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Lighting India

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July - August 2013

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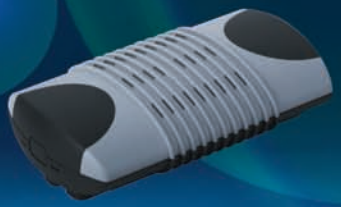

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Publisher's Note . . .

There is a magic that lighting can bring to a space and the finest examples can be traced to hotels, historical buildings and architecture. Hotel lighting creates a cool effect and as highlighted for the interior of the Corinthia Hotel, Lighting Design International worked closely with the interior designer. The Design to create a scheme which compliments their contemporary interpretation of this historic building mixing the use of bold modern decorative light fittings and concealed energy efficient light sources creates a very subtle balance.

LED modules are becoming increasingly utilized in retail, hospitality and other professional settings due to the many benefits they offer, such as reliability, modularity, economical operation, and – most importantly – color and quality of light is well explained in an article, 'LED Modules: Turning Up the Light, Taking Off the Heat'. One characteristic typically associated with light-emitting diodes (LEDs) is that they provide cool lighting.

Lighting concept lends space and a new dimension. Lighting plays a critical role, as it has to highlight the key boutique elements while being warm and welcoming. The concept is to use accent lighting for highlighting the boutique elements, and soft lighting for supporting different activities. A project 'Redefining Boutique Hotel' is a glaring work worth its essence.

Do visit us at Light India International event at Chennai during September 13-16, 2013. Further, the issue contains report of Guangzhou International Lighting Exhibition 2013, during June in China wherein Lighting India participated for the 4th time to bring more of LED lighting awareness for our readers.

Do send us your comments at miyer@charypublications.in

Lighting concept lends space and a new dimension

Mahadevan Iyer
Editor & Publisher

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- Portable Luminaire
- Indoor Luminaire (Fixed and General Purpose)
- Outdoor (Road and Street) Luminaire
- Floodlights

Control gear

- Ballast for fluorescent lamps
- Electronic Ballast
- Electronic control gear for LED module

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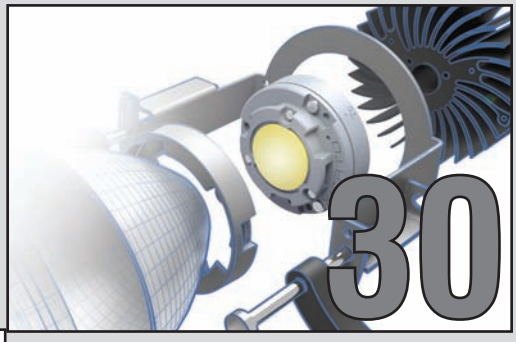

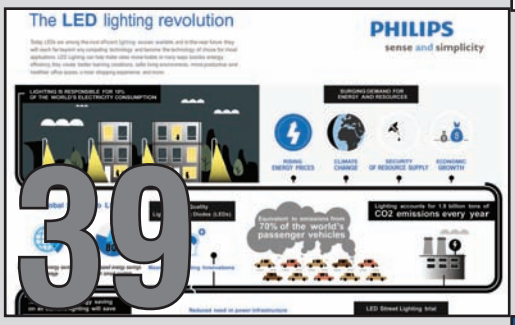

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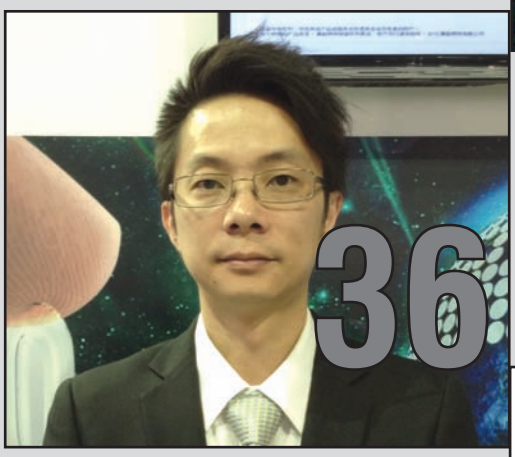

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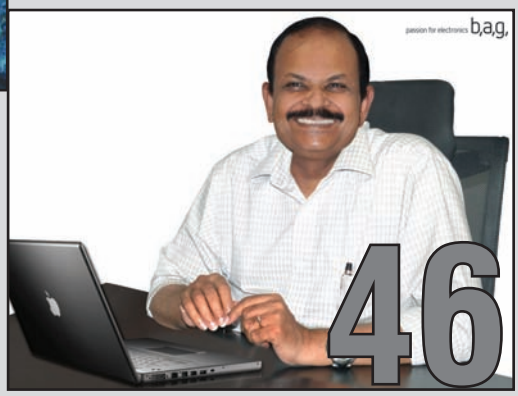

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Editorial

Changing Market Trends in LED Lighting

LED lighting is considered to be the development trend of future lighting. With the advances in semiconductor lighting technology LED lighting products have begun to enter interior lighting field. LED interior lighting products market share in 2020 may reach 50% and the market is still in infancy. Interior lighting implies commercial and public lighting, hotel corridors etc. Indoor lighting concerns with downlights, spotlights, freezer and fluorescent lights.

Significant saving, on an average 40% is possible simply by switching to energy efficient LED lighting technologies. LED technology is advancing to replace fluorescent tubes and changing the scenario of commercial applications, creating efficient street lights with less pollution that provide a cool look, and being increasingly used to enhance the architectural decor, and heritage lighting.

Lighting accounts for 19% of the world's electricity consumption. Goldman Sachs report remarks, LED lighting technology since early 2000 after the rise of the application market extends all the way from the phone to the TV, the next step will be widely used in general lighting and 2025 LED lighting penetration will reach 80%. According to NPD DisplaySearch's latest forecast, LED in lighting applications will double from 15 million units in 2012 to a forecasted 33 million in 2013. That number could triple by 2015. The global penetration for LED light applications will increase to 26% of the market, up from just 5% last year.

Using LED lighting with adequate control systems may reduce hotel's energy consumption by 50-70% that reduces operation costs also. According to news sources, Indian northern railway authorities took the initiative of starting solar lighting system in the heritage toy train ferrying passengers in Himachal Pradesh. The Kalka Shimla Railway is included in UNESCO World Heritage List. This necessarily provides a clean and pollution free environment to the passengers and tourists and save electricity.

The main indicator for general lighting is household lighting. Residential Lighting trends will change lighting combined with the daily routine is also a popular fashion, such as a ceiling fan lights, round mirror lights, flashlights yellow lights. Moreover, the shift in trend is towards technology, respect for nature, multifunctional solutions, pollution free environment and richness in colours.

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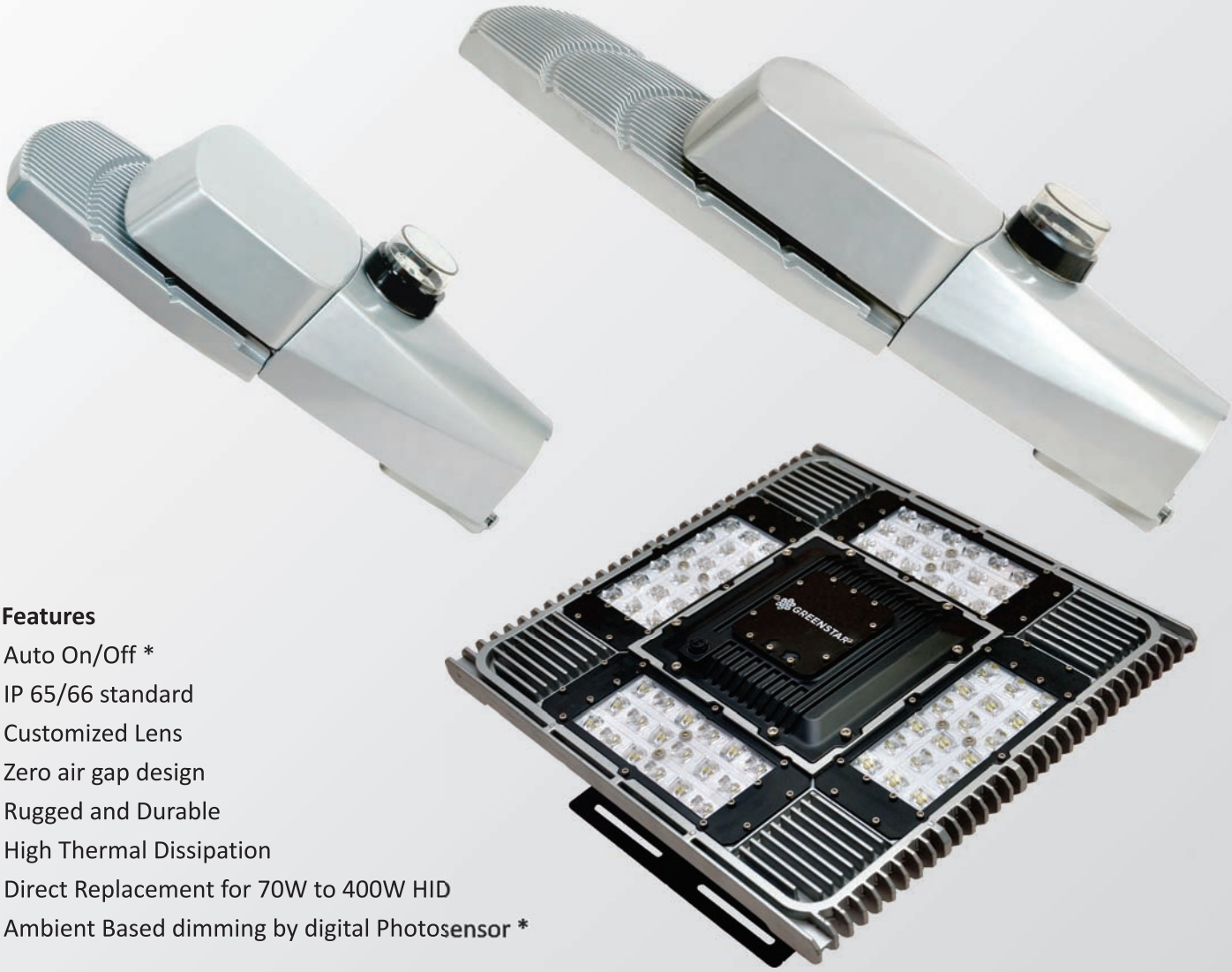

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Tripack Advantage – Energi Tripack solution by lutron now available in India

Lutron understands that in order to have total control of the lighting environment; one must control the biggest light source of the world – sunlight. Lutron Electronics introduces a new lighting control that finds a way how to reduce Lighting Energy Usage by 60%. Energi TriPak is a simple, cost-effective, energy-saving light control which is used for both new construction and retrofit solutions. It is a family of products which provides the ability to choose the components that meet any project need and create the best light control solution for any space. This family of wireless load controllers, sensors and controls communicate via radio frequency, allowing the system to be easily installed without any complicated programming or additional wiring. Energi TriPak is ideal for applications like classrooms, conference rooms, private offices, hallways, stairwells, washrooms, and break rooms. In most of the buildings, lighting and HVAC systems are the largest users of energy. Lutron's solution Energi TriPak can reduce lighting energy consumption by up to 60% and HVAC energy consumption by 10% to 30% by offering wireless sensors that monitor occupancy and available daylight levels, and communicate that information to the load controller which can then adjust the lighting in the space to optimise energy efficiency. The utilisation of Energi TriPak is beneficial to various aspects in our daily life. It allows teachers to tailor the lighting for all kinds of activities, including a perfect lighting environment during presentations. ■

Arise India Ltd enters television market of country with its Spectra range of world-class LED Televisions

Arise India Ltd, the industry leader in electrical goods with a market standing of more than 25 years, has launched its Spectra LED Television range. With the launch of the world-class LED Television range, Arise India Ltd seeks to bring in an amazing television viewing experience to the consumers looking for cutting-edge technology at the best affordable prices. Arise India Ltd's Spectra LED Range includes a total of 8 models in various television sizes, namely – 16", 20", 22", 24", 32" (i), 32" (ii), 42" and 50" priced at a bracket of Rs. 7490/- to Rs. 79,990/- (MRP). The Spectra LED TV range is powered by innovative features like Eye Protection Technology (EPT) & Zero Bright Dots Clear Panel Display, a host of connectivity features like multiple USB Support format & Connecting Interface (B/S/R), eye catching colour profiles and much more. Targeted to the emerging consumers in Tier II & III markets of the country, Arise India's latest LED television range is specially engineered to enable longer duration of television viewing. The Spectra range brings in revolutionary features like Eye Protection Technology (EPT) which safeguards eyes from growing irritation due to longer television viewing, and keeps eyes safe from harmful electrical emissions. To be available in the market from 15th August, 2013 onwards, the LED Range will target all North Indian states in the first phase. ■

Nirupam Sahay elected as New President of ELCOMA

The Electric Lamp and Component Manufacturers Association of India (ELCOMA) announced the appointment of Nirupam Sahay as President of ELCOMA for two year tenure, effective from July 27, 2013. Nirupam Sahay, President, Philips Lighting India, the leading lighting company in India comes with a vast experience of over 18 years across industries such as consumer durables, telecom and financial services. He has been the President of Philips Lighting India since May 2011. "ELCOMA is happy that Nirupam Sahay has been elected as the President of our Association. With his rich management experience we look forward to his leadership and contribution in further enhancing the effectiveness of ELCOMA", said, H.S. Mamak, Advisor, ELCOMA. Commenting on his new role, Nirupam Sahay, said, "I take up this role with immense pride, and look forward to driving the lighting industry's growth and success. In this new role, I aim to work in synergy with the industry members towards promotion and betterment of the Indian lighting landscape and furthering the agenda of energy-efficient lighting." The lighting industry in India has been growing in double digits for the last five years and will continue to grow between 8-10% in the next 3 to 4 years. Heavy infrastructure development, emergence of newly electrified areas and urban development have resulted in this growth. ELCOMA liaisons with government bodies and supports the industry players in matters connected with the lighting industry. ■


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Lumenpulse establishes New entity in Southeast Asia in collaboration with Singapore-based Technolite

Lumenpulse announced that it has established a new independent commercial entity, Lumenpulse Southeast Asia (SEA), with Singapore-based Technolite. As a manufacturer of high-performance, architectural LED-based lighting solutions for commercial, institutional, and urban environments, Lumenpulse SEA will cover the regions of Singapore, Hong Kong, Vietnam, Thailand, Indonesia, and Malaysia. New entity expands the relationship between Lumenpulse and Technolite. In July 2012, Technolite and Lumenpulse entered into a strategic partnership. Lumenpulse luminaires have since been used in major architectural projects in Southeast Asia. ■

EYE Lighting introduces LEDioc LED retrofit lamps for 120V-277V systems

EYE Lighting International, announced new LEDioc brand lamps, designed for simple and easy field retrofit from an HID to LED light source in post-top and pendant luminaires. EYE estimates there are more than 2 million luminaires of these types in service in the USA, with hundreds of thousands annually requiring retrofit. The 37 watt EYE LEDioc lamp, consuming only 42 system watts, comes complete with a driver and surge protector, and can be applied in 120V through 277V systems. The 5000K model provides 44000 initial lumens, 70 CRI, and 106 lumens per watt. The 3000K model provides 3100 initial lumens, 85 CRI, and 75 lumens per watt. Both feature 70% lumen maintenance at 50,000 hours of life. ■

LG Display introduces world's Slimmest Full HD LCD Panel for Smartphones

LG Display, a leading innovator of display technology, announced that it will unveil the world's slimmest Full HD LCD panel for smartphones. The state-of-the-art 5.2-inch panel is an exciting advancement for the premium mobile device market enabling sleeker Full HD smartphones featuring better 'grip-ability' and a superior viewing experience. Only 2.2mm thin with a 2.3mm bezel, LG Display's new panel is both slimmest and narrowest among existing Full HD LCD panels designed for mobile devices. This world's slimmest Full HD LCD panel will provide larger visible display space on smartphones, critical as mobile devices are used for multimedia viewing more than ever before. Additionally, the panel will make devices easier to grip as well as lighter in weight. Key to realizing the world's slimmest panel is LG Display's Advanced One-Glass-Solution (OGS), the latest touch technology enabling an enhanced touch screen experience, developed and applied to the new panel for the first time ever. Dual Flexible Printed Circuits, superior to a single circuit, have been inserted between the panel and touch film, reducing the number of lines on the panel by more than 30 percent. Utilization of a direct bonding system has also resulted in Optical Clear Resin between the panel and touch film for greater brightness. Panel's superiority in displaying resolution, brightness, and contrast ratio results in enhanced outdoor readability. ■

Cree introduces LED Street Luminaire optimized for Challenging Environmental Requirements

Cree, Inc. introduces XSP IP66 LED Street Luminaires that are optimized for European and other global environmental requirements. The advanced LED street luminaire provides metropolitan and other municipal areas a durable luminaire that protects critical electrical components from dust, water jets and other potentially damaging environmental factors. The Cree® XSP Street Luminaire is the first real alternative to high-pressure sodium street lights with better payback, better performance and better price. Compared to its outdated predecessor, the XSP IP66 uses nearly 50 percent less energy and is designed to last more than three times longer. Beyond saving energy and reducing maintenance due to longer lifetime, Cree achieves better control over luminaire output with its NanoOptic® Precision Delivery Grid™ technology compared to a traditional street light. The new XSP IP66 features similar aesthetics as a traditional HPS street light while achieving unmatched target illumination. Cree's LED and optical technology efficiently delivers light to the street, helping communities appear cleaner and safer. "XSP IP66 is the ideal choice for metropolitan and other municipal areas looking to save money and reduce maintenance costs," said Massimo Targetti, MD, Cree Europe S.r.l. "Designed to meet demanding needs of global markets, the XSP IP66 represents the perfect combination of high-performance design and advanced LED technology. ■

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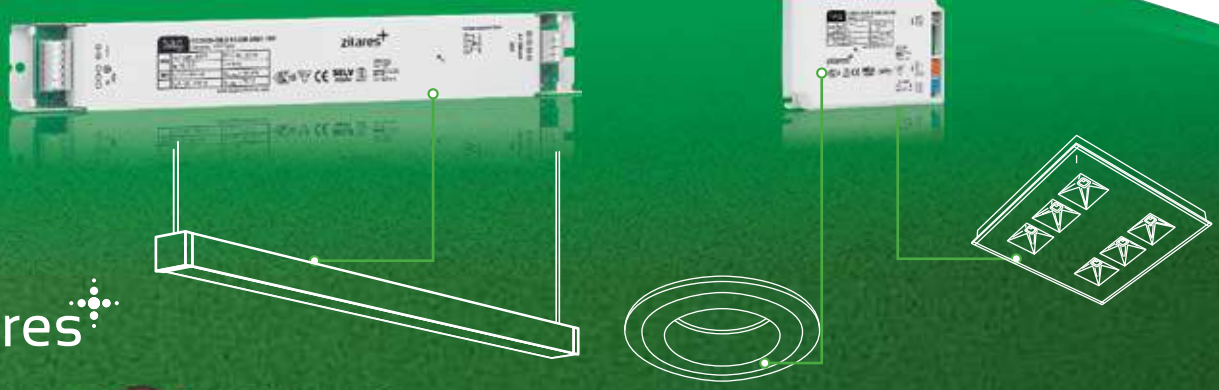

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CAO Group spins Lighting Division into Independent Company

Salt Lake City - CAO Group, Inc., a world-leading high-technology company, announces the transition of its lighting division into an independent company: CAO Lighting, Inc. Since its inception in 2004, CAO Group's lighting division has followed a strong upward trajectory. Using revolutionary practices and techniques, this division of CAO has continuously delivered advanced products and solutions for commercial signage and lighting and established fundamental intellectual properties (IPs) in solid state lighting. It's this forward momentum that has allowed CAO to expand its innovative work in the lighting industry. "This new company will provide a platform for fast growth and profit in the rapidly growing LED market as well as provide opportunities to apply our patented technology and IPs to the ever-changing market," said Densen Cao, president and CEO of CAO Group, Inc. and CAO Lighting, Inc. "We hope to further penetrate the general lighting market with advanced lighting products." Through the years CAO Group's lighting division has established a reputation of innovation in LED light sources, including a revolutionary 360-degree light beam. The LuxemBright® and Dynasty® LED products from CAO Lighting, distributed across North America, offer unique features that can be applied to various signage and lighting applications. CAO Lighting will maintain all original lighting division personnel and all intellectual properties in LED products. ■

New products added to Outdoor LEDs range of energy efficient outdoor lighting solutions

Outdoor LEDs announced expansion of its energy efficient and creative lighting solutions for homes, gardens and driveways, jointly marketed with Marshalls, the UK's leading manufacturer of superior natural stone and innovative concrete hard landscaping products. Three new products are designed following the partnership between Marl International and Marshalls to create a high-end, unique range of LED outdoor effect lights and landscape lighting products. The latest additions to the energy efficient range include the Urban Spike Light, an extremely versatile solution used to create a variety of decorative lighting effects in hard or soft landscapes, offering unlimited positioning options with its 30 degree beam angle and adjustable spike fitting system. The new shape Square Dual Wall Light utilises six LEDs, three pointing up and three pointing down, for stylish wall washing with light in dual directions, and the Bollard Light provides a focused beam of light making it a unique and contemporary way to illuminate pathways, driveways and patios. It can be fitted almost anywhere using either the included spike attachment for soft ground, or in previously finished applications using the masonry fixing kit. Commenting on the new products, Arianna Rawlinson, Business Development Manager for the Outdoor LEDs range said, Style as well as function is a major factor when looking to enhance and showcase gardens with stunning lighting, and new solutions fit the bill. ■

Kitchen Lights by Philips

Kitchen lighting so far have been largely ignored in terms of quality lighting options by branded luminaire players. The kitchen is an important area to prepare, cook and wash-up where house-lady prepares meal for family and guests. However, in most instances, the light inside kitchen is simply not bright enough due to lack of lighting options, especially at some important places in the kitchen which require specialized lighting to effectively complete the tasks. Furthermore, lighting products inside kitchen should be able to handle the harsh oily & greasy cooking conditions, especially to clean them up. There is definitely a need for energy-saving solutions that could brightly light up kitchen in all the right places with simple, modern designs and materials that allow easy cleaning and maintenance. This gap has now been partially addressed by Philips which has recently launched the myKitchen collection that contains a wide range of articles that spans from ceiling to battens, surface mount spots, kitchen wall lights, kitchen ceiling lights, under-cabinet lights, Kitchen pendant lights, overhead cabinet lights, corner lights, dining table lights, recessed wall and portable motion sensor cabinet spot light for your dream kitchen. These lights are designed to provide light at the right places and keeping you alert, focused and even safe at what can sometimes be hazardous tasks, such as cutting vegetables or cooking. The lights come with glass diffuser with smooth and clean cuts. ■

Pelco by Schneider Electric builds on Commitment to IP with New Line of Cameras for Any Lighting Condition or Environment

Schneider Electric announced the release and availability of two new Pelco™ IP camera lines, the Sarix™ Enhanced Range with SureVision™ 2.0 and the Sarix Professional Range. With the release of these two camera ranges, Schneider Electric is surpassing solutions currently on the market and offering a complete line of IP cameras for any lighting condition, application and environment. Today's news delivers on the company's commitment to being IP-driven, customer-focused. The two ranges add to Pelco's continually expanding IP camera offering, following the introduction of the Sarix Value Range cameras earlier this year, part of more than 50 new IP cameras to be released in 2013. All of the new Sarix cameras integrate with major third-party video management systems through the Pelco API, and other third-party software and systems through the open ONVIF Profile S standard, and work seamlessly with Pelco video management systems. "At Schneider Electric, we continue to deliver on our promise to be an IP-driven, customer-focused company," said Herve Fages, senior vice president, Schneider Electric, Pelco Video Line of Business. "Continuing to expand on our IP camera offerings benefits the end user, and we are proud to meet the needs of our customers, delivering both choice and performance. We are also delivering on our commitment to resellers by offering solutions that are comprehensive – making it easy to meet their customers' various needs." The Sarix Enhanced is well suited for the most difficult lighting conditions and available in a wide range of indoor, environmental and vandal options, including box cameras and domes. Additional benefits include: Performance IQ: Equipped with SureVision 2.0 technology; Performance processing: Offers full HD video (up to 30 ips) with 1080p resolution using H.264 compression; Features an optimized modular design for quick install, built-in analytics, and advanced features for a premium user experience; Operating temperatures range from -40^0 to +50^{0}C (-40^{0}to 122^{0}F) for environments covering the desert to the arctic. The Sarix Professional Range delivers choice to customers, allowing users to mix and match technical options Benefits include: Choice for any lighting condition, application and environment and Industry leading specifications. These powerful and versatile cameras maximize customizable options. ■

Chauvet professional and USITT presents LED seminar at Disney

CHAUVET Professional, a brand of Chauvet, and USITT Presents will host the seminar "How to Blend LED with Traditional Fixtures" from 9 a.m. to 5 p.m. Aug. 29 and 30 at Walt Disney World. Senior Product Manager for CHAUVET® Professional Ford Sellers will conduct the session, which includes topics such as transitioning and replacing existing lighting with energy saving LED fixtures, discussions on color—narrow band vs. broad emitting, concepts in design using the right tool for the right job, and more. USITT Executive Director David Grindle said that offering professionals this type of hands-on training, which has direct impact on their careers is a great step in fulfilling USITT's mission. The first time Sellers led a USITT Presents workshop on June 3 in Miami, "the attendees were impressed with the amount of information they learned." "It's great to be back presenting in this public forum," Sellers said. "Since leaving Cornell University I have missed teaching (and learning from a group of inspired students). I am thankful to USITT for giving us this forum to educate our industries top professionals, and up-and comers, so that they are able to better understand the opportunities and challenges afforded by the emergence of LED into mainstream product lines. Helping our industry maximize our investments, capitalize on the strengths of new technologies, and realize true value is central to our mission at Chauvet." ■

Ecological and economic advantages: eurammon symposium presents examples of natural refrigerants in use

Under the banner of "Green Economy with Natural Refrigerants" the eurammon symposium showcased the great potential of natural refrigerants during June 2013 in Schaffhausen (Switzerland). They are not only environmentally friendly, but profitable as well. International speakers at the lecture event presented new developments and current trends in refrigeration technology to almost 70 participants. "We are delighted that our symposium has again attracted great interest this year," says Monika Witt, chair of eurammon. "The header 'Green Economy' makes it clear that, even today, forward-looking refrigeration systems have to be much more than just environmentally friendly. We feel it's important to inform people of the high energy efficiency that can be achieved by using natural refrigerants. They really pay off for operators." In addition to a screening of the new eurammon film on the history of natural refrigerants and a discussion panel on the use of the refrigerant ammonia, the speakers presented international case studies from Australia, the US and Switzerland. Beat Schuppisser from Johnson Controls explained how carbon emissions were reduced by 790 tonnes and natural gas consumption was reduced by 500,000 m3 using a combination of a refrigeration system and a heat pump. In his talk, he presented a case study from the Kellermann company. The Swiss agricultural enterprise and food producer covers the entire production chain – from growing salad leaves and vegetables to industrial processing. ■

Pollux LED: A new size for compact spotlights

The new Pollux sets new standards for compact spotlights. Developed for a wide range of applications from museums or galleries, to retail, gastronomy or residential settings, the Pollux sets new standards in efficiency, output and design. It is especially good in rooms with ceiling heights of up to 3.5m. The new Pollux LED spotlights don't just succeed their analogue forefathers in terms of the name. With a completely new technological and design direction, Pollux LED luminaires distinguish themselves by great versatility coupled with a highly compact, cylindrical light head made of cast aluminium. This, in turn, carries the patented LED Spherolit technology already found in successful ranges such as Light Board or Optec. Similar to its "big brothers", the Pollux features modular Spherolit lens technology that enables free and flexible creation of light distribution patterns ranging from spot through to wide flood with a single luminaire. A new feature in this class of spotlights is the wallwash characteristic. Pollux LED spotlights are not only great for supporting differentiated lighting concepts in retail and gastronomy, galleries or the home, but also due to their compact format, they are ideal for small rooms with ceiling heights of up to 3.5m. ■

High End Systems announces Major Hog Controls Reseller Partnership with Creative Stage Lighting Co., Inc

Barco Lighting Systems (dba as High End Systems - HES; Austin, Texas USA) and Creative Stage Lighting Co., Inc. are proud to announce a new partnership that will enable Creative Stage Lighting to serve as a Major Hog Controls Reseller of High End Systems' console products throughout the United States of America. Effective immediately, this agreement enables Creative Stage Lighting to make HES' console products available to their extensive network of local resellers. George Studnicky III, President of the Creative Stage Lighting comments: The HOG 4 SERIES is the end result of a Very Attentive and Industrious High End Systems. While Creative Stage Lighting has a very Gratifying and a decades old relationship with HES, we are Overjoyed to be taking on the responsibilities of a Major Hog Controls Reseller. Our readily available Sales and Rental inventories of HOG 4 is something we are extremely committed to sustaining and growing. Bill Morris, CEO for High End systems, comments: We are thrilled to have CSL step up as a major Hog Controls Reseller and seeding partner for the new Hog 4 line of products, stated Bill Morris, CEO of High End Systems. "There are two keys to successful market adoption of a new product. One is to deliver a product that the industry wants. But the 2nd and equally important is getting products in the hands of users and specifiers. Doing that can be just as challenging as the product development phase. ■

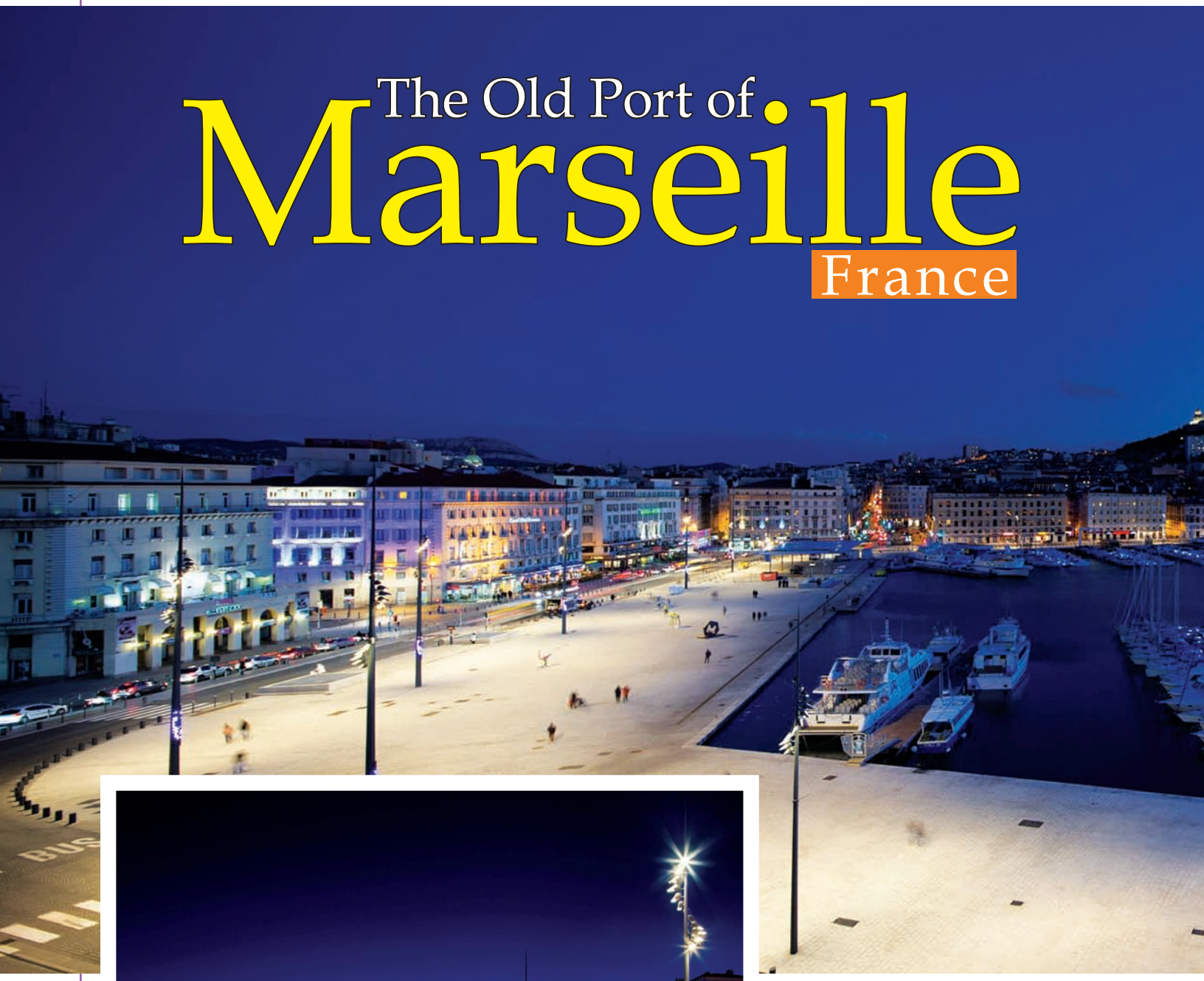
LichtRouten Luedenscheid 2013 – International Forum of Light in Fine Art and Design

For the 7th time artists working with light as material or media are invited to present their works during the 'LichtRouten' (German for 'Light Trails') in Luedenscheid/ Germany. The temporary art installations will be spread throughout the city's center – from the city hall to the main station an art trail will be set up for 10 days from September 27th to October 6th, 2013. The LichtRouten stage "The Art of Projection" exploring phenomenal, technical and esthetical aspects of artificial light. Objects, sculptures and installations from the 1930s to the present will be showcased. From intangible light sculptures to immersive environments and mapping projections visitors can experience light in all of its sensory forms. "Lichtrouten" will present some of the most visually stimulating art and design works created for urban spaces in the recent years. Essential part of the work of the long-term artistic directors Bettina Pelz and Tom Groll is the high degree of site-specific works. A number of urban sites that changed their function or have been redeveloped since the first LichtRouten 2002 will become the backdrop of artistic interventions by Jürgen Albrecht, Refik Anadol, Atsara, Cuppetelli + Mendoza etc. The curator Bettina Pelz says: "One more time LichtRouten will reflect the power of light to touch our hearts, to affect our minds and to alter the world we perceive". ■

Shipment for Chinese PV products account for 60% in 1H13

Several PV manufacturers in Europe have either declared bankruptcy or are seeking to reorganize. For example, Solarezo, Conergy, and Gehrlicher all filed for insolvency and some manufacturers have started business restructuring. While Scheuten Solar has been looking for buyers to take over its German module plant, Panasonic has planned to close its module plant in Hungary in September. According to the most recent global PV industry data collected by EnergyTrend, a research division of TrendForce, the future for PV manufacturing in Europe is worrisome due to the government subsidy reduction, high manufacturing cost, and competition from cheap Chinese products. As indicated by global PV industry data, total module capacity in the world was around 54GW by 2Q13. Chinese manufacturers' total capacity accounted for about 60% of the worldwide capacity. Among the top ten manufacturers, only First Solar was not a Chinese manufacturer. The situation seemed to be the same for the shipments. The total amount of shipment in the world reached 15GW in the first half of 2013 while Chinese manufacturers' total shipment quantity accounted for more than 60% in the worldwide shipment quantity. It's clear that Chinese products have taken the lead in the market. Concerning module cost and price, the manufacturing cost for Chinese module manufacturers was between $0.19USD/watt and $0.22USD/watt, and that for European module manufacturers was at least 27% higher. ■

The Old Port of Marseille France



The place where the Greeks cast anchor and founded their colony "Massalia" 2600 years ago has become an inviting urban space that has recently undergone considerable renovation. Landscape architect Michel Desvigne together with teams from Foster + Partners / Tangram Architects have completely redesigned the entire

As the European Capital of Culture 2013, Marseille has invested around 660 million euros in the development of a new cultural infrastructure and has made some lasting changes to the image of the city. Traffic-reducing measures have been introduced in the Old Port, the heart of the old city centre, which has now become a place for people to stroll and enjoy the surroundings and views. The idea for the lighting stems from Yann Kersalé. Selux have developed and realised a technically highly sophisticated lighting solution.

100,000 square metre area. What had once been a quaint old port area had turned into a major traffic intersection with multiple lanes, and was certainly not attracting people to use the location as a leisure spot any more. The ring road around the harbour has been scaled back, the dock area transformed into a large square for pedestrian and

events, and a modernist shelter from the sun that goes by the name of "Ombrière" added. Spencer de Gray, Head of Design at Foster + Partners in London, describes the projects as "an invitation to the people of Marseille to again stage and enjoy events, markets and festivals in this grand space".

The lighting concept developed by Yann Kersalé lends the space a new dimension. Seventeen 16.5 metre and eight 23.5 metre high custom designed Olivio pole-top design luminaires structure the space and at the same time illuminate the extensive promenade area right up to the water's edge. The ultra-tall slimline poles trigger associations with the masts on sailing ships. The luminaires are equipped with 90 Watt or 140 Watt Cosmopolis lamps and arranged spirally around the upper sections of the poles in different sized groups. Their natural, organic design provides a subtle contrast to the geometric layout of the pedestrian square.

A major component of Yann Kersalé's lighting design are the 2.5 metre high "LED Skins": ultra-flat, reflective stainless steel housings with laser-cut designs, and equipped with RGB LEDs. These clad the eight large poles in the centre of the port area, similar to the bark on tree trunks. The resulting, amorphous looking surfaces can be used as LED screens for displaying video art created especially for this location by the artist himself. Different videos are shown depending on the time of year or the specific occasion. Images and patterns in light that evoke associations to flowing water underscore the intricate link between city & sea – and reflect the centuries-old history of the citizens of Marseille and how they connect to the Mediterranean. ■

Project:
The Old Port of Marseille
Client:
MPM Marseille Provence Métropole
Architect:
Foster and Partners / Tangram architects
Landscape Architect:
Michel Desvigne
Lighting Designer:
Yann Kersalé – AIK
Electrical Engineering:
Ingérop Conseil et Ingénierie
Electrical Installation:
Citeos / Cegelec
Photographer:
Xavier Boymond
Selux Products:
Olivio Floracion. Sistema. Candelabra.

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POV light ROSETTA

at Crown, Melbourne
For Australian super-chef Neil Perry

ROSETTA RISTORANTE opened in late November 2012 at Crown casino complex in Melbourne - a city renowned for fine dining, It was just in time to win the Epicure and Good Food magazine's award for Melbourne's Best New Restaurant.

Given Neil Perry's pedigree, awards and accolades are no surprise. His twenty-four year-old Rockpool restaurant on the water's edge at Sydney is the foundation of an impressive empire and Rosetta is the third Neil Perry restaurant at Crown. Perry has won most international awards including the UK Restaurant magazine award, 7 years running.

ROSETTA is a sophisticated Italian with authentic and highly professional service, seasonal menus and a devotion to simple regional dishes. Simplicity, the cognoscenti always say, is the heart and soul of Italian cuisine.

The interior design by Iain Halliday and Adam Williams at BKH presents a luxurious traditional aesthetic, within a supremely elegant contemporary idiom. The aim for the lighting, by Sara McClintock and Bernie Tan-Hayes at POV Melbourne, was to speak this contemporary-traditional language, and create the illusion that the light emanates from traditional sources such as Venetian chandeliers, table lamps and brass picture lights.

However, behind the traditional surface lies another story. New technologies integrated into the lighting have been cleverly concealed. Down-lights are hidden within the ceiling detailing. LEDs and fiber optics are cached behind domes, joinery and picture lights. This wizardry creates unexpected effects that sculpt the space with light and add imperceptible emotion.

During the day Rosetta is filled with natural light flooding into the room from every direction. The interior lighting plays a supportive role during the day, presenting a bright space where the

interior architecture is enhanced to the full. With an extraordinary view of Melbourne's skyline, Rosetta seats 100 people in the restaurant and 80 on the heated alfresco terrace overlooking the promenade and Yarra River.

With the passing of daylight, the restaurant is transformed: Murano glass chandeliers and table lamps from the 750 year-old Barovier & Toso play the lead roles in the space. Key materials are subtly revealed through the use of concealed lighting; timber veneer, marble gold trims and Braille curtains make an understated appearance, contrasting with accented artwork and murals. Displays of wine glasses are directly illuminated to add sparkle which then bounces off the chandeliers.

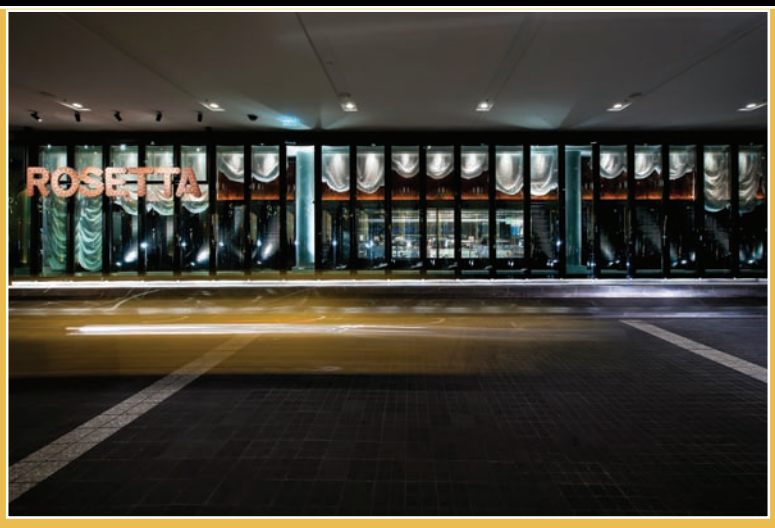
At the heart of Rosetta's fast-paced display kitchen is a wood-fired oven and char-grill for suckling pig, roast chicken and wood fired suckling lamb. Head Chef Brendan Sheldrick works closely with Neil Perry, and there are two dedicated pasta chefs who hand craft over 16 different kinds of pasta daily.

A small bar in the centre of the dining room, with views to the kitchen, seats 10 lucky guests who can enjoy the theatre and artistry of the chefs. A private dining room, with a spectacular Warhol-inspired mural of Michelangelo's Last Supper, accommodates 20.

"We are very lucky to have the opportunity to work with Neil" said Sara McClintock, senior designer at POV. "He is passionate about the details in all aspects of his restaurants, and it's this which takes the dining experience to another level." Perry is knowledgeable in the magic that lighting can bring to a space, and encouraged POV to achieve a sense of intimacy at every table. "Even the bustling kitchen was considered a space where warm light is essential," said McClintock.

"It a great pleasure to light a restaurant of this quality, and contribute to an ambiance where guests can truly enjoy their food and company," said Mark Elliott, design director of POV. ■

Interior Design: Iain Halliday, Adam Williams
Lighting Design: PointOfView
Lighting Designers: Bernie Tan-Hayes, Sara McClintock
Lighting Suppliers: Barovier&Toso, Light Project, Masson for Light, Litesource
Photographs: Dean Bradley



Lii 2013
LIGHT INDIA INTERNATIONAL
13-16 September 2013
Chennai Trade Centre, Chennai, India

Title Sponsor
indiamart.com
Source > Supply > Grow

Programme
Chennai
13 - 16 September 2013

Only International lighting exhibition in South India

For a brighter future

India's prestigious lighting event .... Light India International 2013 will be organized by Indian Society of Lighting Engineers in Chennai Trade Centre, Chennai, during 13-16 September 2013.

Since the launching of the event six months back, the event has generated wide spread interest among lighting professionals and has attracted participation response from many companies engaged in the field of lighting.

Lii 2013 will cover all segments of lighting....• Residential, Commercial & Retail lighting • Industrial lighting • Street lighting • Security lighting • Environmental / Landscape lighting, • City Beautification lighting • Architectural lighting • Railway / Metro lighting • Airport & Runway lighting • Refineries / Mines lighting • LED lighting • Intelligent lighting • Lighting with non-conventional energy • Speciality lighting • Lighting accessories & controls • Power saving solutions • Testing, Measuring Instruments • IT, Publications, Consultancy services relating to lighting industry.

Lii 2013 will not only highlight the latest, but will also focus on the emerging trends in all segments of lighting.

Technical sessions have been planned concurrent with the show. Details are given below. These technical sessions have attracted considerable interest from India as well as overseas. It should be a great success as the indications make us to believe.

13th Friday - Venue : Convention Centre, Chennai Trade Centre

10.00 a.m	:	Inauguration
1.00 p.m - 4.30 p.m	:	Product presentation by select participants
5.00 p.m - 6.30 p.m	:	'A' Grade Electrical Contractors Association meet
6.30 p.m - 8.00 p.m	:	Cultural meet - Sponsored by **M/s. Hybec**


Lii 2011 - Seminar on "Green Lighting Concepts" and National Lighting Code - BIS

14th Saturday - Venue : Convention Centre, Chennai Trade Centre

10.00 a.m - 5.30 p.m	:	Technical Seminar on "Emerging trends in Lighting Concepts for a Greener World"
6.00 p.m - 8.00 p.m	:	Cultural meet - Sponsored by **M/s. BAG electronics**


Lii 2011 - Technical Seminar on "Green Lighting for a Greener World"

15th Sunday - Venue : Convention Centre, Chennai Trade Centre

10.00 a.m - 11.30 a.m	:	Get together of Engineers of Public Enterprises
11.30 p.m - 1.00 p.m	:	Get together of BUILDERS
2.00 p.m - 5.00 p.m	:	Meeting of the Tamil Nadu Electrical Wireman and Licensed contractors
6.00 p.m - 8.00 p.m	:	Cultural programme - Sponsored by **M/s. Vel Tech Engineering College**


Lii 2011 - Seminar on Green Lighting-Federation of all Tamil Nadu Thaniyar Min Paniyalargal Association

16th Monday - Venue : Convention Centre, Chennai Trade Centre

10.00 a.m - 12.00 p.m	:	Students competition on "Green Lighting"
3.00 p.m - 4.30 p.m	:	Architect meet
5.00 p.m	:	Valedictory Function


Lii 2011 - Seminar on "Integration of Lighting & Architecture

FAIR TIMING

13.9.2013	FRIDAY	10.00 am to 3.00 pm BUSINESS HOURS	03.00 pm to 7.30 pm OPEN TO PUBLIC
14.9.2013	SATURDAY	10.00 am to 1.00 pm BUSINESS HOURS	01.00 pm to 7.30 pm OPEN TO PUBLIC
15.9.2013	SUNDAY	10.00 am to 1.00 pm BUSINESS HOURS	01.00 pm to 7.30 pm OPEN TO PUBLIC
16.9.2013	MONDAY	10.00 am to 3.00 pm BUSINESS HOURS	03.00 pm to 6.30 pm OPEN TO PUBLIC

For more details on the exhibition &
online visitor registration **www.lii.co.in**

Organised by

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indian society of lighting engineers

Exhibition office
D-10, Ambattur Industrial Estate, Chennai - 600058, India
Mobile : 98402 73833 / 98402 74355
Email : info@Lii.co.in **Website : www.Lii.co.in**

Corinthia Hotel London

Recently opened in London, the ninth member of the Corinthia Hotel family is situated in Whitehall Place with lighting by Lighting Design International.

Working closely with the interior designer, GA Design, Lighting Design International have created a scheme which compliments their contemporary interpretation of this historic building. The existing high ceilings and architectural features were a challenge to light sympathetically in order to create an ambience so that the guests feel special the moment they arrive. A combination of feature pendants, intimate table lamps, down and up lights and concealed linear lighting create a subtle sense of luxury across the public areas, including the entrance lobby, The Northall Restaurant and cocktail bar.

Mixing the use of bold modern decorative light fittings and concealed energy efficient light sources creates a very subtle balance. The spaces seem endlessly extravagant throughout, despite the scheme being well within the Part L regulations and the majority of fittings used being energy efficient light sources. Integrating linear lighting and reflecting light off the interior finishes helped to disguise the energy saving aspects of the project.

Exterior

The hotel's Victoria Belle Epoque exterior which spans Whitehall Place, Northumberland Avenue and Great Scotland Yard was specifically lit to give the hotel its deserved landmark status. LDI's design intent for the exterior was predominantly to enhance the buildings architectural features by night, whilst improving the general ambiance of surrounding streets and defining the hotels identity. The building's beautiful original Victorian architecture was emphasized to express the scale by bookmarking the building with more illumination to the vertical turrets. These corner features and surrounding entrances are given a higher level of lighting to express the building's architectural form, and highlight the building's extremities framing the more subtle window architrave uplighting in-between. Wattages were appropriately selected in relation to each other and the streets ambient lighting.

Extensive on site lighting trials were conducted to assess suitability of technology, setting out of lighting, lit effect, brightness and glare control. Colour temperature was also an important consideration to show the stone façade in its true colour.


CORINTHIA HOTEL
CORINTHIA HOTEL

Ground floor façade lighting was designed to be complementary and specific to the architectural detailing, while improving the pedestrian experience at street level and tying the two facades together with one seamless lighting effect. The lighting was then concentrated further on the various entrances to the hotel, to aid way finding for guests.

Full consideration was given to selecting fittings which were energy efficient and with a view to maintenance issues. In particular fittings which were used in greater quantity higher up the building were LED light sources, which reduce both maintenance, time and power consumption. All products were tested and specified with precise optics and louvers to minimise glare with the creation of custom glare shields where appropriate. Consideration was also given to the individual beam angles of each light fitting to keep light pollution and light spill to an absolute minimum. All fittings were ordered to specific RAL finishes to match the stone of each floor for lower visual impact during the day. Custom fittings were designed with through-wiring and fixed angled LEDs for minimal commissioning time & a reduced margin for error. They could be mounted to each ledge of the building without the need for individual angling.

Differing priority has been given to each facade, so that lighting is in-keeping with the character of each street with individual consideration. Northumberland Avenue lighting has a higher level than Whitehall Place for example, as the character and use of the street is far more public and populated. Lighting has been designed to be sympathetic to the context and character of the street.

The exterior scheme is designed with no dimming capabilities. To create flexibility, the circuits were allocated and planned out carefully to create 4 unique lighting scenes which are

used at different times of the evening to sympathise with the surrounding ambience and level of foot fall. The client also has the flexibility to choose different scenes when there is a special event taking place.

Interior

For the interior of the hotel, Lighting Design International worked closely with the interior designer, GA Design to create a scheme which compliments their contemporary interpretation of this historic building. The existing high ceilings and architectural features were a challenge to light sympathetically in order to create an ambience so that the guests feel special the moment they arrive. A combination of feature pendants, intimate table lamps, down and up lights and concealed linear lighting create a subtle sense of luxury across the public areas, including the entrance lobby, The Northall Restaurant and cocktail bar.

The Hotel has two opposite entrances which both lead up to the central reception space. Large decorative pendants, cornice lighting to gold leaf ceilings and small uplights all helped draw the eye up and encourage guests to explore the inner spaces. The architectural lighting creates the ambience, allowing it to feel as though the decorative pieces were doing all of the hard work.

An impressive new dome shaped skylight centrally positioned in the heart of the hotel spans an enormous decorative pendant. The client was keen for this to be the focus of the two joining entrances of the hotel. Lighting Design International worked closely with a light artist to develop this key feature, with special care being taken to ensure that the colour temperature & dimming were correct.

Mirrors were used inside all of the specialist joinery. Careful positioning and specification of the linear LED

lighting meant that the objects were perfectly illuminated, and the joinery itself glowed without any direct views of the fittings.

The impressive original ballroom was lit sympathetically to highlight the features. The huge double height columns were lit from behind to put them into silhouette, with additional uplights to give a more intimate option for the evening senses. Remote controlled downlights positioned carefully into the ceiling mouldings can be individually moved to accurately pin spot the dinner tables.

An impressive inner courtyard creates a focus for the guests and has been cleverly decorated to create an indoor-outdoor space for people to enjoy. Low level uplights, coffer lighting, and a colonnade of lantern style pendants create a very intimate space which does not feel overlooked.

Lighting Design International were responsible for the fine dining in the Northall restaurant, as well and the more relaxed brasserie which links the hotel to the restaurant. High level concealed LED lighting to the original mouldings links these spaces and draws the eye upwards to the grand ceiling above, whilst decorative lamps and pendants fill the space with a soft light for a comforting and intimate ambience. The specialist wine cabinets which separate the space were lit with points of light which give sparkle to the scheme and add extra warmth.

Lighting Design International also had the role of advising on the lighting for the guest suites. These were to be luxurious in their fixtures and fitting as well as modern in their appearance and the way they were controlled. Linear lighting to the window reveals was a subtle way to give soft light to each suite which meant that the outside appearance of the hotel was consistent. Lamps and soft lighting make the hotel rooms & bathrooms feel cosy, whilst strategically positioned downlights are used to highlight the rich fabrics and exquisite furniture.

The enormity of the building itself, and the way in which the areas were split up meant that the design concept could have been easily lost. Using one master set of fittings and details across the different zones resulted in a holistic design where every inch of the building feels as special as the last.

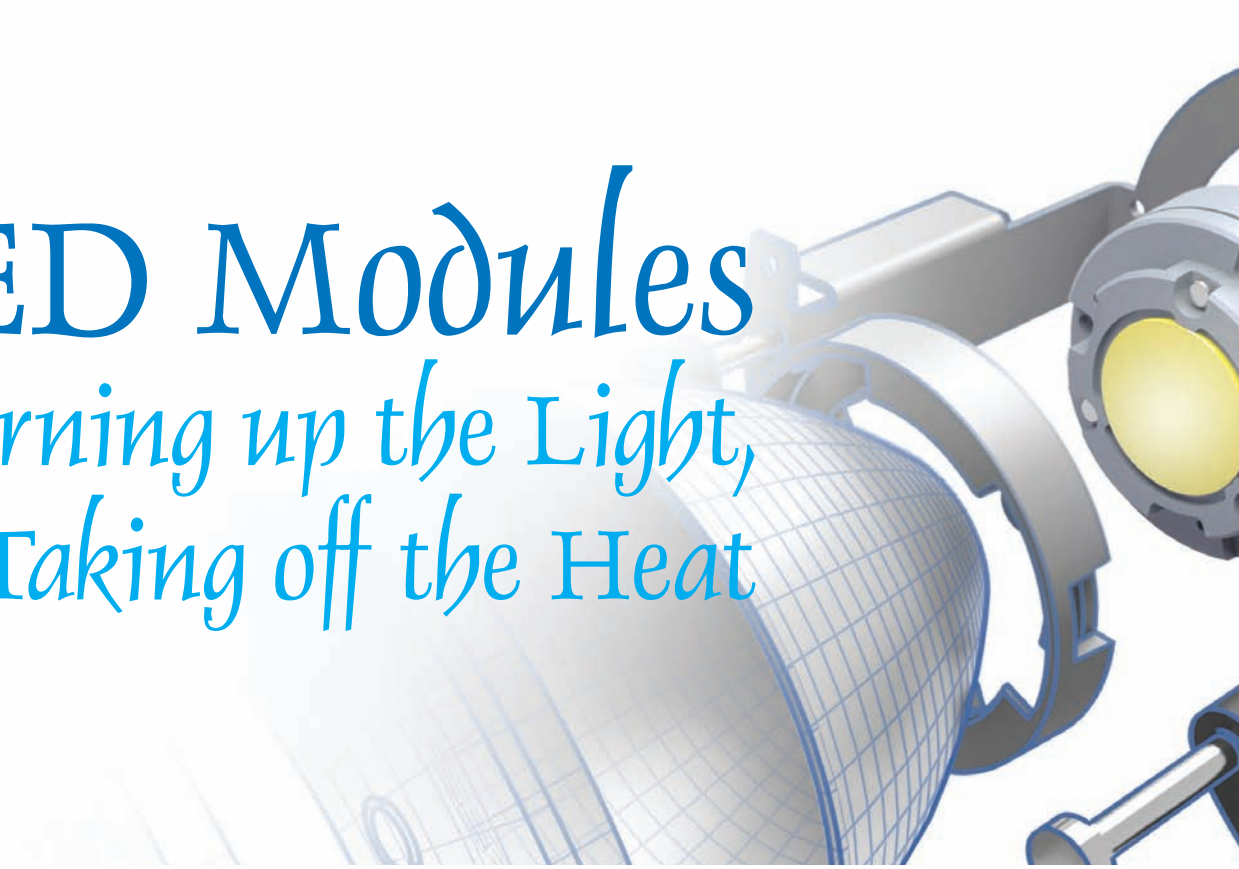
The lighting design for Corinthia Hotel as a whole had to be sympathetic and considerate to the historic original building as well as complement the visionary contemporary concept by GA Design. The bold use of modern decorative light fittings and subtle use of energy efficient light sources give a perfect balance to this hotspot of London. ■

Sally Storey is Design Director of Lighting Design International.

Sally Storey

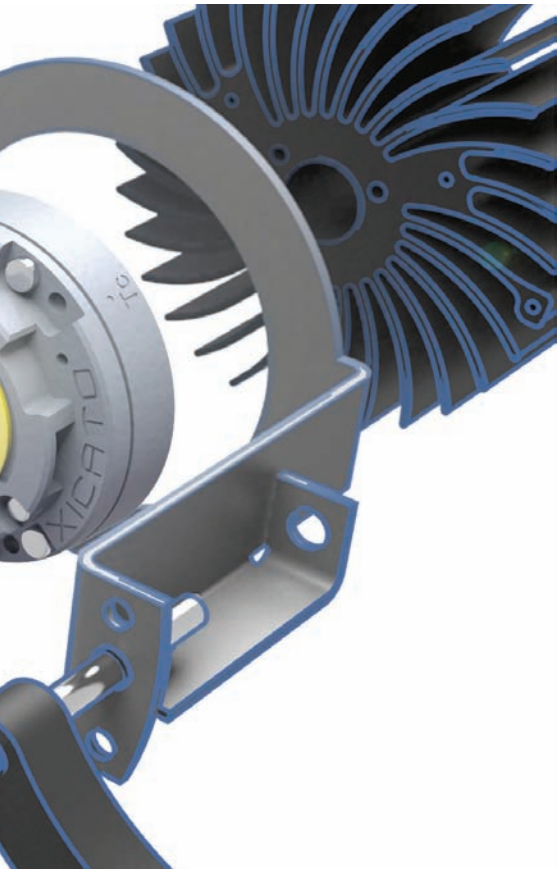
LED Modules

Turning up the Light, Taking off the Heat



One characteristic typically associated with light-emitting diodes (LEDs) is that they provide "cool" lighting. While it's true that LEDs are cool to the touch because they don't generate much infrared (IR) energy, they do generate heat within the semiconductor structure, so the system must be designed in such a way that the heat is safely dissipated. The waste heat, white LEDs generate in normal operation can damage both the LED and its phosphor coating (which converts the LED's native blue color to white) unless it's properly channeled away from the light source.

LED modules are becoming increasingly utilized in retail, hospitality and other professional settings due to the many benefits they offer, such as reliability, modularity, economical operation, and most importantly – color and quality of light. In a purpose-built LED luminaire, a fixture's thermal design is specified to support continuous operation without heat damage and often times separates the LEDs from temperature-sensitive electronics, which provides an important advantage over individual LED replacement bulbs. When choosing a module for your lighting solution, there are some thermal-related considerations that are important to keep in mind.



Test Point Temperature

Test point temperature (Tc) is one characteristic that plays an important role during integration to determine the amount of heat sinking, or cooling, that the luminaire design requires. In general, the higher the Tc limit compared to worst-case ambient temperature (Ta), the more flexibility a luminaire manufacturer will have in designing or selecting a cooling solution.

The worst-case ambient temperature is usually 40^{O}C or higher, so a module with a low Tc rating (e.g., 65^{O}C) doesn't have much headroom above the already hot ambient temperature. Trying to keep a module at Tc 65^{O}C when the Ta is 40^{O}C & dissipating 40W thermal power is very difficult to do with a passive heat sink, so a fan or other active heat sink will likely be required. On the other hand, a module with a Tc rating of 90^{O}C or higher (while still meeting lumen maintenance and warranty specifications) has at least 50^{O}C headroom over the ambient temperature and should be able to make use of a reasonably sized passive heat sink.

However, the higher you can push the test point on the LED module, the smaller the heat sink you need. It's dependent on the Ta – if the module can't withstand a high enough maximum temperature, it's impossible to cool below Ta unless you have a refrigerated system, regardless of the size or effectiveness of the heat sink. Stretching the difference between Tc and Ta as much as possible will give you greater room to deviate from the norm and be creative in your heat sink selection. In Xicato's case, the intention is to continually push the temperature rating higher to provide more room to play and thus help push flexibility in customers' design capability, broadening their competitive advantage.

This highlights a key advantage associated with Xicato's proprietary Corrected Cold Phosphor technology: separating the phosphor from the LED, which allows phosphor temperatures to be maintained at a stable level. Lack of stable phosphor/binder temperature is often the primary mechanism for degradation. Xicato is constantly improving this technology – what was launched five years ago differs from what is being built today – but the central principle of keeping the phosphor cold remains essential. There's a vital need to decrease the thermal resistance from phosphor to where the heat sink is located, and maintaining a clear path is difficult. To this end, Xicato is driving Corrected Cold Phosphor to create ever-lower resistance between the phosphor and the heat sink, without having to cool through the hot LEDs. Today, the module output is at 4000 lumens, which wouldn't have been possible five years ago. Evolving the technology was critical to enabling this capability.

The bottom-line considerations with respect to test point temperature are really flexibility and cost. If a module with a high Tc rating is chosen, there will be more options for design and cost savings than are provided by a module with a low Tc rating, assuming the same power dissipation.

Thermal Power

Another key characteristic, thermal power (load) has always been a difficult number to deal with. LED module manufacturers don't always provide the information required to calculate thermal power because this value can change based on such variables as lumen package, Color Rendering Index (CRI), correlated color temperature (CCT), etc. Cooling solutions are often rated for performance in terms of degrees Celsius per watt, which, unfortunately, necessitates calculating the thermal power.

To address this problem, Xicato has developed a "class system," through which each module variation is evaluated and assigned a "thermal class." With this system, determining the appropriate cooling solution is as simple as referencing the thermal class from the module's data sheet to a matrix of heat sinks. Figure 1 is a sample passive heat sink thermal class matrix for the Xicato XSM module family.

Let's take, as an example, a 1300-lumen module with a thermal

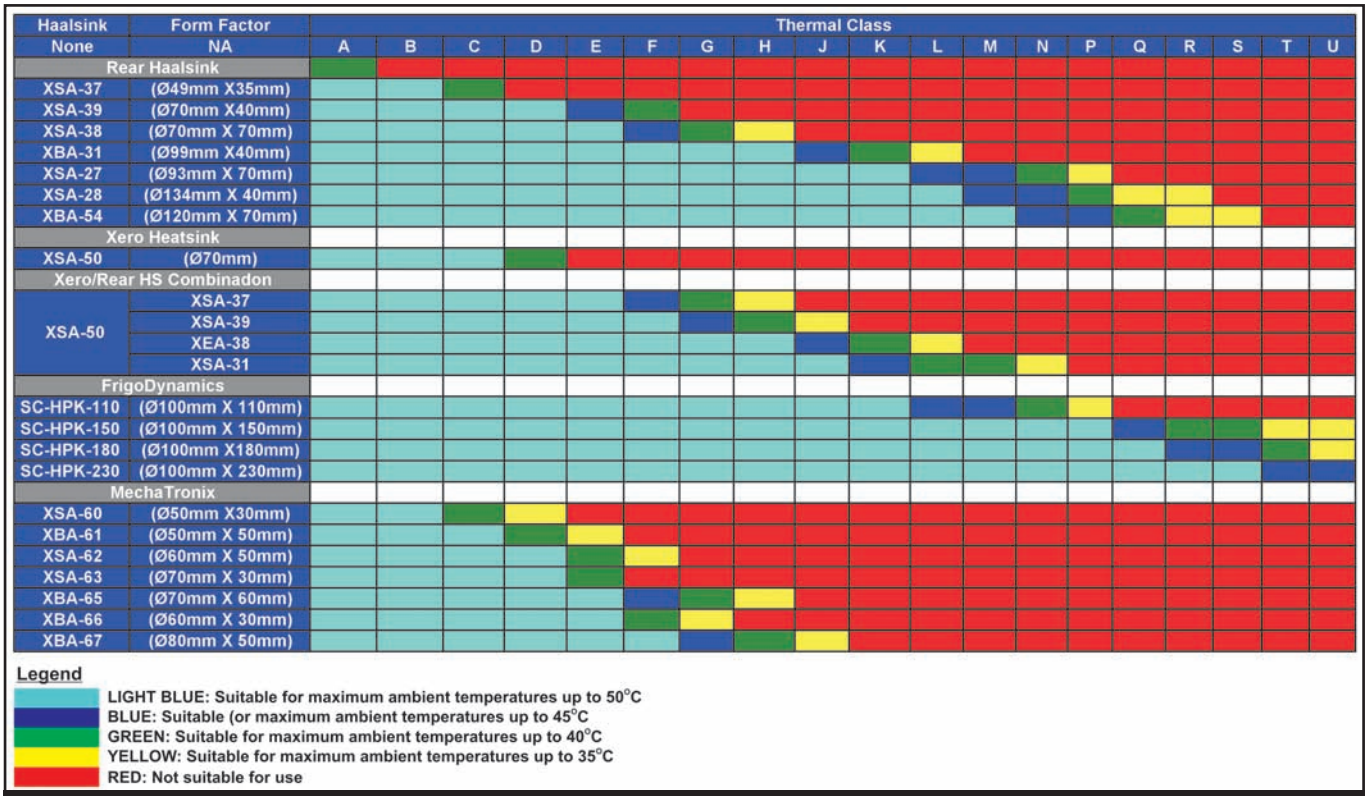


Fig. 1: Xicato XSM module family sample passive heat sink matrix showing suitable module usage for a range of thermal classes

class rating of "F." According to the matrix, for an ambient condition of 40°C, the best choice of heat sink would be one that is 70 mm in diameter and 40 mm tall. Validation testing is still required for each luminaire during the design phase, as variations in trims, optics, and mechanical structures can affect performance. Looking at the example module, if a manufacturer were to design a luminaire around this class "F" heat sink and nine months later a new, higher-flux class "F" module were released, the same luminaire would be able to support the higher-lumen module without the need for additional thermal testing. The thermal-class approach supports good design practice, speeds development and product portfolio expansion, and provides a future-proof approach to thermal design and integration.

Most specification sheets cite an electrical requirement for the module and the lumen output. Electrical input is basically the voltage the module will require and the current needed to drive it; the product of these two variables is power. The problem with output is that it's always displayed in lumens – a lumen is not a measure of power, but rather a unit that quantifies and draws optical response to the eye. It's calibrated specifically on what the human eye sees, but there's a quality of brightness that comes into play that can't easily be tied back to electrical power. There's no way to figure out exactly how much thermal power is being dissipated by the module – power "in" is measured in electrical energy (voltage × current), while power "out" is non-visible electromagnetic, visible electromagnetic, and thermal power. None of this is shown in datasheets.

This intangible factor creates a challenge – for most customers, a watt is a watt, but in reality, there are thermal watts, electrical watts and optical watts; not all are easily determined. The customer can attempt calculations – e.g., how to cool 10 thermal watts – but the fact is that people don't generally think that way. Many customers don't have engineers on staff, and those that do often use rough approximations to determine compatibility.

Removing the Guesswork

Xicato has addressed this challenge by taking the selection process a step further via its newly redesigned and updated website. Each module/drive current is assigned a letter to designate thermal class, so a user can simply go to the web page for the particular module (listed under the Products pull-down menu), select "Specifications," and easily see designated thermal classes

Lighting India

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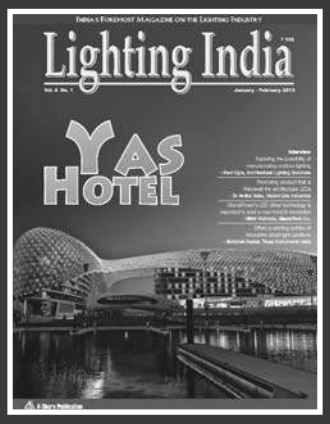

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❑ 1 (6 Issues)	750	150	
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❑ 5 (30 Issues)	3000	700	

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LI/ July-August 2013

Contents of the magazine :

- Articles on various subjects related to the Lighting Industry. Eg. LEDs, stage, aquarium, kitchen, garden, bedroom, architechtural, monument, office, hospital etc.
- Articles on energy conservation
- Who is who of the Lighting Industry
- Around the world (international news)
- Automobile lightings
- Design, engineering & consultancy services
- Rural electrification
- Event management & trade shows
- Letter to the Editor
- Interviews
- Advertorials
- Trade Window
- Brochures
- Product News
- Application Oriented
- Opinions and Open Forum
- Lighting Education

... and much more.

Major Industries covered :

- Shopping Plazas, Cinema Halls and Theatres
- Entertainment Industry: eg. Hotels, Restaurants, Gymnasium & Malls
- Stage & Studio Lighting
- Automobile Industry
- Manufacturers
  - Lighting
  - Machine
  - Neon Lamp
  - LED
  - Pole
  - Switch & Switchgear
  - Decorative Luminaire
  - Electric Measuring Instrument
  - Glass & Glass Furnace
- Suppliers
  - Chemical
  - Gas
  - Starter
  - Cable Wire
  - Lighting Products
  - Lamp Component
  - Brass Component
  - Electric Component
  - Plastic Component
  - Steel Component
- Research & Testing Laboratories
- Electronics in Lighting
- Furnace Refractories

... and related accessories

Reach :

- Top industrialists
- Manufacturers
- Lighting Engineers & Designers
- Architects
- Interior designers
- Event Managers
- Consultants, Contractors & Traders, Project Managers
- Plant Engineers Of Large Companies
- Builders & Developers
- Mechanical & Electrical Engineers
- Lighting Products Manufacturers, Suppliers & Distributors
- Entertainment Industry
- Construction Industry
- Hotels & Restaurants
- Fitness Centers
- Hospitals
- Airports Authority Of India
- Importers & Exporters
- Municipal Corporations All Over India
- Government Utilities :
  - Ministry of Power
  - Central Public Works Department
  - Electricity Utilities
- Non-conventional energy providers
- Manufacturers from other allied industries
- Universities, Technical & Research Institutions

Among Several Others.....

A production luminaire (components manufactured, processed and assembled to production specifications).
Assembled with a module that represents the highest thermal class (worst case heat load) that will be used in the family. The thermal class rating for each module can be found on the representative product datasheet.
Assembled with the worst-case thermal interface material (TIM) that will be used in production of the luminaire. Since Xicato modules come pre-assembled with a TIM, this only applies if the TIM is changed, or if a TIM is used in other areas of the luminaire.
If the product family is adjustable or has an adjustable version, the adjustable luminaire that represents "worst case orientation" which generally means worst case flow conditions through the heat sink. Usually this is the luminaire with the greatest range of motion.
Assembled with a driver that is typical for fixture family and represents highest wattage to be used.
Assembled with an optic, reflector, glass, cover, media or other component that represents the most air restrictive or cooling inhibitive optical system. Often times this may be the stack up of several media (e.g. filter+ diffuser+ lens).
Finished with paint, powder coating, anodize or other coating that creates the greatest thermal resistance and creates the highest temperature condition.
Assembled with a trim or accessory attachment that represents the most air restrictive or cooling inhibitive trim or accessory.
If a housing, chassis or enclosure is optional for the family, a representative enclosure must be included as part of the test. Examples include enclosures that are often required for satisfying UL safety requirements, or enclosures required to satisfy ceiling cutout requirements in accordance with IEC 60598-1 (or equivalent).

Table 1: Summary of Requirements for Luminaire Validation

for each drive current. Additionally, a user can select "Thermal Management" to view all available heat sinks and associated thermal class compatibility at different ambient temperatures. With this new capability, accessible without requiring a login or password, a luminaire maker can easily go in and identify how a heat sink and module should be able to work together, without having to do any calculations. For customers that wish to design their own heat sinks, Xicato has application notes for guidance, as well as a free thermal simulation program that can accurately predict mobile temperature in desired ambient conditions.

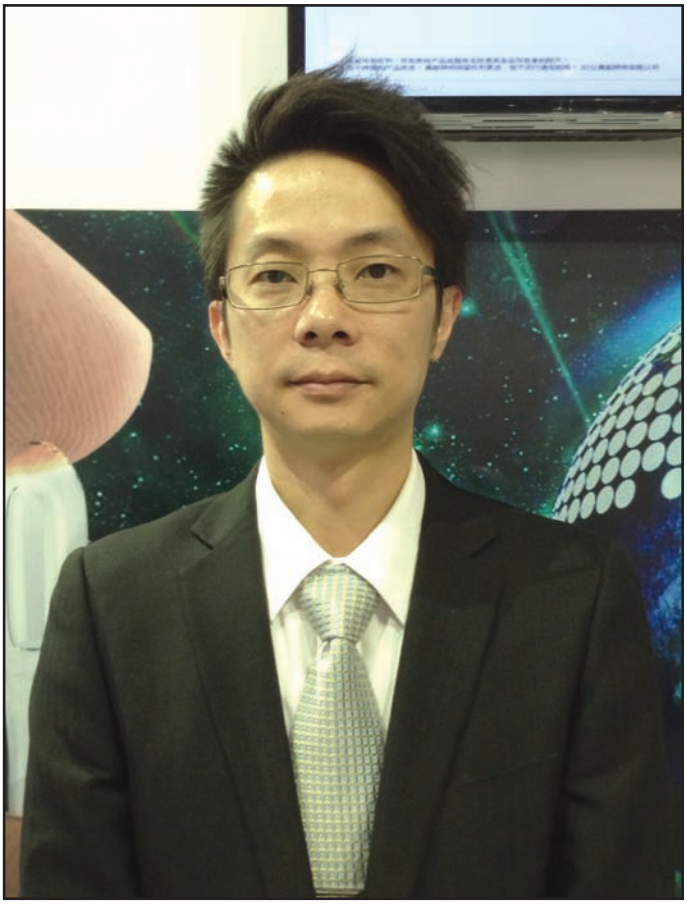
Xicato has defined modules that go up to Class U. The Tc rating, while independent of module flux package, is interrelated. Class A modules, in general, don't need a heat sink; lower power modules usually achieve about 300 lumens. On the other hand, an XLM 95 CRI product is a Class U product that requires either a passive heat sink or an active heat sink. Higher-power devices would be employed where high illuminance is needed (e.g., retail), applications with high ceilings, or for outdoor architectural lighting (e.g., the front columns on the White House).

Once the module and heat sink have been selected and integrated into the luminaire, the next step is thermal validation, which Xicato performs for the specific fixture utilizing an intensive testing process that includes detailed requirements that must be met by the luminaire maker when submitting a fixture for validation (see Table 1 for a partial summary).

The validation is based not on lumens, but on the thermal class model, and the fixture rating is also based on thermal class, rather than wattage, because watts differ. With this approach, an upgrade can be made easily without having to do any retesting. This is another aspect of what makes LED modules like Xicato's future-proof, ensuring their ability to accommodate the lighting community's needs for many years to come. ■

John Yriberri, is Director of Global Application Engineering, Xicato, Inc. He joined Xicato in 2007 and was the Project leader for Xicato's first LED platform- the Xicato Spot Module (XSM). Prior to joining Xicato, he held Program Manager and Senior Engineering positions at Lockheed Martin Space Systems Corporation and Raytheon Space and Airborne Systems. He began his career at Raytheon and led the development of a multimillion-dollar RF decoy system for US fighter aircraft. From there, John advanced into program management and led his multi-disciplined team to the successful delivery of a fiber optic counter measures system to the US Department of Defense. He is BS in Mechanical Engineering with an emphasis in heat transfer from the University of California Santa Barbara, and attended Babson Executive College for Program Management.

John Yriberri



'Focusing on the High lumens market'

Raymond Shiu, Business Development Manager, Alphalite Company Ltd, in a one-on-one interview during Guangzhou International Lighting Exhibition in China, while speaking with Gopal Krishna Anand from **Lighting India** points out that we have all the technology that is required to check or to test the manufacturing or testing.

Alphalite is an emerging company focusing on the high illumination lighting industry. By successful integration of the cutting-edge Light Emitting Plasma™ (LEP™) technology and using a much lighter fixture made of environmentally friendly Magnesium alloy, it helps you in dramatic energy-savings, easier installation and maintenance, and lower total cost of your lighting system. They have strong manufacturing capabilities coupled with high value-added services. Its team consists of focused professional lighting and die casting experts with savvy creativity and an exceptional team of engineers that bring ideas to light. As the world seeks new technologies to reduce energy usages and carbon footprint, 'Alphalite' is poised to be the leader in utilizing Plasma Lighting to offer lighting solutions to markets such as Area Lighting, Parking lot, Street and Highway, Hi-Bays, Flood Light, High Mast, Grow Light and other high illumination applications. They are always ready to provide professional services beyond your expectations.

What is the scope of lighting industry in china?

The scope of lighting industry in China, in fact, LEDs has been better for energy saving, and using LEDs for general lighting is a good choice. But we found most LEDs have different performance in china market. Most people using that for indoor, outdoor, factory, even roadways and tunnel lighting, but we have to clearly know that LEDs for high lumens lighting probably still has weakness. Thus, Light Emitting Plasma (LEP), an innovative solution is designed to bring clean and natural lighting to a whole new level. And with LEP, in fact, one LEP bulb could be replacing LEDs of 100 bulbs, and LEP's light source has been provided a greater superior light distribution than 90% optical efficiency.

So how do you integrate this lighting technology with plasma?

The world's most energy efficient technology Plasma is very important as on today. The Plasma Lighting is single point source, is more special than LED, and LEP for mega lighting application is rated for 70% lumen maintenance after 50,000 hours or even maximum of 90% of use, this is mostly over than LED

and HID length of operating cycles. The plasma lighting technology has another unique feature. The natural illumination plasma lights source greatly enhances visibility and color appearance with a CRI up to 94, the lights similar to sunlight quality produce and are excellent for the horticultural use because plasma lights that photon flux maximum achieve 600µmol/m2/s or above could be improved for the plant morphology, healthier plant, for medical marijuana higher yield and showed 20% higher potency (THC/g) than HPS and even delivered higher potency/Watt than HPS.

Thus, plasma lights technology is energy efficient and a saving solution which is our mega highlight -a 400W mega highlight- and basically energy saving is over 50 percent or above, and the energy within two years start giving you money as pay back.

What is the LEP market in China?

In china, the LEP market has just started up, we have to tell the people what's plasma lighting and we had dedicated promotion to market about the LEP features and benefits. We believed LEP is a better solution for high lumens market trends such as square, roadway, warehouse, gymnasiums & horticultural lighting.

So what are the responses you have received so far?

So far, we are getting a lot of enquiry and better than a few years ago. Actually, Some people knew using the LEP is a good choice for product sorting and color proof of products surface, they know LEP higher CRI reach 75 to 94, even SPECTRA 2 for high bay lights to be more light weight and high reliability then HID and LEDs that can help them easier and faster to install the high ceiling height which is a good sound for the project contractor.

What is the product range?

We have been focusing on the High lumens market. Our lighting products range is parking lots, stadium, gardens, tennis courts, basketball courts, Bridges, High Way, factories, gymnasiums, horticultural and something like that.

What are the marketing strategies?

Right now, basically through commercial centers, through magazines and advertisements and information centers. All things are focusing on a lot of issues on overseas. They are new, saving energy and environmentally friendly which is important and return of investment fast, that is rather great reason in spending a lot of money on promoting the product. Just to push it up there, our company is willing to do it through better sites so that people just go to the sites and look at it. So this type of LED is more relaxing to the eyes rather than LEDs or HIDs. HID you get a yellowish color; LED is like a different type of white, it is a penetrating white. If you are in LEDs a lot it pressurizes, but this is very relaxing. And right now we are also getting into contracts with casinos in Macao and we are apparently doing a project with the galaxy and the project is for outdoor lighting and we are also right now into the negotiations with the highbay and in the casino. So, it is more relaxing and it keeps you awake and that is what the people in the casino want, so its relaxing and people gamble and gamble and gamble for the 24 hours a day. It is the effect of the lighting.

What is your competitive edge against the other companies?

Our edge would be energy saving. When our lights are compared to LEDs, where LED, when you're pointing it down to the highbay you get one center point, and the one center point might be blowing bright. But from us you get different types of reflectors, so you have a wide angle, short angle. We also have adjustments in that recording. And in our companies we have done testing for over two years before we actually launch this product. We want to keep our company image; we are selling not just quality but top products.

What is the annual production?

Right now, we are looking forward to 20 thousands to thirty thousands in numbers. It is not that big right now but we only started half a year ago and only in six months it started selling the products, like I said, the company started 3 years ago and we spent 3 years to do the manufacturing, and testing etc, and also, our company is sister company to a listed company kashui in Hongkong. It is listed in the stock market for over 30 years now and the company is specialized in Die cast also in magnesium and this magnesium is one-third to aluminum.

Do you have the R&D facilities?

We have got four facilities; we have all the technology that is required to check or to test the manufacturing or testing.

Where are your manufacturing facilities located?

Shenzhen; we actually have four different factories all around in china but the closest one is in the Shenzhen.

Do you have quality certifications also?

Yeah! For all these lights we have the CE, EMC, ETL, FCC, IP65, RoHS, ErP, NLCC and CQC.

Are you exporting the products to any countries?

Right now and currently to U.S. From India, I have lot of enquiries and we are also negotiating with

other companies right now to sell the product because everybody wants the exclusive, so I have to decide which one is appropriate, because we were little bit more strict while choosing the distributors. I do not want to choose the wrong one and in our company we prefer to have one distributor per company and in this way it helps both to him and to me.

So what about your product, how competitive it is?

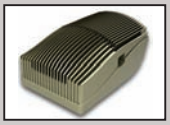
Yes, I find it very competitive, because it is not published. A lot of people are educated with LED and LED is really ruling for over 10 years now. Everybody is now opting LEDs and the thing is, it is affordable. However, with LED it is a little bit difficult one because of the pricing, it is a little bit expensive however you get your return in two years.

Do you think that any change is required in the marketing strategy?

Right now, we are pushing the LED to the front line right now, for each one there are different strategies for e.g. in US we are pushing the HighBays, throw lights because a lot of people want to throw lights and its very popular in US and Canada, also in Frankfurt in Germany, there is a lot of demand in Europe. In certain countries we will target different products.

What are the products you are displaying here?

We have got four products. We have got street lights, conventional street lights, highbay which is for gymnasium for factories. We have got the waves for party launch, and tennis courts and basketball courts and outdoors and we also have the glow lights, which is for agricultural purposes and we do not send it directly to the end users, it is mainly our project. It is because we are mainly dealing with the government jobs. Some of the larger charge would be airport, harbors, airlines and factories; we are currently doing these projects right now.

 **WAVE - Area / Parking Lot Light:** Lightweight Magnesium fixture for easy installation; Lifetime up to 50,000/ hrs.	 **STEALTH - Street Light:** Low Cost Maintenance with Tool-less maintenance designed; Lifetime upto 50,000/hrs.
 **SPECTRA 2 - High Bay Light:** Light weight 8kg below and durable, quick and easy set up; Able to apply different type reflector	 **NITE GROWER – Horticultural:** Provide full color spectrum close to sunlight; CRI reach 94 & good efficient for green plants

What are the other innovative products for the future?

This light and fixtures as well, however the difference is 500 Watts rather that the existing ones, which is 280 and this one will replace the 1000 W that is better for highlight which will be coming out in quarter fourth of this year.

What is your vision in the next two years?

Our progress for the next two years is that we will be developing new fixtures; it will be all depending on the market needs and that is how we decide what kind of products to be manufactured. Right now, every country is doing product research, just get a lot of feedback before we decide to manufacture product.

How do you see Indian market?

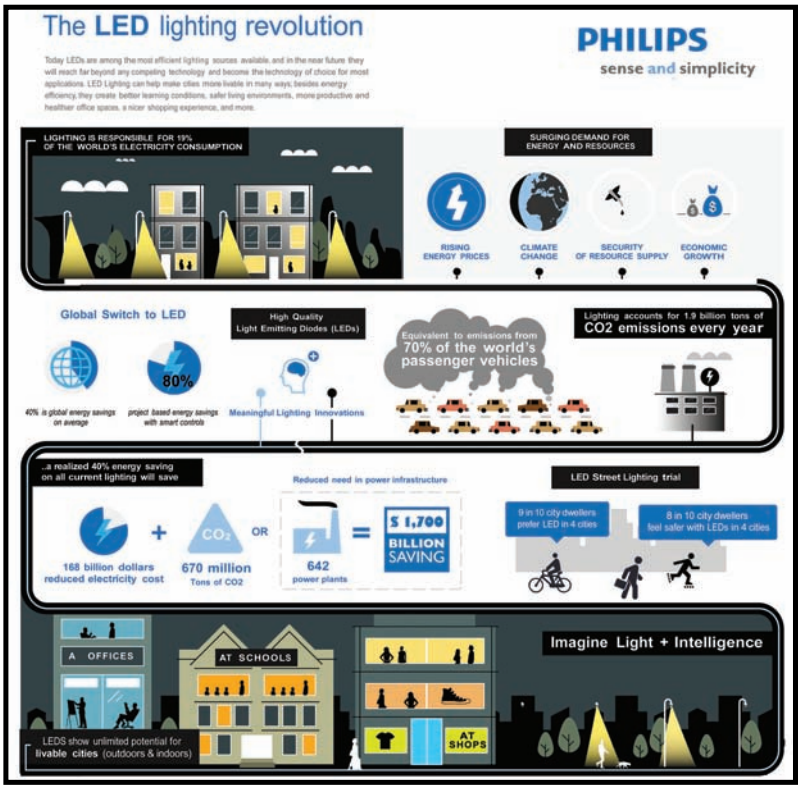
India is a bigger emerging market. There is a lot of demand in India right now. However the only concern that I have in India right now is pricing-wise because nevertheless our products' starting range is from 500 to 800 dollors including tax etc, so I am not familiar with the Indian market. But with my feedback some companies are concerned about the pricing whereas some are okay with the pricing. So, right now I am gathering a lot of information, marketing information, also I am sticking to the pros and cons.

How has been the response to this exhibition?

We recently participated in one of the exhibition in Philadelphia in USA. Also in this show right now in Guangzhou, there is a lot of demand from India also. I have got a lot of contacts from India. I am really surprised that it's from India. I was just hoping the entire Middle East. Currently, India is the country and has the best response right now.

Anything else you would like to say.

I would say the plasma, LEP is leading in the future. LED eventually will die out and LED being cheaper because plasma lighting is new. That is why the pricing is little bit high but I am estimating that around 3 to 5 years down the road, the prizes will drop dramatically and it will be the higher demand for the plasma lights and it will be more common and our target is the government. Our goal is to be the leading company and to reach to every country to cater them with our products. ■



Ten Commandments for a better tomorrow

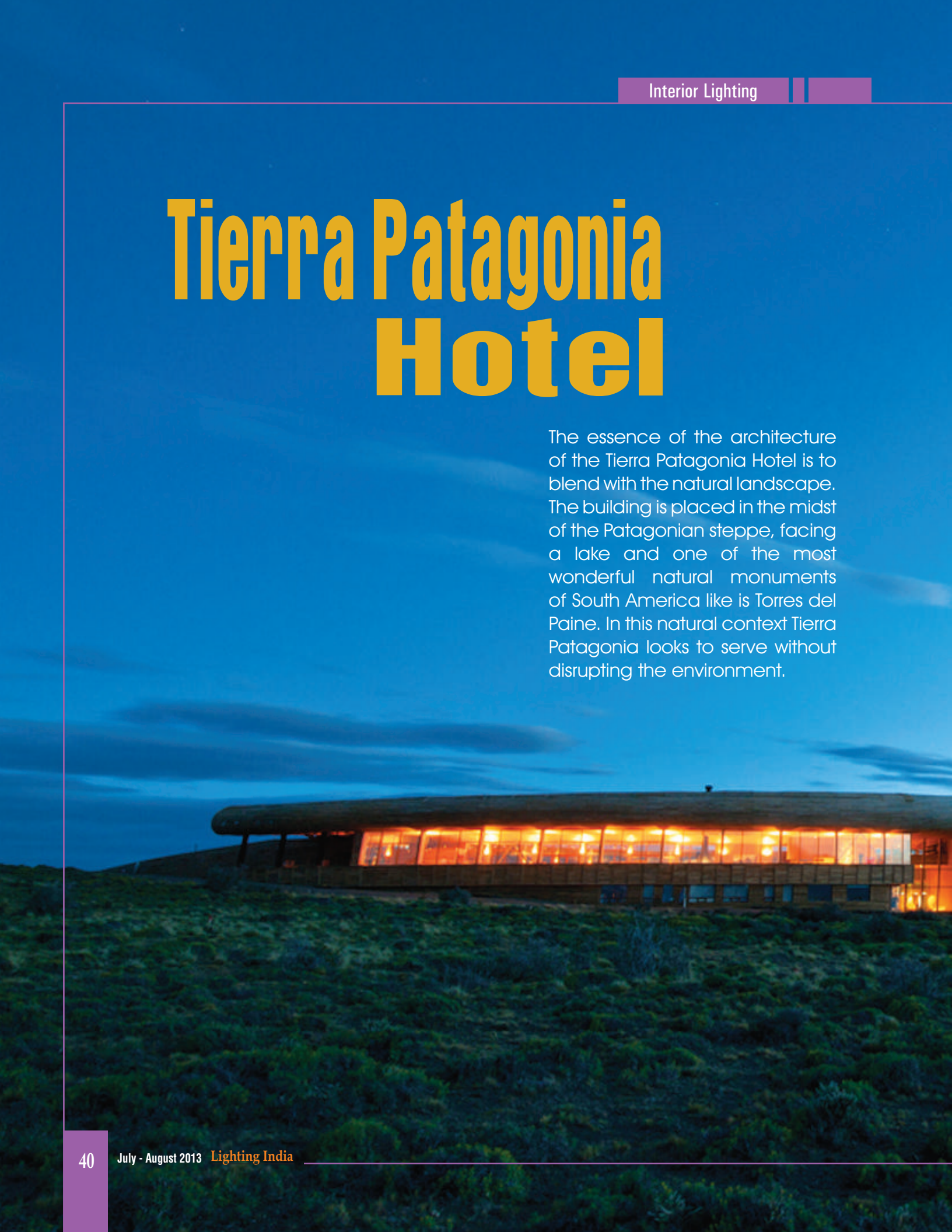
The World Bank recently came out with a report which states that another 2 to 4 degree Celsius rise in the world's average temperature may impact India's rain pattern. The report adds that the scenario would be worse unless action is taken to limit carbon emissions, as South Asia is likely to suffer the most through extreme droughts, floods, rising sea levels, melting glaciers and decline in food production.

It is high time that each one of us takes up the initiative for making the world a better place to live in. One of the easiest and first steps towards it can be reducing your carbon footprints. Carbon footprint is the amount of carbon dioxide that is released into the atmosphere as a result of your activities. This is thought by many to contribute to climate change. You may reduce your carbon footprint at home or at work for little to no cost through changes in your habits, conservation, and using energy more efficiently. The following is an easy guide on how to reduce your carbon footprint.

- Change from incandescent to LED lighting
  - Energy efficiency of LEDs allows for an 85% reduction in energy consumption
  - Helps save electricity and also improves lifespan
- Use mirrors to brighten inner rooms with ambient light
  - This means you won't need to switch on lights during the day
  - Well positioned mirrors can ha ve a drastic impact on the atmosphere and feeling of space in your home
- Choose energy efficient appliances
  - This can help save you money on your energy bills
- Turn it off
  - Turn off lights, televisions, videos, stereos and computers when not in use
  - They can use 10 to 40% of the power when on standby
- Check your tires
  - Properly inflated tires can improve your car's fuel efficiency
- Use no plastic
  - Use cloth bags when going shopping and avoid buying products which use too much plastic
- Fan up
  - Instead of using air conditioners in the summer, wear cool clothes, and use a fan
- Drive less
  - Do your weekly errands in a single trip or pay your bills online. Walk, bike, ride the bus or carpool
- Optimize your speed
  - You will consume up to 25% less fuel if you drive no more than 90 km/hr
- Recycle
  - Consume less, and re-use old products. ■

Tierra Patagonia Hotel

The essence of the architecture of the Tierra Patagonia Hotel is to blend with the natural landscape. The building is placed in the midst of the Patagonian steppe, facing a lake and one of the most wonderful natural monuments of South America like is Torres del Paine. In this natural context Tierra Patagonia looks to serve without disrupting the environment.



Two curved wooden plates twine together, in order to build the volume of the building and its inner space. This image resembles the branches of a tree touching the ground, or an enormous fossil lying for centuries on the steppe, or a fortress in Rajasthan constructed as a prolongation of the mountains fusing with them. The wooden curved forms of the Tierra Patagonia Hotel blend gently with the landscape.

The inner lightning accentuates and reveals the sinuosity of the space. The lightning design had to highlight the encounter of the nature, the materials and their form. When the night falls the light emerges from within the architectural volume through its openings.

The access paths guide the passengers using small points of light that fade underneath the access bridge. At this point two Patagonian landscapes emerge lightened with raking light hidden under the baseboard. The dining room and the large viewing room

are covered by an extended wooden plate building, a sort of cavern that through its opening frames the view to the Torres del Paine, enhancing the vital energy of the space. Indirect lightning brightens softly the wooden plate of the ceiling. The whole area benefits of the direct light provided by hanging tubular lamps, which appear like stalactites in the cavern. This lamps point the light on the tables, avoiding it to spread through the room.

The handrails are provided with a continuous LED lightning strip to facilitate and improve the circulation. Besides this two-level circulation area one encounters open spaces, which are highlighted with spotlights directed to the walls. This light reaches up to the room area, where each threshold is provided with a slim vertical light.

The spa is situated in a half-lightened area. The light of the remaining area gently activates the space with sparks and slim built-in lines of light. On the way one encounters different settings such as a playful resting area provided with swing-chairs from where one can contemplate the Torres del Paine. The swing of the chairs covers and exposes points of light on the ceiling depending on the oscillation, producing alternating lights and shadows.

The rooms are different from the rest of the spaces of the hotel. Each one has a view to the lake and the mountains. Nogushi lamps besides the windows form a light volume that allow to estimate the distance between what is in proximity and what is farther outside, like the mountains. This light volumes form themselves a light mountain within the rooms creating a counterpoint with the vast landscape. A fine continuous light line illuminates the double height spaces from behind the partition walls simulating natural light. Different light objects and fine light strips define diverse atmospheres inside the rooms. This makes them more attractive, help the passenger to orientate and enhance the visual hierarchy of the Patagonian landscape.

Tolomeo lamps with flexible arms provide functional lightning besides the beds. The bathrooms are lightened from behind the mirrors and zenithal lightning works filling in the spaces. ■

Paulina Sir

Paulina Sir, architect graduated from Universidad de Chile, Valparaíso has been a teacher in Lighting Design and Lighting Design Degree Tutor at the School of Architecture of Universidad de Chile, Santiago. She has done numerous seminars and courses in Europe and America and is professional member of the international PLDA; of the European Lighting Designers' Association, ELDA, and of the Chilean Lighting Designers' Association, DIA. Her Lighting Design Office is part of the Architect Offices' Association, AOA, Chile. It has LEED accreditation, focused on the energy sustainability.

Redefining Boutique Hotels

Boutique hotels are normally high-end plush entities. The Arcadia is a benchmark in boutique hotels: it has all the makings of a plush hotel sans the high price tag!

The challenge was to imbue a feeling of 'boutique' in its quintessential sense right from the exterior façade to every little nook and cranny while working with a tight budget. Lighting played a critical role, as it had to highlight the key boutique elements while being warm and welcoming. The concept is to use accent lighting for highlighting the boutique elements, and soft lighting for supporting different activities.

The feeling of a boutique is evident from the façade, as it consists of three distinct elements meant to formulate a collective light art installation. The central staircase landings are used as windows for displaying furniture and decorative light fixtures made of colourful fabric. On one end is a glass cuboid backlit with LED strips in purple light, its corporate colour. A monochromatic ensemble of squares in different shades of grey is used on the other end of the façade to complement the different colours of the furniture and cuboid. The three-dimensionality of the ensemble is more prominent after dark with LED strips silhouetting the squares.

The main entrance double-height lobby consists of three elements: a central decorative chandelier, a display wall with colourful glassware highlighted with LED mini-spotlights and a higher display wall with glass floral elements. A 3000K-colour temperature is chosen throughout the hotel to provide a warm and welcoming ambience. The reception area is softly lighted with bespoke linear luminaires made of wood and acrylic inset with LED strips. LED deep-recessed downlights in the peripheral areas provide glare-free additional illumination.

The restaurant uses soft LED cove lighting and LED backlit strips recessed in the ceiling for the dining areas and LED spotlights for highlighting the textured wall and buffet table. Two decorative pendants are also centrally mounted to add a boutique character to the space. The lighting for the banquet hall had to exude the required grandeur while being soft on the guests. The banquet ceiling consists of three lighting elements providing soft lighting: an LED cove, gold-painted translucent acrylic trays backlit with LED downlights and decorative floral pendants.

The boutique feeling is extended to the corridors as well. Soft LED cove lighting is provided on the ceiling and wall panels for way finding while the mosaic columns and flower baskets are accentuated with LED spotlights. More than 80% of the lighting is done using LEDs and

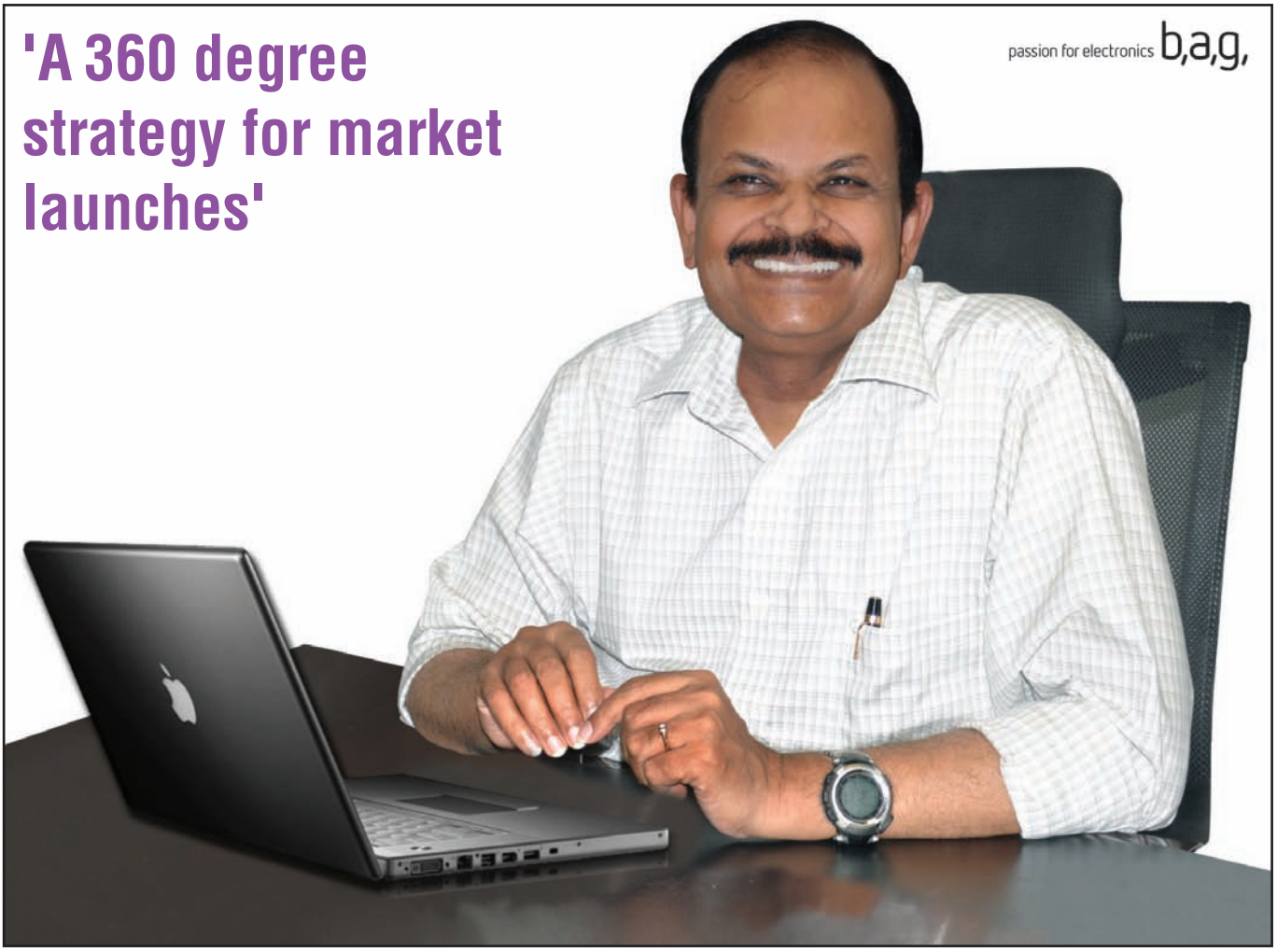
Photos Courtesy: The Arcadia
Project Details
Project: The Arcadia, Coimbatore/IND
Architect: Shanavaz & Associates, Coimbatore/IND
Lighting Design: Lighting Research & Design, Chennai/IND

therefore sets another benchmark in energy-efficient lighting for hospitality spaces. All this is accomplished with a shoestring budget, and hence makes visiting this boutique all the more worthwhile! ■

Dr Amardeep M Dugar

Dr Amardeep M Dugar, IALD, IES, SLL, is the founding principal of Lighting Research & Design, a firm that specializes in applied research and design consultancy. He received a BArch from GGSIP University in New Delhi. After completing MA in architectural lighting from the University of Wismar in Hochschule, Germany, he went to pursue PhD in architectural lighting from Victoria University of Wellington, New Zealand. He is a practitioner who brings his research into client service and professional development. He practices lighting design and has won international awards in the field, and also contributes papers to high-quality conferences and publications, organizes hands-on practical lighting design workshops for students and practitioners, and teaches at several architecture and design schools. He is working on a book for budding architects on architectural illumination design.

'A 360 degree strategy for market launches'



B S Praveen, CEO & MD, BAG electronics (India) Private Limited during one-on-one interview with **Lighting India,** remarks, we still expect to grow at a rate of 60-70% per annum

Founded in Switzerland in 1909, BAG is a global company for lighting electronics Product portfolio mainly focused on components for LED lighting and control gears for FL and HID lamps. Headquartered in Arnsberg, Germany, it has units in Germany, China, Philippines and India. The group is supplying to over 50 countries. During Guangzhou International Lighting Exhibition 2013 in China speaking to Gopal Krishna Anand from Lighting India in a one-on-one interview, B S Praveen speaks about BAG's participation in the exhibition, LED technology and its impact on the Indian market.

How do you find lighting exhibition here?

Number of people this time are less than 50% than compared to what I saw last year, perhaps it is because of long weekend people might have opted for outings with family.

What are the products you are displaying here?

This time our booth is application oriented. Major display is of LED products and there are a few FL and HID products. In the booth, the luminaire are with BAG ballasts not only for booth lighting but to show the application of it. Apart from our global range we have special Asian range LED drivers which will be further expanded during this year.

BAG is in news with Indian Railways. What is 110 V DC ballast for Indian railways?

We have developed ballast for Indian railways rolling stock (coaches) which is 110 V DC ballast. Our ballasts meet all the specifications of the Indian railways without any concessions or compromises which we understand are first time for the railways. We have made initial supplies on trial basis.

What are the benefits of that?

For us the benefit is - we were not into Indian railways till now. Railways' specification is almost same as European specifications but all the present ballast which railways use do not meet the specifications in full. The railways have given a number of concessions on those specifications but our ballast does not need any of those concessions.

What are the quality certificates your products do carry?

The product is equivalent of European CE and ENEC. Product meets RDSO Specifications. However, as of now we have not got any certifications.

What is BAG's market share?

BAG started full-fledged local marketing in India since late 2010 and since then we have come to a market share of about 12-15% of the high specification fluorescent ballast market. Last year we started selling LED drivers and other products and owing to our high quality at affordable prices we are getting very enthusiastic response from the market. A number of large IT companies have specified BAG as the main ballast supplier. Of late our products have become popular in various segments such as commercial offices, industry, hospitality sector, healthcare due to the long term value for money that these products provide. Our products enable our customers to get LEED certification for green building due to their high energy efficiency such as achieved through latest technology like A1 BAT, A2 BAT (Best Available Technology). All our full spec products comply with CE ENEC, VDE, EMV, ROHS certifications. BAG has some unique products like the Hot Restrike Igniters and the outdoor HID driver. The Hot Restrike igniters is a pivotal element of lighting in places like stadiums and high security areas and outdoor HID driver with self-adjusting and DALI dimming features.

Where are your R&D facilities situated in India and how does it compare with the European R&D facility.

Our R&D facility is part of our all in one set up at Pune. We have a highly skilled set of Engineers working to European standards and also having a very good understanding of the Indian market needs. At this facility we undertake development work for Europe and India/Asia Pacific. The facility is fully equipped to develop products to European standards.

What is your marketing strategy for launching your products?

We have a 360 degree strategy for market launches. However, the strategy is tailor made for each type of product. We market our high spec products to Luminaire manufacturers, Consultants, Architects, Large customers like IT companies and other projects. For our low spec products, we use various promotions/advertisement channels and Distributor/Dealer route. We have distributor/dealer network all over India through our long term partner.

What is your competitive edge?

Having R&D manufacturing and marketing all in one set up at Pune enables us to bring out quality products at affordable prices. Our technical strength enables us to attend and resolve even cryptic issues quickly and smoothly. We have in-depth understanding of the products that we sell. We have a team of technically sound marketing personnel. We maintain a very high level of service with our customers which reflect in the high customer engagement index in our customer service. All our full spec products have a standard warranty of 5 years.

What are the new products that you have been planning to come out with?

We recently came out with a number of LED products both the European high spec and Asian medium spec range. We are working on expanding this range. We have number of products tailor made to suit needs of local LED fixture manufacturers. Shortly we

will be coming out with the outdoor LED driver range particularly suited for the Indian market.

What is the BAG's supply chain in the Indian domestic market?

We supply our products directly as well as through distributor/ dealer network. Our direct supply is to major Luminaire manufacturers and projects. Our distribution partner SMPL has dealer network and Sales offices throughout India.

So how do you compare the Indian lighting market with the Chinese lighting market?

It is a bit hard to answer this question because I am not very well familiar with the Chinese Lighting market. By and large they seem very similar - both markets are highly price sensitive as compared to European markets. In the Chinese market there are regulatory needs like CQC, CCC etc., required to be met. However, the Indian government does not impose any such requirements on lighting products. As such, I would expect the spread of quality and price range in China to be lower than in India.

Besides Pune where does elsewhere do you have offices?

We have Sales offices through our distributors in Delhi, Kolkata Chennai and Mumbai.

What is your vision for the next two years?

We will continue to focus growing our domestic market. In the last two years we have been able to consistently double our sales but we may not be able to do so every year. However, we still expect to grow at a rate of 60-70% per annum. This is not going to be easy and to achieve that we have to undertake a variety of activities which may include going beyond the lighting market. We will continue exporting products to our parent company in Europe.

Anything else you may want to say about your company?

We are working hard on arresting the deterioration of LED products' quality perception in India. Today the market is awash with a number of low reliability LED products which is degrading the perception of LED technology itself in the minds of many customers. We are bringing in good quality LED products at affordable prices to enable this. Finally, I can well and truly say,

BAG – "A company you can trust and products you can rely upon." ■

Different Type of Lamps for Luminous

Artificial luminous radiation can be produced from electrical energy according to two principles: Incandescence: It is the production of light via temperature elevation. The most common example is a filament heated to white state by the circulation of an electrical current. The energy supplied is transformed into heat by the Joule effect and into luminous flux. Luminescence: It is the phenomenon of emission by a material of visible or almost visible luminous radiation. A gas (or vapours) subjected to an electrical discharge emits luminous radiation (Electroluminescence of gases). Since this gas does not conduct at normal temperature and pressure, the discharge is produced by generating charged particles which permit ionization of the gas.

The nature, pressure and temperature of the gas determine the light spectrum. Photoluminescence is the luminescence of a material exposed to visible or almost visible radiation (ultraviolet, infrared). When the substance absorbs ultraviolet radiation and emits visible radiation which stops a short time after energization, this is fluorescence.

Incandescent lamps

Incandescent lamps are historically the oldest and the most often found in common use. They are based on the principle of a filament rendered incandescent in a vacuum or neutral atmosphere which prevents combustion.

A distinction is made between:

Standard Incandescent bulbs These contain a tungsten filament and are filled with an inert gas (nitrogen and argon or krypton).

Halogen Incandescent bulbs These also contain a tungsten filament, but are filled with a halogen compound and an inert gas (krypton or xenon). This halogen compound is responsible for the phenomenon of filament regeneration, which increases the service life of the lamps and avoids them blackening. It also enables a higher filament temperature and therefore greater luminosity in smaller-size bulbs.

The main disadvantage of incandescent lamps is their significant heat dissipation, resulting in poor luminous efficiency.

Fluorescent lamps

This family covers fluorescent tubes and compact fluorescent lamps. Their technology is usually known as "low-pressure mercury".

In fluorescent tubes, an electrical discharge causes electrons to collide with ions of mercury vapor, resulting in ultraviolet radiation due to energization of the mercury atoms.

The fluorescent material, which covers the inside of the tubes, then transforms this radiation into visible light.

Fluorescent tubes dissipate less heat and have a longer service life than incandescent lamps, but they do need an ignition device called a "starter" and a device to limit the current in the arc after ignition. This device called "ballast" is usually a choke placed in series with the arc.

Compact fluorescent lamps are based on the same principle as a fluorescent tube. The starter and

Applications of Bulbs

Type	Application	Advantage	Disadvantage
Standard Incandescent bulbs	(1) Domestic use (2) Localized decorative lighting	(1) Direct connection without intermediate switchgear (2) Reasonable purchase price (3) Compact size (4) Instantaneous lighting (5) Good colour rendering	(1) Low luminous efficiency and high electricity consumption (2) Significant heat dissipation (3) Short service life
Halogen Incandescent bulbs	(1) Spot lighting (2) Intense lighting	(1) Direct connection (2) Instantaneous efficiency (3) Excellent colour rendering	(1) Average luminous efficiency
Fluorescent tube	(1) Shops, offices, workshops (2) Outdoors	(1) High luminous efficiency (2) Average colour rendering	(1) Low light intensity of single unit (2) Sensitive to extreme temperatures
HP mercury vapour	(1) Workshops, halls, (2) hangars. (3) Factory floors	(1) Good luminous efficiency (2) Acceptable colour rendering (3) Compact size (4) Long service life	(1) Lighting and relighting time of a few minutes
High-pressure sodium	(1) Outdoors (2) Large halls	(1) Very good luminous efficiency	(1) Lighting and relighting time of a few minutes
Low-pressure sodium	(1) Outdoors (2) Emergency lighting	- Good visibility in foggy weather - Economical to use	(1) Long lighting time (5 min.) (2) Mediocre colour rendering
Metal halide	(1) Large areas (2) Halls with high ceilings	- Good luminous efficiency - Good color rendering - Long service life	(1) Lighting and relighting time of a few minutes
LED	(1) Signalling (3-color traffic lights, "exit" signs and emergency lighting)	(1) Insensitive to the number of switching operations (2) Low energy consumption (3) Low temperature	(1) Limited number of colours (2) Low brightness of single unit

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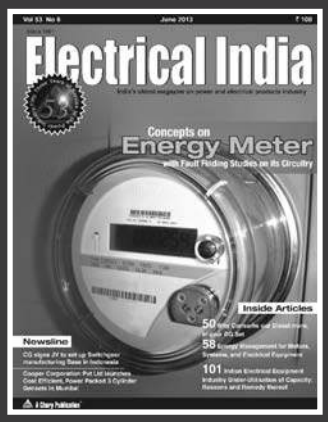

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ballast functions are provided by an electronic circuit (integrated in the lamp) which enables the use of smaller tubes folded back on themselves.

- Fluorescent tube
- HP mercury vapour
- High-pressure sodium
- Low-pressure sodium
- Metal halide
- LED.

Type of HID (High Intensity Discharge) Lamp

The term High Intensity Discharge or HID describes lighting systems that produce light through an electrical discharge which typically occurs inside a pressurized arc tube between two electrodes. In general, these systems feature long life, high light output for the size of the lamp and increased efficiency compared to fluorescent and incandescent technologies. HID lamps are named by the type of gas and metal contained within the arc tube. There are five different families of HID: Mercury Vapor, High Pressure Sodium, Quartz Metal Halide, Pulse Start Quartz Metal Halide, and Ceramic Metal Halide.

HID lamps require a ballast to operate. Typically, the HID ballast (sometimes with the addition of a capacitor and igniters) serves to start and operate the lamp in a controlled manner.

HID lamps take several minutes to warm-up. Full light output is reached after the arc tube temperature rises and the metal vapours reach final operating pressure. A power interruption or voltage drop will cause the lamp to extinguish. Before the lamp will re-light, it must cool to the point where the lamp's arc will re strike.

There are four basic types of lamps considered as HID light sources:

- Mercury vapour
- Low pressure sodium
- High pressure sodium and
- Metal halide.

All are arc discharge lamps. Light is produced by an arc discharge between two electrodes at opposite ends of the arc tube within the lamp.

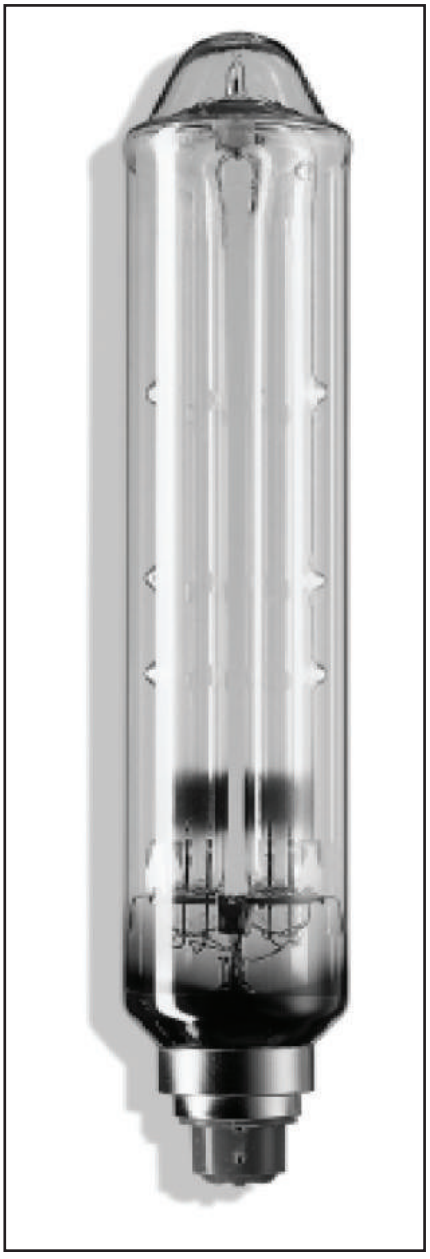
Each HID lamp type has its own characteristics that must be individually considered for any lighting application.

High Pressure Sodium

- Efficacy: 80 to 140 lumens per watt.
- Life: A long lamp life of 20,000 to 24,000 hours, and the best lumen maintenance of all HID sources.
- Wattages: 35W to 1000W and the warm-up time is from 2 to 4 minutes.
- Re-strike time: Approximately 1 minute.
- Applications: Roadway lighting
- High pressure sodium and metal halide lamps comprise the majority of HID lighting applications.
- The biggest drawback of high pressure sodium is the yellowish colour light output, but it is acceptable for use in many industrial and outdoor applications (e.g. Roadway lighting).

Low Pressure Sodium

- Low pressure sodium (LPS) lamps are grouped with HID lamps, but



in fact do not have a compact, high intensity arc. They are more like a fluorescent lamp with a long stretched-out arc.

- Colour: LPS lamps have no colour rendering index as the colour output is monochromatic yellow.
- Efficacy: 100 to 185 lumens per watt
- Wattages: 18W to 180W
- Life: Average 14,000 to 18,000 hour lifetimes.
- Re-strike time: shortest re-strike time among HID sources only 3 to 12 seconds.
- Applications: LPS has few viable applications beyond street, parking lot and tunnel lighting.
- They have excellent lumen maintenance but the longest warm up times, from 7 to 15 minutes.

Metal Halide

- Efficiency: Efficacy of 60 to 110 lumens per watt
- Warm-up Time: 2 to 5 minutes.
- Re-strike time: 10 to 20 Minutes.
- Wattages: 20W to 1000W
- Life: 6,000 to 20,000 hours.
- Applications: This technology is ideal for Lamp applications requiring truer colour as in fruit, vegetable, Clothing and other accent lighting in retail displays.
- Wattages from 1500W to 2000W are specialty lamps used for sports lighting, and have lamp life ratings of only 3000 to 5000 hours.
- Advantages: The advantage of metal halide lighting is its bright crisp, white light output suitable for commercial, retail, and industrial installations where light quality is important. However, lumen maintenance over the life of the lamps is less than optimal relative to other HID sources.
- The arc tube material for metal halide lamps was quartz until 1995 when ceramic arc tube technology was developed.
- Ceramic arc tubes are now predominantly used in low wattage (20W to 150W) lamps, though new designs up to 400W have emerged in recent years.
- Ceramic arc tubes provide improved Colon consistency over lamp life.

General Descriptions of Ballast

HID lamps provide light from an electric discharge or arc and have a negative resistance characteristic that would cause them to draw excessive current leading to instant lamp destruction if operated directly from line voltage.

The ballast is a power supply for arc discharge lamps. Its purpose in HID lighting is to provide the proper starting voltage to initiate and maintain the lamp arc and to sustain and control lamp current once the arc is established.

Ballasts and lamps are designed to meet standards for interchange ability between lamps and ballasts of the same type and wattage. A lamp must be operated by the ballast designed for that lamp, as improper matching of lamp and ballast may cause damage to the lamp or ballast or both.

For many years all HID ballasts were magnetic ballasts operating at the power line frequency of 50 or 60 Hertz to provide proper lamp operation.

In the past few years electronic ballasts have been developed, primarily for metal halide lamps, using integrated circuits that monitor and control lamp operation. Electronic ballast circuits sense lamp operation characteristics and regulate lamp current to operate the lamp at constant wattage, thus providing a more uniform light output and color rendition throughout lamp life.

They also sense lamp end of life and other circuit conditions and shut down the ballast when the lamp operating characteristics fail to meet operating specifications.

Type of HID (High Intensity Discharge) Ballast

HID lamps like fluorescent lamps require a ballast to provide the proper starting voltage for the lamp and limit the operating current once the lamp is ignited. HID lamps have negative impedance, which means that the lamp draws more current than is required for it to operate. Without ballast, running in this negative impedance condition, the lamp would self-destruct in a very short period of time.

HID ballasts are classified by the type of circuit they use

Electromagnetic Ballast (EM)

- Reactor (R).
- High Reactance Autotransformer (HX).
- Constant wattage Autotransformer (CWA)

- Magnetic Regulator.

Electronic Ballast

Further HID ballasts are classified by the type of Power Factor

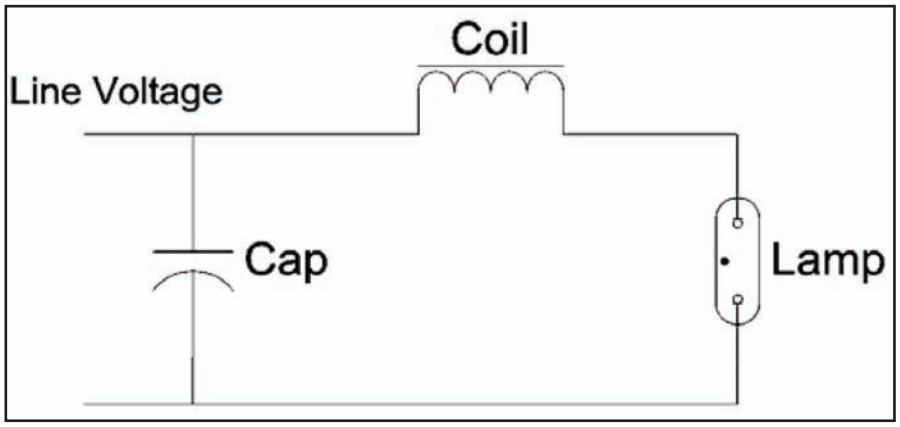
- High Power Factor (HPF)
- Normal Power Factor (NPF).

Electromagnetic Ballasts (EM)

Electromagnetic Ballasts use magnetic components to start and regulate the operation of a lamp. Inductors are used as the current limiting component in EM ballasts. Although the inductor is very good at regulating current, it causes a phase shift input of the current waveform creating a non-ideal power factor. Often times a Capacitor is used in Electromagnetic Ballasts to correct

Reactor (R)

Single coil ballast can be used when the input voltage to a fixture meets the starting and operating voltage requirements of an HID lamp. In this situation, the reactor ballast performs only the current-limiting function since the voltage necessary to initiate the ignitor pulses, and start and sustain the lamp comes directly from the input voltage to the fixture.



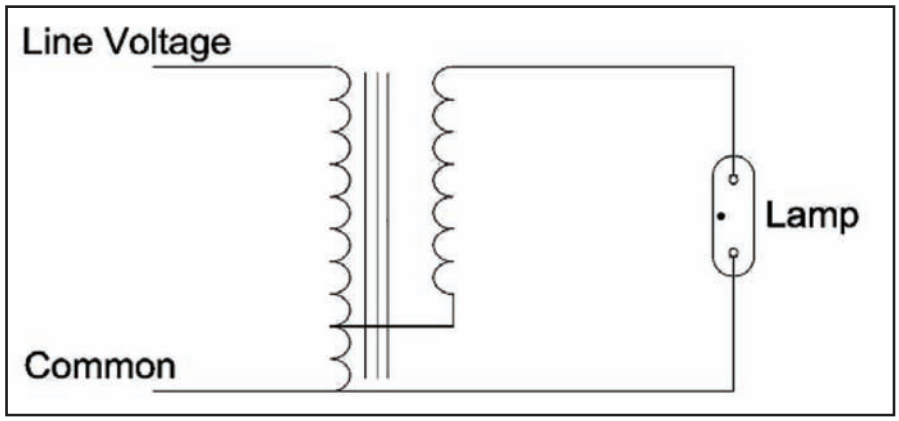
The reactor ballast is electrically in series with the lamp.

There is no capacitor involved with the operation of the lamp. Because of that, the lamp current crest factor is desirably low, in the 1.4 to 1.5 range.

Without a capacitor, the reactor ballasts are inherently normal power factor devices (50%). When desired to reduce the ballast input current required during lamp operation, a capacitor may be utilized across the input line to provide high power factor (90%) operation, but the addition of the capacitor will not affect how the ballast operates the lamp.

High Reactance Autotransformer (HX)

When the input voltage does not meet the starting and operating voltage requirements of the HID lamp, a high reactance autotransformer ballast can be used. In addition to limiting the current to the lamp, an HX ballast transforms the input voltage to the lamp's required level.



Two coils, called the primary and secondary, are employed within the ballast. The operating characteristics, such as lamp wattage regulation are similar to the reactor.

The high reactance autotransformer ballast is also inherently a normal power factor (50%) ballast but can be corrected to a high power factor (90%) with the addition of a capacitor across the primary coil. As with the reactor ballast, the addition of this capacitor does not affect the lamp's operation.

Both reactor and high reactance ballasts provide the same degree of lamp wattage regulation. For example, a simple 5% change in line voltage results in a 10-12% change in lamp operating wattage. However, this fair degree of lamp regulation is acceptable for many applications.

Advantages

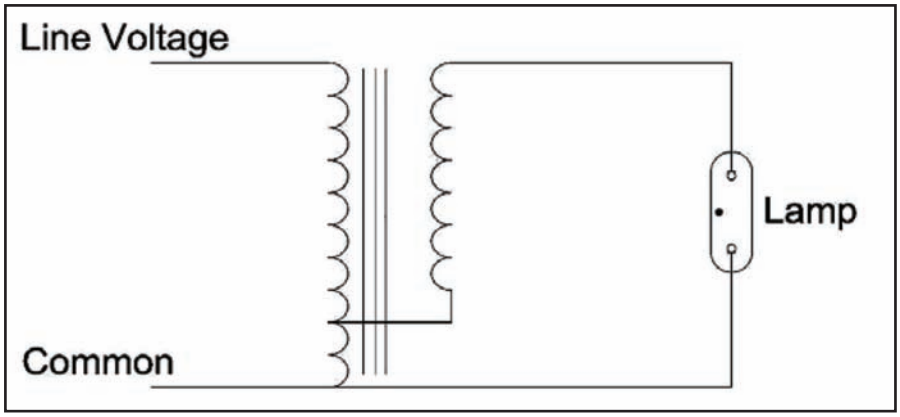
- Slightly higher in cost than reactors, but
- less than regulated type ballasts
- Lower ballast losses than regulator types
- Provides good wattage regulation when line voltage is controlled within ± 5%
- Can be used with 120V, 208V, 240V, 277V, and 480V supply.

Disadvantages

- High operating current
- Higher starting current
- Poor regulation.

Constant Wattage Autotransformer (CWA), "Peak Lead Autotransformer"

To correct the higher input current associated with reactor and high reactance ballasts, and to provide a greater level of lamp wattage regulation, the 2-coil CWA ballast was developed.



- Slightly larger in size and weight than variations of up to +5% or –10% Reactor Ballast
- Starting current is even lower than operating current
- Costs less than magnetic regulator
- Provides good regulation of lamp wattage, especially in nominal and below normal systems
- Ballast losses are less than for magnetic regulator.

It is the most commonly used ballast circuit for medium and high wattage (175W – 2000W) applications and typically represents the best compromise between cost and performance.

The CWA is a high power factor ballast utilizing a capacitor in series with the lamp rather than across the input. The capacitor works with the core-and-coil to set and regulate the lamp current to the prescribed level.

The CWA ballast provides greatly improved lamp wattage regulation over reactor and high reactance circuits. A ± 10% line voltage variation will result in a ± 10% change in lamp wattage for metal halide.

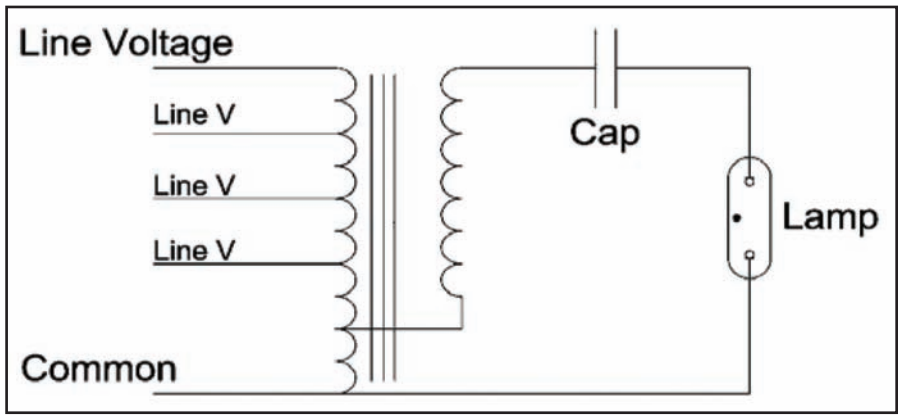
The metal halide and high pressure sodium ballasts also incorporate wave shaping of the open circuit voltage to provide a higher peak voltage than a normal sine wave.

This peak voltage (along with a high voltage ignition pulse when an ignitor is used) starts the lamp and contributes to the lamp current crest factor (typically 1.60 -1.65).

With the CWA ballast, input current during lamp starting or open circuit conditions does not exceed the input current when the lamp is normally operating. CWA ballasts are engineered to tolerate 25-30% drops in line voltage before the lamp extinguishes (lamp dropout), thus reducing accidental lamp outages.

Constant Wattage Isolated (CWI)

The CWI ballast is a two-coil ballast



similar to the CWA ballast except that its secondary coil is electrically isolated from the primary coil.

This isolated design permits the socket screw shell to be grounded for phase-to-phase input voltage applications such as 208, 240 and 480 volt inputs.

Advantages

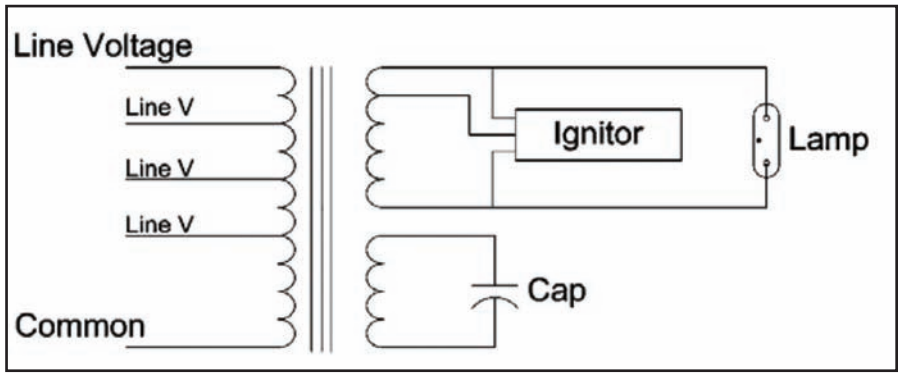
- High power factor (over 90%) and low operating current
- Good regulation–permits and responds favourably to line voltage

Disadvantages

- More expensive than Reactor type ballast
- Available for all standard voltages.

Magnetic Regulator

Magnetically Regulated (Mag Reg) and Regulated Lag (Reg Lag) are another type of EM ballasts. They utilize a magnetic with three separate coils. One coil connects to a capacitor for increased Power Factor and to regulate current into the lamp coil. The lamp coil is isolated



from the power supply. This circuit provides very good control over light output. In some ballast designs, large changes in voltage cause very small changes in lamp wattage

Advantages

- High power factor (over 90%)
- Excellent line voltage regulation, it is responsive to systems that operate
- normally in extremely high or extremely low line voltage situations–in the "near to ± 10%" range
- Low operating current and lower starting current
- Isolated secondary reduces danger of electrical shock
- At nominal voltage, its volts/watts trace is quite like the performance of a Reactor Ballast
- Provides better lamp regulation.

Disadvantages

- Most expensive of all types of ballasts
- Heavier and larger than other ballasts.

Electronic HID (e HID) Ballasts

There are two basic designs for electronic HID ballasts:

Low frequency square wave (typically used for low-wattage lamps or with ceramic arc tube lamps in the 250W-400W range) and High frequency (for medium wattage lamps in the 250W to 400W range).

Both make use of integrated circuit technology to provide closer regulation and control of lamp operation over a variety of input voltage and lamp aging conditions.

The integrated circuits in both types of ballasts continuously monitor input line voltage and lamp conditions and regulate lamp power to the rated wattage. If any power line or lamp circuit condition exists that will cause the lamp or ballast to operate beyond their specified limits the ballast shuts down (removes power from the lamp) to prevent improper operation.

Electronic HID ballasts improve lamp life, lamp lumen maintenance, and system efficiency.

Integrated circuit control allows most electronic ballasts to operate at multiple input line voltages and, in some cases, operate more than one lamp wattage. The lamps are operated with constant lamp power that provides better light output regulation and more consistent light color over the life of the lamp.

Some electronic HID ballasts also offer a continuous dimming function that will dim the lamp to 50% (minimum) lamp power using 0-10V (DC) dimming control voltage.

All functions required to correct power factor, line current harmonics, and to start and control lamp operation are inherent in the ballast.

The lamp socket must be pulse rated (dependant on lamp type) because there is an ignition pulse supplied to start the lamp.

Parts of HID (High Intensity Discharge)

Ballast

All HID lamps are negative resistance light sources (this means that once the arc is initiated, the lamp's resistance continually decreases as current increases; for all practical purposes, the lamp becomes a short circuit). They require a support device (ballast), that limits the lamp and line current when voltage is applied, to prevent the lamp from being destroyed.

In addition, the ballast provides the lamp with proper voltage to reliably start and operate the lamp throughout its rated service life. If a transformer is integral to the ballast circuit, it modifies the available supply voltage to provide the voltage required for the lamp.

A distinction must be made between lag circuit and lead circuit ballasts. The lamp current control element of a lag circuit ballast consists of an inductive reactance in series with the lamp. The current control element in lead circuit ballasts consists of both inductive and capacitive reactance in series with the lamp; however, the net reactance of such a circuit is capacitive in mercury and metal halide ballasts, and inductive in high pressure sodium ballasts.

High pressure sodium (HPS) lamps are greatly different than the mercury or metal halide lamps. Mercury and metal halide lamps maintain a relatively stable voltage drop across the arc tube throughout its life (wattage is also essentially constant) with aging being reflected only in lamp lumen depreciation, decreasing light output.

The HPS lamp is a dynamic device with performance changing as the lamp ages. The arc tube voltage rises with usage; therefore, the wattage and lumen output change with age.

Capacitors

All high power factor (HPF) Reactor (R) and High Reactance (HX) ballasts, as well as all Constant Wattage Autotransformer (CWA), Constant Wattage Isolated (CWI) and Regulated Lag ballasts require a capacitor.

With core and coil and encapsulated core-and-coil units the capacitor is a separate component and must be properly connected electrically.

The capacitor for outdoor weatherproof, indoor enclosed-can and postline types is already properly connected within the assembly.

Two types of capacitors are currently in use:

- Dry metalized film and
- Oil-filled.

Present capacitor technology has allowed all but a few capacitor applications to be dry film. Oil-filled capacitors are used only when dry film technology cannot satisfy capacitor voltage requirements.

Dry Metalized Film Capacitors

Available to fill almost all needs

for HID ballast applications.

Advance dry film capacitors typically require only half the space used by oil filled capacitor and do not require additional spacing for safety.

The compact, light weight, cylindrical non-conductive case and two insulated wires or terminals reduce the required mounting space as compared with oil-filled capacitors.

The discharge resistors (when required) are installed within the capacitor case. Dry film capacitors are UL Recognized and contain no PCB material.

The maximum allowed dry film capacitor case temperature is 105°C.

Oil-Filled capacitors

Contain non-PCB oil and are a UL-Recognized component. Oil-filled capacitors are only supplied with ballasts where the capacitor operating voltage cannot be satisfied by dry film capacitors.

When required, the capacitor discharge resistor is connected across the capacitor terminals.

Additional precautions must be taken when an oil filled capacitor is installed.

Underwriters Laboratories, Inc. (UL) requires clearance of at least 3/8 inch above the terminals to allow for expansion of the capacitor in the event of failure.

The maximum case temperature for oil-filled capacitors is 90°C.

Igniters (Starters)

An ignitor is an electronic component that must be included in the circuitry of all high pressure

sodium, low wattage metal halide (35W to 150W) and pulse start metal halide (175W to 1000W) lighting systems. The ignitor provides a pulse of at least 2500 volts peak to initiate the lamp arc.

When the lighting system is energized, the ignitor provides the required high voltage pulse until the lamp arc is established and automatically stops pulsing once the lamp has started.

It also furnishes the pulse continuously when the lamp has failed or the socket is empty. Ballasts that include an ignitor to start the HID lamp are limited in the distance they may be mounted remotely from the lamp because the ignitor pulse attenuates as the wire length between the ballast and lamp increases.

For most of these ballast/ignitor combinations, the typical maximum ballast- to-lamp distance is listed in the Atlas as 2 feet. When this distance is exceeded the lamp may not start reliably and a long range ignitor is required.

Some lighting applications require instant restarting of lamps after a momentary loss of power to the fixtures. When an HID lamp is hot after operation and power is removed and reapplied, it will not restart with a standard ignitor until the lamp sufficiently cools.

When instant re strike of a hot lamp is required, a special ignitor is necessary that will provide a pulse with much greater peak voltage.

Some ballast designs require ignitors to start the lamp. Ignitors create a glow discharge in the lamp by providing a voltage high enough to ionize the gas. This glow discharge is created by a 2500 volt pulse. Once the lamp is started, the ignitor stops pulsating automatically.

Ignitors are designed to last thousands of hours. However, if the lamp has failed, or if the socket is empty, the ignitor will continue pulsing. In these situations, it is important to replace the lamp or turn off the HID fixture to preserve the ignitor's life.

Standard Ignitors are supplied with all High Pressure Sodium, Pulse Arc, and Metal Halide ballast requiring ignitors. These ballasts are supplied with the appropriate external ignitor and are to be wired within two feet of the lamp. Sometimes the ignitors can be permanently attached to or built into the ballast.

Long range Ignitors are used in situations where an ignitor must be mounted further from the lamp than is recommended for a standard ignitor. The maximum lamp to ignitor distance for these ignitors is 50 feet, which may vary depending on the type of lamp, ballast, fixture, and wiring.

Instant Restrike Ignitors generate multiple pulses to restrike lamp arc without a cool down time, after a brief power interruption has extinguished it. This requires a special lamp and is still subject to warm-up time.

Automatic Shutoff Ignitors will apply pulses for 10 to 12 minutes and then deactivate if a lamp arc cannot be initiated. This saves the on ignitor life because a standard ignitor will continue to pulse. Resetting the Automatic Shutoff ignitor is accomplished by momentarily interrupting the power to the ballast. They should not be used on unswitched circuits that cannot be reset. Shutoff Devices is an Ignitor Accessory that can be used to convert a Standard Ignitor into an Automatic Shutoff Ignitor. The catalog lists all the different Ignitors and accessories.

It is important to note that ignitors are specifically designed to operate properly with specific ballasts and cannot be interchanged with other ignitors or different brands of ignitors and ballasts.

The ignitor should always be mounted near the ballast but not on the ballast.

Installation & Testing of HID (High Intensity Discharge)

Only the input to HID lighting systems is a sine wave. Once the voltage and current is processed through the ballast and lamp, it is changed and is no longer a perfect sine wave. As a result of this transformation, only TRUE RMS volt and amp meters will give proper readings.

TRUE RMS clamp-on current meters are also available and are most convenient when reading lamp current.

There are many brands of test meters available. Some indicate RMS and some indicate TRUE RMS on the meter. They are not the same. Only those that have TRUE RMS will read non-sinusoidal waveforms accurately. The RMS meters will give readings 10 to 20% low depending on the shape of the voltage or current waveform.

Normal End of Lamp Life

Most fixtures fail to light properly due to lamps that have reached end of life. Normal end of life indications are low light output, failure to start or lamps cycling off and on these problems can be eliminated by replacing the lamp.

Supply Input Measurement

Measure the line voltage at input to the fixture to determine if the power supply conforms to the requirements of the lighting system. For constant wattage ballasts (CWA, CWI), the measured line voltage should be within ±10 % of the nameplate rating. For reactor (R) or high reactance (HX) ballasts, the line voltage should be within ±5 % of the nameplate rating.

Check breakers, fixture fuses, photocells and switches when no voltage reading can be measured. High, low or variable voltage readings may be due to load fluctuations.

The supply voltage should be measured with the defective fixture connected to the line and power applied to help determine possible voltage supply problems.

Open Circuit & Short Circuit Voltage

If the proper input voltage is measured, most HID fixture problems can be determined by measuring open circuit voltage and short circuit current.

Measuring Open Circuit Voltage

To determine if the ballast is supplying proper starting voltage to the lamp, an open circuit voltage test is required. The proper test procedure is-

- Measure input voltage (V1) to verify rated input voltage is being applied to the ballast.
- If the ballast has an ignitor [HPS, low wattage MH (35W to 150W) or pulse start MH], the ignitor must be disconnected or disabled with a capacitor (1000 pF or larger) across the voltmeter input to protect the meter from the high voltage ignitor pulse.

Some ballasts have an integral or built in ignitor. If you are not sure if an ignitor is used put a capacitor across the meter for all open circuit voltage measurements.

- With the lamp out of the socket and the voltage applied to the ballast or the proper tap of the ballast with multiple voltage inputs, read the voltage (V2) between the lamp socket center pin and shell. Some lamp socket shells are split. Make sure connection is being made to the active part. Open circuit voltage must be measured with a TRUE RMS voltmeter to provide an accurate reading.
- Constant wattage (CWA, CWI) ballasts have a capacitor in series with the lamp. If the capacitor is open there will be no open circuit voltage. Measure the voltage on both sides of the capacitor. If the voltage exists on the ballast side but not on the lamp side.

Change the capacitor and re-measure the open circuit voltage at the lamp socket. If there is still no voltage disconnect the lamp socket from the ballast and measure open circuit voltage again. Once a voltage is measured test the lamp socket for shorts with an Ohm-meter or replace the lamp socket. An ohm-meter test is not conclusive as the test is at low voltage and the failure may be due to the open-circuit voltage.

Short Circuit Lamp Current Test

Do not be concerned about momentarily shorting a magnetic HID ballast output. They will not instantly burn up. HID ballast is designed to limit current at the specified value range.

To assure that the ballast is delivering the proper current under lamp starting conditions, a measurement may be taken by connecting an ammeter between the lamp socket center pin and the socket shell with rated voltage applied to the ballast. If available, a lamp socket adapter may be used as described in the open circuit voltage test.

- Energize ballast with proper rated input voltage.
- Measure current with ammeter at A1 and A2 as shown in the diagram shown herein.
- Readings must be within test limits. A clamp-on TRUE RMS ammeter may also be used to perform this test by placing an 18 gauge wire between the lamp and common leads of the ballast. When using a clamp-on ammeter for this measurement, be certain the meter is not near the ballast magnetic field or any steel object that may affect the reading.

The short circuit current test will also determine a defective capacitor in constant wattage circuits. A shorted capacitor will result in high short circuit current, while an open capacitor or low value capacitor will result in no or low short circuit current.

Capacitor Testing and Ballast Performance

Disconnect the capacitor from the circuit and discharge it by shorting the terminals or wires together.

Check the capacitor with an ohmmeter set to the highest resistance scale

If the meter indicates a very low resistance then gradually increases, the capacitor does not require replacement.

If the meter indicates a very high initial resistance that does not change, it is open and should be replaced

If the meter indicates a very low resistance that does not increase, the capacitor is shorted and should be replaced.

The ohmmeter method of testing capacitors will only determine open or shorted capacitors. The capacitance value can be tested by many available portable TRUE RMS meters having that capability, though a test using a dedicated capacitance meter is more conclusive.

The capacitance value will affect lamp performance of Constant Wattage ballasts in ways that cannot be determined by the ohmmeter method.

A capacitor may look good visually, but should be tested for capacitance value or replaced.

The capacitor in a reactor or high reactance ballast circuits will only affect the ballast power factor and not ballast operation.

Capacitor failure in these circuits will cause line supply current changes possibly causing circuit breakers to activate or fixture fuse failures.

Ballast Continuity Checks

Continuity of Primary Coil

- Disconnect the ballast from power source and discharge the capacitor by shorting its terminals or wires together.
- Check for continuity of ballast primary coil between the voltage input leads.

Continuity of Secondary Coil

- Disconnect the ballast from power source and discharge the capacitor by shorting its terminals or wires together.
- Check for continuity of ballast secondary coil between lamp and common leads

Ignitor Testing

Ignitors are used as a lamp starting aid with all high pressure sodium; low wattage metal halide and pulse start lamps.

Measurement of the starting pulse characteristics of an ignitor is beyond the capability of instruments available in the field. In laboratory tests, an oscilloscope equipped with a high voltage probe is used to measure pulse height and width. In the field, some simple tests may be performed to determine if the ignitor is operable.

It is first assumed that the lamp has already been replaced with a known operable lamp.

Replace the ignitor with a known operable ignitor. If the lamp starts, the previous ignitor was either mis-wired or Inoperative.

If the lamp does not light check the open circuit voltage and short circuit secondary current.

Further Magnetic Ballast Checks

Probable Causes of Inoperable Ballasts

- Normal ballast end-of-life failure
- Operating incorrect lamps. Use of higher or lower wattage lamps than rated for the ballast may cause premature ballast end-of-life.
- Overheating due to heat from the fixture or high ambient temperatures causing the ballast temperature to exceed the
- Specified temperature.
- Voltage surge from lightening or power source malfunction.
- Mis-wired, pinched or shorted wires.
- Shorted or open capacitor.
- Incorrect capacitor for the ballast.
- Capacitor not connected to the ballast correctly.

Probable Causes of Shorted or Open Capacitors

- Normal capacitor end-of-life failure.
- Overheated due to heat in the fixture or ambient temperature.
- Capacitor mounted too close to ballast.
- Incorrect voltage or capacitor value for ballast.
- Mechanical damage such as over-tightened capacitor clamp.

Electronic HID Ballasts

Electronic HID ballasts present special troubleshooting challenges. The previously discussed procedures cannot be used to test electronic HID circuits. Electronic integrated circuit control limits reliable testing that can be performed in the field.

An energized electronic HID ballast will attempt lamp ignition by producing high voltage pulses for a specified time period, usually between 10 and 30 minutes. Consult the ballast label for specific times.

Unlike magnetic HID ballasts, momentary shorting either output lead of an electronic HID ballast to ground or each other.

HID Ballast / Lamp Troubleshooting

Normal End of Lamp Life

Normal end of life is important to understand for troubleshooting. It occurs when the lamp has aged to the point that the arc can no longer be sustained. End of life can be induced prematurely when lamps are operated at improper voltages, temperatures and positions.

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LI/ July-August 2013

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
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... and much more.

Major Industries covered :

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- Controls
- Cooling Towers & Parts
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- Ducts & Accessories
- Energy Saving
- Environmental
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- Fans
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- Instruments
- Insulated Doors
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- Thermal Storage Systems
- Transport Refrigeration
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- Water Treatment

... and related accessories

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Industries like :

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

Mercury and metal halide lamps tend to emit low light output at end of life and starting will become intermittent. There will also be significant blackening on the arc tube located at the center of the lamp. High pressure sodium lamps retain their light output at the end of life, however, starting becomes intermittent at first and then impossible.

There will be some blackening on the end of the arc tube located in the centred of the lamp.

Verify average rated lamp life as published by the lamp manufacturer and compare it to the actual life of the lamps in the system. Remember that the average rated life is not the same as the minimum life expectancy. The average rated life means that for a population of lamps, the average lamp lasted this long. When a system of lamps installed at the same time reaches the average rated life, we can expect half of the population of lamps to have failed. It is always important to be aware of the operation of the system when evaluating lamp life. For example, is the system operated round the clock either intentionally or as the result of faulty controls?

Lamps Will Not Start

Check to see if lamp is loose in the socket. Check for arcing (blackening) at the center contact button and retighten lamp until it is properly seated. Tightening too much may cause lamp breakage.

Check to see if lamp has failed or is damaged. Visually inspect for loose, broken internal parts or broken bulb wall. Visually inspect for separation of the lamp base. Check for looseness or for significant discoloration of the bulb wall near the base.

Test the lamp in an adjacent fixture that is operating properly.Check to assure that the voltage at the fixture is not too low.

Check the nameplate rating for the ballast. The voltage should be within 5% for reactor and high reactance ballasts, and within 10% for all others

Lamp Cycling (starting and shutting off repeatedly)

Lamp cycling is a common end of life failure mode for high pressure sodium lamps. Check the capacitor: Verify the capacitor has the correct microfarad (uF) value as specified on the ballast. Inspect the capacitor for a swollen or ruptured case. Disconnect the capacitor and discharge it by shorting across its terminals with a piece of insulated wire. Use an If the resistance starts low and gradually increases, the capacitor is good. Any other reading indicates either an open or short circuit condition & the capacitor is bad.

Check the ballast: If it is an older system, it could be simply the normal end of ballast life. Replace the ballast, capacitor (if present) and ignitor (if present). If the ballast is located in an extremely high ambient temperature, it can overheat the ballast or other parts. Check for discoloration of the ballast or other parts. Also check for failed capacitor (see above). Check the ballast open circuit voltage.

Short Lamp Life

Verify the correct ballast type and wattage, and correct capacitor value.

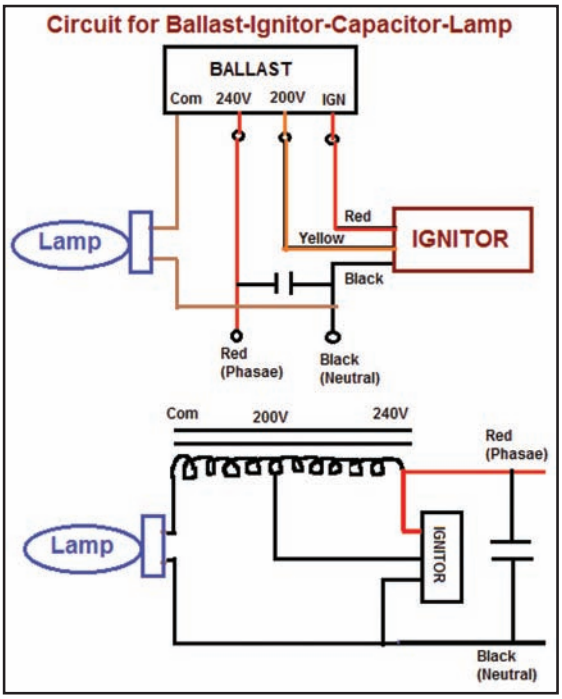
Check the input voltage and verify that it does not exceed 10% ballast input voltage shown on the label.

Inspect the capacitor for a swollen or ruptured case. Check the lamp specification for "base up" or "base down" position specifics. Use the specified lamp only in the current orientation.

Replace with a known good lamp.

Fuses Blow or Circuit Breakers or Circuit Breakers Open On Lamp Start Up

Overloaded Circuit - Rewire to accommodate starting current of lamp/ballast combination.



High Momentary Transient Current - Can be caused by reactor or autotransformer ballasts which draw high initial currents. Use current protective devices incorporating time delay elements. If these fail, change ballast as its characteristics will affect lamp life. ■

Jignesh Parmar is an Electrical Engineer having more than 11 years experience in Power Transmission, Power Distribution (T&D Loss control, Electrical energy theft detection), electrical Maintenance, Electrical Projects. He is also freelancer programmer of advance Excel and design unique Excel base Electrical programs as per NEC, IEEE code. He is also Technical Blogger and contribute Technical papers to various national and international site.

Jignesh Parmar

Guangzhou International Lighting Exhibition 2013

China Import and Export Fair Complex, China

LightingIndia participated in 18th Guangzhou International Lighting Exhibition's 2013 edition that attracted over 116,000 visitors. It was more than a sourcing platform: fair's ability to showcase current and upcoming market trends was praised by Attendees.

Market Foresight: Design, Technology, Market & Strategic partnership presented across 120 sessions of seminars and networking events

Over 116,000 visitors from 120 countries and regions attended the 18th edition of the Guangzhou International Lighting Exhibition, a six percent increase for one of the world's most influential and comprehensive lighting and LED events. The show was held from 9 – 12 June 2013 in Guangzhou, where it welcomed professional buyers both from China as well as a number of mature and emerging markets across the globe. The top ten overseas visiting countries and regions in 2013 included Hong Kong, Taiwan, India, Korea, US, Singapore, Russia, Thailand, Malaysia, Japan.

Held once again at the China Import and Export Fair Complex in Guangzhou, the sold-out show welcomed 2,588 exhibitors from 27 countries and regions, who presented the most comprehensive collection of lighting fixtures and products, electronic components and accessories as well as solutions from across the entire supply chain of LED lighting development. In addition, four international pavilions participated in the fair, promoting the competitive advantages of their respective LED and lighting technology firms, including Hong Kong, South Korea, Taiwan and the US.

The fair was held concurrently with Guangzhou Electrical Building Technology and Building Solar China. Combined, the three shows provided coverage across a broad spectrum of integrated building solutions, with a special focus on the emerging project-based business sector in China. In total, 21 halls were utilized by the three events, covering 215,000 sqm.

Commenting on the successful year, Ms Lucia Wong, Deputy General Manager of Messe Frankfurt (Shanghai) Ltd noted: "I am very impressed with the quality of the 2013 lighting show and glad to see the support from the worldwide lighting industry for the fair. By bringing together the different lighting sector groups under one roof, we have been playing a dynamic role in the

development of the lighting industry, by offering a comprehensive industry platform for presentation and communication on the international stage."

More than a sourcing platform: Attendees praise the fair's ability to showcase current and upcoming market trends

Three of the biggest trends to be witnessed at the 2013 show were in the areas of intelligent lighting, project-based business development and LED technology integration. Exhibitors at the show were unanimous in their praise of the fair serving as the annual platform for promotion and education on the growth and innovative solutions across these three trends.

In the intelligent lighting sector, advanced products such as controllers have become one of the key drivers of growth in the lighting industry. Controllers have been hailed as one of the driving forces in the development of energy efficiency as well as smart home and city lighting. Compared to the previous edition, the 2013 show attracted a number of exhibitors interested in showcasing their collection of intelligent and efficient control systems for use in hotels, homes, offices and public areas. Commenting on his company's success in the field, Samuel Wu, President and CEO of Asia Pacific at OSRAM shared: "In terms of trends, there are several key factors that can be seen in the industry. One of the biggest I have observed at the Guangzhou show is the integration of control technology into lighting products. This fair is an important annual event for Osram to see where the market is moving forward."

Jim Prior, President of Architectural Lighting Works in the US and a buyer at the show added: "One of the biggest trends I witnessed during the show was the need for more control of light through technology. Controllers allow for better customisation of lighting, therefore users can adjust light not only to one specific space, but also to the time of day or even to their personal mood. This is a very important event for my business, and I will continue to visit it for years to come."

For project-based business suppliers, the show provided access to this rapidly growing sector of China's property development industry. Ms Sandra Niederberger, Division Manager for Customer Relations at Kny Design GmbH, a manufacturer of custom-made chandeliers for over three generations noted: "We decided to participate in order to find new customers, and our prime target was project-based businesses in the high-end residential and hotel development sectors. The Messe Frankfurt brand

is held in very high regard by our company, and we felt the organiser was able to offer a platform for great business opportunities in China."

LED suppliers believed the 2013 fair provided a wide variety of machinery and systems for the development of chips, wafers, die-bonded materials, encapsulation, packaging, heat sinks, thermal management and much more, to cope with the increasingly strong market demand for Solid State lighting. LED component, accessory and production equipment suppliers overwhelmingly had positive views on the show's ability to let them meet target overseas and domestic buyers. Ms Elaine Chuen, Marketing Manager of Niche-Tech (Hong Kong) Ltd, a first-time exhibitor to the show noted: "We produce packaging, bonding wire as well as LED silicon encapsulates, and most of our customers are actually lighting product exhibitors at the show. The fair has a very strong influence on the industry and it is a great opportunity to exhibit here."

Fellow exhibitor, Mikhail Berest, Senior Vice President of Sales & Marketing, Monocrystal, had no doubt that Asia's top lighting event, was the destination for his company, the world's largest manufacturer of synthetic sapphires. He shared: "The show offered the opportunity to do research on how to bring new technology from Russia. Synthetic sapphires have quickly become a key component to LED lighting encapsulation companies in China. We're able to learn a lot about the Chinese market in just a few days. It was a great networking and sourcing destination for us."

Frequent visitor to the show, Zou Qing Sheng, Deputy General Manager, Hubei Chuji Technology Co Ltd commented: This is the largest professional LED and lighting show in Asia, and we need it in order to keep track of international trends. Each year there are new products from a number of renowned exhibitors. I believe this is due to the rising living standards of the general public. I am sure I will continue to attend."

Design, Technology, Market & Strategic partnership presented across 120 sessions of seminars and networking events

Jointly organised with influential industry associations and media outlets, a total of 120 sessions of seminars and networking events were hosted during the 2013 show.

Design: With design becoming a crucial component to Chinese lighting suppliers being able to differentiate their products and solutions from competitors, a strong focus was given to new, avant-garde and sustainable design concepts both from China and around the world. For 2013, programmes dedicated to design included:

9th Asia Lighting Arts Symposium

Kaoru Mende, Principle Lighting Designer at Lighting Planners Association (speaker): "I was invited to talk about lighting design particularly in the hotel sector. My goal was to show professionals a series of examples on the how to succeed with lighting projects, by tailoring designated settings to the clients requirements. With so many engaging questions, I believe the presentation was overwhelmingly successful."

Lighting Design Gallery

Lear Hsieh, President, Chinese Lighting Designer Association (co-organiser).

"The gallery is an excellent platform for us to network with other design associations such as PLDA, LUCI and IALD, as well as share the latest concepts from the industry's top designers. The opportunity provided by the gallery is rare in other parts of the world."

Technology

Highlighting the latest advancements in lighting and LED technology, top industry brands were invited to share their expertise on the growth of LED lighting at the Asia LED Summit, a combination of two events that attracted over 1,000 industry professionals.

Market: Providing valuable news on China's lighting market, two well-attended summits were presented at the 2013 show:

- China Lighting Distribution Market Summit
- China Urban Lighting Development Summit

Strategic partnership: To find business opportunities, strategic partnerships need to be cultivated. And through the AGORA platform, industry associations, manufacturers and solution-seeking buyers were able to meet, share and exchange expertise.

LED Summit – LEDForum 2013 Guangzhou

LEDforum 2013 Guangzhou looks

GILE – Alighting Award: Top Ten Products Award	
Toyoto Lighting (Guangzhou) co. Ltd	Serpentine System (IP65 LED Linear lighting system
Philips (china) Investment Co.	GreenSpace
GE Lighting	hx-Series LED High Bay
Zhejiang Jingri Lighting Technology Co. Ltd	JRB5 LED Garden Light
Osram China Lighting Co Ltd	LEDTOUCH Tracklight
Guangzhou Yajiang Photoelectric Equipment Co Ltd	Eclipse 600 SS807SW/SC
Strong LED Lighting Systems 9Cayman) Co Ltd	Dimmer MASTER DMX-Player
Pak Electrical Appliance Co. Ltd	LED Ceiling Spot Lamp 9prince Series
Shanghai HELF Advanced material Techno;logies co Ltd:	Therpoxy
Tridonicatco (Shanghai) Co Ltd	TALEXXengine STARK SLE
Top Ten Projects Award	
The Design Institute of Landscape 7 Architecture China Academy of Art	Beishshan Street lighting design
Nanchang Meini Light Environmental Technology Development Co Ltd	"Circle of Life" Landscape Lighting Project
Philips (China) Investment Co	Akzonobel : Space for Color
New Space New Lighting Technology Co Ltd	Beijing Raffles City
Light & View Lighting Design co Ltd	The Lighting design of Guangzhou Opera House
The National Aquatics Center (water Cube)	
RNF Lighting Design & Consultant (Beijing) Co Ltd	Wuyuan Xingjiang River and Riverside Landscape Lighting
Zhejiang Urban construction Garden design Institute Co Ltd	Nightscape lighting Design of Huishan Old Street in Whxi City
Panorama Lighting Consultant (Int'l) Ltd	Chongqing Jinfoshan Tianxing Town Lighting Project Bejing

into the development of the LED industry over the next five years, channel strategies of Chinese LED suppliers and the challenges facing the industry.

Topics covered:

- Futher evolution of LED
- Future of LED high-end manufacturing equipment localization
- Process control and yield management in LED manufacturing
- Global LED industrial development prospect and forecast
- Trends and challenges of LED lighting
- LED lighting driving modules design.

Networking & Award

Opening ceremony and welcome reception were held to celebrate the 18th Guangzhou International Lighting Exhibition. The event brought together corporate and associations' representatives. The opportunity to network has made these gatherings the most enjoyable and invaluable.

Guangzhou International Lighting Exhibition – Alighting Award

Celebrating the achievements of the Chinese lighting industry, the inaugural edition of The Guangzhou International Lighting Exhibition – Alighting Awards was held at the 2013 show. The 18th Guangzhou International Lighting Exhibition – Alighting Prize is the core event of the world's biggest lighting exhibition.

"The Guangzhou International Lighting Exhibition -Alighting Award" aims to award global innovative products in green, energy saving and new technology areas, excellent lighting design projects with the perfect combination of technology and art, as well as candidates devoted to the development of the lighting industry in 2012.

The Alighting Prize are the lighting industry's Oscars award.

"The Guangzhou International Lighting Exhibition – Alighting Award" includes three awards: Innovation Product of the Year, Best Project of the Year and Individual Contribution of the Year.

Both Guangzhou International Lighting Exhibition and Guangzhou Electrical Building Technology are headed by the biennial Light + Building event, which will take place from 30 March – 4 April 2014 in Frankfurt, Germany. The next edition of the Guangzhou International Lighting Exhibition is scheduled to take place from 9 – 12 June 2014 at China Import and Export Fair Complex. ■

The Largest Expressway Service Area in Taiwan (Dongshan) Redecorated with

GlacialLight LED Bay Lights, Flood Lights, Down Lights and Indoor Lamps (AR111 and MR16)

GlacialLight, a division of the Taiwanese technology manufacturer, GlacialTech Inc., announces that its environmentally friendly LED lighting products are being used in many applications around the world and providing users with energy-saving light of the highest quality. The redecorated indoor facilities of Dongshan Expressway Service Area in Southern Taiwan, the largest of its kind in Southeast Asia, are an excellent example of the benefits of GlacialLight LED lighting.

The redecorated indoor facilities of Dongshan Service Area were opened to the public in June, 2013 and boast a wide range of GlacialLight LED lighting, including: LED Bay Lights, Flood Lights, Down Lights and Indoor Lamps (AR111 and MR16). GlacialLight's lights were chosen because of their aesthetic appeal, energy-saving design and wide selection of customizable models. Compared to the traditional lighting used in the service area earlier, the new GlacialLight LED lights reduce about 80% of power consumption, which has helped to make the service area significantly more environmentally friendly.

The service area and its adjacent bus station cover an area of approximately 40 hectares. The service station offers rest to

thousands of people everyday, many of whom visit the extensive interior facilities. These facilities range from an information desk and tourist lounge to several major retailers and restaurants. All of these public spaces have GlacialLight LED lighting installed in them.

Choosing lighting for a space as large as Dongshan Service Area means many factors need to be considered. One example of this is the tourist lounge with a 20 meters high ceiling. Lighting for such a space needs to come from different directions and needs to be of high luminosity. To provide an optimal level of luminosity a combination of 110 and 210 watt GlacialLight Bay Lights and Flood Lights were selected. The Bay Lights were hung from the roof and the Flood Lights were placed around the base of the load-bearing columns. This combination offers a bright natural-looking luminosity for the large space.

The wide selection of GlacialLight's LED lights made it possible for the optimal LED lights to be found for specific tastes and needs. For example, the inventive AR111 lamp and the supplementary MR16 projection bulb were chosen for most storefronts, but the softer luminosity GlacialLight Down Lights were selected for the information desk and some of the storefronts.

GlacialLight is excited to see its product lines being used to make businesses more successful and at the same time benefiting society by offering lighting products that have longer lifetimes and save more energy than traditional lighting, emit no harmful UV or IR radiation, and contain no hazardous materials such as mercury. ■

Lutron lights up 'Gurdon Institute of the Cambridge University'

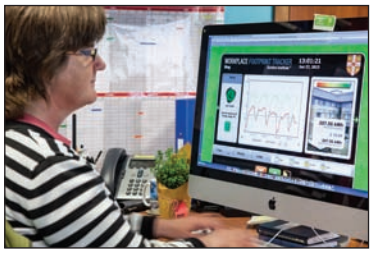
When Kathy Hilton, building facilities manager at The Gurdon Institute of the Cambridge University in UK initiated an energy reduction programme, it paved the way for Lutron's Energi TriPak™ retrofit lighting control solution which enables the 'unloved' areas of the department to deliver significant energy savings. The Gurdon Institute was identified by the Cambridge University as one of five pilot departments due to its high energy consumption. Kathy Hilton explains: "We wanted to reduce electricity consumption throughout The Gurdon Institute but we wanted to do this without affecting the 'good science' that is done here in developmental biology and cancer research. With this in mind, we challenged the researchers to get involved in an energy reduction competition. The key to keeping 'switching off' front of mind was to maintain a high profile of energy awareness and reminders. An iPad kiosk in the main entrance helped with this, as did various behavioural changes. We began to see great results, one lab in particular achieved electricity consumption reductions of 50%, without compromising their research, by a complete shift in behaviour; this involved planning usage of equipment in advance and leaving it switched off when not in use. To see the impact that lighting control could have in 'unloved' areas, Kathy Hilton set up a trial in an equipment room; and a research laboratory. The results not only showed the significant savings that can be achieved when lighting is used well, but also the reductions that can be gained when the system is adapted to suit user habits.

Equipment room 323

Energy monitoring and management company, Building Sustainability Ltd, installed Lutron's Energi TriPak wireless retrofit solution in lab 323 that houses scientific equipment. As well as one wireless Lutron Rania® RF switch and two Radio Powr Savr® wireless occupancy/ vacancy sensors, in the 50m^2 equipment room, Building Sustainability Ltd, also fitted a meter to monitor results. Taking into account the cost of the Lutron Energi TriPak system, it was calculated by the students of the University of Cambridge that the equipment payback would be achieved in approximately 1.5 years (at present energy costs).

Laboratory 328 Trial

The light control trial was expanded to include a laboratory. As well as installing Lutron's EcoSystem Energy Savr Node digitally addressable lighting control, four occupancy and daylight sensor plus a tracking meter, the T8 36W fluorescents were also changed to lower energy 28W T5 alternatives. The Lutron occupancy sensors were reset from presence detection to vacancy sensing, accommodating the lab researchers altered behaviour patterns. Combined with the daylight harvesting, lab usage went from 360 kWh to 160 kWh following sensor re-programming. This equated to a 56% reduction between manual switching and sensor and daylight control. Taking into account the cost of the Lutron Energi TriPak system, it was calculated that the equipment payback would be achieved in approx. 2 years (at present energy costs).



Expanding out the trial

Following these successful trials, Kathy Hilton then worked with Building Sustainability to prepare an expansion programme to a further 97 zones, including research support and equipment rooms, stores, , toilets and some small office areas have been retrofitted with Lutron's light control solution since the trial's completion earlier this year. Projected financial savings for these zones, based on the findings from the equipment room and lab trials, are as follows:

Rs. 9, 00,000/- projected financial savings per annum
100,000 kWh electricity savings per annum
54 tonnes of Carbon Dioxide saved per annum
Investment – Rs. 18, 00,000/- and payback – 2 years.

Lutron's Energi TriPak solution

At The Gurdon Institute, Lutron's Rania wireless RF switch and Radio Powr Savr wireless sensors: occupancy/vacancy sensors and daylight sensors were used. Lutron's Energi TriPak solution provides easy to install, cost-effective, energy-saving retrofit light control in commercial spaces. Lutron's first retrofit solution, Energi TriPak consists of wireless transmitting devices that send out RF commands to load controllers that then switch, dim or integrate, depending on the information received. With no output wires and simple screw/adhesive mounts, Lutron's Energi TriPak can reduce installation time by up to 70% over wired equivalents. ■

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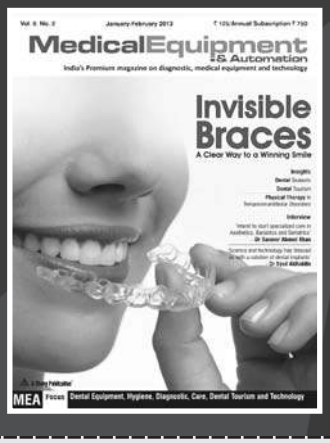

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LI/ July-August 2013

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
- Electromechanical linear actuator system for hospitals, beds, O.T tables, O.T lights
- Dental chairs, Blood donor coach
- Power backup systems (UPS, Inverters & SMF batteries)
- Rehabilitation aids

... and related accessories

Reach :

Professionals like :

- Medical Professional / Doctors
- Surgeons
- Paramedical Professionals
- Hospital Administrators
- Pathologists
- Radiologists
- Physiotherapists

Industries like :

- Medical and Surgical Equipment & Supplies
- Pharmaceutical & Bulk Drugs
- Disposable Supplies
- Diagnostics & Laboratory Instruments
- Hospital Furnishing & Related computer software
- Rehab. & Therapeutic aids
- Ophthalmic Instruments
- Oral & Dental Equipment
- Optical Equipment and supplies
- Institutions
- Other allied industries

Chennai to host India's Largest and Brightest Lighting Fair during September 13-16, 2013

India's largest and brightest lighting fair titled Lii 2013, Light India International 2013, has been organized by Indian Society of Lighting Engineers in Chennai Trade Centre during 13-16 September 2013. Chennai has been chosen for the second time as the venue for this prestigious event keeping in view vibrant economic pace of activity in the city as well as the growth potential.

Lii2013 is expected to be participated by more than 250 manufacturers including 100 from overseas mainly from China, Taiwan, Korea, Italy, Germany, USA. Concurrent show on Solar Lighting Systems and a technical seminar with international experts on the emerging trends in green concepts are expected to draw a larger participation and visitors.

Light India International 2013 will publicize the developments taking place in the lighting industry and provide excellent marketing opportunities for all the products and services under the lighting industry. The exhibition will showcase a wide range of products over 16500 sqm exhibition area in Chennai Trade Centre, covering Residential, commercial and retail lighting; Industrial lighting; Street lighting; Security lighting; Environmental/ Landscape lighting; City beautification lighting; Architectural lighting; Railway/ Metro lighting; Airport & Runway lighting; Refineries/ Mines lighting; LED lighting; Intelligent lighting; Lighting with non-conventional energy; Specialty lighting; Lighting accessories and controls; Power saving solutions; and Testing and measuring instruments. IT, Publications and Consultancy services relating to lighting industry will also take part in the event.

Mainly a B2B event, open to business visitors from 10 am to 3 pm, the fair will provide the exhibitors with opportunity to explore investment opportunities and locate partners for joint ventures and tie-ups. The fair will be open to public in evenings from 3.00 PM to 7.00 PM.

The fair website: www.lii.co.in gives more information on the event for registration of exhibitors and visitors. Limited sponsorship opportunities are also available.

The previous edition of this event titled Lii2011 held in March 2011 had 220 participants including 80 from overseas. More than 15,000 business visitors visited the event and on the spot business worth Rs 200 million were reported to have been transacted. ■

Tube and Spot by Corvi LED Light

Tube

Standard Features: Luminaire efficiency: up to 120 lumens per watt; Dimmable; Inbuilt driver for spatial efficiency; 35 yrs life expectancy; 5 years warranty; Ingress Protection: IP44; Operating Temperature: Up to 40^0 ambient..

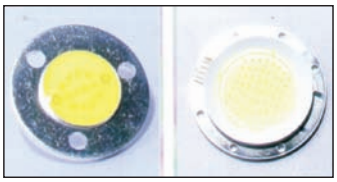
Technical Features: Light Output: 1200 lumens; Wattage: 10; Input Voltage: 110V / 220V; Weight: 75 gm.

Spot

Standard Features: Luminaire efficiency: up to 120 lumens per watt; Dimmable; Inbuilt driver for spatial efficiency; 35 yrs life expectancy; 5 years warranty; Ingress Protection: IP44; Operating Temperature: Up to 40^0 ambient.; Technical Features; Light Output: 600 lumens; Wattage: 5; Input Voltage: 110V / 220V; Weight: 4S, 4SG: 175 gm.; 4, 4G, 4Q, 4QG: 80 gm. ■

Website: www.corvi.com

Products by Jeeja Century Optoelectronics Technology Co Ltd



LED COB Technology: COB (chips on board), multi LED chips packaged together as one lighting module. When it light up, it looks like a lighting panel. In view of the cost and application requirements, COB packaging mostly adopt multichips integrated packaged. The COB structure is consist of LED chip, gold wire, fluorescence glue, partition, Conductive layer, Insulation layer, Aluminum PCB board.

Features: Multiple chips can be freely connected in series or parallel. It saves the cost of the drive circuit. While light packaging coated with fluorescence glue, Low cost. Bonding the chip in high thermal conductivity aluminum PCB directly, excellent sink. High uniformity ratio of illumination, Easy to design light distribution, best for general lighting. Easy to assemble lighting, low cost of production. High output of luminous flux. Lower optical attenuation. Easy to replace and maintain.

Application in various lamps: Low power-application in resident and commercial lighting: LED Bulb lights, MR16 etc. Medium Power-Application in commercial lighting: LED ceiling lights, LED downlight, PAR lights, LED tube lights (long COB), Panel lights. Higher power – Application in outdoors and commercial lighting: Mine lights, High ceiling lights, floor lights. Special Power (OEM & ODM) –Application to customer requirements to make the LED COB (Shape, Voltage & current installed connector). It make the lamp design will be more freedom. Also it is easy to assemble the finished lamps.

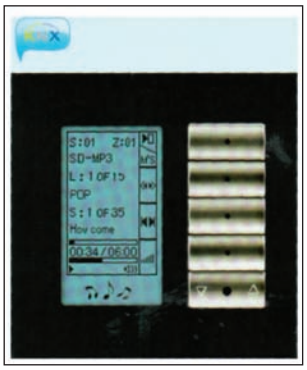
LED street Light: COB Technology, Solid Cold Light source with the features of environment-friendly; energy saving, high brightness, long lifespan; best choice for energy conservation. Chips on Board, Multi LED chips encapsulated directly on heat-dissipation modules. Integration technology to realize heat dissipation, light distribution and lower cost. High lumen COB with good consistency and reliability. Body surface with painting process of anti-static, corrosion resistance against acid and alkali, long lifespan.

Features: Integration design, the light source install on the lamp body directly. Pure die-casting Aluminum; fine design and good heat dissipation, long lifespan. High intensity seal washer with strong protection. Long lifespan of 50000 hours.

Application: High way, Urban Road, School, Park, Garden, Resident, Industrial Zone etc. ■

Website: www.jeja-led.com

Product by Hedong Electronic Co Ltd



KNX-DLP Multifunction LCD Swit: HDL-M/DLP05.1

HDL KNX / EIB Multi page- and function LCD Panels are in full compliance with European safety standards and the KNX association protocol.

Their elegant panels have high-resolution dot matrix LCD displays, rubber keys with moderate intensity and background lights. Choose between different colors and finishes -and your own user-friendly graphics. The simple to use Multi control pages are for: Lighting Control, Curtain Control, Heating Control, Clock, Air-Conditioning, Back Ground Music play and streaming. And for other functionality. With a Built-in mini infrared receiver and the ability to send a variety of data information, the panels will control different types of KNX devices. HDL provides application solutions for Smart Home and Building Control. Their ambition is to become a leading Global supplier by taking very seriously the challenges of delivering products protecting the Environment and the conservation of Energy to enhance a high quality, intelligent lifestyle.

Parameters: Working Voltage: 21-30VDC; Static Current: <25mA; Infrared Receive Function.

Additional Function: Back Light Adjustable; Night Mode; Infrared Remoter Control; Remote Lock for key; Remote Control; Delay Control.

Features: Switch Control; Dimming Control; Curtain Control; Shutter Control; Scene Control; Sequence Control; Percentage Control (Absolute value for Dimming); String Control; Combination Control; Heating Control; Air Condition Control; Timer Control; Back Ground Music Control. ■

Website: www.hdlchina.com

Kinoton GmbH brings Litefast MAGIC

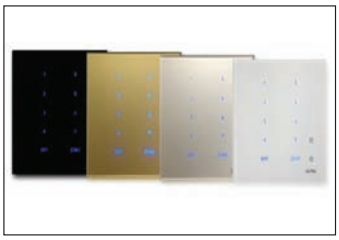
Litefast MAGIC is the only "see-through" 3600 video display in the world. The completely transparent LED display generates holograph-like images which seem to hover in thin air, adding thrilling visual effects to videos, commercials and presentations. This makes Litefast MAGIC an extraordinary Digital Signage display guaranteeing maximum attention.

Transparent cylindrical LED display screen; Ultrafine 1mm LED pixel pitch for crisp pictures; Suitable for either standalone operation or integration in digital networks; Platform-independent: compatible with all computer types and operating systems; Easy operation; Designed for stable, reliable 24/7 operation; LEDs are maintenance-free and extremely long-lasting; Minimal power consumption at a constantly high level of illumination; Minimal service and maintenance requirements; Special product versions possible (depending on order size); Premium product quality Made in Germany; Integrated showcase for product presentation (option); Backlit poster area (option); Digital Media Blade (option); Litefast Media Player with content management software for easy playlist creation (option); Integrated audio system with built-in loudspeakers (option); Set of removable transport rollers for effortless re-positioning (option); Flight case for safe and easy transportation (option); Shortening from the top by up to 300 mm (option).

General Technical Data: Height: 2180 mm/85.8"; Diameter: 750mm/29.5"; Weight: 280 kg/617 lbs; Mains Voltage: 200 -240 VAC, 16 A, 1 -phase; Power Consumption: 0.9KW; video input: DVI-D; Service Interface: RS-232; Poster Area: 2 posters of 1140 mm x 960 mm (w x h); Certificates: CE and ETL (UL). ■

Website: www.litefast-display.com

Glass Wall Control Panel ECP-110T



Glass Wall Control Panel ECP-110T introduced by Lite Puter Enterprise Co Ltd
6 scenes; 256 dimming resolutions; one ECP-110T can control up to 8 zones simultaneously in multi-zone mode; key lock / unlock function; IR reciever; two dry contact inputs; automatically adjusted backlight; protocol: RS-485(EDX); signal connector: 4PIN green terminal; mounting: mounts in European wall box.
Specifications: Protocol: EDX; Signal Connector: 4PIN Terminal; Mounting: Mounts in European Wall Box; Dimension: 86(W)*86(H)*21(D) mm; Weight: 100g. ■

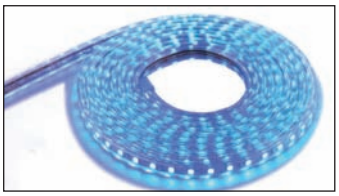
Website: www.liteputer.com.tw

NXP JN516x-EK001 evaluation Kit by NXP Semiconductors N.V.

Providing all the hardware and software components for full application design, this evaluation kit simplifies the development of systems that run ZigBee, JenNet-IP, or IEEE 802.15.4 network stacks.
Features: Four base boards; three lighting expansion boards; two expansion boards with sensors and buttons; one LCD expansions board; 16-button capacitive touch remote control; two USB dongles; Cisco router with Ethernet support; Complete software development kit (SDK): GNU-based tool chain with C complier; Flash programmer; Eclipse IDE; Microcontroller and peripheral libraries.
Benefits: Quick, easy product development; Free, unrestricted Eclipse-based SDK; Hardware platform supports all sensors, displays, LEDs, switches; One evaluation kit for all applications; Supports JN5161, JN5164 and JN5168 wireless microcontrollers.
Applications: Internet of Things; JenNet-IP; ZigBee Light Link (LL); ZigBee Smart Energy (SE); RF4CE; Home and building automation; Smart lighting; Remote controls; Smart energy; Wireless sensors network. The NXP JN516x-EK001 evaluation kit is specifically designed for use with the NXP JN516x series, a range of ultra-low-power, high-performance wireless microcontrollers suitable for JenNet-IP, RF4CE remote control, and ZigBee applications. This comprehensive kit, which includes a series of wireless carrier boards, plug-in expansion boards., USB dongles, a remote control, a specially programmed Cisco router, and a complete software design kit, provides everything necessary for system development. The supplied router, which runs NXP OpenWRT firmware, makes it easy to develop solutions that include sensor-equipped objects as part of the "Internet of Things." Using the various demos included in the kit, designers can quickly produce demonstrators or proof-of-concept products. The same software can then be used for end products, using JN516x ICs or modules.
The Smart Lighting demo, which makes use of nearly all the kit's components, is a JenNet-IP demo that uses the router to support USB connection to a WLAN or the Internet. The evaluation kit can easily be Flash programmed for use with ZigBee LL, ZigBee SE, or RF4CE demos. The ZigBee SE demo lets the user experiment with an energy service portal (via the USB dongle), an in-premise display (using the display expansion board), standalone meters for electricity and gas, or a range extender.
The JN516x series: JN516x series devices feature an enhanced 32-bit RISC processor with embedded Flash and EEPROM memory, offering high coding efficiency through variable width instructions, a multi-stage instruction pipeline, and low-power operation with programmable clock speeds. They also include a 2.4 GHz IEEE802.15.4-compliant transceiver and a comprehensive mix of analog and digital peripherals. ■

Website: www.nxp.com

Products from Opple Lighting Co Ltd



DC 12V LED Soft Strip

Features: Deliver significantly higher lumen than the old version; Special-designed components for safety connections, quick cutting and combination; New arrival of LED soft strip with tube for dust-proof. Special for decoration indoor and atmosphere creation

Benefits: Lower energy cost; Simple and safe installation; Indoor and outdoor use both available.

Application: For decoration ambience lighting in garden, homes, theatre etc.

LED Panel Grille Fixture

Features: Up to 50% energy saving, compared with fluorescent grille fixture; Perfect design of PC reflector for high reflection and minimum glare; Easy embedded or pedant installation; Life time of 30,000hrs; No UV-and IR-free light. It is ideal for general lighting by replacing fluorescent grille fixture.

Benefits: Lower energy cost, short pay-back time; Extremely high Lumen Output; Minimizing re-lamping and maintenance cost.

Application: For general lighting in e.g. office, hotels and stores. ■

Website: www.opple.com

OPTILED Lighting Solutions brings products

OPTILED brand of LED lighting products for an entire range of functional lighting applications, is owned by Huizhou Light Engine Limited.

TUBE, TUBE MODEL H, MODEL HX

Features: High Efficacy; Long Life Span; Standard T8 Size; Ballast Not Required (TUBE AC); Starter Bridge design for flexible installation (MODEL H & HX); Start With No Flicker; Sophisticated Diffuser.

Benefits: Cost saving in energy consumption. Reduces maintenance costs. No need to change existing fixture upon replacement. Installation without a ballast, is more energy efficient. Direct retrofit when using magnetic ballast and Starter Bridge provided. Reduce discomfort to the eyes. . Tube (MODEL H): Part No: 1727401612 / 1727651612; Length: 1200mm / 1200mm; Color: Natural White / Daylight; Color Temp (K): 4000 / 6500; Lumen (lm): 1800 / 1800; Power Consumption (W): 17 / 17; CRI (Ra): 80 / 80; Beam Angle: 165° / 165°. Tube (MODEL HX): Part No: 1728401612/ 1728651612; Length: 1200mm / 1200mm; Color: Natural White / Daylight; Color Temp (K): 4000 / 6500; Lumen (lm): 2300 / 2300; Power Consumption (W): 22 / 22; CRI (Ra): 80 / 80; Beam Angle: 165° / 165°.

Applications: Office lighting; Shop lighting; Corridor lighting; Light box & backlight; Public area; Warehouse/ Car park lighting.

Galaxy 500 Dimmable

Features: High power efficacy; Long Life Span; Incandescent Base; Glass Cover.

Benefits: Cost Saving in energy consumption; Reduces maintenance costs compared with incandescent lighting; Suitable for existing fixtures and direct replacement of incandescent lamp; More light emitting in the direction of lamp base. Part No: 1212050107 / 1212060108; Color: Warm White / Daylight; Color Temp (K): 2800 / 6000; Lumen (lm): 500/650; CRI (Ra): 80/80; Power Consumption (W): 9/9; Lamp base: E27 / E27.

Applications: Indoor general lighting; Task lighting; Ambient lighting. ■

Website: www.optiled.com

Products by Shenzhen Hengyao Lighting Technology Co Ltd

Microwave Sensor

Settings: Detection area: Detection area can be reduced by selecting the combination on DIP switches to fit precisely for each specific application. Hold-Time: Hold-time means the time period you would like to keep the lamp on 100% after the person has left the detection area. Daylight sensor: The daylight threshold can be set on DIP switches to fit for particular application.

Specification: Model: HYK01S Operating voltage: 220-240VAC 50/60Hz; Switch power: 400W (resistance) 200W (capacitance, inductance); Standby power: <1.6W; Detection area: 10% / 50% / 100% (adjustable); Hold time: 5s / 30s / 180s / 15mins / 20lux / 30lux / disable; Sensor principle: Microwave Motion detector; Microwave frequency: 5.8GHz±75MHz; Microwave power<1 mw; Detection range: max. (Φ * H) 10m*5m; Detection angle300-1500; Mounting height: max 10m; Operating temperature: -10^{0}C ~ +60^{0}C; IP rating: IP20.

On-off Function: This sensor is motion switch, turn on the light on detection of people movement, and turn off after a pre-selected hold time when there are no people around, A daylight sensor is also built-in to switch off the light when there is sufficient natural light.

Dimming Function: With the combination of sensor DIM control gears, it offers the levels of light: 100% on detection of people movement, and 20% when nobody around. Ideal for the areas like hotel corridor, hospital or apartment, where always need some brightness for comfort and safety.

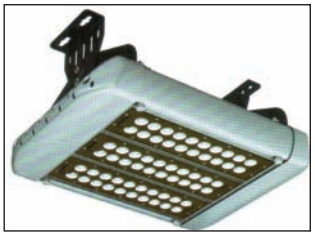
Dimmable Electronic Ballast

Features: Push-Dim Function: Switch on Push to dim light (Short press to switch between the brightest and darkest, while long press the button can dim the light). Long press PUSH to tune the light. Support Power Failure Memory Function (Optional). Support simultaneous dimming for max 20 lights.

1-10V Dimming Function: Tuning the light through 1-10V dimmer / 1-10V supply / 1-10V controller. The 1-10V dimmer will work when it's powered up and light dimming can be realized by changing the voltage at 1-10V port. Press PUSH button, PUSH dimming will work instead of the 1-10V port. Switch to 1-10V dimming through keep the 1-10V dimmer / 1-10V power supply / 1-10V controller for 3s above 20%. ■

Website: www.3aaa.com

Product from Xiamen Greener Optoelectronics Co Ltd



Blue Sky Series LED Canopy Lights

Advantages: Wattage available 100W-200W; Origional LEDs from CREE or OSRAM, MeanWell or Inventronics Drivers; Modularization design and Aluminum-alloy housing; Built in one lens for each LEDs achieving the whole higher luminous efficiency and uniformity and Batwing photometric lens—reasonable rectangle beam; Unique heat-cooling technology: Nano superconductive heat pipe + Aluminum-alloy cooling fins; No glare, no delay for starting, no lead, no mercury. Some of the models are as follows GRBS-CA-3M18; GRBS-CA-3M20; GRBS-CA-3M20; GRBS-CA-3M30; GRBS-CA-3M30; GRBS-CA-3M30.

Applications: Gas station, tunnels, metro, culvert, car parks, ports, gymnasium, industrial and mining enterprises, billboards etc. ■

Website: www.greener-os.com

GreenStar Research & Development India Pvt Ltd

Founded in 2009, GreenStar is an innovative USA-based company designing, manufacturing, and distributing highly advanced, eco-friendly, and cost-saving light emitting diode (LED) lighting systems to municipalities, Government and commercial businesses around the world. Greenstar Research and Development India Pvt Ltd is a 100% subsidiary of Greenstar products Inc USA that is a Toshiba Group Company.

With a professional team, patented designs and technologies, top of the line components, local India based R&D centre and fine customer service, they strive to provide the best LED lighting solutions in the industry.

GreenStar's fixtures are made with a durable aluminum-alloy body, optic grade acrylic lenses that do not yellow or crack, LEDs rated at 60,000+ hours with efficient heat extraction, sealed power drivers that can withstand power variations, and redundant light sensors. We believe being "green" is not only reducing energy use, but also manufacturing sustainable lighting solutions that will last for many years.

Their superior heat dissipation and design allows to reliably run LEDs at a higher current than competitors. The result is maximum lumens per watt, which directly translates into more energy and dollar savings. GreenStar's Galaxy and RGLM/S series patented thermal management system and adjustable mounting arm characteristics help ensure long fixture life and versatility. Also, the patented futuristic design of a GreenStar fixture accentuates architecture while assuring onlookers that you are committed to intelligent conservation.

No Hassle 5 years warranty and available extended warranty gives peace of mind knowing that GreenStar will stand behind its products. Key Features of Greenstar's LED Street and Canopy Light fixtures:

- Auto On/Off
- IP 66 Standard
- Customized lens
- Zero air gap design
- Rugged and durable
- High thermal dissipation
- Direct replacement of 70W to 400W HID
- Ambient based dimming by digital photo sensor
- ETL, RoHS compliant. ■

For further details contact:
Sanjeev.rawat@greenstarled.com

Company Name

Contemporary Ceramic Hanging Lamp Design for Great Lighting fixture

Chouchin is the Japanese word for the traditional, symbolic paper and bamboo lanterns used as light, luminous signs outside public places or as a lucky charms outside homes. The young French designer, Ionna Vautri, was inspired by this ethereal, poetic and almost magical object and has reinterpreted it in a contemporary key. It has an essential and , at the same time, evocative design: the glass body, obtained through a single bowl process, is closed by a collar underneath. Color played a key role in the choice of materials that the glass offers a warm surface in which the varnish produces a full, brilliant color. The varnish, which makes the body completely impermeable to light and extremely glossy, ends where the white collar begins. Thus, when the lamp is lit, it illuminates with a soft, warm glow, while an intense, direct beam of light falls on the surface below. This lamps reflected a welcoming, warm , young, and fresh language that perfectly combines tradition and modernity. ■

Valle House by Materia Architecture, A Wooden Interiored House

This living space design is designed by the Materia Architecture in the Valle House in Mexico City. To the evident physical and natural conditions, the house responds boldly. The design of the house is meant a search for an architectural character fed from exercises of the contraposition. The minimal and refined materials are confronted to the artisan textures, the solid organic are forms balancing with implied transparent and the white boxes, light versus heavy. All of the elements are arranged and it is placed according to the interior programmatic spaces, they envelop thus expressing the relation of the public and private. The volumes or voids which the frame is views to the green spaces are created by the penetrated or excavated walls. The interior courtyard is acts as the extension of the public area. ■

Artistic Rattan Pendant Light

It is very important to choose the right light for your home. Among various new modern and sleek designs artistic rattan pendant lights are becoming hugely popular. Pendant lights are also popularly known as drop lights. These lights can change the ambience of your room. Artistic rattan pendant lights are classy, elegant and unusual. Many people get tensed about the budget before redecorating their homes. Pendants lights are affordable and you can find plenty of designs in it. Pendant lights are available in metals, glass and plastic. You can also use bamboo made and wooden pendant lights. You can use the rattan and wooden pendant lights in your bathroom, balcony or dining areas to give an elegant touch to those areas. ■

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