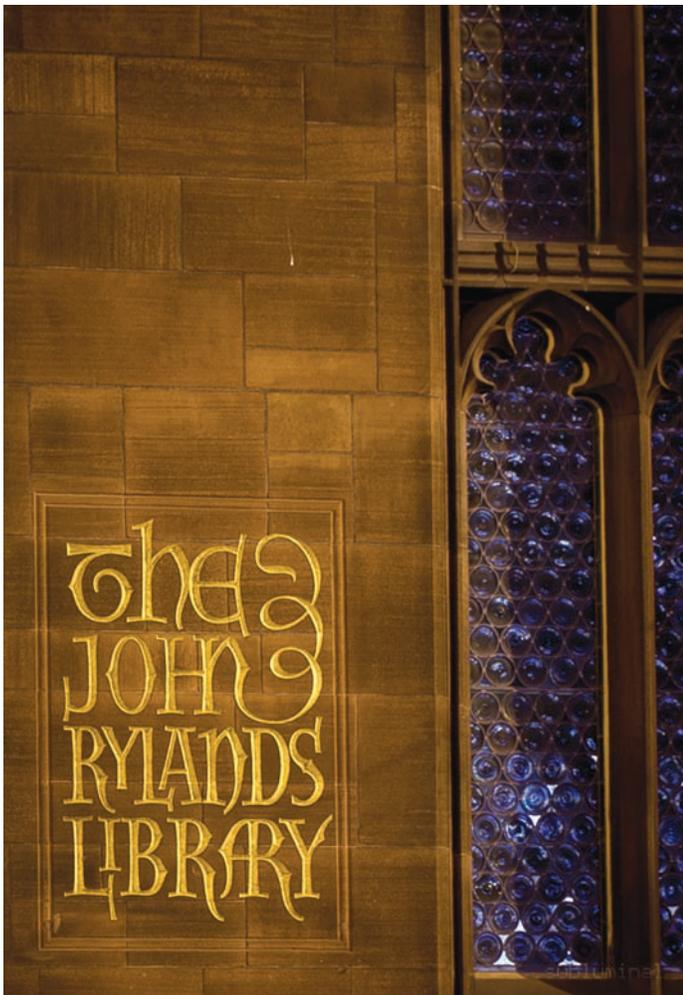
- Top industrialists
- Manufacturers
- Consultants
- Architects
- Interior designers
- Process Engineers
- Importers & Exporters
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Industries like :

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- Biotech
- Process Industries
- Printing & Packaging
- Hospitals
- Cold chains
- Food processing
- Storages
- Entertainment
- Other allied Industries
- Institutions







accompanied guests through the low basement corridor lined with ancient books and the occasional strobe flash to light the way. During the subterranean experience the element of sub-bass vibrations took over from audible sound to reach a climax before the exit and return to ground level.

With close to 800 people visiting this event, the Subliminal team plans to resurface in the future to create a whole new experience. ■

Credits:

Photography: Chris Lowe

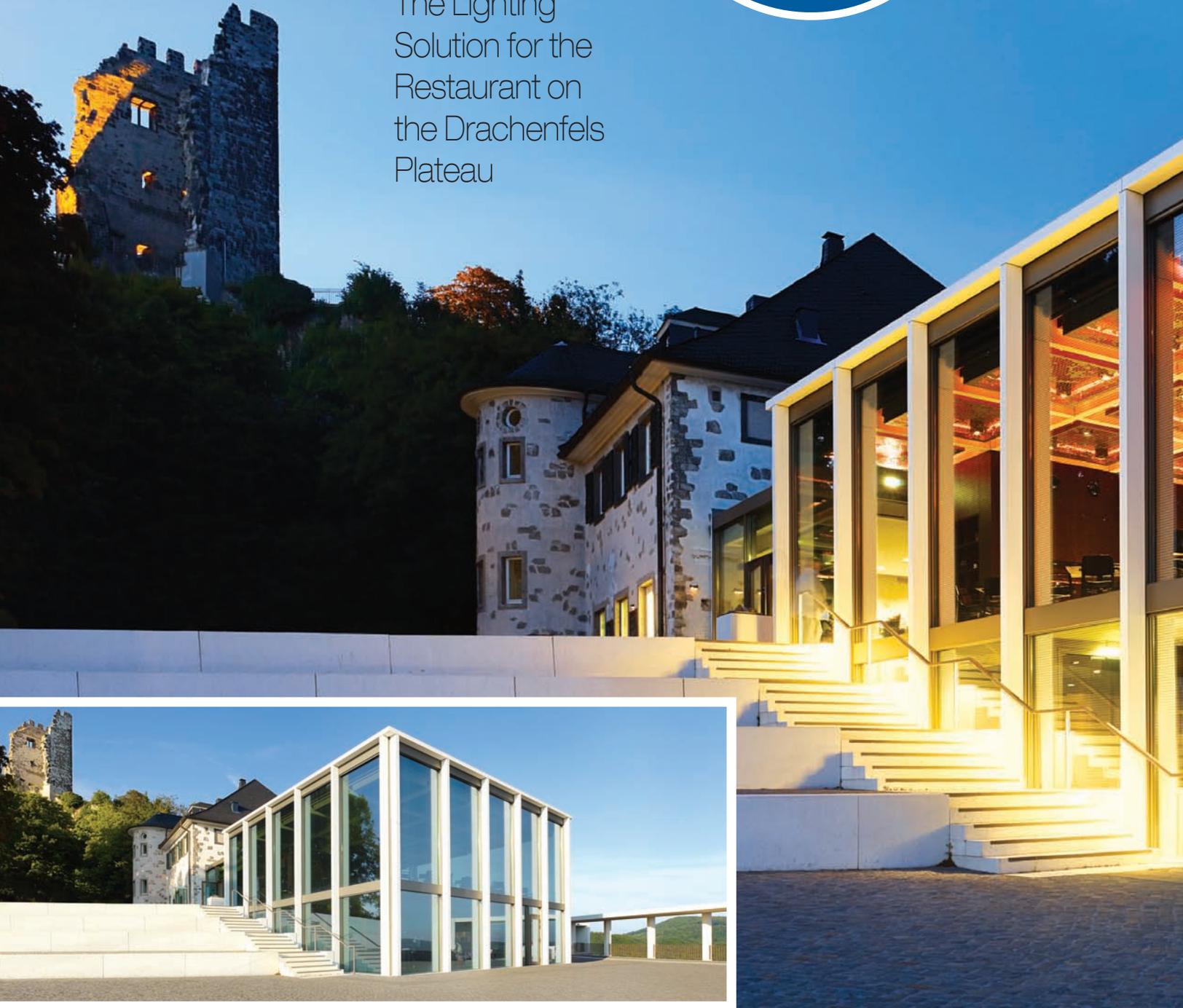
Lighting designers: Chris Lowe, Eliot Horsman, Luke Artingstall, Joe Lally, Rhiannon West, Helen Varley, Simon Jackson, Stephen Peters

SLL Representative: Brendan Keely

Landmark with Panoramic View

The Lighting
Solution for the
Restaurant on
the Drachenfels
Plateau

Designing light for a building that attracts visitors for its view outside does not appear to be a rewarding task. If this building is a glass cube to boot, thus making reflections on the panes a view impairing factor, an elevated level of expertise is required.



What if the illumination is to unfold also a symbolic long distance effect while catering to the sensitive needs of nature and wildlife conservation? Is the client's desire to establish an atmospheric lighting concept that serves a gamut of flexible uses feasible in the face of such restrictions? - With its lighting solution for the new restaurant on the Drachenfels (Dragon Rock) Plateau the lighting designers of LichtKunstLicht prove that the dissolution of these apparent contradictions is not only technically viable but potentially atmospheric and inviting at the same time.

Rhine Romanticism and Brutalism

The Drachenfels, located between Koenigswinter and Bad Honnef upon Rhine is considered to be the most frequently climbed mountain in Germany. The legend of the resident dragon, is - although loosely - connected to the Nibelungen Legend. The sublime landscape with its castle ruin was a pivotal backdrop to German Romanticism. In 1816 the steep mountain flank on the bank of river Rhine, the castle ruin and Drachenburg Palace ascended to fame through a poem by George Gordon Byron. Commenced by his British fellow countrymen, it triggered an onrush of tourists that has never quite subsided. In the 1960ies the Drachenfels had up to 900,000 visitors per year.



Such records, however, failed to materialise in the recent past. Declining visitor attendance figures were a motivation for the city of Koenigswinter to apply for a classification as Status-A-Project of the "Regionale 2010" with the project "Holistic Perspective Koenigswinter - Drachenfels". As a result, 21 Mio.Euro were provided to beautify Drachenfels culturally and touristically. Among other criteria, the focus was on the gastronomic infrastructure on the mountain top. It consisted of a hotel from the 1930s and a large, almost 40 year old restaurant.

Built in 1976 and in keeping with the style of Brutalism,

the restaurant destination was always met with criticism. The sprawling edifice with its horizontal concrete ribbons did not only interfere with the perception of the castle ruin and the palace. Since it extended all the way to the southern end of the plateau, its architecture also limited the greatest asset of Drachenfels: the view of the river Rhine. In order to redefine the context, a competition was launched and the third-place design from the landscape designersplandrei-Landschaftsarchitekten Erfurt and the architects Pool 2 Architekten Kassel was put into effect.



Glass Cube and Seating Steps with a View

Ever since the redevelopment the Drachenfels visitors experience nature and landscape, the local history and a contemporary gastronomical use united in a consistent design entity. A pivotal element of the open area is a phalanx of seating steps offering a view of the Rhine valley, the castle ruin and the Seven Hills. Imbedded in the stepped gradient are the gastronomic venues. They include the interconnected volumes of the old hotel and a newly built restaurant. The restaurant's dimensions blend well with the landscape and the existing historical building.



RESTAURANT LIGHTING





In order to keep the above-grade visible part of the building as small as possible, two entire floors have been located underneath the plateau slope, now housing all the back-of-house areas. Above emerges the restaurant as a transparent cube of glass and light-coloured exposed concrete.

The connection between the new building and the historical volume has created a flexibly usable spatial sequence. The ensemble fulfils the requirements of outing gastronomy with several thousands of guests during the course of one day. Furthermore, conferences and evening receptions can be hosted.

Panoramic View Outside and Atmospheric Illumination Inside

The illumination concept for the restaurant inside the glass cube had to be designed to cater to the requirement of

maximum flexibility. An attractive solution for every-day operation and glamour for nocturnal events was imperative. Both configurations were to function with the most different table layouts, ranging from romantic dinners to large banquets. How does one create an agreeable light atmosphere in a space that is entered by guests with the intention of directing one's gaze towards the outside, the lighting designers of the LichtKunstLicht office were wondering.

They responded to the challenge by using direct downlights emanating their light from circular apertures in the restaurant's custom-made metal ceiling panels. In their interaction with the predominantly dark surfaces in the space they engender inviting luminous islands. A gimbal frame allows for an adequate luminaire adjustment for each table configuration.

The restaurant staff can aim the projectors from the ground in a precise fashion with the assistance of a special tool. The luminaire's direct light distribution and the low-reflectance spatial surfaces avoid unwanted reflections in the floor-to-ceiling restaurant glazing. Thus, the view of the valley remains unimpaired.



A Landmark Visible from the Valley and Controllable Coloured Light

The direct illumination of the Drachenfels restaurant fulfils the gastronomy business's flexibility demands and establishes an attractive spatial atmosphere with an undisturbed view for the guests. In order to support the long-distance visual impact of this prominent and popular location the downwards directed light has been complemented with another component: Appropriate to its landmark status, the building was to be experienced from the Rhine valley also at night. Thus the lighting designers decided to enhance the slab view from below with light. This had to be approached with care, because the Drachenfels restaurant is located inside a wildlife sanctuary. Flora and fauna were not to be disturbed by the illumination.

The use of coloured light was the solution for this challenge. Even with a low luminous output strong visual effects can be achieved. Therefore, RGB-LED light strips have been installed behind the perforated metal panels of the restaurant's coffered ceiling. Their diffuse LED light softly

illuminates the square ceiling coffers. By virtue of a control system accessing all indoor and outdoor lighting systems the restaurant staff can adjust the ceiling illumination's colour. Apart from its exterior visual impact it therefore contributes to enhancing the interior atmosphere. ■

Credits

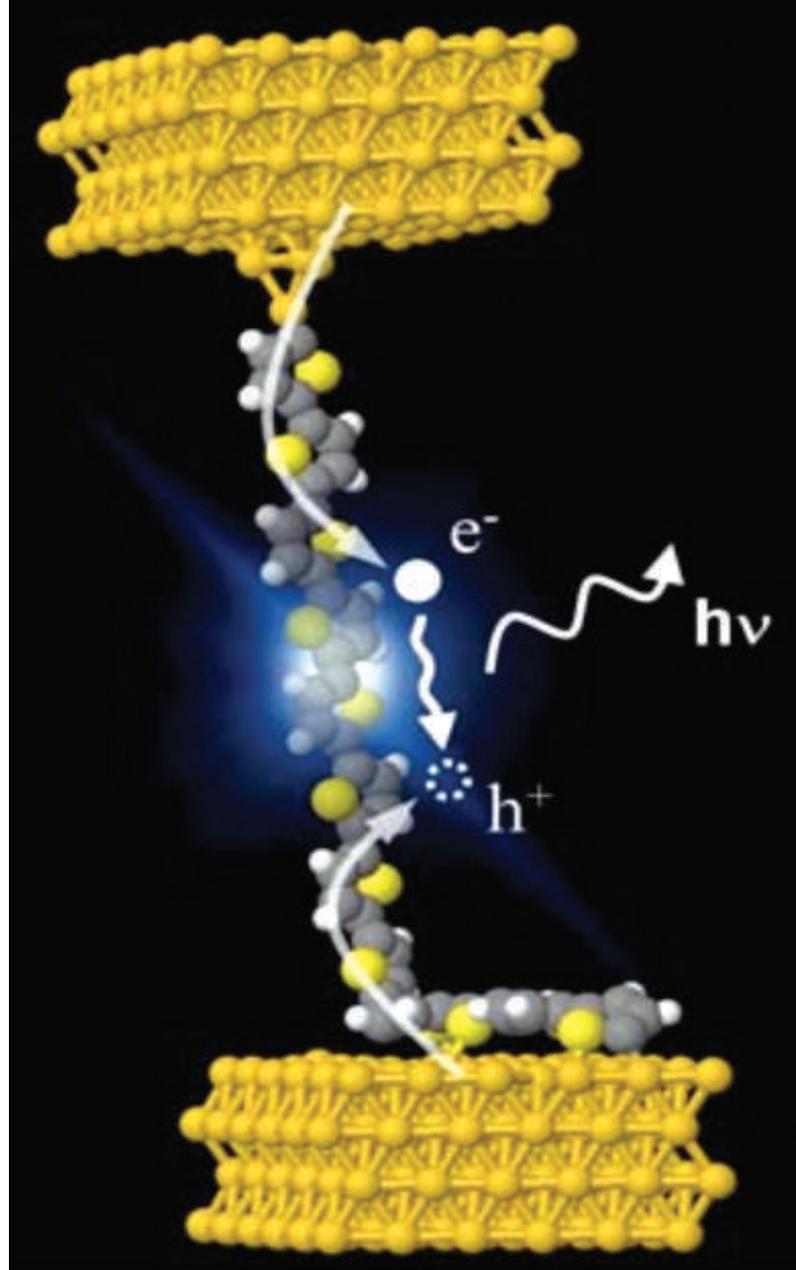
Client: WVG Wirtschaftsfoerderungs- und Wohnungsbaugesellschaft mbH, Koenigswinter
Architects: Pool 2 Architekten, Tore Pape, Kassel
Landscape Designers:
 plandreiLandschaftsarchitektur, GmbH, Erfurt
Lighting Design: LichtKunstLicht AG, Bonn/Berlin
Occupant: Restaurant & Eventlocation Hermann J. Nolden
Project Size: Approximately 3,000 sqm
Photographs: Lukas Roth.

Single Molecule Light Bulb

In general concept, a light bulb or electric light or electric lamp is a device that produces light from electricity. In addition to lighting a dark space, they can be used to show an electronic device is on, to direct traffic, for heat, and many other purposes. Improved vacuum pumps and better materials made them shine longer and brighter late in the century.

Electric generator stations brought electricity to urban & later rural areas to power them. Later gas discharge lights including fluorescent lights use less electricity to make more light. Energy demand with its rising cost and environmental consciousness have motivated inventors & users to look for green yet environmental friendly lighting products and many First Single-molecule LED people have already changed their house lighting system, from the compact fluorescent lights to the energy-efficient LEDs lights. The LEDs, especially the organic LEDs, are becoming increasingly popular in these days. For information, the organic LEDs are mostly thin films made from organic polymers. It can be easily coated onto large areas at a very low cost. Energy-efficient LEDs are widely tipped to become the predominant lighting source of the next decade and beyond, replacing the fast-disappearing incandescent bulb, as well as the compact fluorescent lights that are replacing them.

It's like there is not any engineering problem that can not be solved with carbon nanotubes. Now, it turns out it can solve problems we didn't even anticipate, like making the world's smallest light bulb. It's so small, it's only a few molecules in size. With the going on pace of development in this direction, future light bulb will be one glowing molecule. A single molecule that reliably emits white light and could speed the development of low-energy LEDs has been developed. A single molecule that reliably emits white light could speed the development of low-energy LEDs for the next



generation of light sources and displays, say researchers. The nano-bulb consists of a special molecule trapped in the microscopic gap in a carbon nanotube. When current is applied to this molecular circuit, we get light. Scientists have built a molecule, which is able to behave like two separate light-producing molecules. It produces orange and blue light, when it is stimulated with a voltage. The mix of orange and blue light will turn into white. This means, with this technology, it allows the manufacturers to create white emission in much the same way, as creating white light from independent lights. In this case, we're not only can save much money but it greatly reduces the carbon offset too.

In recent years, many countries have begun looking to switch from incandescent lighting to compact fluorescent bulbs because the latter are so much more energy efficient. There has also been a lot of interest in using light-emitting diodes (LEDs) for displays and general lighting, again because of the potential energy savings they offer. But with

both fluorescent and LED lighting, the quality of white light produced has always left something to be desired. Fluorescent lighting can make people appear unhealthy because less red light is emitted, while most white LEDs on the market today have a bluish quality, making them appear cold. In contrast, OLEDs can be made from a wide range of materials, so achieving good-quality white light is less challenging. It has not been the quality of light that has let OLEDs down but rather their efficiencies. Fluorescent lighting typically operates at around 60 to 70 lumens per watt, while incandescent bulbs operate at about 10 to 17 lumens per watt. In contrast, the best reported power efficiency of an OLED until now was 44 lumens per watt. OLEDs have the potential to grow into a really very energy-efficient light source. One involves reducing its operating voltage by doping the organic material that connects the light-emitting material to its metallic contacts. The efficiency of the device is highly reduced if it is near a metal contact because of a phenomenon called quenching. Another trick was to make the outer surfaces of the device from types of glass that have optical properties that more closely match those of the device substrate. Otherwise, much of the emitted light is reflected and either reabsorbed or lost through heat. The most novel aspect of this new OLED, however, is the organization of different light-emitting materials within the device. Three materials are used—one each for emitting blue, green, and red light—along with a host matrix material in between. Indeed, a major drawback of OLEDs is their longevity. Although companies like Philips are able to make devices with life spans equivalent to fluorescent bulbs—in excess of 10,000 hours—materials that yield higher efficiencies tend not to last so long.

Previous attempts using the same basic concept involved linking together two separate molecules into one. But, because energy is able to flow between the two molecular sub-units, one unit typically emits more light than the other, resulting in an unwanted tint. The new molecule does not suffer that problem, and only contains one light-emitting chemical group. When connected to a voltage, this group switches to a high-energy form that emits blue light as it reverts to its original state. Roughly half the time, though, the high-energy form picks up extra oxygen and hydrogen atoms, becoming a short-lived form that produces orange light before reverting to the original state. A large population of the molecules reliably produces equal quantities of orange and blue light that mix to produce an even white. This allows creating white emission in much the same way as creating white light from independent lights.

Light emitting diodes are components that emit light when an electric current passes through them and only let light through in one direction. LEDs play an important role in everyday life, as light indicators. They also have a promising future in the field of lighting, where they are progressively

taking over the market. A major advantage of LEDs is that it is possible to make them very small, so point light sources can be obtained. With this in mind, one final miniaturization hurdle has recently been overcome by researchers as they have produced the first ever single-molecule LED. A single molecule, in contrast, is better measured in nanometers, a unit just a thousandth of the size. Shrinking the light-emitting element of a pixel by the order of hundreds could, then, make for insane, molecular-scale resolution. The device is formed from a single polythiophene wire placed between the tip of a scanning tunneling microscope and a gold surface. It emits light only when the current passes in a certain direction. They observed that the thiophene wire acts as a light emitting diode: light was only emitted when electrons went from the tip of the microscope towards the gold surface. When the polarity was reversed, light emission was negligible. The researchers showed that this light was emitted when a negative charge (an electron) combined with a positive charge (a hole) in the nanowire and transmitted most of its energy to a photon. For every 100,000 electrons injected into the thiophene wire, a photon was emitted. Its wavelength was in the red range. Therefore, the ultimate challenge in the race to miniaturize light emitting diodes (LED) has now been met. From a fundamental viewpoint, this device gives researchers a new tool to probe phenomena that are produced when an electrical conductor emits light and it does so at a scale where quantum physics takes precedence over classical physics. Scientists will also be able to optimize substances to produce more powerful light emissions. Finally, this work is a first step towards making molecule-sized components that combine electronic and optical properties. Similar components could form the basis of a molecular computer. Single molecule light bulb needs an efficiency boost before it can be used in commercial lighting and displays. Currently, the molecule converts electrons into photons at least 30 times less efficiently than commercial LEDs. ■



Dr S S Verma, working as Professor in the Department of Physics, Sant Longowal Institute of Engineering and Technology (Deemed university), also worked as Assistant Professor in the Department of Physics, Gondar University, Ethiopia. He is MSc from Shimla and PhD from IIT Delhi. He did postdoctoral studies under Japanese Govt. fellowship with Prof. Ken Okazaki at Toyohashi University of Technology, Toyohashi (Japan). He has published about 70 research papers in national/international journals and about 400 science and technology related articles towards science popularization in various magazines/news papers.

FUSION

Next level, second generation LED flood light solution from acdc officially lights up Mumbai

Internationally renowned LED experts, acdc UK in association with VersaLite Hitech Pvt Ltd India, officially launched their latest innovative architectural, IP66, LED floodlight range "FUSION" to the Indian market during September in collaboration with distribution partners and lighting specialists, VersaLite Hitech Lighting.

The event, attended by 80 of India's elite Lighting designers, Architects and Interior designers, took place at the Toteon the Turf, Mahalaxmi Mumbai and gave guests an opportunity to see the power and punch of the FUSION flood light fitting with their own eyes.

The luminaire was designed to meet the demands for a variety of lighting applications including shopping centres and retail environments, contemporary and historic facades through to airports. FUSION 24 and FUSION 48 deliver 4000 lumens and 8000 lumens in warm white at 3000°K and can graze surfaces of 40m and 70m at 12 lux respectively.

acdc's International Sales Manager, Chris Rimmer, said; "We are extremely proud to be launching FUSION in India. FUSION brings a refreshing new choice to the market: an LED flood light luminaire whose crisp, clean, unobtrusive design blends seamlessly into architecture, ensuring the primary focus of attention is on the luminaires' lit effect whilst delivering exceptional outputs, dimming control and colour options."

acdc Sales Director, Louise Frankland, added; "FUSION is the next level, second generation LED flood light solution revolutionising the market place. We have incorporated the very latest in LED technology to enable FUSION to match the performance of the 36 LED flood light products currently available on the market, whilst using only 24 LEDs and offering 25% energy savings. In addition, FUSIONS' wide range of optics and broad choice of accessories, providing maximum glare control, give the designer flexibility when designing lighting schemes around the world."

acdc LED is a UK based, international specialist in architectural LED lighting with offices in Lancashire, London, Dubai, UAE and Baltimore, USA along with a network of 50 carefully selected distribution partners covering 5 continents across the world.

VersaLite™

Let lighting make the statement

acdc®

Bringing light to life

LED - Downlights • Linear • Floods • Accent

Since the company's inception, acdc have been revolutionising the lighting industry with their dynamic and forward thinking approach; leading them to produce a broad portfolio of LED products including downlights, floods, linear and accent luminaires.

acdc operates in all key international lighting markets and their LED luminaires have literally brought some of the world's most prestigious projects and buildings to life including:

- Mumbai Airport, India – over incorporating over 4,000 acdc luminaires
- The Burj Khalifa – the worlds' tallest tower in Dubai, UAE
- The Burj Al Arab - the worlds' most luxurious hotel also in Dubai, UAE
- Bitexco Tower – the largest building towering over Ho Chi Minh City, Vietnam at an impressive 68 storeys high
- Marina Bay Sands – a world-class luxury casino and hotel complex in Singapore
- The Olympics Bridges at the Olympic stadium in London, England.

Unobtrusive luminaire designed with everyone in mind

FUSION offers a robust luminaire housing made from high pressure, die cast, corrosion resistant LM24 aluminium. A specialist Alodine® treatment is then combined with a two stage powder coating paint process to ensure lifetime product performance in even the harshest external environments.

FUSION was created with simplicity in mind; acdc considered everyone involved in a lighting scheme, from the lighting designer and end client through to the electrical contractor, to minimise on site time and hassle. The result is a luminaire which is easy to design with and to specify as well says being simple to install and commission.

FUSION can be flexibly focused on site allowing it to be tilted +50° forward or -95° back and rotated + /- 45° from 0° enabling the product to adjust to graze up verticals with ease.

Technical intelligence & installation simplicity

FUSION has been meticulously designed to maximise airflow around the luminaire, delivering effective thermal management and enabling product lifetime performance. In addition, FUSIONS' on board thermal management software automatically dims the luminaire when temperatures exceed 50°C with temperature compensation algorithms ensuring colour consistency and making it ideal for applications in extreme temperature environments.

Technically, FUSIONS' fully integrated, 4 channel DMX driver comes with a host of important features, including Hybrid Hydradrive driver technology which ensures smooth, flicker free, even and consistent dimming down to 0%.

Set up and commissioning made easy with FUSION

A quick double twist lock, one tool installation and the products light weight ensures simple, one person installation, whilst FUSIONS' "hub" wiring solution provides rapid first fix installation of mains and DMX, followed by plug and play connection of the luminaire, negating the need for external drivers and simplifying the installation process.

The RDM technology incorporated within FUSION then enables each luminaire to be auto addressed onsite, significantly reducing time and adding additional flexibility during the commissioning process.

Chris Rimmer concludes: "FUSION won the prestigious Lighting Design Award last year and is already proving to be an extremely important product for the company. acdc work with some of the worlds' leading lighting designers, architects and interior designers on some of the worlds'

most prestigious projects and FUSION has already been specified on significant projects internationally. We hope to achieve the same success with FUSION in India."

Nilesh Kacheria, Director of VersaLite Hitech Lighting said: "The acdc FUSION launch in India will allow Lighting Designers and Architects to feel the product and see the luminaires lit effect whilst also affirming acdc's commitment to the Indian market. We, at VersaLite, are proud to be associated with acdc and I am confident that FUSION will find place in Indian projects."

Versalite Hitech Lighting Pvt Ltd. specialises in lighting systems design and installations.

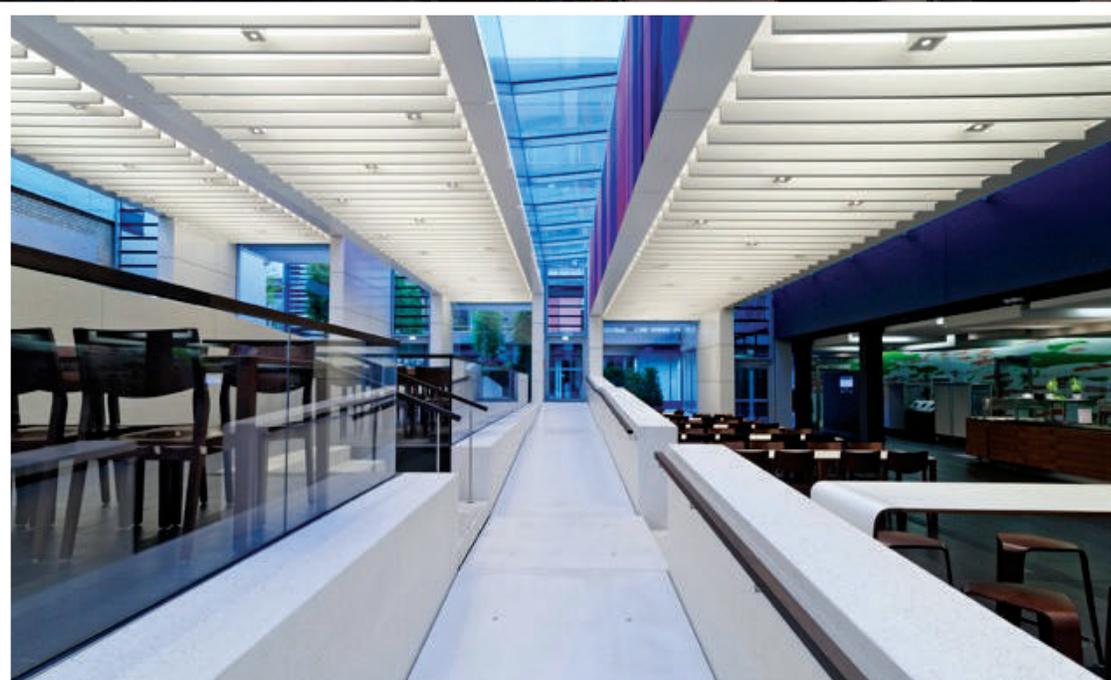
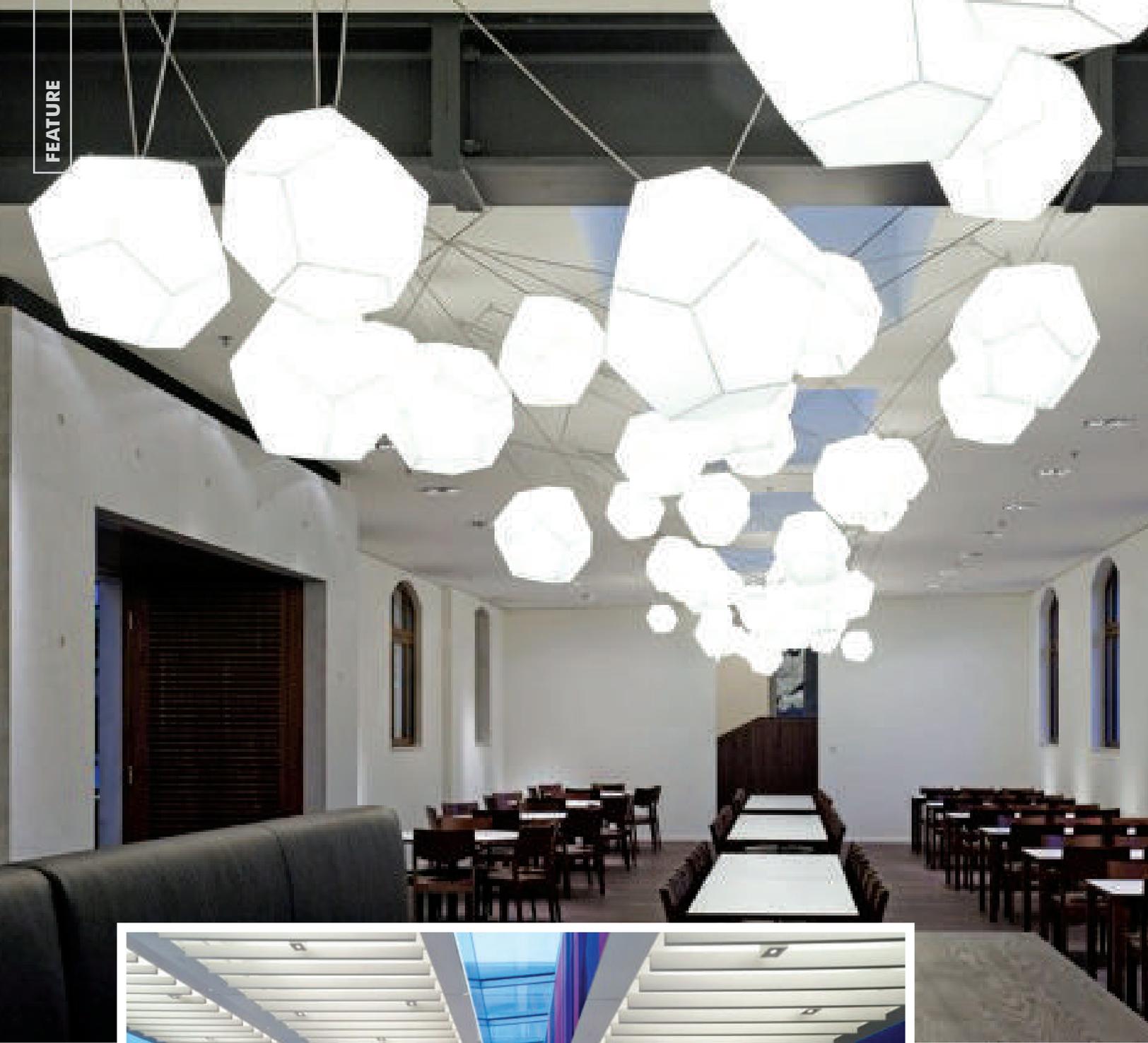
The company has professionals specialised in product system designs and installations. Versalite has done lighting for various projects such as:

- Mumbai International Airport, T2
- Ajanta Caves
- The Triumph, Lodha
- Alila Diwa, Goa
- JW Marriot, Pune
- Farah Khan Fine Jewellery, Mumbai.

FUSION at a glance

Luminaire

- Available in 2 sizes 24 LED 48 LED
- **Initial lamp Lumen output***: 4542lm 8563lm
- **Lamp lumens inc thermal and optical losses***: 4315lm 8135lm
- **Luminaire Lumens output***: 3992lm 7526lm
- **Power consumption (inc 85% efficient driver)***: 40W 82W
- **Efficacy (Lm/W)***: 100 92
- **CRI**: 80 80
- **IP rating**: IP66 IP66
- **Weight**: 3.4kg 5.4kg *based on 3000°K with 10° optics
- **4 channel colour options**: 2700°K, 3000°K, 4200°K, 6000°K, 2700°K/6000°K (Dynamic White), RGB, RGBA, RGBW, R, G, B, A.
- **Broad choice of optics**: 10°, 16°, 30°, 40° x 12°, 64°
- **Accessories**: Louvre, snoot, cowl, garden spike, wall arm
- **Choice of colour finishes**: White, Black RAL
- **Adjustability**: Tilts +50° forward or -95° back. Rotates +/- 45° from 0°
- **Temperature range**: From -10°C to 50°C
- **IP rating**: IP66
- **Lumen Maintenance**: High efficiency LEDs tested to LM80 standards, 50,000hrs lifetime with lumen maintenance at L70.
- **Binning**: Colour consistency ensured across a project - 2 step MacAdam ellipse.
- **Listings**: CE, ETL us/c pending
- **Warranty**: 5 years. ■



WGV Casino & Old Guardhouse Stuttgart



Light Vision In this project, the challenge for the lighting designers was as complex as the topography of the site: three terraced levels in the casino and the gardens, adjacent a protected historical building – the "Old Guardhouse", skylights with enormous dimensions, etc.

With our lighting concept we wanted to give carefully considered answers to all the various themes and architectural details. We did not want to push any lighting elements in the foreground, with one exception: the floating group of octahedron-shaped pendants, designed especially for the event space in the Old Guardhouse.

Lighting Concept

The Casino roof is divided in three ceiling slabs with long skylights in between. Within these slabs LED-baffles have been developed in close co-operation with the architects and acoustic planners to provide smooth indirect ambient lighting for the casino. In addition, custom made, glare-reduced LED-spotlights provide direct light for the tables.

At one side of the long skylights, a strong colorful artwork enhances the architectural concept. A LED strip, located on the opposite side of the skylight, illuminates the artwork, in order to boost its effect also during the blue hour and in the evenings. Apart from the direct lighting effect, the reflection of the illuminated artwork creates a very pleasant, smooth gradient of colors on the light architectural surfaces, changing according to the position of the viewer.

In the Guardhouse, octahedron-shaped, custom-made pendant luminaires float in a random fashion through the multi-used event space. They were executed with dimmable fluorescents, in three different dimensions.

The terraced gardens act as a visual extension of the interior casino. This architectural composition is enhanced by linear uplighting for the dividing concrete slabs and vegetation, and with a soft wallwash for the Old Guardhouse's facade. Balanced lighting levels, both horizontal and vertical, support this spatial approach and create a enjoyable atmosphere. ■

Project Details

WGV Casino & Old Guardhouse, Stuttgart

Project: WGV Casino & Old Guardhouse, Stuttgart

Client: Württembergische Gemeinde
Versicherung a.G., Stuttgart

Location: Stuttgart, Germany

Date of completion: March 2014

Size: 2900 qm/sqm

Architects: Hascher Jehle Architektur, Berlin

Lighting Design: Pfarré Lighting Design, Muenchen

Artists: Hansjörg Schneider, Daniel Lordick

Photography: Andreas J. Focke



Gerd Pfarré FIALD, founder and managing/design director of pfarré lighting design, an independent lighting design practice in Munich. Co-founder of the publishing company LightingPress with Frank Koschembar. He is specialized in the area of lighting design. Since 2012 Co-Editor of the magazine ILLUMINATOR. In 2013, pfarré lighting design accepted the world's most prestigious award for excellence in lighting design, the Radiance Award, for the Hafencity University subway station.

Hotel Lighting

Stickman Tribe

Getting the lighting right is key to any interior design project, be it in an area of a hotel, in a bar or restaurant or in a spa. Creating the right mood, tone and feel of a place relies heavily on how it is lit and the ambience this lighting produces. At Stickman we see every project as a blank canvas ready to dress, and lighting is one of the main components that turns this blank canvas into something that stands out and separates itself from the crowd.

As interior designers when we embark on a project our principal approach is to envision and create spaces and places that energise audiences, placate the soul and thrill clients. Design goes beyond just putting things together in a certain way and is really about capturing an essence and creating an ambience. There are many ways to light a space, not only with color intensity and different scenes, but you can also provide accents with indirect light, angle beams, pin spots and so forth. It needs to be a delicate play on the interior architecture and elements within the space. There are also decorative lights, which play a critical role in providing the general look and feel of the space.

The right balance is created between lighting for design and lighting for purpose. The lights in an outlet need to create your desired mood but they also need to be functional. With every space you have different operational areas that need to be well lit and it's important to provide the correct level of light required while masking any light bleed into the space with screens, petitions, indirect focus lights or narrow beams. It's also important to bear in mind the positioning of the outlet when thinking about lighting, as you may have to either compensate for not enough natural light, or try and dim it down if the natural light flowing in is too intense.

There are many different styles of lights you can choose and each one is different from the rest. You can go for obvious, design pieces, such as lights, which catch your eye when walking into the outlet, or more subtle, hidden lighting. As a designer you should never underestimate the power of

hidden, subtle back lighting, or the beauty and seduction of an open flame. When working on a project, especially within a hotel or restaurant, lighting designers are vital to a project due to their expert opinion and knowledge. To touch on some products would be, LED, Oled and electro luminescence are great to use as they reduce the loading and carbon footprint of an outlet.

At Stickman we aim to choose LED lights wherever possible to help with energy conservation. In hotels and restaurants, lights are on for the majority of the day so it's important that these lights have the lowest impact on the environment as possible, saving our clients' money on their electricity bill in the meantime.

With lighting, the main objective is to hide what you don't want to see and highlight what you want to show off, with a smooth lighting transition from sunrise to sunset, all the while bearing in mind the overall scope of the project, the venue and the trading hours of the outlet. Lighting is a component that should be key in your design planning and research straight away from day one. If you get the lighting right, the space you have created will not only invite guests in, but also make them feel at ease and in awe of their surroundings. ■



Marcos Cain, Interior Designer is Owner/ Director with Post Graduate Degree in Project Management from the Curtin University of Technology in Perth, West Australia. His design projects include Development of Horeca, School of Excellence, Malaysia. Marcos Cain has over 20 years of comprehensive and progressive international experience within the hospitality industry. Marcos established Stickman in early 2009 with business partner KarenHay. Stickman is an international Dubai based boutique style interior design consultancy. Stickman tribe in Dubai and Hong Kong is a melting pot of 18 individuals coming from a wide range of different cultures and nationalities. He comes from a food & beverage background and owned several bars and restaurants in Australia recognized but his inert talent for design.

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Contents of the magazine :

- News and views from the medical equipment industry
- Interviews and Opinions of eminent professional from the medical field
- Events
- Technical articles related to disease, product equipment
- Book reviews on the industry
- Product write-up
- New Products/ Product Launch

... and much more.



Major Industries covered :

- Pharmaceutical machineries
- Medical implements & implants
- Oxygen setup
- Dental equipments
- Hearing aids
- Pathological equipments
- Ophthalmologic equipments, devices & solutions
- Ambulance
- Air sterilization
- Surgical equipments
- Electro medical equipments / Medical technology
- Rescue & Emergency equipments
- Medical Diagnostic & hospital supplies
- Physiotherapy / Orthopedic equipments & technology
- Communication & IT
- Medical furnitures & equipments
- Cardiology equipments
- Radiology & Imaging equipment technology
- Medical disposable disinfection
- Hospital utilities & supplies
- Neonatal / Pediatric equipments & patient monitoring equipments
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... and related accessories



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- Diagnostics & Laboratory Instruments
- Hospital Furnishing & Related computer software
- Rehab. & Therapeutic aids
- Ophthalmic Instruments
- Oral & Dental Equipment
- Optical Equipment and supplies
- Institutions
- Other allied industries

Surya Roshni Limited

Surya Roshni, an Indian multinational is the largest Indian lighting company & G.I & Hollow section Pipes manufacturer. Surya has proved its mettle in every realm of excellence. Recently, Surya Roshni has entered into the realm of fans. Surya launched colourful range of ceiling, table, pedestal & wall mounting fans along with the wide range of domestic exhaust fans. Surya now plans to launch home appliances for the Indian market like Water Heaters, Dry Irons, Steam Irons and Mixer-Grinders. These products will be available in the market from October 2014. The next generation LED technology is the latest addition to SURYA's cosmic range of lighting series. This energy efficient luminaire is available in many mounting options to offer a flexible LED lighting solution to customers.



Technology & Innovation: Surya Roshni have invested for design, development & manufacturing of LED products. Keeping pace with the changing times, Surya has come up with LED Lamps which are fast replacing the conventional GLS bulbs, which are not only energy efficient but also environment friendly. LED products are completely mercury free and save up to 85% energy. LED market in India is expected to grow at a rate of 40-45% which will remain technology driven for at least for next 5 years.

In-house Manufacturing: Surya has state of the art in-house manufacturing facilities for production of indoor and outdoor LED Luminaires, which include LED Bulbs, Downlighters and Streetlights etc. Surya focus shall be to educate and promote only sustainable energy efficiency and drive LED products. LED products needs to be seen from

Sustainability, Value creation to consumer/channel partner & Total Product Life Cycle point of view. Although LEDs seem to be more expensive than other type of lighting, they are very cost effective in the long run. First of all it saves energy and secondly they operate for a much longer duration than ordinary lamps. Their design flexibility, powerful nature, small size and availability in almost all kinds of colours make them an attractive choice for household & other use.

R&D Centre: Surya's R&D centre at Noida is one of the most advanced state-of-the-art lighting laboratory and research centre with specific focus on LED. This set up is already DSIR (Department of Scientific & Industrial Research, Ministry of Science and Technology) and NABL accredited. It is equipped with the most advanced photometric laboratory which houses High Speed automatic Mirror Photo Goniometer from LMT Germany.

Network: Surya has network from Kashmir to Kanyakumari and North-East to Gujarat with 2 lac retailers & 1500 dealers and are also exporting to 44 countries across the globe, including Europe and America. Surya enjoys about 25% market share in India.

Quality of Surya Products: By being cost effective without compromising on quality, the company has become a leader in lighting and steel pipe industry. With a nationally and internationally accepted SURYA Brand and pre eminent position in the lighting and steel industry, it is poised to capitalize on the immense opportunities unfolding in the global market. ■

Website: www.surya.co.in

PANLUX s.r.o

Founded in 1998, Czech Republic, PANLUX s.r.o was initially a trading company had started its own production. It is amongst leading manufacturers and distributors of luminaires in central Europe with branches in Slovakia, Hong Kong and large logistic centre in the Czech Republic. This fact allows its customers to receive their orders in the shortest possible time.

The company offers a wide variety of luminaires for interiors and exteriors, like home, office, industrial, garden, worklights and design lighting. They also offer various



bulbs: halogens, metal halides, CFL, energy saving bulbs, LED bulbs and other accessories such as sensors, LED drivers, transformers, flashlights, headlamps, wireless doorbells, etc.

As the interest in Czech products quickly increases, they have expanded distribution of products around the world. Nowadays they supply their products to Germany, Austria, Switzerland, Netherlands, France, Malta, and Iceland. The PANLUX s.r.o. company is also an exclusive distributor of LEDMED brand. ■

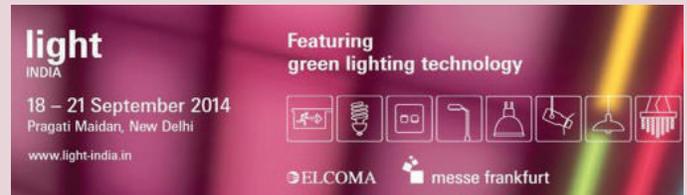
Website: www.panlux.cz

Light India unveils innovative technologies in green lighting

Lighting India participated in Light India 2014 exhibition in Delhi and continuing on the success of the last edition, this India's b2b trade fair proved to be successful for attracting visitors. Opening on a promising note with 'Green Lighting' as its theme this year, the exhibition unveiled energy efficient and innovative lighting technologies, its various applications in the form of latest products, luminaries and its accessories that town planners, architects and builders can expertly use to design green buildings and use in commercial, residential and public spaces.

The inauguration witnessed the presence of eminent dignitaries from the industry including: Piyush Goyal, Union Minister of Power, Government of India; Dr. Ajay Mathur, Director General, Bureau of Energy Efficiency; Nirupam Sahay, President, ELCOMA, Sunil Sikka, Vice President, ELCOMA, Shyam Sujan, Secretary General, ELCOMA; Wolfgang Marzin, President & CEO, Messe Frankfurt GmbH, Germany; Raj Manek, Executive Director and Board Member of Messe Frankfurt Asia Holding Ltd, among others.

Speaking on the occasion, Piyush Goyal said, "With growing consumer standards, urbanisation and the government's aspiration to make lighting available for all, consumption of power for lightings should not go up from the existing 19%. It is essential to educate citizens and encourage adoption of sustainable lighting and I appreciate the role Light India is playing in raising consciousness among people. Country is realising the importance of this exposition and I can see a lot of brands here today. I would urge sector players to scale up their operations to make energy efficient lighting solutions viable and attractive to consumers." He urged sector players to move ahead with the changing times and become the change needed to create zero effect on the environment.



Bringing 200 exhibitors including foreign contingents from China, Spain, Italy, Japan, Korea, Russia, Taiwan, Turkey, the UAE and the UK on the show floor, Light India once again takes pride in showcasing the newest developments in the lighting industry and how light as a concept can be 'green' and environment-friendly.

Speaking at the inaugural, Shyam Sujan, Secretary General, ELCOMA said, "Light India 2014 has stepped into its second edition and it gives us immense pleasure to be able to give exposure to the concept of Green Lighting to the wide audience through this exhibition. While the exhibition will allow business opportunities wherein Indian as well as foreign players come on the same platform to showcase the evolution of Lighting, this exhibition in a manner will also educate the general consumers of the latest lighting trends. At ELCOMA, we have always aimed at educating everyone on adopting environmental friendly lighting and this exhibition is an important step towards our efforts in this direction."

Several exhibitors are also showcasing their newest developments in lighting technology focused specifically on achieving greater energy efficiency and sustainability.

Underlining the fair's growing importance in the industry, Raj Manek, Executive Director and Board Member of Messe Frankfurt Asia Holding Ltd. said: "With the government's ambitious plan to upgrade urban India, Indian town planners



need to re-evaluate existing structures and adopt high-performing and energy saving lighting. Light India aims to bring sector players along with architects, interior designers, retailers, construction companies, institutional buyers and government authorities under one roof and put these energy efficient lighting innovations in all-encompassing business platform for the industry. Manufacturers at this exhibition have demonstrated the great energy-saving potential offered by the use of innovative, market-ready technologies."

With an increase in number of footfalls in comparison to the last year, on the first day itself, the exhibitors reported a good number of inquiries for the products they displayed. A series of workshops and conferences have also been lined up by The Energy & Resources Institute (TERI), The Indian Institute of Interior Designers (IIID) and International Solid State Lighting Alliance (ISA) alongside the ongoing exhibition. Ms. Meenakshi Lekhi, Member of Parliament (New Delhi) and

Presiding officer NDMC will also be seen addressing attendees on the new dispensation plans to use lighting and digital technologies and initiatives to make New Delhi a model city by using lighting as a development tool at the 'Business of Lighting' Conference by Sourcing Electricals and Lighting on the third day of the fair. More than just an exhibition, it is a platform where the exhibitors and the visitors can interact for interesting opportunities and learn more about the applications through the concurrent seminars.

On track for another outstanding edition, Light India assured to deliver a riveting experience as visitors attending the show can also plan meetings with over 200 manufacturers and suppliers, witness innovative product displays, interact with lighting technology experts and lots more. The trade fair was held in Halls 7, 8, 9, 10 & 11 of Pragati Maidan in New Delhi until the 21 September, 2014.

The next edition of Light India is slated in 2015. ■

LED Expo December 5-7, 2014 in Delhi



Lighting India is participating in LED Expo 2014 during December 5-7 at New Delhi. On the basis of a research, Frost & Sullivan has claimed that by the year 2021, the LED technology will penetrate a whopping 57 percent of the lighting market in India. Messe Frankfurt announced LED Expo; an expo exclusively for LED products and technology in India. LED Expo, now part of Messe Frankfurt's internationally renowned event-technology brands will present a premier trade platform for innovations in the growing field of LED. Today, LEDs serve as a perfect lighting solution for illuminating public, commercial and private spaces. LED lights are replacing the conventional halogen lamps at a fast pace by slowly making their way outside the homes by illuminating street lights, public transport areas like railway station, metro stations, airports etc.

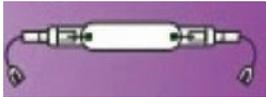
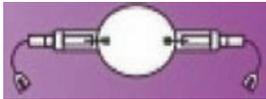
LED expo was conceived out of the growing popularity of LEDs to answer all the questions related to science, technology and application of LEDs and solid-state lighting. The first edition of LED expo, held in January, 2009 in New Delhi received commendable success and appreciation from the industry with an unprecedented turnout of visitor footfall. Since then, The LED Expo has continued to grow in leaps and bounds.

Exhibitors, over the years, have received numerous enquiries & generated business with visitors from all walks of life including architects, automotive industry professionals,



building contractors, consultants, brand managers, CPWD, dealers & distributors of LED products, hospitality industry, government agencies & planning departments, trade councils, real estate companies, retail chain owners & many others exploring the use of LED for various applications; be it domestic or commercial. Till now, the show has witnessed 9 successful editions held across the globe and is expected to witness multifold growth in terms of size, area, number of visitors & exhibitors. LED Expo is slated to be held at halls 8- 11 of Pragati Maidan, New Delhi, and will take advantage of Messe Frankfurt's professionalism to ensure industry players gain access to the best domestic and international business opportunities, networking & knowledge sharing. ■

Sports Lighting High Wattage - Short/Long Arc & Double Ended by Venture Lighting India Ltd



Features

High lumen output;
 Compact linear lamp;
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 Cooler base design;
 Improved field performance;
 High CRI 90+;
 Also Available in Elliptical & Tubular;
 Range: 1000W, 1500W, 2000W.

For further details contact: marketing@vlindia.com

Luminis' brings Aramis and Syrios



Luminis, an established innovator and manufacturer of specification grade lighting solutions, announce d its Aramis AR150 and Syrios family have been selected for inclusion in the 2014 IES Progress Report. Aramis AR150 is a high power cylindrical pendant LED luminaire that combines a clean design aesthetic with high light output for use in interior applications such as shopping malls, retail stores, convention centers, sports centers and transportation terminals. Heat management optimization means the Aramis AR150 delivers a luminous efficacy three times that of a conventional HID light source.

The Syrios family of fully engineered and integrated exterior luminaires have been designed for maximum lighting performance. Wall, pendant, and surface ceiling mounted configurations in various diameters provide the flexibility to mix and match products while maintaining a common design aesthetic within traditional or contemporary architectural settings such as schools, public spaces, office buildings, shopping centers and hospitals. Syrios products also feature a unique integral adjustable lamp to enable precise directional light without disturbing the position of the luminaire.

Website: www.luminis.com

MAXRAY inc brings Bonbori Small



Bonbori Small

Created from a paper shade anchored to a wooden base, this angular table lamp is characterized by origami-like folds that combine structure and surface in a single expression. The geometric planes that characterize its structure resemble the facets of cut gemstones, giving the lamp a strikingly sculptural appearance. The angles of the surface enable the lamp to be cleverly positioned to cast light into the darkest corners.

The number of the product is MF70086-0. It is available in W327 x L377 X H427 size and in white color.

Materials: painted wood base and paper lampshade.

Website: www.maxray.co.jp

EM powerLED BASIC - Functions for emergency lighting and mains operation in a compact package



The EM powerLED BASIC FX 80W and the EM powerLED CPS FX 80W units combine basic emergency lighting functions and mains operation with an integrated simple CORRIDOR FUNCTION (sCF) in a compact low-profile casing. With a cross-section of 21 mm x 30 mm they are designed for installation in slim LED luminaires. Each unit covers a wide range of LED applications with output power of up to 80 W and both offer considerable potential for energy savings due to the integral sCF feature.

The combined EM powerLED BASIC FX 80 W module not only enables LED modules to be operated from the mains supply but also provides simple emergency lighting functionality from a local battery. It covers a power range from 25W to 80 W and the output current can be set via the Tridonic i-Select system in 25 mA steps between 150 mA and 500 mA. The LED emergency lighting unit is suitable for a wide range of LED modules with forward voltages from 50 to 230 V. In mains operation the integrated sCF, in combination with a presence sensor, enables the lighting level to be reduced from 100% to 10% in the absence of people. This reduces energy consumption and leads to considerable cost savings.

In emergency lighting mode the operating time can be set between one and three hours via a jumper. Standard output or high output for emergency lighting can also be selected via a jumper and integrated power control ensures maximum output for the required operating time in an emergency.

The CPS version, EM powerLED CPS FX 80 W, has the same electrical parameters but is designed for operation on both AC mains and central DC battery systems. In emergency lighting mode, from the central system, a lighting level of 100% or 10% can be set at the output. Depending on the application, the size of the central battery can therefore be reduced or, if required, a maximum light level can be achieved. The same simple corridor function sCF is available to reduce power in the absence of people. ■

Website: www.tridonic.com

Instrument Systems presents a goniophotometer system with new feature



The LGS 1000 from Instrument Systems allows angle-dependent spatial radiation characteristics of large LED modules, solid-state lighting (SSL) products, as well as lamps and luminaires to be determined. The LGS 1000 can be operated together with a photometer as a conventional goniophotometer or with a spectrometer. This allows all important performance characteristics such as luminous intensity distribution curves, luminous flux, color coordinates and even rendering index to be measured.

As an optional accessory, the newly developed luminous flux integrator allows the characteristics of lamps and luminaires to be determined in their required burning position. An added benefit is that the measurement can be taken faster and are more accurate.

Alongside the new accessory options, the basic version of the goniometer also offers an array of advantages. Accessible steps allows samples up to 2 m in diameter and weighting 50 kg to be easily mounted. Notwithstanding the robust dimensions, the LGS 1000 can still be accommodated in a laboratory with a standard ceiling height. The two synchronously controlled servo motors with precision angle encoders facilitate simultaneous movement with minimal vibration. The reproductibility of the sample positioning is smaller than 0.10 at nominal load. ■

Website: www.instrumentsystems.com

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New mood maker from Northern Lighting: Birdy



Northern Lighting is hereby proud and happy to present the re-launch of a classic Norwegian design lamp series dating back to 1952; Birdy. Now also available as a more compact wall version with a short arm. This beloved modernist lamp series designed by Birger Dahl (Oslo, Norway) has been a favourite Norwegian collector's item for many years. After its original launch and as part of the post-war so-called "democratic design wave" from Scandinavia, the lamp reached early high standing as a relatively inexpensive, yet highly functional, and esthetically appealing light piece for the masses. The Northern Lighting team shares a deep affection for this lamp and its characteristics and have therefore decided to reintroduce it. They will re-launch the following four models of the Birdy series: a table lamp, two different wall lamps and a floor reading lamp. ■

Website: www.northernlighting.no

Eco Hi-Lo LED Tube with PIR Sensor by Joy Life Electronic Co Ltd



Feature

The illuminations of ECO Hi-Lo LED Tube with PIR Sensor is equivalent to that of 38W fluorescent light tube. When an object enter the detection area, the light will switch to 100% brightness. When the object has left the detection areas. Light will switch to 20% brightness after 1 minute.

No need to change T8-type lighting fixture. Construction work is unnecessary. For every light tube replaced, over 320kWh of electrical power may be saved annually. An expert business with reliable products.

Specifications

JST-A 15DT model is available;
It has a T8 tube type;
Method of Detection: passive infrared (PIR);
Operating Voltage is AC85V~265V 50Hz/60Hz;
The Power Consumption is 15W (100% brightness), 2W (20% brightness). ■

Website: www.joylife.com.tw

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- Industrial & Machine Tools
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Did you know...

A LED Light Wand Ceiling



If one has a ceiling like this one, which is completely covered in LEDs, one can on a whim, change the lighting in the room. Draw The Lights, by Seo Dong-Hun, is a concept for a customizable LED ceiling composed of a network of energy efficient LED lights, a few sensors and a light wand. Need brighter light right above to read? Use the light wand to turn on more lights. Want to create a special pattern for a party? Paint the ceiling with lights to fit the mood. Dong-Hun's concept for a customizable ceiling would give the flexibility to light for different settings, parties or work. Composed of a ceiling web of circular LED units, patterns and moods can be drawn into the ceiling via the light wand, which communicates with the sensor inside the LED unit. Users can set the light type as well as the color for each unit across the whole ceiling. And since all of the lights are LEDs, the lighting system is energy efficient and could have the potential to save energy, since it can create the ambiance that fits needs. And it's pretty unlikely that one would ever need the entire ceiling of lights on at once. ■

Hemmesphere lighting by Massow designs



Hemmesphere lighting range, from Massow designs, takes beautifully crafted and sculpted wood, offset against the industrial feel of a bare lightbulb, to make this statement piece lighting range. The design goes further than the fitting its self by creating unique shadows which can give any room a one of a kind feel with a warm and fulfilling glow. Taking Japanese influences, the lamps are designed to be peaceful by using very clean lines and brilliant craftsmanship. As very tactile pieces, they bring a brilliant energy into any space. ■

NLC lamp by Constantin Wortmann



NLC perplexes with its positively striking and yet strangely puzzling appearance. Its special appeal lies in the seeming conflict between the chaotic and the organic. NLC draws its inspiration as much from the head of Medusa as from the finely trellised branches of a treetop. One of the reasons for the luminaire's attractiveness certainly stems from the fact that the design invisibly incorporates the light source. The white cover hides the light fittings and is easily adjusted to create the desired amount of illumination. Dimmable LEDs offer an additional option of controlling the level of brightness. Due to the E14 fittings NLC can be used either with LEDs or standard energy-saving lamps. ■

Table Softlights by Molo Design



The white textile shade of cloud – comprised of hundreds of cellular honeycomb-like forms, is lit internally by energy-efficient LED and radiates a gentle, all around, ambient quality of light. The beautiful, low glare light emanating from cloud makes it ideal for reading, doing detailed work, or simply bringing a new impression to a space. Beneath the textile shade, the visually delicate, de-mountable wooden bases of cloud floor + table softlight make clever use of a flexible and hidden connection to elegantly join each of its three legs together. ■

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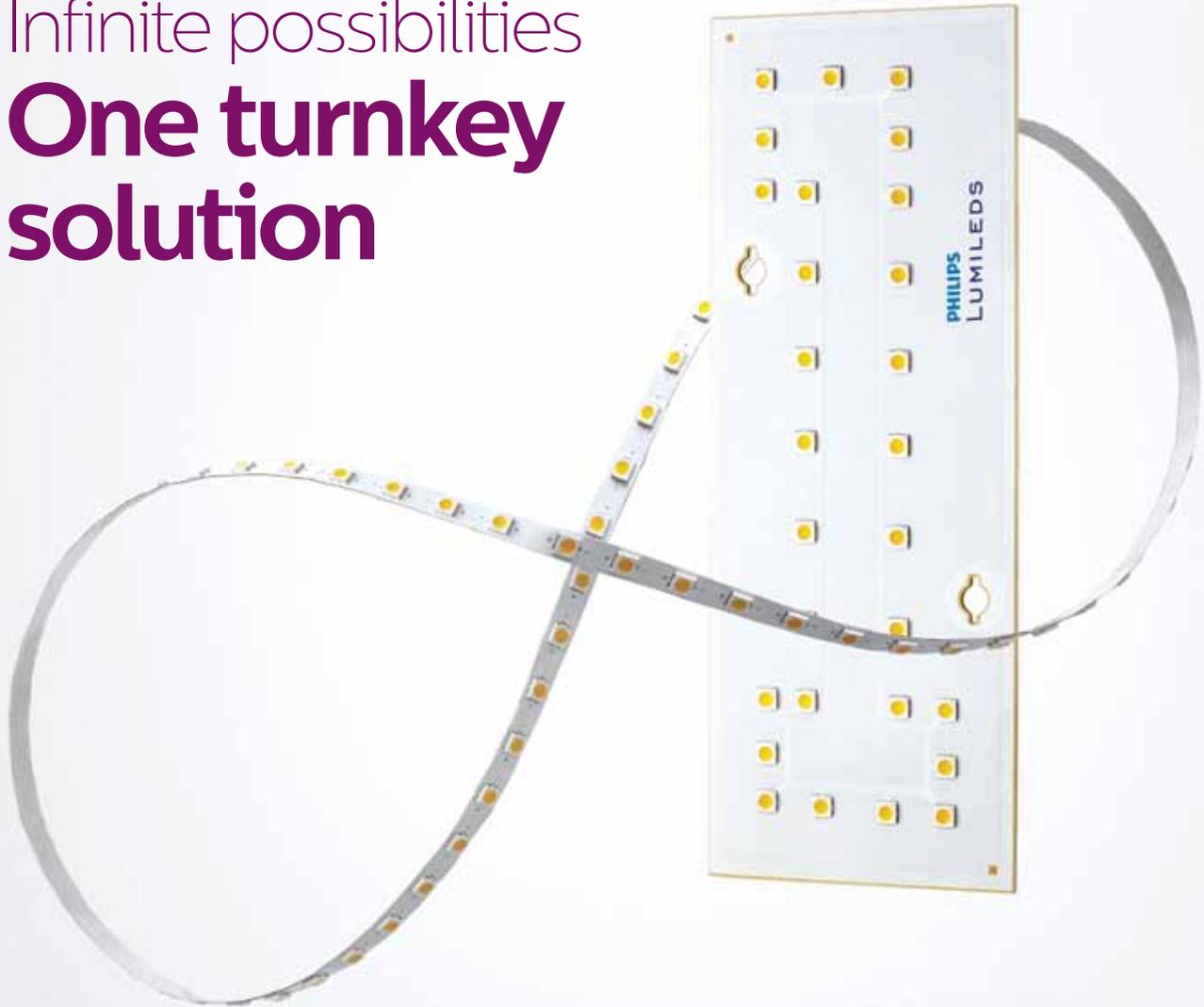


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