

Lighting India ₹ 125

Vol. 10 No. 5

September-October 2015

Visit us at



LED EXPO

3-5 December, 2015
Pragati Maidan, New Delhi
Stall No. L-16
Hall 12

Lighting can change the look of a room



- 💡 Design adds life to a space...
- 💡 Solar lighting makes a lot of sense...
- 💡 LEDs have transformed the lighting design...



We devote all our energy

LED Driver and modules



TALEXengine compact



TALEXengine linear / area

Electronic components



Electronic ballasts
for fluorescent lamps



Digitally dimmable ballasts
for fluorescent lamps

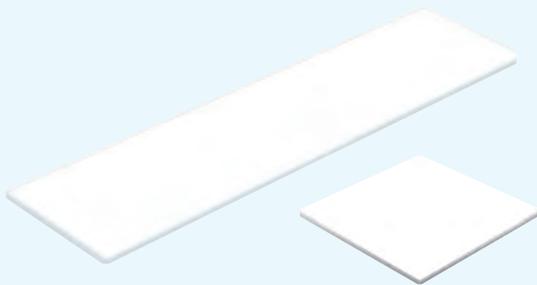


Electronic ballasts for
high-intensity discharge lamps

to your light.

Tridonic offers you a comprehensive, diverse range of products on a one-stop shop basis – to be individually combined, including complete solution packages for any application. We keep all your requirements – down to the smallest detail – in mind and the entire system in sight.

OLED



OLED modules

Emergency lighting units



Single battery emergency systems

Batteries

Controls



Sensors

Touchpanels

Signage



TALEXchain

TALEXdriver

TALEXcontrol

PUBLISHER'S LETTER



Mahadevan Iyer
Editor-in-Chief

When I compare the Indian lighting outlets with those in China, literally I feel they are miles ahead, and we need to put vigorous efforts for at least 10 years or more to catch up with them. The old market rule is: what is seen that is sold. Unfortunately, we neither have created proper places to display advanced lighting products and their applications, nor even our people have exposure to the amazing modern world of lighting.

It is not only the technology or the technical knowledge that is used in modern lighting, but also there is a big share of mind's projections or imaginations. Mere display of sets of luminaires and fixtures cannot describe the endless potential of their applications, it needs a well conceived and designed environment to display them to share the amazing effects that have already been created. It not only attracts the people but also instills new thoughts in their minds to extrapolate further.

It is a well established fact that good lighting not only improves visibility and saves energy, but also it takes the human mind to a different plane. Change is the way of life, and every human being likes to get away from the boredom of day to day life – where lighting is the easiest, most economic and the most effective tool to provide changes within the boundaries of an individual's residence. With effective lighting, a home can be changed without changing its address, a mind can be refreshed without moving out of it. But all these are possible only through experiencing. Are we planning to deliver such experience to our citizens?

Do send in your comments at miyer@charypublications.in

Mahadevan

Subscribing
Lighting India is now a
click away
Just log on to
www.lightingindia.in

Follow us on:



www.facebook.com/lightingindia



www.twitter.com/lightingindia



www.linkedin.com/in/lightingindia



www.google.com/+lightingindiamagazine



TRUST UL

Fast access for Indian market

NABL ACCREDITED
UL ENERGY EFFICIENCY
TESTING LABORATORY,
MANESAR, GURGAON



UL's Manesar, Energy Efficiency Testing Laboratory is one of the largest Lighting, Performance testing facilities in India. This independent Lighting Testing Laboratory which is only of its kind in India with state-of-the-art equipment's such as Type C Gonio-Photometer, Thermostatic Integrating Sphere, Precision Power Analyzers, High Bandwidth Digital Storage Oscilloscope and Data Acquisition Systems. The UL Energy Efficiency Laboratory is the first service provider in the country to provide LED & CFL/TFL Photometry and Energy Efficiency Test Reports specific to the Lighting Industry and also assists customers in obtaining Global Product Certification such as cULus, CE, ENEC, ENERGY STAR®, IEC CB Scheme etc. UL Energy Efficiency Testing Laboratory is NABL Accredited, assessed under the standard ISO/IEC 17025:2005 for General Requirements for the Competence of Testing and Calibration Laboratories.

MAJOR TEST EQUIPMENT'S

- Type C Mirror Goniophotometer
- Thermostatic Integrating Sphere
- Life Test Racks
- Thermostatic Integrating Sphere for LED Chip
- Precision Power Analyzers
- High Bandwidth Digital Storage Oscilloscope
- Data Acquisition System

PRODUCTS

Lamps

- LED lamps
- Compact Fluorescent lamps
- Tubular Fluorescent lamp
- LED Modules

Luminaires

- Solid State Lighting Products / LED Luminaire
- 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

For more information please contact:

T: +91.80.4138.4400 / +91.124.4698100 / E: sales.in@ul.com

contents

Vol. 10 | No. 5 | September-October 2015



26

articles

Daylight In Home Design: An Energy Saving Resource **20**
- Ar. Ashish Batra

Home Lighting: Changing Perception **26**
- Dr. S S Verma

CHAUVET Professional Puts The Heart Into Ibiza **32**
- Credits: CHAUVET Professional

Solar Lighting: A Green And Sustainable Lighting Option In India **38**
- Sneha Shah

Lighting & Design: Two Sides Of A Coin **42**
- Gauri Argade, Kaamy Design Studio

Transforming Architectural Lighting Design With LED **46**
- Yoshiyuki Kato



20



32



Illuminating Ideas: Material Solutions for Lighting

The market for light-emitting diodes (LEDs) in lighting is booming. It's no surprise since it is energy efficient, environment friendly and offers a long service life. With the growing demand for unique designs and creative ideas, designers and manufacturers of LED lighting components can choose from a wide range of innovative solutions offered by Covestro. In addition to high light transmission, our polycarbonate grades display good heat resistance, excellent stability when exposed to LED luminous flux, outstanding flame-retardant properties, and a number of special features that are ideal for a wide range of LED applications.

For further information, contact:

Covestro (India) Private Limited
(Formerly known as Bayer MaterialScience Pvt. Ltd.)

Bayer House, Central Avenue, Hiranandani Estate, Ghodbunder Road,
Thane (West) - 400607, Maharashtra, India. Tel: +91 22 25866161
Email: divakar.gokhale@covestro.com

covestro.com





42



46

Interview



30

"Our R&D consists of three pillars – chemistry, physics and mechanics..."

- Sanjay Jain, Business Director
DSM Engineering Plastics India



36

"Human Centric Lighting is becoming more and more popular..."

- CEO & Managing Director
BAG Electronics (India)

Company Index

Avolites	16
Bridgelux Inc.	12
Brightside Bike Lights	55
Cree	10, 54
Ecosense	12
Eye Lighting	18
GE Lighting	16
Hella	16
HKTDC	14
K-lite	54
LEDil	55
Luce Group	18
Lumileds	54
Lutron Electronics	12, 52
Osram	10
Philips	14
Robe Lighting	18
ShotSpotter	16
Surya Roshni Ltd	53
Zumtobel Group	14

02	Publisher's Note
08	Editorial
10	Newsline
18	Appointments
41	Portfolio
48	Pre-Event Info - Light+Building 2016
50	Pre-Event Info - LED Expo 2015
52	Technology
53	Company Profile
54	Product Review
55	Index to Advertisers

department

THE ART OF LIGHTING INNOVATION



Surya's Luminaire Business Group (LBG) seamlessly integrates cutting-edge technology and pioneering innovations. Our aesthetically appealing Luminaires range includes **Commercial Lighting, Industrial Lighting, Street Lighting, Landscape Lighting and Flood Lighting**. They are NABL approved and answer to all your future lighting needs.

SURYA ROSHNI LIMITED

Padma Tower - 1, Rajendra Place, New Delhi - 110008 (INDIA)
Tel.: +91-11-47108000, 25810093-96 | Fax: +91-11-25789560
E-mail: consumercare@sroshni.com | www.surya.co.in

TOLL FREE NO.: 1800 102 5657

Follow us on



EDITORIAL



Breaking The Ice

Whatever proposals are being made and actions are being taken on improving the lighting schemes are still limited among a particular section of the Indian society. Majority of the buyers of the new homes are from the so called middle class families, and most of them focus only on the cost aspect of the wiring and electrical & lighting fittings.

Some may be concerned about the running cost of the lamps. So, economy only, and neither the aesthetics nor even the comfort, is the determining factor for a vast section of users of lights in the Indian society.

Buliding architects or designers can come forward to improve the situation. If they seriously think of implementing the concepts of the human centric lighting and include its applications in their designs, then each and every home of the future can be more vibrant, brighter and comfortable providing enough energy saving. This is the the best point for breaking the ice.

I know, again cost escalation will be an issue. But with mass application of the modern lighting systems and devices, the costs are bound to fall, as it happens in case of any technology. Buyers can be convinced by giving demonstrations from the sample flats or dummy installations at some other place – as mostly the hesitation or objection from the buyer's end is not really for cost escalation but for not realising or foreseeing the advantages.

Please send me your views at pkchatterjee@charypublications.in

A handwritten signature in black ink that reads "P. K. Chatterjee".

P K Chatterjee (PK)



Vol. 10 • No. 5 • September-October 2015

Director/Publisher

Mahadevan Iyer
Pravita Iyer

Editor-in-Chief

Mahadevan Iyer
miyer@charypublications.in

Editor

P K Chatterjee (PK)
pkchatterjee@charypublications.in

Advertisement Manager

Nafisa Kaisar
nafisa@charypublications.in

Design

Rakesh Sutar
Yusuf Khan

Subscription Department

Hemant Yelave
Nafisa Khan
sub@charypublications.in

Accounts

Dattakumar Barge
Bharti Solanki

Editorial, Subscription & Advt. Office:

201, Premalaya, Next to Cafe Coffee Day,
Opp. Telecom Factory, Deonar, Mumbai - 400 088.
Tel.: (022) 2507 3300 / 01

Printed, published, edited and owned by Mahadevan Iyer and published from 311, Raikar Chambers, Govandi (E), Mumbai 400 088 and printed at Finalcopy (India) Pvt Ltd., B-33, 4th Floor, Royal Indl. Est., Naigaum Cross Road, Wadala, Mumbai 400 031.

Disclaimer

Chary Publications does not take responsibility for claims made by advertisers relating to ownership, patents, and use of trademarks, copyrights and such other rights. While all efforts have been made to ensure the accuracy of the information in this magazine, opinions expressed and images are those of the authors, and do not necessarily reflect the views/ collection of the owner, publisher, editor or the editorial team. Chary Publications shall not be held responsible/ liable for any consequences; in the event, such claims are found - not to be true. All objections, disputes, differences, claims and proceedings are subject to Mumbai jurisdiction only.

Editor-in-Chief: Mahadevan Iyer

LIGHT UP YOUR HOME WITH FINOGLOW

NEW

Launched
LED Bulbs,
Down Lighters,
Street Lights,
Highbay Fixtures

*In comparison with ordinary CFLs



T5 Tubes & Luminaires



Finoglow

Discover

TRUE COLOUR LIGHTING

FOCUS - PUNE

■ Eight Times Longer Life ■ 40% Extra Life* ■ Energy Saver ■ Eco Friendly ■ True Colour Lighting



/FinolexIndia



/FinolexIndia



/Finolexgroup



/Finolex-cables-ltd

Regd. Office : 26-27 Mumbai-Pune Road, Pimpri, Pune 411 018, India.

Tel : 020-27475963. Fax : 020-27470344. Visit us at : www.finolex.com Email : sales@finolex.com

Clay Paky, a subsidiary of Osram, lights up Frankfurt's bridges

Image Courtesy: Osram



Hundreds of visitors were fascinated by Sven Sören Beyer's and Björn Hermann's light show on October 3 in Frankfurt...

In honour of the occasion of German reunification celebration, a lighting installation designed by Sven Sören Beyer and Björn Hermann illuminated 25 bridges across the Main as part of a spectacular light show on October 3.

On October 3, 2015 German reunification celebrated its 25th anniversary, with the Main taking centre stage for a very special event. Beyer and Hermann symbolically built a total of 25 bridges across the Main – taking the number of years since the reunification as his inspiration. "For this event there was no alternative to using the Mythos spotlight, a mix of beam light and spotlight", said Hermann.

The show, which left the audience speechless with amazement, was divided into three parts. Starting with the division into West and East Germany and the building of the Berlin Wall in 1961, then moving on to the fall of the Wall in 1989 and reunification in 1990, and finishing with 2015, the light show highlighted the most important milestones of the past.

During his career, Björn Hermann has provided outstanding lighting for many events. Sven Sören Beyer, the director of the event, is famous for his spectacular huge events. The collaboration of both is characterised by remarkable lighting architecture.

In consultation with the German government, the federal state opted for the Main metropolis of Frankfurt to host the 3-day festivities. Thousands of people gathered at the city centre and the bank of the Main to celebrate this special anniversary in style. ■

Cree LED Lighting delivers better light quality, lifetime savings to Bowling Green State University

Image Courtesy: Cree



Bowling Green State University selected LED lighting by Cree to replace the outdated metal halide light fixtures over its indoor turf field in the Perry Field House...

Since 2012, BGSU has participated in the American College & University Presidents' Climate Commitment (PCC), which signifies the university's pledge to take actions to achieve climate neutrality. As part of PCC, the Student Green Initiative Fund advances the campus's environmental efforts. Cree's CXB Series helped the university gain swift approval to use the fund to cover half of the project's cost through rapid payback and emissions reductions.

The Cree CXB Series provides quick and easy one-to-one replacement of up to 400W HID fixtures at the highest lumens per dollar among LED luminaires today, cutting energy consumption in half and providing a better light experience. Its innovative design features a low profile for high-bay applications at half the weight of incumbent technologies.

"The need to upgrade the lighting in Perry Field House was identified in our climate action plan, and we were looking for a solution that would provide exceptional cost savings, reduce our emissions, and improve light quality compared to the original system," said Dr. Nick Hennessy, sustainability coordinator at BGSU.

The new Cree CXB Series LED High-Bay luminaires contributed immediate benefits to BGSU. Previously, the lights would remain on, even when the facility was not in use between events. The coaches, athletes and field-house staff have strict requirements for the facility, and are all enjoying the new lights, especially the better light quality and uniformity eliminating hot and cool spots. Backed by Cree's 10-year industry-leading limited warranty, the CXB Series offered added benefits, such as lower maintenance, easier installation and additional utility rebates that proved the switch from metal halide was worth it. ■

Edinburgh Festival keeps Avolites' team busy



The console was chosen for its flexibility...

The Avolites team had a busy few days at this year's month-long Edinburgh Fringe festival, with consoles and dimmers busy across the city's many diverse venues. LD Tom Campbell used his new Quartz console to create an immersive light show to match the dramatic dynamics of Anna Calvi's performance alongside The Heritage Orchestra. She was playing a three-night residency at The Hub on the Royal Mile.

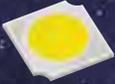
Tom recently upgraded from a Titan Mobile to a Quartz, and said of his shows in Edinburgh "With such a busy summer schedule I flew in to Edinburgh for the shows, and being able to fly with my preferred control surface took all the stress out of programming, allowing me to concentrate on the creative process. Of course I could do that with my mobile, but the Quartz is a complete console, so no separate laptops or touchscreens needed."

Underbelly have established them at both the Edinburgh festival and on London's Southbank for hosting great comedy, theatre and improvised shows. Earlier in the year Stage Electrics supplied a new Tiger touch II console for their flagship Udderbelly purple cow venue. The console was chosen for its flexibility: One moment they're busking some improvised musical comedy, the next moment they're running a theatrical show with a cue list. Anthony Newton, Technical Production Manager for Underbelly, said the operators were very happy with the console, and the flexibility it offered is perfect for the demands of such a multi-purpose venue. ■

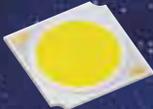
Open a new frontier in LED lighting.



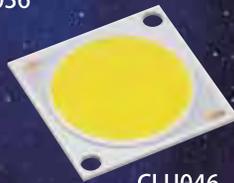
CLU027



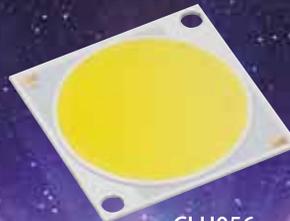
CLU026



CLU036



CLU046



CLU056

CITILED COB Series Standard Type & High-CRI Type

Version
4

The new version of CITILED COB series increases the performance significantly from previous version. New version creates more options to match luminaire's products design (ex. High performance, Cost effective, Small Light Emitting Surface (LES), increased allowable max. If). Emitted light density of the LED package is improved higher for suitable use of light-condensing products. The outline and LES size is the same as for previous version. Thus existing parts of 3rd parties are compatible in mechanical characteristics. All specs are at hot binning (Tj=85°C).

CITILED
The Light Engine

http://ce.citizen.co.jp/lighting_led/en/

Sales branch: C-E (Hong Kong) Ltd. (Contact person: Taro Fujisawa) Tel: (852) 2793-0613 E-mail: taro.fujisawa@ce.citizen.co.jp

CITIZEN and CITIZEN Micro HumanTech are trademarks or registered trademarks of CITIZEN HOLDINGS CO., LTD. JAPAN. CITILED is a trademark or a registered trademark of CITIZEN ELECTRONICS CO., LTD. JAPAN.

CITIZEN ELECTRONICS CO., LTD. JAPAN

1-23-1, Kamikurechi, Fujiyoshida-shi, Yamanashi-ken 403-0001, Japan Tel:+81-555-23-4121 <http://ce.citizen.co.jp/e/>

Bridgelux Décor Series LED arrays chosen for the new lighting system at the Lower Basilica of San Francesco of Assisi



The Lower Basilica of San Francesco of Assisi...

Bridgelux, Inc., a leading provider of high-performance, solid-state LED arrays, announced the selection of Bridgelux Décor Series LED arrays for a new lighting installation at the Lower Basilica of San Francesco of Assisi in Italy, a UNESCO World Heritage site.

Founded in 1228, the Basilica is decorated with frescoes painted by medieval artists, illustrating the unique development of Italian art.

The new lighting system will highlight the unique quality of the stunning frescoes, while providing safe illumination over the delicate paint and colours.

"Light is a powerful medium that can lift one's heart, mind and spirit," reflected Aaron Merrill, vice president of marketing for Bridgelux. "Bridgelux is honoured to have been selected for the project."

Over 550 Bridgelux Décor Series Ultra LED arrays were chosen for the lower Basilica, because of their state-of-the-art colour rendering with a high CRI of 97, which emphasises the reds and other radiant colour tones to which the human eye is most receptive.

Marco Frascarolo designed the new lighting system and is very familiar with projects of this magnitude.

ILM Lighting manufactured customised fixtures for the project. The company believes that to make a special environment they should pay close attention to how it is illuminated, and therefore the use of proper light is a determining factor for the success of a good project. ■

Ecosense awarded prestigious 2015 Lightfair Innovation Award for Tröv as best in category

ECOSENSE EcoSense, a fast-growing manufacturer of high-performance LED lighting technologies, has announced that the new TRÖV platform has been recognised as the BEST IN CATEGORY for Dynamic Colour, Theatrical, Cove and Strip Lighting at the LIGHTFAIR Innovation Awards.

Judged by an independent panel of renowned lighting professionals, the LIGHTFAIR Innovation Awards recognise excellence in new lighting products and technologies introduced in the past twelve months. As the industry's highest honour, the LIGHTFAIR Innovation Awards illustrate the potential of LED technology.

"We are extremely honoured to be chosen for this distinguished award by leading industry professionals," said Mark Reynoso, CEO of EcoSense. TRÖV reflects our vision to push the boundaries of technology and design. It has been a lot of work and we couldn't be more proud."

Available in over 20,000 different product configurations, TRÖV is the industry's only linear platform designed entirely from the ground-up. This product platform includes completely original designs for the board, power supply, optics, housing and connectors.

TRÖV was conceived and developed for lighting designers and each attribute was meticulously engineered to incorporate market leading functionality while pushing the boundaries of beautiful design. TRÖV is a one-of-a-kind LED lighting platform for architectural, retail, hospitality and commercial spaces that allows for unparalleled freedom in lighting design. The product platform is intelligently designed with a patented optical system that delivers the largest assortment of beam angles available today including the highly sought-after Asymmetric distributions. TRÖV also features smooth, flicker-free dimming down to 0% output along with the uniquely new Flip to Flat design for ultimate adjustability. ■

Lutron Electronics presents the full range of light, shade, temperature control solutions for Middle East hospitality at The Hotel Show 2015

LUTRON Lutron Electronics, the global Lighting, shade and temperature control expert, is presenting its full range of solutions for the hospitality industry at The Hotel Show 2015, including the new myRoom guestroom solutions, which bring Lutron's lighting, daylight and temperature control systems expertise right into the guestroom.

Lutron provides a comprehensive range of solutions for the hospitality sector including lobby and public areas, conference rooms, ballrooms, hallways and back of house, restaurants and spas, which all require different lighting solutions and the flexibility to meet a variety of needs and applications depending on the specific use of the area. As lighting, daylight and temperature control requirements change through the course of the day and night, Lutron's flexible lighting control systems automatically optimise the environment, enhance the guest experience and save energy.

myRoom saves energy, reduces operating costs and increases guest satisfaction and loyalty by offering a high degree of personal control over the guest room environment. Through the options of myRoom prime and myRoom plus, the solution is available for any type of hotel room as a standalone solution or integrated into a broader hotel management system.

Lutron already works with most of the major hotel groups in the key hospitality markets around the world, including the GCC. ■

Veto[®]

SINCE 1967
ALL ELECTRICAL SEGMENT

**LONG LIFE
BRIGHT LIGHT**
electrifying your world



85%
Energy Saver

Long Life upto
25,000
hrs



Bright Light
100 lm/W

LIFE UPTO
15 YEARS*

VOLUX LED BULB

"BIS" APPROVED LED BULB
IS-16102 (PART I):2012-R-83000671

- Eco Friendly
- Lasts upto 25000 Hrs.
- High Energy Efficiency
- 100 Lumens Per. Watt
- Almost Zero UV & IR Emmissions



LED PANEL



LED FLOOD LIGHT



LED SPOT DOWN LIGHT

VETO SWITCHGEARS AND CABLES LTD.

Regd. Off : 506, 5th Floor, Landmark Building, Link Road
Andheri (W), Mumbai - 400 053 (India) • Ph.: 0141-4100424

Email : info@vetoswitchgears.com • Website : www.vetoswitchgears.com

Scan this QR Code
on your mobile
to check out the
range of products
from **VETO**



Philips Showline strobes create 'reality-altering' experience at Middle East's biggest club



The Philips Showline strobes were positioned onto vertical trusses to add a perspective bending edge to WHITE Dubai's light show...

Over thirty Philips Showline SL NITRO 510C LED strobes have dazzled audiences at the packed opening party for WHITE club Dubai's third season.

WHITE Dubai is situated on the rooftop of the glamorous Meydan Grandstand racecourse. Each season sees a roster of international DJs take to the decks, with the club offering one of the most extravagant audio-visual party experiences in the Middle East.

During the opening party's 'reality-altering' light show, the Philips Showline strobes were employed to deliver beat-perfect bursts of colour that filled the space with light. The SL NITRO 510C is the colour version of the highly popular SL NITRO 510 and boasts an array of 264 tightly packed RGB LEDs to ensure maximum output.

"The SL NITRO 510C fixtures played a huge role in providing intense color washes in conjunction with the LED wash lights," says the club's lighting designer Dave Parry of Most Technical. "Having the ability to color change is fantastic and allows every look to be in sync. I also wanted to have a strobe effect running across the entire space, again working with the moving lights. When the place is rocking the strobe effects cut through and looks absolutely awesome." The Philips Showline strobes were positioned onto vertical trusses to add a perspective-bending edge to the light show. The plan is to also place some units under the central stage to add extra effects to the upcoming season's performances.

WHITE Dubai is open on weekends throughout the season and is set to see a jam-packed calendar of events. ■

HKTDC supports Indian SMEs to explore global opportunities via small-order online transactions

The Hong Kong Trade Development Council (HKTDC) organised a press briefing to introduce, describe and communicate how best to use its Small Order Zone system.

The HKTDC Small-Order Zone Online Transaction Platform is a buyer-oriented online sourcing platform for direct sourcing of quality products in small quantities. This innovative concept will create new global business opportunities for Indian companies and their products on the international stage; provide them real time exposure to focused sellers and buyers relevant to their specific industry and expand their business to international markets.

The Small Order Zone connects global buyers with third-party authenticated suppliers in a secure sourcing and payment environment without time or geographical constraints. HKTDC has built in a number of safeties for businesses, such as dealing directly with verified suppliers; the "Buy Now" service offers instant order and payment for selected products and protection and processing of payments by PayPal.

Since 2012, both buyers and suppliers have been enthusiastic about the benefits of using the Small-Order Zone. Results have been positive with the online and offline zones together helping a total of 6,000+ suppliers featuring 100,000+ products and resulting in 1.4 million sales leads to date. This easy online transaction process helps suppliers expand internationally easily, bypassing complicated foreign trade processes and creating actual deals across the globe.

Suppliers, with the support of physical trade fairs, can take advantage of the O2O (online-to-offline) model to win buyer confidence and strengthen their marketing efforts. ■

Zumtobel Group acquires UK-based LED lighting company ACDC

Image Courtesy: Zumtobel



Gareth Frankland (CEO, ACDC);
Ulrich Schumacher, CEO Zumtobel Group...

The international lighting corporation Zumtobel Group has acquired (as of now) a majority holding in UK lighting company AC/DC LED Holdings Ltd (ACDC). The company based in Barrowford, north of Manchester, is an innovative supplier of high-end LED lighting solutions – with a focus on the architectural façade and hospitality segments. ACDC started off its business with high brightness LED luminaires in 2001. In 2014 ACDC posted annual sales revenues of approximately 17

million euro with a current headcount of around 120 employees. This extremely dynamic enterprise exclusively develops and manufactures high-end LED luminaires in the international specification and project business and benefits from an excellent client network of lighting designers, architects and interior designers.

As a first step, the Zumtobel Group has acquired a majority shareholding of 60% in ACDC lighting. An option to purchase the remaining shares exists as a second step. The amount of the transaction will not be disclosed. ACDC's long term CEO and majority shareholder Gareth Frankland will continue to head the brand and drive forward its dynamic development within the Zumtobel Group. Zumtobel Group CEO Ulrich Schumacher commented, "For the Zumtobel Group, the acquisition of ACDC is an excellent strategic addition to our existing brand and product portfolio. With ACDC, we are bringing an extremely innovative, highly successful and well-positioned premium brand under the umbrella of the Zumtobel Group."

Key markets for ACDC are currently their domestic UK market and the Middle East, along with a selective presence in other European countries and USA. Huge growth potential exists for the ACDC brand, particularly in regard to marketing products portfolio through the Zumtobel Group's worldwide sales organisation. ■



Plastic solutions in power distribution for MCCB

Akulon® Arnitel® Arnite® Stanyl® Stanyl® ForTii™ EcoPaXX®

- Solutions for open, semi open & closed type MCCBs.
- Excellent material properties capable to withstand the design & testing criticalities.
- Material portfolio specifically designed to meet the most recent design trends and needs.
- Proven capabilities in thermoset to thermoplastic and metal to thermoplastic conversions for higher cost-effectiveness.
- ROHS, UL, REACH compliant.

GE Lighting and ShotSpotter announce MOU to bring gunshot detection to light fixtures



Building a robust ecosystem with GE's Intelligent LED fixtures...

Cities and their emergency responders will soon have a new way to deploy gunshot detection technology and be able to respond to incidents and react faster to protect their residents. A Memorandum of Understanding (MOU) between GE Lighting and SST, Inc., developer of the ShotSpotter crime detection and location suite, lays ground to embedding sophisticated ShotSpotter technology into GE's intelligent LED street lights.

The proposed exclusive arrangement intends to add real-time gunfire detection from ShotSpotter to GE's Intelligent Environments for Cities solution, which features software and sensor-enabled LED lighting powered by Predix—GE's cloud-based platform for the Industrial Internet – to help cities realise potential opportunities for reducing cost, optimising operations and creating value.

Communities most affected by gunfire are least likely to call it in. It is estimated that 1 in 10 shooting incidents are reported to 9-1-1 (2013 SST Inc., National Gunfire Index), and when calls do come in, the information is often inaccurate. Through its proprietary acoustic sensors and enterprise-grade software, ShotSpotter detects and locates gunfire in real time.

Alerts are then broadcast to 9-1-1 dispatch centres, patrol cars and even smart phones, with the precise location, number of rounds fired, multiple or single shooters, and other valuable situational intelligence. These alerts enable first responders to get on scene quickly and safely in order to aid victims, collect evidence and quickly apprehend offenders. ShotSpotter is already driving meaningful outcomes in cities today. ■

Avolites Sapphire Touch tours the US, UK with Hozier



UK - Lighting designer Matthew Kilmurry is controlling Irish musician Hozier's US and UK tour lighting this autumn using an Avolites Sapphire Touch...

to be a few less button pushes away."

The Sapphire Touch is designed for ambitious shows, with more submasters, more flash and executor buttons, and the power to control larger, more challenging rigs. The two wide screen touch monitors offer a huge workspace area, expandable further with Sapphire Touch and Sapphire Media Wings.

"The customisation feature for the pallets and playbacks is also a nice addition to the console. I like being able to see the colour of my pallet not only by text but by the actual visual colour that is stored there, and being able to write into the desk exactly what is in a playback as opposed to typing it. I also really like the path fixture window. I set it up as you see the rig, meaning there is no need to make a stage view, grid or plan in a separate window," he says.

For the UK shows, PRG supplied the Sapphire Touch. In Ireland, Just Lite and Production Services supplied the console, and in the US, the Sapphire Touch was supplied by Christie Lights and PRG. Hozier - real name Andrew Hozier-Byrne - performs across the US during September and October, including New York, Los Angeles and Portland. He lands back in the UK in early January to play in Edinburgh, Manchester, Sheffield and Liverpool. ■

Camaro 2016 wows visitors with flowing ambient light from Hella



The new Chevrolet Camaro is being unveiled for the first time in Europe at the International Motor Show (IAA) in Frankfurt am Main, Germany. HELLA is providing a new kind of interior light concept for the iconic performance car, giving the interior a distinctive design. The colour changes slowly throughout the vehicle in a subtle, flowing pattern from the centre screen.

Another special technical highlight is the fact that all the colours in the interior are matched to one another despite the use of different materials. The light guide of the head-up display is surrounded by a gray cover, which in daylight fuses into the black cover of the dashboard. At night, however, the light has the same effect as the other light guides in the ambient interior lighting. Calibration of the LED modules during the production process is more complex as a result.

Not only is HELLA providing the lighting equipment for the Camaro, the company also developed the controls for this new interior concept. The software of the existing Ambient Lighting Control Module (ALCM) control unit was refined to be able to implement the different lighting scenarios in the interior.

As a special feature, parts of the lighting package can be retrofitted. For example, there are additional footwell lights for the vehicle models not fitted with the optional interior light package and the doors can be interchanged. The driver can then manually control the interior lighting with a control unit. The project was carried out in the international HELLA network. ■

VISIT **THE MEGA**
CHINA **SHOW**
TRADE



Download 'CHINA EXPO APP'
Now on your Phone



24th-26th
November,
2015

The **13th** China Products (Mumbai India) Exhibition 2015



Time

10.00 a.m. to 6.00 p.m.
(Last day open till 4.00 p.m.)

Venue

Hall No. VI, Bombay Convention & Exhibition Centre,
Goregaon (East), Mumbai, India

Show Highlights

- Source from Hong Kong & Mainland China suppliers
- Opportunity to network with over 150 quality manufacturers from more than 20 product verticals
- Complementary Business Matching Service
- Industry seminars and networking receptions
- Special Group Pavilions

Major Exhibits

- Consumer Electronics
- Home and Kitchen Appliances
- Interior & Home Décor
- Hardware
- Plastics and Packaging
- Construction Equipments
- Industrial & Machine Tools
- Lighting & LED

For Exhibitors profile & visitors,
registration log on to:

www.chinamumbaiexpo.com

Organised by



CHINA COUNCIL FOR THE PROMOTION OF INTERNATIONAL TRADE (CCPIT)

GUANGDONG PROVINCIAL COMMITTEE | COMMERCIAL SUB-COUNCIL | XIAMEN CCPIT | SICHUAN SUB-COUNCIL | WUHAN SUB-COUNCIL



HONG KONG TRADE DEVELOPMENT COUNCIL



**DEPARTMENT OF FOREIGN TRADE AND ECONOMIC
CO-OPERATION OF GUANGDONG PROVINCE**



广州世展米兰展览有限公司

Supported by



All India
Association
of Industries



India-China
Chamber of
Commerce &
Industry



Indian
Merchants'
Chamber



SMALL & MEDIUM BUSINESS
DEVELOPMENT CHAMBER OF INDIA

Consulate General of
the People's
Republic of China
in Mumbai

- Entry strictly for trade buyers on production of valid business card
- No registration fee
- Visitors below 18 years, students & housewives will not be permitted
- Right of admission reserved
- No retail sale

Managed by



Worldex India Exhibition & Promotion Pvt. Ltd.

Tel: +91-22 40376700 - 30, 24944672 / 73

E-mail: operations@worldexindia.com

Website: www.worldexindia.com

Connect with us at



Greg Barry joins EYE Lighting as VP of Sales and Marketing



Greg Barry

He will work closely with the sales and marketing teams to help continue the company's growth...

EYE Lighting International has welcomed a new Vice President of Sales and Marketing recently. Greg Barry will work closely with the sales and marketing teams to help continue the company's growth.

EYE Lighting President and Chief Executive Operating Officer Tom Salpietra informed that he was quite pleased to note that Barry had been elected to join the EYE Lighting management team. "Greg is a well known and respected lighting industry professional," Salpietra said.

"As we continue to grow, we must manage our brand transition from an HID lamp manufacturer to a leading provider of LED

lamps and luminaires. Greg's experience, knowledge and skill will contribute to the acceleration of revenue growth," he added.

Barry previously held senior management positions with Acuity Brands, Hubbell Lighting, GE and Topanga Technologies. He earned an M.B.A. from Central Michigan University and holds a B.A. in Marketing from the University of South Florida.

Located near Cleveland, Ohio, EYE Lighting International is a well known provider of lamps and related lighting products. It has over 100,000 square feet of manufacturing space and more than 20 years of market presence. ■

Luce Group promotes R Chamblin to Sr Lighting Designer



Richard Chamblin

As a theatrical designer, he has worked on plays and festivals...

Richard Chamblin joined Luce Group with a background in theatrical lighting design. He brought to the firm theme park experience, having lit staged productions and seasonal areas at Sea World and Busch Gardens Parks and Entertainment. As a theatrical designer, Richard has worked on plays and festivals for such notable theater companies around New York City as Ars Nova, Epic Theatre Ensemble, and the Gallery Players. Regionally, he has designed at Florida Studio Theatre, Asolo Repertory Theatre, Two Rivers Theatre Company and The Barter Theatre.

Richard has worked as an associate designer on- and off-Broadway, both in the studio on drafting and paperwork and in the theatre supervising crews and providing support. Rounding out his audience-directed experience, Richard was the Lighting Director for two web series.

He is a member of USA Local 829, the American Alliance of Museums (AAM) and the Themed Entertainment Association (TEA).

Luce Group specialises in exhibit, themed entertainment, architectural and theatrical lighting design. ■

A Camp joins Robe Lighting as Regional Sales Manager



Adam Camp

He brings a wealth of experiences...

Czech Republic-based lighting manufacturer Robe Lighting has appointed Adam Camp as Regional Sales Manager of the Western United States, effective September 28, 2015.

"I am very pleased and honoured to take over Western U.S. Sales alongside such a great team of well-respected industry professionals. In recent years I have watched Robe bring many new and innovative advances to our industry. In my opinion we have the widest array of professional lighting products and some of the most advanced LED technologies. This is all due

to a key factor – Robe listens," said Camp. Bob Schacherl, CEO, Robe Lighting, said, "We are extremely pleased that Adam has chosen to join the Robe Lighting Inc., team as Regional Sales Manager for the Western US.

He brings a wealth of technical knowledge and practical experiences across various sectors of the entertainment lighting industry. Additionally, Adam possesses very strong existing relationships within the lighting design community and with system integrators and rental companies throughout his new sales territory. ■



DOLLAR
LUMINAIRES

For Every Situation,
One
Lighting Control Solution



In every field of endeavor, someone has to light the way. And for Dollar luminaires, leading is a way of life. For commercial, industrial & outdoor lighting, Dollar offers decision makers innovative designs, outstanding performance & easy installation for virtually every product on your project blueprint. When it comes to quality lighting, you can't find a better source.



DOLLAR ELECTRICAL INDUSTRIES

1802, ELECTRICAL MARKET, BHAGIRATH PALACE, DELHI - 110006
TEL. : 23865355, 23869563, FAX : 91-11-23865860 (R) 22166168
e-mail : dollarelect@gmail.com

DOLLAR ... Lighting solutions for today's environment
For those who value quality

Authorised Dealers :





DAY LIGHTING



Daylight *in* Home Design

an Energy Saving Resource

The symbolism of multi storey towers has also grabbed the attention of both building owners and architects/planners – so a building type that originated in the crowded cities of America and to a lesser extent Europe, has become iconic throughout the world for developing nations and corporate wealth...

Daylight is constantly changing. The other elements of architecture we have considered can be exactly determined. The architects and planners can fix the dimensions of solids and cavities in the building, they can designate the orientation of the building, they can specify materials and the way they are to be treated but the only thing they can't control is the day light, because day light changes from morning to evening, from day to day, in both intensity and color.

Daylight is the light source our eyes have evolved to use. It is available everywhere for majority of the working day. Why have architects and urban planners been designing buildings that do not take full advantage of this generally available and usually plentiful source of light, particularly in these environmentally aware times when the potential energy saving aspects of utilizing this resource might be seen as a desirable benefit?

Natural daylight was the only practical, generally available source until the mid 19th century when gas lighting and kerosene oil lamps with efficient wick designs came to the market, predominantly in already industrialized countries. These new light sources were able to provide reasonable working levels of light for many tasks, not the least of which was reading, past sunset. From this point one begins to see lower floor-to-ceiling heights and reduced window areas in many building types. As we reach the electric age we also reach the level of building technology that allows tall buildings with large floor plates, and we see the increasing dependence on electric light in the residential areas and workplace.

Over the 20th century artificial light became very cheap and the land prices became more expensive. We have seen land prices spiral upwards and the resultant pressure to maximize the net floor area in every building. The result has been buildings with large floor plates and relatively low ceiling heights, limited window area, and with predominantly artificial lighting.

Now, the symbolism of multi storey towers has also grabbed the attention of both building owners and architects/planners so a building type that originated in the crowded cities of America and to a lesser extent Europe, has become iconic throughout the world for developing nations and corporate wealth. Extending this high rise building type into regions with an overabundance of sunlight results in glazing that do little to provide quality daylight to the interior space of houses.

Daylight and Energy Saving

In the past few years, the issues around energy use throughout the world have come to

the forefront of everybody's attention, and lighting has become a focus for energy saving ideas. Largely, these have been attempts to apply technology to improve the efficiency in the conversion of electrical energy to visible light energy. So far, little effort has gone into maximization of the use of 'natural light' either in building design or legislation; in fact, legislation exists in the few countries of Europe to reduce window areas to increase the thermal insulation of buildings. In tropical climates, architecture has also sought to exclude direct sunlight for the very opposite reason that of unwelcome heat gain and to some extent glare.

The issue connected to daylight ingress is heat, either excessive heat gain in tropical regions or heat loss in the temperate regions. India is a country where both tropical and temperate region exists. We have to consider this very carefully when it comes to striking a balance between natural and artificial light. It is usually very easy to make an argument that on lighting costs alone natural light is an easy winner; however, we do need to factor in the additional energy requirements for heating or cooling required to balance out larger glazed areas in the house/building.

The challenges around designing for effective day lighting for individual houses or multi storey apartments also vary according to local climatic conditions. Where there is a preponderance of direct sunlight and clear skies, there are many more options for separating the light from the heat. Where there is a lower level of available direct sunlight, then the only answer is massive areas of glazing open to overcast skies with some degree of control to moderate the light when the sun is shining.

Daylight and Building Design

Designing for day lighting has to be considered at the earliest stages of building/house design. The orientation of the building and glazing relative to the sun path is the single

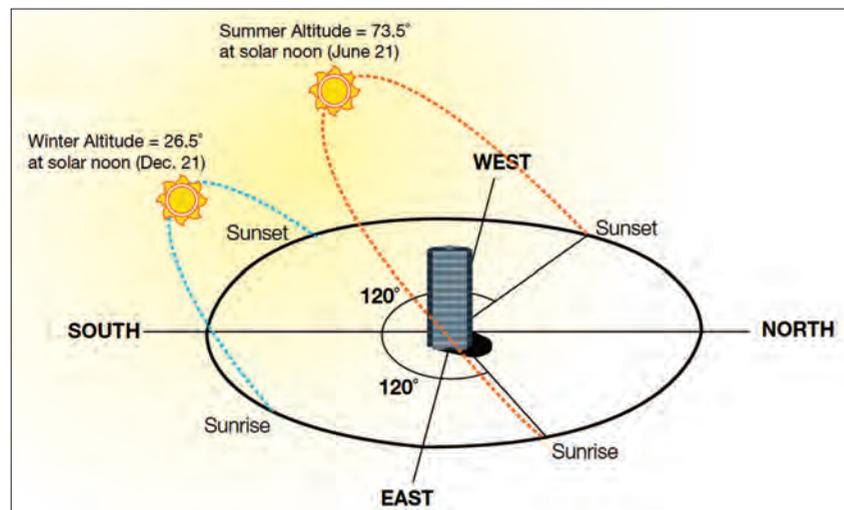


Fig. 1: Daylight autonomy diagram...

most important decision. Refer Figure-1 for the daylight autonomy diagram. Daylight autonomy is the result of designing a space to maximize the amount of useful daylight, thereby minimizing or eliminating the need for supplemental electric light.

This is followed by design of the facades and roof, selection of glazing systems, and daylight controls such as blinds and louvers. Unfortunately, many of these things have already been decided by the architects/planners long before the lighting designer is brought on board by the design team. A lot of the time we are asked to “fix” problems created by the architecture; for example, glare from extensive south facing glazing, balance between areas in an atrium open to the sky and areas with solid ceilings, etc. The design approach of the building/house should be integrated and collaborative, and must be considered from the very onset. One or two days design process initiative right at the beginning can make all the difference between good and bad day lighting in the building/house. Refer Figure-2 for tentative integrated design process for efficient use of day lighting in the building.

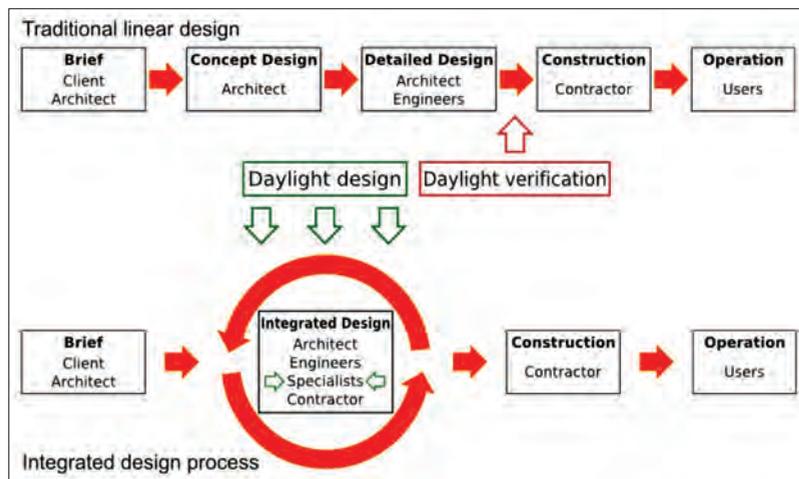


Fig. 2: Integrated design approach...

More usefully we are able to develop lighting controls that will optimize the effective use of daylight by dimming down unnecessary electric light when daylight is available, and suggest changes to details such as light shelves to make them more effective.

Another area where we can have some influence is in the use of daylight powered light fittings; by this, we mean light gathering and distributing systems such as sun pipes or other similar devices. These do not need to be very high tech: the principle is very simple; you are capturing a section of sky and reflecting it through a mirrored tube to where you want it. Obviously, there are limitations to this, as it is not very practical to carry light downwards in every house in a multi storey building.

Day Lighting Strategies

Day lighting strategies may be divided into two groups. The first includes side lighting systems, where light is brought from the sides of a building into the interior space. A window is the simplest example of that strategy. The second group includes top lighting systems, where light is brought from the top of a building and distributed into the interior. A skylight is the simplest example of such a system.

A successful day lighting strategy is one that maximizes daylight levels inside the building but optimizes the quality of the luminous environment for the occupants. Day lighting design is not only about maximizing light levels. Excessive sunlight in an interior can be extremely uncomfortable for its occupants. The key word in day lighting design is control, not only of light levels but also of the direction and the distribution of light.

Most side lighting systems are designed to overcome the problem of uneven distribution of natural light resulting from the use of traditional side windows. Effective side lighting systems operate by reducing excessive daylight levels near the windows and increasing them in areas away from the windows, thus giving rise to a more balanced daylight distribution throughout the room. Adding devices to the window glazing, such as light shelves, prisms or mirrored louvers, offers a viable side lighting strategy because of the ability of these devices to deflect light further away from the window wall and towards the back of the room.

A skylight system is one of the simplest top lighting strategies. It usually provides a horizontal or slanted opening in the roof of a building and is designed to capture sunlight when the sun is high in the sky and diffuse light from the zenithal area of the sky vault, and introduce it into the portion of the room under the skylight. This day lighting approach can be used only for the top floor of a multi-story building or for single-story buildings.

Several skylights uniformly distributed across the ceiling lead to a uniform distribution of daylight.

Successful Examples

Some of the finest examples of day lighting of homes were during the modern movement when the new solutions to structural problems allowed large areas of glazing. The successful examples are given below:

De Syllas House, Dartmouth Park Road, London, UK: First House, Dartmouth Park Road in London, was built by the architect Justin De Syllas for his own use, and shows a careful use of day lighting in informing the space. The architect's stated ambition to provide a large open-plan living area, full of space and light, was the main motivation



LED Lighting 100% INDIAN PROVEN



Light Up The World

CONFORMING TO
IS-16102 (PART I):2012-R-95000078

INDIA'S FIRST
"BIS" APPROVED LED BULB

Long Life upto
25,000
hrs



Certified Products

Energy Efficient Lighting | Energy Saving Trust
Govt. approved R&D Center with Testing Facility
9 state-of-the-art manufacturing facilities
Innovative design • Superb performance
Save Power • Save Money



LED Tube Light



Street Light



Hi-Bay Light



Flood Light



Slim Panel Light



Down Light



Post Top Garden Light



Solar Lantern



Low Carbon Emissions



Zero Mercury & UV



Zero Maintenance



Eco-Friendly

Fiem Industries Ltd.

(AN ISO/TS 16949 : 2009, ISO 14001 : 2004, OHSAS 18001 : 2007 & ISO 9001 : 2008 CERTIFIED COMPANY)

Corporate Office: Plot No. 1915, Rai Industrial Estate, Phase-V, Sonapat-131029, Haryana

R&D Centres: India (Rai-Haryana), Japan, Italy

Units: Haryana, Rajasthan, Himachal Pradesh, Tamil Nadu, Karnataka & Gujarat

Email:

ledsales@fiemindustries.com

Website:

www.fiemindustries.com

Toll Free No:

1800 11 5969

Also Available at



for the design for the house, leading to the first floor living room, with its open plan covering the entire area save the void for the double height to the dining room below.

The living area is associated with a wide terrace along the entire length of the building, connected to the living area by means of full height windows to the south with low level sills. To the north, a large window located above the front door ensures that natural light enters the space from different directions, ensuring sunlight penetration at all times of the day. The dining and kitchen are a double height space, with an open tread stair leading up to the first floor; it has a large bay window which connects to a dining patio. The combination of the bay window at low level and a large roof light above gives the double height space its naturally lit quality at both levels. The house is provided with a number of energy saving measures not least of which are its day lighting credentials. The area of glazing to the south is considerable, providing solar heating in the winter, with limited window area to the north to conserve heat. At no time would artificial light be required during the day. The windows to the south are controlled by external awnings against solar gain and all may be opened to achieve summer ventilation. Refer Figure-3 for actual photographs of De Syllas House.

Bishop Gate Residences, No 1 Bishop Gate, Singapore: A total of 29 numbers of super-luxury condominium residences and a pair of semi-detached houses named as Bishop Gate residences. These residences are passively designed to maximize the use of natural light, ventilation and temperatures.

In the initial concept stage of design, numbers of simulations were conducted to assist in block massing and layout of units to maximize the use of day lighting and natural air flow. Units are configured in such a way to allow cross ventilation, maximized day lighting and this includes naturally ventilated service lobbies.

At estate level, building massing was studied and simulations were conducted to evaluate permeability of all

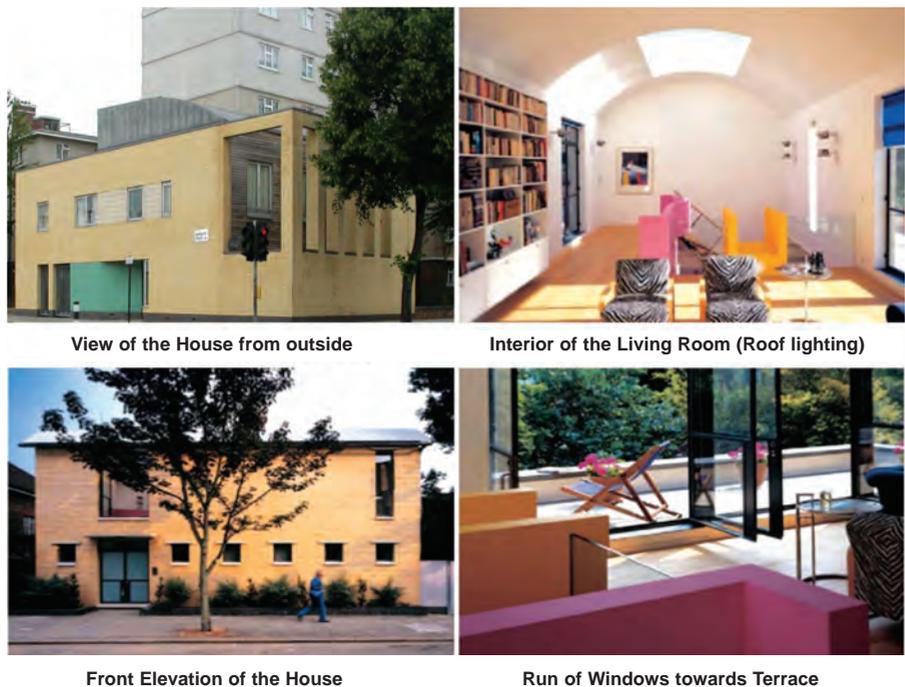


Fig. 3: Photographs of De Syllas House highlighting the effective use of day lighting...

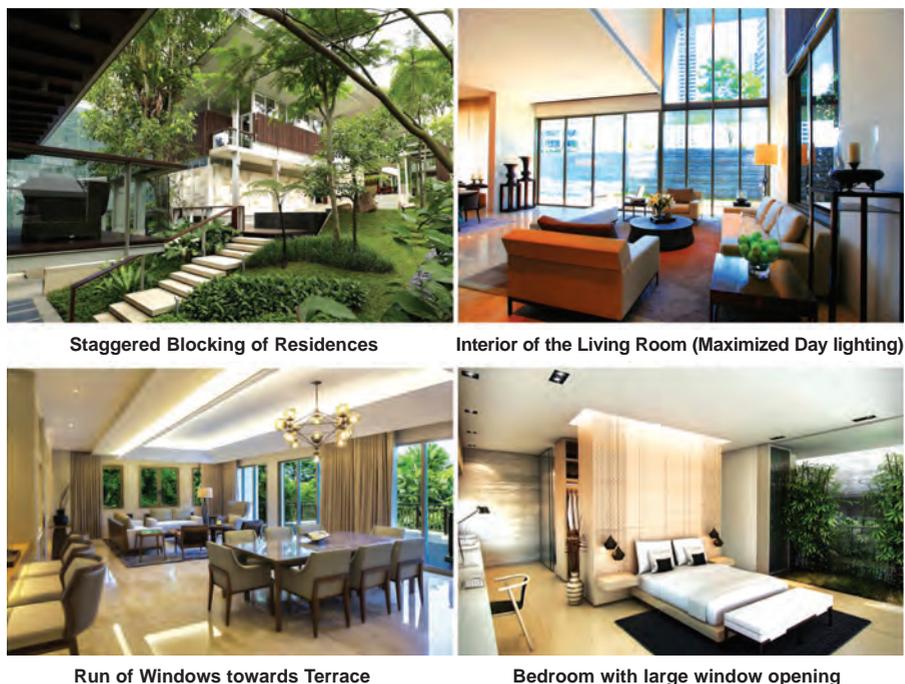


Fig. 4: Photographs of Bishop Gate residences highlighting the effective use of day lighting...

the blocks in channeling wind movement throughout development especially to the central garden court. Final scheme consisted of gaps between blocks to allow airflow to reach the central garden court. Heights of the blocks were also staggered to prevent obstruction to wind movement and day lighting. Refer Figure-4 for actual photographs of Bishop Gate Residences.



24 storey luxury residential development



Use of full height glazing in club house



Interior of living room (maximized day lighting)



Bedroom with large window opening

Fig. 5: Photographs of Clividen Grange residences highlighting the effective use of Day lighting...

Clividen Grange, No 24 Grange Road, Singapore:

Clividen Grange is having 4 blocks of 24 storey luxury residential development with a total number of 110 residential units. These blocks are designed in a way to maximize the use of natural light, ventilation and temperatures.

Airflow and Day light simulation was conducted at conceptual design phase and used as basis to explore possible design changes to improve airflow and daylight within the units. After getting results numbers of design changes were made as a result to improve airflow, day light

and comfort conditions within the living spaces.

New openings were made at the master bathroom, window openings at bedroom was repositioned, openings at dining area was enlarged by 15%, internal wall was redesigned to channel airflow into bedroom. The airflow and daylight simulation was re-run with the design changes to verify the improvement in airflow profile and velocities; as a result around 86% of design was improved. This result is only due to integrated design process of day lighting considered from the very onset. Refer Figure-5 for actual photographs of Clividen Grange Residences.

Conclusion

When properly designed, day lighting can provide significant energy savings for building owners

and for developers. With recent concerns over global warming and the need to conserve fossil fuels, it is imperative to use day lighting as a primary strategy for building illumination. Many of us spend most of the daytime hours at work and may be unable to come into contact with daylight outside our work schedules. As a result, buildings should be designed to admit light levels that will enable us to maintain a well-balanced circadian rhythm.

In conclusion, daylight is a major light source that is radically under-used in modern architecture. We believe that a greater consideration of daylight use in the early stages of architectural design would lead to a significant saving in lighting energy. Due to potentials for heat gain and loss through glazing the energy saving in lighting needs to be balanced with any energy impact of heat gains or losses. Lighting has to be considered holistically with all aspects of the building design to achieve the optimum solutions for energy efficiency and quality of light. ■



Ar. Ashish Batra
Planner (Urban & Regional Development)
LEA Associates South Asia Pvt Ltd (LASA)



Home Lighting

Changing Perception

Light is the source of life, giving us needed energy and uplifting our spirits. Without light, life stops. Many homes are gloomy simply because they don't have enough lighting fixtures. Interior designers quite literally try to bring light and energy inside the home...

Home lights for a majority of population all over the world are still a source to just illuminate the home to perform the day to day activities. A small section of society, however, growing in number with resources and changing life styles are eager to make use of lighting devices in home for their ambience, comfort and health related activities. People are also integrating the natural light with artificial lighting in homes to their best advantages. Light devices with different qualities like colour, design, intensity, etc. are becoming a common feature of artificial light sources in the market. This article presents a brief summary of advances taking place in home lighting towards the benefits people are looking from the lighting devices.

Importance of lighting

Lighting is the most essential element in the decoration of home. We all need to bring more lighting into our homes. Lighting creates, paradoxically, both reality and illusion. Lighting fixtures illuminate our treasured objects and highlights our favourite colours, as well as affects our mood, performance, and mental health on a daily basis. Life can be in effect a reflection of divine lighting. When inside of the rooms are not fully exposed to boundless energy from the sunshine, create happy illusions with everything that is light catching, loving, and illuminating. Even a house with lots of windows cannot guarantee sunny weather. But with artificial lighting, properly arranged, rooms can shine brightly. We



can make room look brighter by adding luminaries in plenty or can make it more warm and cosy through softer lighting. So, look and feel of any room in house will depend largely on what kind of lighting is in use. The lighting in a home changes the mood of a room just as it does the perceived size of a room. We must raise our consciousness about the therapeutic benefits of light and make lighting fixtures a high priority in the decoration of house.

Without lighting, there would be no colour, and when the lighting is dim, it dampens the vitality of a room and depresses the spirit. Balance plays an important part in the lighting of the home. There are three types of lighting - general, task, and accent, and all three sources must work in harmony, with one not dominating at the expense of the other two. The combined lighting effect should provide the most evenly balanced light and maximum versatility for different purposes, such as lighting for conversation, reading or accenting a collection of favourite objects. It is important to remember that reflection and contrast are the keys to vision; glare from lights is not good; uniformity of light on ceilings and walls makes spaces appear more attractive; spotlights can make faces appear more aggressive than more diffuse lighting; sudden changes in light level should be avoided and 'domestic' style lights contribute to a homely atmosphere.

Physiological changes in the eye mean that the capacity to see steadily deteriorates from a young age. By the time people are about 75 years old they need twice as much light as normal lighting standards recommend, and nearly four times as much as a 20 year old, in order to see satisfactorily. The two implications for care environments are that twice the 'normal' light is required, and that the lighting level in spaces should be set by someone who is of mature years. The eye sends signals which the different parts of the brain interpret to form a visual construct. Therefore some older people with dementia are significantly disadvantaged compared to other older people because the ability of the brain affected by dementia to process visual signals is greatly diminished. Therefore it is even more important that higher light levels are delivered into the environment of people with dementia in order that their brain has some chance of performing reasonably. Exposure of the skin to sunlight for only few minutes daily between spring and autumn can trigger the production of vitamin D in the body. So with improved sleep, fewer falls and more active participation, good lighting can make people in care environments happier.

Design aspects

Light is the source of life, giving us needed energy and uplifting our spirits. Without light, life stops. Many homes are gloomy simply because they don't have enough lighting

fixtures. Interior designers quite literally try to bring light and energy inside the home. Of course, daylight levels are very much higher outside buildings than inside, and people should be encouraged to go outside, especially during the morning, when exposure to even an overcast sky for one hour can deliver sufficient light to help maintain a good circadian rhythm. This, in turn, helps sleep duration and quality; thus, making people more content. The control of artificial lighting by occupation and movement sensors, time-switches and daylight switches must be carefully thought through in order to minimize electricity costs. A good way of delivering light is by use of daylight, as it is both free and gives excellent colour rendition. So, it is best not to block the available daylight with unnecessary blinds, and curtains that do not open beyond the window.

Placement and type are important aspects of interior design, and they work in conjunction with colour selections, room size, availability of natural light and furniture selection. The elements that come together when the right lighting is achieved transform a room into a seamless combination of functionality and style. Home fixtures are essential for all households since lighting can change the look of room. With the development of technology, there are many light manufacturing companies to implement cost effective and environmentally friendly lighting fixtures that can cut down electricity costs. The options are many to choose from such as residential lighting. All these options are broadly available in the market. We can go through lists of home lighting fixtures along with their prices and choose the perfect match for exterior and interior decor. People spend more time choosing the right fittings for their homes than any other as to arrange attractive and cost effective lighting can enhance the beauty of their home making it more appealing to visitors.

Characteristics of lighting devices

Colour Management: The use of lighting can add to or subtract from the overall colours of a room or from only those surfaces the light is meant to enhance. Darker colours make a room feel smaller and cramped, while light-coloured walls do the opposite. The illusion of space is defined by light reflected off of the surfaces of the walls. Some types of lighting help with this illusion by further illuminating the walls. In addition, directional lighting, such as a track light, can soften the wall colours. There is also recessed can lighting, which has a soft, downward glow that illuminates the floors, not walls. This is opposed to lights hung from the centre of the room, which provide ambient illumination, or wall lighting. In both cases, this can affect how light or dark a colour section can appear.

Directional Lighting: The lighting in a room either provides illumination for the entirety of the room, or it highlights very



specific elements. Track lighting is the perfect example of positional lighting. Hung from the ceiling, the adjustable necks and lamps can be pointed at specific elements, such as a wall painting, the vase of flowers on an entryway table or the bar top or kitchen island. Consider mounting them on the walls, also. Special picture and mirror frames also have built-in lighting to highlight specific areas on a wall. Recessed lighting can be used in floors and ceilings to create vertical beams of light as opposed to an overall glow from central light fixtures hanging from a ceiling.

Functionality: One major role of lighting in the interior setting is functionality. Lighting needs to serve a purpose, or it simply wastes electricity. Chandeliers are not only used in large, open foyers, entryways and rooms because of their centrally themed placement but also because they provide excellent illumination for the room. Wall lights add length and size, visually, to an entryway hall, as well as light the way. Consider the style of lighting you want to ensure you get the best directional or luminescent type for the setting. Look into task-specific lighting for desks and other work areas where functionality is more important than overall room illumination.

Space

Adding to natural lighting: Both, natural and man-made lighting, help with the illusion of space and for a darker room, find ways to bring in more full-spectrum natural light.

If natural lighting is not available then create a visually larger space. Natural lighting is preferred above man-made lighting because it shows off colours better and adds to the visual space of a room by bouncing off reflective surfaces. Consider skylights or large windows if want more natural light, or use sheer drapes and curtains to allow the maximum amount of light from current windows.

Conclusion

Lighting is not only the most essential element in the decoration of home but also helps to prevent and treat depression and sadness in people of all ages. Everything bright is beautiful indeed and lighting is a mood enhancer. Need is to brighten the home to best effect with the varied range of lamps and lighting available. Lighting arrangements in a home needs carefully planning. It is important to choose perfect lighting (decorative and functional) for homes as the right lighting fixtures can work wonders for home environment. Employing the benefits of both natural and artificial light is a good way to reach a happy medium. ■



Dr S S Verma

Professor, Department of Physics
Sant Longowal Institute of Engineering and
Technology (A Deemed University)



Timeless Elegance

Florian Lighting Pole



Causeway Lighting Pole



Cross Lighting Pole



Causeway Mini



Furrow Bishop Drive way Orna

India's Lighting Company



D-10, Ambattur Industrial Estate,
Chennai - 600 058.
Tel : 26257710, 42281950, Fax : 26257866
Cell : 95000 79797, 95000 85511
Email : info@klite.in

Website : www.klite.in



DSM Engineering Plastics India's mission is supported by their core value: Sustainability. Everything they do contribute to a more sustainable world. To them, achieving sustainability means simultaneously pursuing economic performance, environmental quality and social responsibility. In other words, they strive to create value on the three dimensions of People, Planet and Profit simultaneously...

DSM Engineering Plastics India, is an innovative company that is working on developing next generation of heat conductive plastics products, which have immense potential for use in the LED lighting segment. **Sanjay Jain, Business Director**, of the company is talking with the team of **Lighting India** on his company's lighting business, products and projects. Excerpts...

“Our R&D consists of three pillars – chemistry, physics and mechanics...”

What are the areas where LED lighting is witnessing fast growth?

LEDs are quickly taking over from incandescent and even fluorescent lighting in buildings.

They offer many significant benefits, e.g., very low energy consumption, potential lifetimes – 50 times longer than the traditional bulbs, higher efficiency and reduced environmental impact. Therefore, there is a significant growth of LED as a light source worldwide.

Also, in the automotive industry LED shows its clear benefits.

Headlights are a key distinguishing feature for a car's identity, and currently LED lighting, with its excellent performance characteristics, is the cutting edge of automotive head-lamp design.

How is DSM Engineering contributing to the process?

A key challenge that lighting manufacturers need to overcome with LEDs is the thermal management – the heat generated by the LED has to be dissipated, in order to ensure that their potential to provide high quality light over the years is fully realised.

Aluminium heat sinks are widely used to conduct the heat away from the LED, but designers are increasingly calling for alternative materials that can provide greater design freedom and lower the weight, without compromising on the safety.

DSM's Stanyl TC was developed specifically to answer this call. It has a sufficient thermal conductivity (up to 14 W/mK) to successfully dissipate the heat generated by the LED.

It also has excellent flow properties, common to all the polyamides that enable it to be moulded into complicated shapes with high surface-to-volume ratios, enhancing the heat dispersion.

Recently, DSM has introduced another material to answer the growing need for thermos-conductive materials. Akulon TC bears complete certification including Reach, RoHS, UL yellow card and IEC standards.

When it is compared with aluminium heat sinks, Akulon TC heat conductive plastics are electrically isolative, which technically means it acts as the electrical insulator, making it safer and enabling the use of non-isolated driver to lower costs and improve the efficiency of the whole lighting apparatus.

For automotive LED lighting systems, DSM has been the proven material in the market. Other components in the headlamp assembly such as the bezel, lensholders or frames can suffer from outgassing, become distorted, damaged or can even melt under such severe conditions.

Aesthetic trim components extend the performance challenge by meeting the designer's need for exacting the surface appearance in black or dark grey colours that increase the sun load issue. DSM's Arnite XL-T with a Heat Deflection Temperature (HDT) of 250°C, low out-gassing and excellent textured surface and finishes in dark colours, offer the designer and engineer extended freedom in headlight LED and HID module construction.

How is your R&D effort to boost application of LEDs in new fields?

DSM has R&D all around the globe. We have research centers in the Netherlands, India, China and the USA to be close to our customers and translate their local and global needs into material specifications.

Our R&D consists of three pillars—chemistry, physics and mechanics. For the development of the LED materials specifically, DSM makes use of all three. By using these three competences, we are developing material solutions for LED application, in lighting as well as automotive. At the same time we are using Computer Aided Engineering (CAE) and thermal simulations to design and convert metal heat sinks to thermally conductive plastics.

Have you developed any proprietary material?

Yes, the Stanyl TC heat conductive plastics for the LED lighting industry. It has been widely used by leading lighting corporations, both at home as well as abroad and has an excellent reputation in the market. Our track

record proves that DSM heat conductive plastics are completely qualified for the requirements of LED light apparatus for heat management and mechanical performance. Our indoor lighting products, which replace the traditional aluminium heat sinks, do not compromise performance in any aspect and have advantages over the aluminium radiators in quality, electrical safety, production efficiency, and appearance.

DSM launched the next generation of heat conductive plastics products – Akulon TC. Based on the DSM's patented formulation technology, Akulon TC succeeds Stanyl TC's long-term reliability, showing outstanding performance in our top customers' rigid circulative high – low – temp., heat duty test. Akulon TC maintains good mechanical performance, which is higher than similar products in the market, ensuring that our customers' goods will not fail due to cracks in the long term usage.

Arnite has been used successfully for many years in CFL lighting, and many other automotive electrical and electronic applications that demand high heat performance and low outgassing characteristics.

Through extensive experience and application understanding, DSM has developed proprietary technology that has extended the thermal conductivity of Arnite XL-T to outperform high heat resistance thermoplastics – such as polyether sulfon (PES), polyetherimides (PEI) and polyphthalamides (PPA) without the exotic price tag or other issues like critical processing and water absorption.

A key benefit of Arnite XL-T is its outstanding surface finish when textured, even when glass fibre is reinforced with grades and variations. Recently DSM has announced the use of Arnite XL-T in the new Audi Q7 for automotive headlight applications that can resist extreme thermal loads.

Please tell us about your LED application supporting (booster) projects in India.

DSM has been working with all the key LED lighting manufacturers in India with the standard Arnite solution. We are also working on the next generation, upcoming with thermally conductive solutions.

What kind of business potential do you see in this field?

Based on the demand generated by the EESL (Energy Efficiency Services Limited) through the DELP program and the increased awareness among consumers for energy efficient and green lighting solutions like LEDs, we expect the market to grow aggressively in the coming years.

How are you gearing up to help the LED users in India?

We are gearing up on two fronts. First, the market is still in the early stages of using thermally conductive plastic solutions, so we are leveraging our global knowledge in this area to promote and develop the solutions. Secondly, we are looking into the possibility of making these solutions at our site within India.

What would you say to the potential users from India?

The need to reduce the environmental footprint of LED manufacturing is growing fast. Also, there is pressure on cost and productivity, and there is a need for robust innovative solutions. By substituting traditional heat sinks with innovative solutions like Akulon TC and Stanyl TC, it's possible to reduce cost, increase productivity, design freedom and lower the carbon footprint substantially.

This is the reason why growing number of LED lamps and automotive lighting manufacturers are using Akulon TC, Stanyl TC and Arnite XT. All three are supported by our global team of application experts. ■

CHAUVET Professional

puts the heart into ibiza



With the bulk of the evening taking place in the Supper Club, Arf & Yes were tasked with creating a lighting concept that could adapt to the differing situations and ambience of the evening...



Millions of tourists visit Ibiza's old town every year. With its labyrinth of centuries old streets, alleys and cathedrals, it's easy to see why countless people become enchanted with the island's capital. Beautiful though it may be, in the last couple of decades Ibiza Town has become famous for an entirely different reason: Clubbing. With Ibiza town and the island of Ibiza now playing host to some of the world's most exclusive night clubs such as Pacha and Amnesia, a whole different layer of tourism has emerged with hard core clubbers and dance music fans discovering what the island has to offer.

The latest addition to Ibiza Town's extensive nightlife platter is a club-cum-restaurant named Heart, perched idyllically at the foot of the Marina next to the Ibiza Grand Hotel. The unique club, which provides guests with a three-pronged experience of food, dance and musical performances and DJs, is the brainchild of Albert and Ferran Adrià - the world-famous chefs renowned for their Michelin three-star restaurant elBulli - and Guy Laliberté, founder of Cirque du Soleil. Belgian-based Arf & Yes were responsible for coming

up with a lighting concept for the main part of the experience, and called upon the services of 112 Rogue R1 Washes supplied by Spanish distributor Stonex Show Lighting.

"The concept is nothing like a normal club. It's more like a Vegas show in a way, with many evolving parts of the show. It has got nothing to do with a normal Ibiza club," said Ignace D'Haese, one half of Arf & Yes.

Heart club consists of three areas - the terrace, a pop up food terrace on the roof, and the supper club - where dinner and drinks are served as a part of an immersive performance, and the club with electronic music from DJs. Each night guests are presented with a sumptuous three-course meal followed and intertwined with a varying programme of performances lasting three hours.

With the bulk of the evening taking place in the Supper Club, Arf & Yes were tasked with creating a lighting concept that could adapt to the differing situations and ambience of the evening.

"The main challenge for us was that we weren't designing a lighting concept for one event or room as such. The Supper





Club is transformed several times throughout the course of the evening, and so do the lighting requirements. We introduce new elements in the lighting gradually to correspond with the changing phases of the evening. In this sense, the Rogues are the key instruments in defining and bringing about change in mood and atmosphere," added D'Haese.

D'Haese's concept ensures that the Rogues foster a warm atmosphere at the beginning of the evening, and then as the evening progresses, the atmosphere becomes noticeably cooler. That being said, one of the key challenges for Arf & Yes was to find a solution to light both dancers and musicians performing on the stage and creating a suitable atmospheric lighting for the exquisite dinner; two completely different parts of the evening, which nevertheless intertwine.

"We needed to take into consideration the fact that we were required to create lighting conditions suitable for both the dining experience and the performances, and for that we needed a versatile lighting fixture. The Rogues were the perfect fixture, because they can wash colour delicately and perform accordingly during full on show lighting, making them highly adaptable for all intents and purposes. Even during dessert, there are changes happening already with the lighting. You might not realise it, but the Rogues are able

to subtly aid the transition in ambience. The Rogues are key in enabling a smooth transition between the stages of the evening," commented D'Haese.

Although the Rogues were limited with respect to the height from which they could be hung from the ceiling, they were nevertheless still able to achieve excellent colour mixing.

"The relatively low ceiling height in the Supper Club had made us question whether the height for the colour mixing would be sufficient, but the Rogues were able to achieve vibrant warm colours with the space we were given," continued D'Haese.

In the first couple of months since opening, Heart has already seen famous bands such as Duran Duran and the Chemical Brothers take to the stage. With the Rogues playing such an important part in building the atmosphere of the Supper Club, D'Haese and his team at Arf & Yes are extremely pleased with the result. ■

Credits

CHAUVET Professional
www.chauvetprofessional.com



India's no.1 exhibition on LED lighting products & technologies

3 — 5 Dec 2015

Hall Nos. 8, 9, 10, 11 & 12
Pragati Maidan, New Delhi, India

www.ledexpo-delhi.com

Must visit for:

Architects | Interior Designers | Project Consultants
Builders | Dealers | Retailers | Institutional Buyers
Energy Service Companies | Govt Authorities

For more information on visiting, please contact:
seema.kotian@india.messefrankfurt.com
Tel: +91 22 6144 5900 / +91 11 6676 2300



It's the expertise and experience of their employees around the world that makes the difference. In addition to headquarters in Arnsberg, Germany, **BAG Electronics** also maintains sales and development locations in Europe and Asia as well as state-of-the-art production sites in China, India and Philippines. Their products are marketed around the world in over 50 countries...

BAG Electronics was founded in Switzerland in 1909. Today, the company is well known globally for lighting electronics. **B S Praveen, CEO & Managing Director, BAG Electronics (India)** is talking with the team of **Lighting India** on his company's product concept and business model. Excerpts...

“Human Centric Lighting is becoming more and more popular...”

Please tell us about your complete business portfolio for India.

BAG electronics in India is one of the high quality suppliers of LED drivers and electronic ballasts for the lighting industry. We have our state-of-the-art manufacturing and R&D set up in Pune. Apart from our exports to our parent company in Germany, we supply our products to major OEMs across India and South Asian Market. Further, we are expanding our reach in GCC countries. We will be focusing on developing more and more LED products suitable for Indian power conditions and achieve significant market share in the lighting industry.

How is the demand for intelligent lighting growing here?

There isn't much growth of intelligent lighting. We, at India, are still to catch

up the prevailing level in the developed countries. There are a few pockets where the affordability is high and people are looking for some automation. There some intelligent products do go. However, intelligent products that have potential for big scale energy saving, as in street lighting – auto off/on, auto dim, etc are still far away from Indian products. It's a pity that our company makes them and sends them overseas, but no takers for it in India.

Are you importing the complete ballasts or just their components?

We do bring some complete ballasts/drivers, mostly from our associates, like high spec intelligent products, some dimmable products; but mostly we manufacture products in India and a big chunk of them designed by our

state-of-the-art designers for the Indian conditions. We started 'Make in India' a long time back and our products are also 'Made for India'.

How do the ZITARES solutions differ from those offered by others?

Zitares is generic name for our LED drivers' range. It covers a vast range from the most intelligent drivers to the basic ones. Since last over a year we have Zitares range extended to LED drivers specifically designed for India – to withstand the tough power environment of India, which most imported products fail to adequately meet. Now we are extending that range to cover more and more variants. With this our customers can use our products even in the toughest of Indian environments – rural areas with wide power variations, industrial

environments with lot of disturbances in power characteristics e.g., high surge etc., hot conditions of Rajasthan, to the cold of Kashmir, to the humidity of Tamil Nadu.

What kind of quality checks do you conduct on your products?

Basically, our quality checks include everything that the product has to sustain in real life and perform to. But what makes our products 'the best' in quality is not just the checks carried out at the end; it starts right from the design of the product. Quality is built into our product at design stage, our components come only from well vetted and approved sources, our production processes are tuned to give the best quality – and only in the end the numerous quality checks, just doubly ensure that everything is perfect. Our checks include various performance characteristics – like output level, output stability, how the product withstands various rough power and usage conditions, how is the performance of the product over its lifetime etc. Our organisation is ISO & EMS certified.

How do you define the concept of human centric lighting?

Our body is naturally tuned to the normal light cycle of the sun, during daytime. Although sunlight is mostly white, it is not the same 'white' always. The nature of its whiteness changes at different times of the day, which is technically called the colour temperature of white – e.g., 3000 K, 6000 K etc., and this cycle is called the Circadian cycle. In the morning the colour temperature would be different to that in the afternoon and then again different towards the evening and so on. Replication of this cycle in artificial light is called Human Centric Lighting. Also, there are some situations – e.g., during certain stages of recovery from illness etc. when certain colour temperature could be better than other.

So Human Centric Lighting system is capable of giving light at desired colour temperature, or replicating the Circadian cycle. When you use Human Centric Lighting in various environments like Industries, Hospitals, Schools/Colleges, Offices etc. it is found that the productivity or comfort or recovery (in case of hospitals) is better than when it is a constant colour temperature artificial lighting.

Human Centric Lighting is becoming more and more popular in the developed countries. For India too this could be beneficial in a lot of places especially where people spend extended hours under artificial lighting. Applications typically could include Factories, BPO's, Software offices, Hospitals, Schools/Colleges etc, as already mentioned above.

What are you doing to improve and popularise this concept?

In our last exhibition we had demonstrated the concept of Human Centric Lighting, which was one of the key features of our stall. There were a number of people interested in the concept and the products. However, due to lack of awareness of end customers the concept is still far off from taking off. We are trying to create this awareness through advertisements, magazine articles etc.

What are your most targeted segments in India?

Most targeted segment for indoor application is Office, Commercial, Industrial and hospitality segment, and in case of outdoor applications, street lights, parking lots etc. Besides this, we also develop and manufacture LED drivers for special applications such as Metro Coaches, Marine etc.

How are you approaching them?

We approach through promotions by giving advertisements/articles in Lighting Magazines, sponsoring Lighting workshops, visiting potential

customers, end users, architects, consultants, PMCs etc. Every month we send product info to about 500+ lighting professional to create awareness of BAG Products and their functionalities.

What are the 5 most important points that you would recommend to your potential Indian customers as a veteran person from the lighting industry?

In your projects, don't take lighting for granted, as in past. Lighting has changed a lot in recent times – not only in its own technology and availability of choices, but also in terms of its importance in the end users' minds. So plan your lighting needs too in advance, rather than leaving it to the last moment.

- LED lighting is here to stay. It may have suffered a hit in its reputation initially, due to bad quality products flooding the market, but inherently it is a good and solid technology, with very high level of energy efficiency benefits. Going for good quality products may not be cheap, but will save you money in the long run.
- Do a good lighting planning using a qualified light planner, for your projects.
- There is now a plethora of lighting products to choose from, compared to what was in the past. So take advice from experts to make the right choice. Unlike the earlier fluorescent technology, the level of standardisation is not yet there in LEDs. So, while choosing products, consult the experts in the field.
- Last but the most important – see if you or your users can benefit from Human Centric Lighting. Discuss with an educated and experienced consultant considering wider perspectives, and see if you can have more benefits from lighting, than just being able to see. ■



A Green And Sustainable Lighting Option In India

Proper lighting with a good colour combination can do wonders for improving the ambience of a place. But improper usage can lead to energy wastage. Solar Lighting has emerged as a viable option – it is environment friendly and cheaper...

There are certain critical areas that needs to be analysed before using solar power:

- How much Energy does your establishment need?
- What will be the size of the solar system to meet your energy demand?
- Will you be completely off the grid or partially connected?
- Should you use CFL or LED options for solar lighting?
- Should you use timers to turn outdoor decorative lighting on and off?

How does it work?

Solar Energy is abundantly available in India and it has been estimated that solar panels installed on less than 1% of the country's landmass should be enough to meet the

entire energy needs. Solar lights charge up during the day absorbing energy with the help solar cells. This energy is then stored in rechargeable batteries. At night time, this stored energy is converted back into light. This is a green, sustainable way of lighting since it not only reduces the electricity bills but is clean and non-polluting as well. It avoids using electricity generated from fossil fuel based power plants.

Scope

Solar lighting is all set to become the next generation lighting option in India. Approximately 60% of population in India does not have access to electricity. This percentage is even higher in case of rural India which mostly uses subsidized kerosene or biomass to light their homes. About



© http://all-free-download.com/free-photos/download/solar_power_207339.html

100,000 Indian villages do not access to the electricity grid which means that work comes to a halt in the dark. Kerosene which is highly polluting is the main source of energy for millions of Indian citizens. It is also a health hazard as smoke from kerosene lamps leads various to respiratory diseases and sometimes causes accidental fires as well.

Solar lights is a safe and green alternative to fossil fuel powered lighting. The Ministry of New and Renewable Energy of India has issued policies to deploy 20 million solar lighting systems for rural areas by 2022. Though the market is still nascent, it is growing rapidly. Energy is a basic necessity like food and water and it is a fundamental right even for the poorest of the poor. The government has targeted to provide 24/7 power to every citizen in India and solar lighting can go a long way in meeting those goals.

Solar lighting makes a lot of sense in areas where there is no grid connectivity. Using solar powered lights can avoid connecting these places with the power grid; thus, saving on transmission costs. In India, even the main cities suffer from long, unscheduled power cuts. Given the large demand from both rural and urban areas, there is an expectation that the demand for solar lighting will increase rapidly in the future. A forecast from Navigant Research predicts shipments of LED-based street lights will be more than 17 million by 2020. It has also been estimated that there will be a production of 3.5 million solar lanterns by the end of 2015.

Advantages of solar lighting

- **Low Cost** – Since solar lights use light from the sun, it is independent of the power grid. There is no electricity costs and no fuel cost as sunlight is free. A basic solar lamp can be bought at a pocket friendly price of ~ INR 500-600.
- **Clean and Green** – Solar lights are an environment friendly way of lighting up. They use clean energy from

the sun for their working, hence there is no pollution. Solar lights are do not emit greenhouse gas emissions and require no dirty fuel.

- **Safe** – Unlike the conventional lights, there are no wires associated with the solar lights and so there is less risk of accidents. Usage of kerosene in lamps have caused numerous accidents and are also responsible for respiratory problems and poor eyesight.
- **Low Maintenance** – The maintenance associated with solar lights is much less as compared to the normal lights. Regular cleaning of the panels with a dry cloth and warm soapy water is enough to run the lights for a very long time.

Types of solar lights in India

A wide variety of solar lighting products exist in the market such as solar torches, solar lamps/ solar lanterns, solar multifunctional devices including solar charging of simple devices and solar home systems.

- **Solar Lamps/Lanterns** – Solar lamps or solar lanterns have become popular in India because of the lack of access to electricity and the high costs of kerosene lamps. They are not only economical but also help reduce the number of accidents and health issues due to kerosene lamps. LEDs can be used in these lamps to further improve the efficiency of the lamps.
- **Solar Home Lighting Systems** – A typical solar home lighting system consist of solar panels, mounting structure, battery, battery box, solar charge-controller, luminaries, cables and switches. The Solar lighting fixtures have inbuilt DC to AC inverter converters. They can be used to run household appliances on a daily basis.
- **Solar Street Lighting** – Solar Street Lighting System is a lighting system for illuminating streets and cross roads





located in areas that are not connected to the power grid. Standalone solar street lighting system comprises of a solar panel, lead acid battery for energy storage, compact fluorescent lamp (CFL)/ LED lamps as light source, suitable electronics and hard-ware like pole, battery box for fixing of these sub system. The system is controlled by a controller with automatic on/off time switch, which controls the light from dusk till morning.

- **Solar LED Lighting** – The falling prices of LEDs has made it possible to couple these two green technologies together. Solar LED Lighting can be used anywhere as a replacement for normal solar lighting which uses CFLs. Solar LED lights are mainly used as decorative and garden lights.



- **Solar Garden Lights** – Solar garden lights are decorative lights that are used for garden lighting. They come in a variety of designs and are commonly seen around swimming pools or for marking footpaths.

Suppliers in India

The number of solar lights manufacturers in India is growing steadily. Selco Solar Pvt Ltd is a social enterprise that was established in 1995, to provide services to the under-privileged of the society. It has sold more than 2 lakh solar systems till date and provides easy financing options as well. D.Light Design also started with a charter for social responsibility by bringing affordable lighting to millions of poor. Its flagship product is S250 which is a dual purpose solar light and mobile charger. Tata Solar which is one of India's largest solar companies also manufactures a wide range of solar lighting solutions based on both LED and non LED lights. Philips the leader of lighting solutions in India, also manufactures aesthetic and sophisticated solar lighting products. It mainly manufactures solar street lights and decorative lighting pieces running solar power. Globally, Africa is set to become the world's largest market for solar lamps. There has been an increasing demand for cost effective sustainable lighting in Asian and African countries. This has led to the maturing of solar off-grid lighting industry. China is the largest manufacturer of solar lights globally. These countries possess immense potential for growth in future. The government in these countries are also promoting off-grid lighting.

Conclusion

More than 500K solar home systems were sold in 2014 and the market is expected to grow at 60% annually in India. It was estimated that approximately 900K homes were using solar home systems, offsetting 39,000 tons of carbon emissions in 2014. Improving affordability, better access and government support are the main drivers behind increasing demand for solar lights. Solar Lighting will not only be restricted to rural applications but will also be increasingly used as commercial lighting in India. The Indian government has mostly subsidized large scale solar farms for grid connected power which mostly benefits large developers and investors. This has resulted in the rooftop solar and off grid solar segment being a tiny fraction of the large solar farm segment. The government needs to shift its priority and provide more impetus to solar lighting to meet India's climate change goals. ■



Sneha Shah
Editor-in-chief
Green Blog Greenworldinvestor in India



Osram Expands Its LED Lamp Portfolio

For the current lighting season, Osram is launching a lamp type featuring state-of-the-art technology that looks almost identical to classic carbon filament lamps...

Osram is starting with a range of further LED lamp developments for the new lighting season that traditionally begins in October. At the same time, the lighting manufacturer supports the efforts of its trade partners with a renewed LED competition for consumers.

For the current lighting season, Osram is launching a lamp type featuring state-of-the-art technology that looks almost identical to classic carbon filament lamps – “LED filament” is the name of the new technology where tiny LEDs are interlinked and surrounded by a glass bulb, as were incandescent filaments in previous years. All new LED Retrofit Classic from Osram comply with the demands of energy efficiency class A++, meaning they consume around 90% less energy compared to traditional incandescent bulbs, and have a 15 times longer lifespan with 15,000 hours.

LED filaments feature 25 to 30 tiny LEDs configured in a line on a miniaturised PCB, and these are connected in series and surrounded

by a phosphorous cast that gives the so-called filament its yellowish colour. Osram technicians speak of “Chip on Cord”, based on the common “Chip on Board”. The glass bulb is filled with helium gas to protect the components, primarily the LEDs, from overheating, utilizing the chemical characteristics of helium for optimum heat dissipation.

The warm white light (2,700 Kelvin) is uniformly distributed almost omnidirectionally (300 degrees), and luminous flux with between 250 lumens (the 25 watt replacement) and 806 lumens (the 60 watt replacement) is as high as its specific historical archetype. Professional and end user variants are identical with this LED lamp type – the life of 15,000 hours and 100,000 switching cycles have been determined and ensured based on intensive quality testing. The period of warranty for both versions is two years and the colour rendering index (CRI/Ra) is 80.

Eleven versions of the LED filament lamp from Osram have been available since October 1, in the classic shape as well as drop and candle forms. The 60 watt replacement lamps will be available from January. All LED filament versions have a clear glass bulb to emphasize their decorative aspect. ■

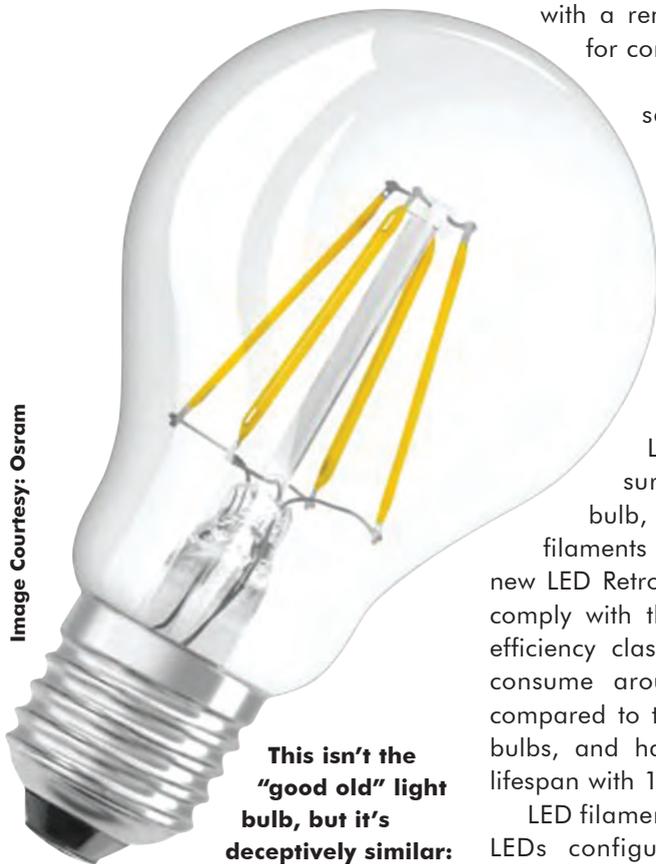


Image Courtesy: Osram

This isn't the "good old" light bulb, but it's deceptively similar: the new LED Retrofit Classic A from Osram...





LIGHTING DESIGN



LIGHTING & DESIGN

TWO SIDES OF A COIN

Design is an art that showcases 'Passion', 'Beauty' and 'Creativity'. We, at Kaamya design studio, help you create your personal spaces as we believe that a personal space reflects the expressions of a soul that resides in it...





Every project comes with a different and a challenging design brief. The process is the ultimate factor and the key in achieving any zone of design. Our process starts with initial sketches, scribbles, material charts i.e. case studies. It's a practice of understanding the user mindsets. Numerous design possibilities are drafted in form of models, clay, and graphics. Different themes and concepts are explored. Essentially, in our world it's called playing with textures, forms, colours, and shapes.

A space, for me, tells a tale and design is its storyline. Design adds life to a space. Its outcome speaks for itself. Design is like a painting on a plain canvas. It speaks through colours, through shades. It creates music and sometimes, even silence. Your space says a lot about you! Sometimes it's



a bold statement and sometimes, a little whisper!

Lighting plays very important role in the field of architecture and design, it adds all the drama and completes the story of a space. It brings liveliness into it and gives an aesthetic touch. We have always experimented with lighting, be it custom-made lighting or an interesting placement of a fixture. In a project we did a while ago, we placed a hexagonal shape lighting fixture above a 6 seated hexagonal dining table. It became the show stopper of the house.

In an upcoming fashion studio, ceiling is designed in such a way that light follows a circular pattern around circular cabins and the same is repeated on the floor accentuating the glass partitions.

Needless to say, lighting has been as important as designing.

The real challenge of any space is to come up with simple

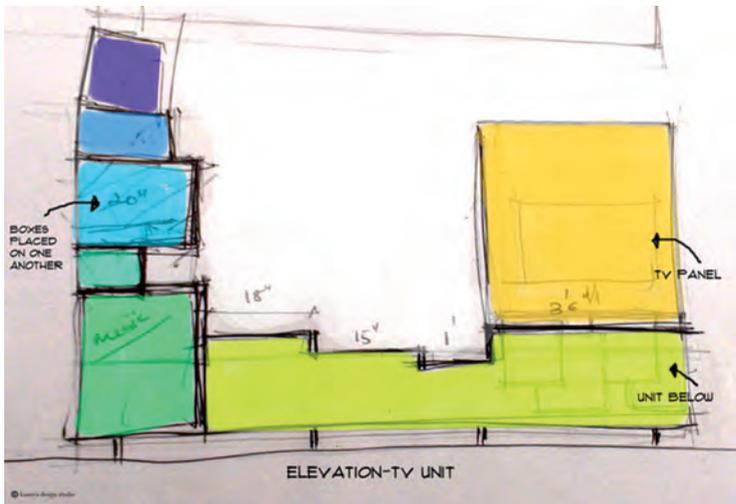




and elegant solutions, rather than complicated and unfriendly design results. In this particular project, done in collaboration with 'D'sign and Art design studio', we played with colours, textures, and forms and created a minimal, clutter free apartment. In a poetic way, the client, with his artistic bend of mind, wished for a canvas, so that he could add colours in the form of artefacts, lights that he had collected from different corners of the world. Just as how cove lights, back lit panels add warmth to a space, that's what such incredible lighting fixtures do to these spaces. They add a 'the oomph factor' to any space.

Inspired from a design principle, this furniture piece is a play of positive and negative spaces. The use of equal negative space, as a balance to positive space, in a composition is considered by many as good design. This basic and often overlooked principle of design gives the eye a 'place to rest', increasing the appeal of a composition through subtle means. The term is also used by musicians to indicate silence within a piece. In design language, it partially blocks the view; partially reveals, ultimately forming a standalone furniture display piece. Button LEDs highlights each niche just perfectly.

A subtle use of colour palate and only few pops of shocking colours can also make spaces very special. This is how you are welcomed in Nabar house – with a Slate Cladding on the wall and a peaceful Buddha painting. Pink and olive colour upholstery stands out against the monochromatic slate wall. The design where light follows the headboard pattern became an uncommon feature in our portfolio and a favourite one of the occupants. Each room is



A raised Dining floor area is defined by a drop down truss ceiling and wooden finished hanging lamps. A TV unit, having a shade of blue as background deoxidizes the overall dark colours. The floor is 1M x 1M vitrified tiles which acts as a background to the bright colours and furniture. Crockery unit is a two way display unit designed with glass on

designed as per occupants taste. While the living room is very contemporary, son's bedroom has a wooden cottage feel to it, master bedroom totally takes you back to old 'Indian mahal', while kitchen has a shocking blood red combination. The interesting part was to blend them all together.

While lighting is one option that can bring in a drastic difference to any space, colour is the other dynamic option. A corner of a house storing your best possessions can be quite a show stopper. This cabinet was sketched for a young couple with diverse interest. The one and only common liking were colours. So this piece of furniture depicts riot of colours. Straight out from an artist palate, this chunk speaks for itself.

The idea of having wooden flooring laid in living room adds warmth to the place. Play of different light fixtures and monochromatic colour scheme makes the space unpretentious. Master bedroom has a seamless wall panelling. Sliding folding wardrobe has muted gold baroque wallpaper on it that adds to the beauty. Daughter's room has a Cuban wallpaper graphic with a blood red laminate cabinet. Rather than making it childlike it gives a stylish and modern look in an unconventional way.

The initial thought was to break the idea of a typical 'jali' that is used at the entrance safety door. After all they say first impression is the best impression. We surely wanted to cast the best first impression. Thus, a laser cut Jali in a silhouette of Lord Ganesh was made and fixed in the safety door. With light highlighting the panel, and the positive aura, it gives the best first impression.

Every Mumbai apartment comes with a pre-requisite of using every inch of the available space. This house had an 18 foot long passage waiting to be creatively used. Cubes of various sizes were fixed above a low height cabinet. To break the monotony, these cubes were designed to be of different colour and sizes. The passage looks interesting with lights and the design serves the purpose.

two sides and mirror on two sides, has a crystal light to beautify it, acts as a special corner in itself.

The most interesting part of a house is its entrance. So in this residence in Thana we decided to give name plate a personal touch. Graphically, the tree shape figure was designed by using their family names in which the owner's names were highlighted. It had many words related to family. These names were composed and mounted on a thin canvas of size 8" x 10". A 14" high artist canvas stand was used on which this canvas was placed and was highlighted with a spot light. The idea not only looked unique on that particular floor but also in the whole of building complex.

Resembling pile of boxes, the doodle was sketched to be a TV unit. Each box had different colour to it. This in-out design breaks the concept of a typical TV unit storage. Each box is self-sufficient and big enough to store or display things. And each one is highlighted with light fixture.

This is a drop down bar counter camouflaged with the slate wall. It is designed as a compact unit storing all and showing none. Raised unit gives a floating effect. The unit is technically on an old mechanism combined with a modern show. It is sufficiently and smartly lit to help during parties. Lighting design is a significant part of design process, there is no doubt about that. Thus, making 'design process' a fascinating, twisting, interesting, spellbinding, captivating, engaging, enthralling, thought provoking, absorbing, exciting, intriguing, action packed journey from start to end. ■



Gauri Argade

Interior Design: Furniture Design:
Visual Merchandising: Photography
Kaamy Design Studio





TRANSFORMING ARCHITECTURAL LIGHTING DESIGN WITH LED

The key challenge for the architectural lighting designer is to ensure adequate illumination for a space or structure, maintaining the delicate balance of initial and operating cost of the installed lighting, energy efficiency and appearance...

The famous architect 'Le Corbessier' once said, "Architecture is the learned game, correct and magnificent, of forms assembled in the light." No words than these, could probably be closer to reality for a lighting designer.

Architectural Lighting Design is a part of architectural, engineering and building illumination. The key challenge for the architectural lighting designer is to ensure adequate illumination for a space or structure, maintaining the delicate balance of initial and operating cost of the installed lighting, energy efficiency and appearance.

Lighting plays a vital role in enhancing the appearance of architectural structures, and hence it is imperative to have a good understanding of light distribution and perception for a human eye. For a lighting designer, it is essential to combine the lighting science and align it with the human psychology. Architectural lighting design is one of the fastest changing dynamic arenas of lighting in the

modern world as the role of lighting design evolves in tandem with architecture and endeavours creating a new milieu stimulating countless human emotions.

The famous Japanese lighting designer and President LEM Design Studio Ms. Shiho Nagamachi mentioned, "Listen to the voices unique of the places," stating the importance of human emotions in the world of lighting design.

This artistic application of light is balanced with the technologies of light production and luminaire photometrics. These electrical lighting systems also consider the impacts of and ideally can be integrated with day lighting systems. Architectural lighting design focuses on three fundamental aspects of the illumination of buildings or spaces, namely the aesthetic appeal of a building, the ergonomics or measuring the functionality of lighting and lastly, the energy-efficiency. Lighting Designers have to prevent light wastage caused by expendable illumination of



vacant spaces or due to over-illuminating a certain space. Manual calculations based on tabular data are used to provide an acceptable lighting design for simple installations. Critical or optimized designs now routinely use mathematical modeling on a computer. The proposed lighting layout is checked for uniformity and quantity of illumination based on the positions and mounting heights of the fixtures, and their photometric characteristics.

Lighting design software is widely used for large projects or those with irregular floor plans. The Zonal Cavity Method is used as a base for manual, tabulated, and computer calculations. This method uses the reflectance coefficients of room surfaces to model the contribution to useful illumination at the working level of the room, considering the light reflected from the walls and the ceiling. Fixture manufacturers usually give simplified photometric values for calculating the illumination using this method.

While majority manufacturers focus on measuring 'illuminance' - the amount of light striking a surface, Panasonic has developed an index that creates a paradigm shift in the world of lighting design with its 'FEU' - the new space brightness index, an innovation that focuses on 'luminance' - the human sense of brightness.

Panasonic has thus developed lighting that broadly expands the creative freedom of the architect, from the three vantage points of scientific lighting - methodology, design, and light quality.

Architectural lighting design is a combination of interior lighting design and landscape lighting design that assists in enhancing the aesthetics of these spaces and adds to their ambience. Panasonic's top end luminaires range Smart Archi, unveiled by Anchor Electricals Pvt. Ltd last year utilizes its highly advanced technology to provide the elegant lighting that people seek, focusing attention on both illuminated surfaces and light-emitting surfaces.

The range Smart Archi is designed using the amassed technologies from Panasonic dedicated to the mission of refining quality of light. It is thus able to deliver uniform, stress-free and glareless light through dramatically improving the performance of reflective surfaces and utilizing the properties of LED to achieve lighting with the highest efficiency.



As a vital member of Panasonic Eco Solutions Company, Anchor Electricals is offering the value addition of custom lighting design plans for residential and commercial premises through Panasonic LED lighting Experience Centres in Mumbai and Bengaluru. One can actually visit and experience the Panasonic LED products in action through the simulation rooms situated in both these showrooms.

The arrival of LED thus transformed the world lighting design. Innovation of lighting design has happened due to evolution of light sources from the incandescent bulb to LED.

The emerging trend in architectural lighting includes that of a media façade where the lighting design becomes a visual and spatial art that overcomes the structural limitation of 'rigid' architecture and the colors of light enhance its value of the architecture. One of the other trend is to light up large public structures with colour LEDs that become landmarks of the respective places.

The Nobel Prize Winner and one of the inventors of Blue LED, Dr. Isamu Akasaki worked for the Panasonic Tokyo Research center and his activities in that period contributed to the invention of blue LED chip. While Panasonic is still watching the new trends of LED in India, it is also looking to promote its advanced LED technologies to offer the combination of Lighting Design with LED. ■



Yoshiyuki Kato
Director Lighting
Anchor Electricals Pvt. Ltd.



light+building 2016

March 13 - 18, 2016, Frankfurt

The world's leading trade fair for lighting & building services...

Light + Building is a fixed variable when it comes to lighting and building services engineering. The trade fair, which runs from 13 to 18 March 2016, is a firm entry on the calendars of national and international manufacturers and trade visitors. The sector will be meeting up in Frankfurt am Main on six days that will focus on the over-arching central theme "Where modern spaces come to life: digital – individual – networked". Business contacts will be established for the future and new products presented. With a lot of new information collected, new business partners and orders in the bag, everyone can look forward to a successful future.

Light + Building is all that: sector platform, showcase for new products and roadmap for the future. To complete the picture, Light + Building also offer, in addition to the presentation of product innovations on the part of the exhibitors, a comprehensive complementary programme. This involves reports from experts in their fields on current developments in the sector and, in a series of lectures; they will be presenting examples of best practice. On top of that there are award ceremonies for innovations in products and design trends. The latest trends will be displayed in special shows and younger members of the profession will find support and sponsorship, as well as having events staged specially with them in mind. At the forthcoming event, the emphasis will be placed on safety and security technology, Building Information Modelling (BIM), digital building and trends in the lighting market. There is a multi-faceted and broad range of offerings on specific topics for all trade visitors, including architects, engineers, planners, interior architects, designers, tradesmen and women, wholesalers and retailers, as well as for those working in industry.

Experience the future: new products, trends and sector know-how

The new special show Digital Building picks up on Light + Building's motto, "Where modern spaces come to life", and

puts flesh on the bones of the notion of "digital – individual – networked", using examples of a variety of technical solutions. The focus of the special show is on "Rooms in non-residential buildings". The special show provides models for the use of the technology and the systematic networked integration of the components within modern rooms. The latest developments in various different areas of building services engineering are to be presented on individual 'technology islands' as part of networked systems. To complement the 'technology islands' there will, in the central area of the special show, be a display of the kinds of possibilities and options for applications that open up with the increasing digitisation of building services technology. The demonstration will be presented with the help of two example applications in an office.

Building Performance offers trade visitors the opportunity to find out more about issues relating to lighting and integrated building services technology in a series of seminars and lectures. In their lectures, well-known and respected experts in their field from Germany and from abroad will consider in detail the latest developments and technological solutions and invite discussion about them. A particular attraction for architects, interior architects, specialist lighting retailers and designers is the Trend Forum, which presents the trends in the home for 2016/17 exclusively at Light + Building. The Forum stages various home scenarios and showcases selected products, integrated in unusual room designs. At the heart of things are four main stylistic trends, which are picked up on in diverse life-style scenarios. The Trend Forum will be designed and realised by the internationally well-known Trend Bureau, bora.herke.palmisano. Several times a day, there will be guided tours that go into greater detail about the scenarios staged and provide facts about current trends in the home.

The E-House, organised by the ZVEH (Central Association of the German Electrical and Information Technology Industry), demonstrates what networked building services

technology and intelligent energy management look like from the point of view of the end consumer. The 'energy-saving power plant' shows, in a realistic context, the effect of the energy revolution in practice and how it is already possible, today, for energy efficiency and increased comfort, convenience and security to go hand in hand. The debating format offered by Futurecourse brings together, at Light + Building 2016, representatives from politics, commerce and industry at the world's largest trade fair for lighting and building services engineering. Over the four days of the trade fair, two or three guests at a time will discuss current issues in a chaired debate. Following on from this, the audience will be able to raise questions of their own. Futurecourse is part of the Technology Forum that is being organised jointly by Messe Frankfurt and the Association of the German Electrical and Electronics Industry (Zentralverband Elektrotechnik- und Elektronikindustrie e.V. - ZVEI) and is aimed at encouraging dialogue between exhibitors and visitors.

Promoting the future; focus on the skilled professionals of tomorrow

Focus on the world of tomorrow with 'Meeting Point Future'. The title encompasses various projects that support the younger generation. This special institution has become established within the framework of the complementary programme and is aimed at both visitors and exhibitors.

In 'Workshop Street', young trade visitors and trainees from the electrical and information technology trades have the chance to learn about the latest techniques and installation procedures in practical situations at a series of workstations. A certificate, recording their participation, will be available for those who complete the course and try their hand at all stations. The prevention of accidents and health and safety at work are at the centre of concern in the safety at work seminars. This section is offered to young people already training in the relevant professions and provides specialist information about increasing safety in the workplace. Participation is certificated at the end of the course. The safety at work seminars are being organised in cooperation with Hesse / Rhineland- Palatinate Electrical Engineering and Information Technology Association (Fachverband Elektro- und Informationstechnik Hessen /Rheinland-Pfalz - FEHR) and the employers' insurance association, BG ETEM.

Young Design offers an opportunity for young designers to showcase their lamp creations. This area is sponsored by Messe Frankfurt and offers creative young talents the ideal platform on which to make contact with both industry and a specialist public and to introduce themselves and their work.

The promotional area for innovative young companies aims at facilitating the entry of young companies into the marketplace and enables them to present their products at a leading international trade fair. The area is organised in

collaboration with the Federal Ministry for Economic Affairs and Energy (Bundesministerium für Wirtschaft und Energie - BMWi). So that companies can present themselves in an appropriate context, a joint stand will be organised for each of the product groups: Lighting, Electro-technology and Home and Building Automation.

At the Job Exchange exhibiting companies can offer vacancies directly to the visitors and make contact with them while still at the show. In the University Area, universities and colleges working in the fields of architecture, lighting design, building services engineering and building services technology will be presenting their current projects and providing information about the many and varied courses on offer.

Under the title of 'Industry meets Students', the German Association of the German Electrical and Electronics Industry (Zentralverband Elektrotechnik- und Elektronikindustrie - ZVEI) and the Association for Electrical, Electronic & Information Technologies (Verband der Elektrotechnik Elektronik Informationstechnik e.V. - VDE) are organising the Jobday. Students in or beyond the second semester of courses in electrical engineering, information technology and physics will be able to establish contacts with well-known companies in the electrical and electronics industries.

Awards for the future: awards and award ceremonies

The Design Plus powered by Light + Building competition presents innovative and ground-breaking products offered by exhibitors represented at Light + Building who work in lighting, electrical and electronic engineering as well as in home and building automation. The award-winning products will be selected by an international panel of experts according to the following criteria: technology, ecology and design. The competition is open to students and recent graduates in product and industrial design, as well as architecture or interior architecture.

The German Lighting Design Awards are presented annually and reward planners, projects and concepts relating to 'light as a building material'.

The Innovation Award for Architecture and Technology is aimed at architects, planning engineers and manufacturing companies. The focus of the ZVEH/ZVEI Energy Efficiency Award is the application of internationally recognised standards for integrated systems of home and building technology, and their contribution to energy efficiency. Prizes are awarded in the categories of residential dwellings, non-residential and commercial buildings and applications in one's own company.

When it comes to the AIT Award, the choice is between the best projects in the field of architecture and interior spaces. The resultant selection is presented at Light + Building, and the best of them receive an award. ■

Lighting sector continues its commitment to LED Expo

the only show dedicated for LED lighting products & technologies in India...



Along with the ongoing initiatives, the government including various ministries, sector players and industry associations are now seen extending strong support to the show. Organised by Messe Frankfurt Trade Fairs India Pvt Ltd, the 10th edition will be distinguished by many firsts...

Delhi has been the starting ground for many schemes and initiatives by the government, institutions and the private sector. Schemes such as LED bulb distribution, implementation of BIS Standards, Domestic Efficient Lighting Programme (DELP) etc., have already commenced in the capital city.

The city is soon expected to create WiFi hotspot with routers fabricated along with the LED strip of streetlights at its prime locations. The proposed project will begin with Connaught Place. Along with the ongoing initiatives, the government including various ministries, sector players and industry associations are now seen extending strong support to the only show dedicated for LED lighting products and technologies that is set to take place from 3rd to 5th December 2015 at Pragati Maidan in the capital city.

Continuously working towards the phase-out of inefficient lighting in India, LED Expo has been playing an instrumental role in bringing together innovators, leaders and buyers of LED technologies to promote widespread adoption among high-power consuming sectors. The platform is known to bring decision makers from commercial, retail and business sectors, urban and town planners, architects, interior designers, municipal corporations, energy service companies as well as regulatory bodies under one roof to facilitate networking, business and market penetration.

The upcoming edition bringing LED technology frontrunners from Indian and Asian markets is now gearing up to showcase solutions for architectural, automotive, residential, commercial and street lighting

use, as well as decorative landscape and garden lighting to the Indian market this December.

Over 170 companies from China, Korea, Singapore, Taiwan and India including FIEM, Hublit, Luxmate, Kore, Compnix, Juki, Firefly, Vin LED, Kevin, Kore, Khatod, Luminus, Componix, EMST, Electrolube etc., have already signed up and talks with industry majors are in progress.

Organised by Messe Frankfurt Trade Fairs India Pvt Ltd, the 10th edition will also be distinguished by many firsts. LED Expo, for the first time, will create hall-wise product segmentation of the various products and applications of LEDs making it easier for professionals – who wish to procure LED solutions focus on their requirements and meet relevant manufacturers directly. This will also bring together leading brands in the segment, consolidate solutions and highlight exhibitor's competitiveness in terms of price, value additions and differentiated offerings.

The LED Summit, which made its debut in Mumbai early this year, will take place for the first time in the capital city bringing together officials and experts from the government, industry and consumer sides.

The Summit is expected to cover three mega trends affecting the industry under the themes of 'Make-in-India' products, lowering costs and diverse application areas for LED technologies.

Visitor registration and delegate registrations for the summit are now being accepted.

LED Expo is headed by the biennial Light + Building event, which will take place from 13 – 18 March 2016 in Frankfurt, Germany. ■



MLS INDIA

**“visit us at
LED Expo,
Pragati Maidan New Delhi.
03-05 Dec, 2015”
Booth No.”
C45 Hall No. 10”**

MLS is one of the largest LED package manufacturers in the world with the capacity of 25bn plus high efficient LED at an optimal cost. Our LED packages are ideal for variety of LED products and solutions.

MLS INDIA, 1021-1022, DLF Tower-A, DDA District Center, Jasola, New Delhi- 110025,
T: +91-11-41685700 M: +91 8800314447 E: Shobhit.bhasin@mlsindia.net

Lutron Electronics Introduces Larger, Battery-Powered Shading Solution

With Sivoia QS Triathlon WIDR Roller Shades



Lutron Electronics, the leader in energy-saving, wireless lighting and shade control, today announced the Sivoia® QS Triathlon® WIDR roller shades. These large, battery-powered shades seamlessly integrate with the RadioRA® 2 and HomeWorks® QS whole-home control systems, while offering industry-leading battery performance and clean, elegant aesthetics. Sivoia QS Triathlon WIDR can also be used

as a standalone solution, easily controlled using a remote or the Lutron mobile app.

The new Triathlon WIDR roller shades are available in sizes from 20 1/2" wide x 12" tall up to 12' wide x 12' tall, which provides greater functionality and fashion to homes with larger windows. These shades come in a wide variety of beautiful fabric colors and textures to meet the needs of larger spaces, such as family rooms or sunrooms – all controlled with a touch of a button. As an extension of the Triathlon

family, the Triathlon WIDR roller shades boast several superior operational benefits, including:

- **Superior Motion** – Smooth motion for the entire travel of the shade, including stops and starts. Adjacent shades track together and maintain perfect alignment.
- **Smallest Roll-Up Diameter** – No more than a 3" roll up for a 12' x 12' shade – the smallest in the industry
- **Redesigned Headrail** – Sleek new headrail design for use without fascia in contemporary spaces. ■

ZKW Group, DSM Develop New Light Weight LED Lighting Module For Audi



AUDI Q7 with headlight LED/HID module construction in Arnite XL-T...

Headlights are a key distinguishing feature for a car's identity and currently LED lighting, with its excellent performance characteristics, is the cutting edge of automotive headlamp design. They are also a safety critical item and must perform to the highest international

standards. LED, HID and Halogen lighting systems, often combined in one headlight assembly, offer excellent performance. But that also places more restrictions on the use of materials and design. Sunlight radiated into the multiple LED/HID lenses creates localised increases in thermal loadings in excess of 235°C.

However, high sun loadings can cause heat distortion and out-gassing of both functional and aesthetic components. To overcome this, exotic and expensive high performance polymers can be used or, alternatively, additional metal heat shields offer protection – but add weight and cost as well as restricting design parameters.

Components in the headlamp assembly such as the bezel, lensholders or frames can suffer from outgassing, become distorted, damaged or can even melt under such severe conditions. Aesthetic trim components extend the performance challenge in being able to meet the designer's requirement for exacting surface appearance in black or dark grey colours that increase the sun load issue.

The superior performance of DSM's Arnite XL-T with a heat deflection temperature (HDT) of 250°C, low outgassing and excellent textured surface finish in dark colours, offer the designer and engineer extended freedom in headlight LED/HID module construction. ■



Lighting: Committed To Excellence

Surya Roshni Ltd., has started in-house production of LED products and presently manufactures almost all the products, backed by strategic marketing initiatives and a strong trading channel...

Surya has been ranked as one of the most respected as well as trusted brands in India for lighting products. At Surya, the excellence of its wide-ranging solutions is found on a strategic mechanism, of backward integration, unmatched corporate governance and excellent management skills. Even more, is a world class manufacturing infrastructure, with fully integrated plants in Kashipur (Uttarakhand) and Gwalior (Madhya Pradesh), complemented by a state-of-the-art R&D centre at Noida, that adds credibility to the brand's stature as being synonymous to lighting. LED is the dominant trend among aware consumers today, mainly because of the entailing advantages like energy savings, long life and eco-friendliness. Visionaries at Surya group had visualised the crucial importance of LED lighting, long before and had commenced the preparations in this direction.

The group has started in-house production of LED products and presently manufactures almost all the products, backed by strategic marketing initiatives and a strong trading channel. As a result, Surya has registered CAGR of 20% as compared to the Indian lighting market CAGR of 12%. LED market is growing at a high speed rate of 60%, whereas, Surya Roshni has registered a 300% growth with wide range of products launched. Its LED product portfolio has both, indoor as well as outdoor luminaires. Apart from these, nowadays, LED bulbs are fast replacing the GLS incandescent bulbs. Keeping this in mind, Surya Roshni has come out with LED lamps. The LED lamps save up to 85% energy and have a long life-span up to 25,000 hours. Surya's LED product offerings include – LED candle lamps, LED coloured lamps, LED lamps, down lighters and LED street light fittings.

Supported by the ongoing government initiatives like DELP and Prakash Path programme, the LED market is poised to grow substantially, to promote LED lighting as well as changing the consumer preferences. Technologically-ready companies like Surya, can help the government, in their decision to change all the street lights in public spaces. All the existing government schemes are being modified with the LED Lamp distribution. Moreover, the 'Make in India' campaign launched by the government, shall provide the extra impetus to both Surya Roshni and the LED industry

to grow faster. Displaying a firm's commitment to stay competitive, the group is committed to the progress of 'Make in India' campaign and is also participating in all the tenders of LED bulbs and LED street lights.

In the wake of the government's decision to develop 100 smart cities in India, Surya has been fully geared up, and understands the requirement of all the sectors including trade, govt tenders and rural electrification projects. Making more use of technologies like LED and star rated appliances, and slowly progressing towards renewable energy, are the strategic steps that form the part of its growth plans for transforming the existing cities into smart ones.

Since its inception, the conglomerate has believed in the power of transformation, turning energy into happiness and living up to its promise of achieving brilliance at everything. This underlying ethos has not only transformed Surya into a leader in lighting and steel pipes sector, but it has also helped it, carve a niche in the home appliances and fans segment, enabling it to earn respect and recognition as a credible multinational.

Surya is a name to reckon within the energy-efficient, domestic as well as commercial fans-solutions market. It is the brand behind the innovative products with world class performance in quality, delivery and service.

The group's range of appliances features pioneering innovations as an imperative. Form and function interweave themselves into a seamless solutions bouquet, which is the delight of every value-conscious homemaker. Surya's India-specific appliances range includes – dry iron, steam iron, mixer grinder, juicer mixer grinder, induction cooker, sandwich maker, toaster and water heater. Today, Surya has a global footprint with an international presence across 44 countries. It has a network of over 2,000 distributors. The two lakhs country-wide dealers are its strength, which helps the group to be present in every nook and corner of India.

Surya's product range demonstrates the group's relentless commitment to performance, customer satisfaction and superior value. As a result, the group has become one of the most trusted brands in the country today. But the group doesn't allow itself to rest on achieved laurels. Instead, it treats each milestone as a stepping stone to rise to even greater heights. ■

K-Lite introduces LED Landscape - Redefined



The essence of lighting is one of the important things in our lives. At K-Lite we are passionate about creating a distinctive atmosphere that improves the quality of life in the cities and towns, by exploring the potential facets of lighting that supports the well-being and safety of all. Founded in 1977 in India, K-Lite has grown to be the leading manufacturer of outdoor luminaires and decorative poles. K-Lite's proven performance in the landscape segment is because of its ability, to stylishly convey the identity of a space,

with a blend of efficiency and modularity to maximise the visual comfort that is best suited to each specific space.

Landscape range includes -

Linear wall washer, up-down lighters, LED strips or neon flex, promenade lighting, bollards, under water lighting, post-top luminaires, bulk heads, path finders, polar lighting and the newly added series of facade lighting. ■

Website:
www.klite.in

Lumileds expands Matrix Platform offerings to provide long lengths of perfectly uniform light with LUXEON XF-3014 CV Flexible LED Strip

leoLED has launched its flagship product: the iSpectrum LED Grow Light. As per the company, this state of the art LED horticultural fixture was created to provide users with an alternative to the mass-produced and rebranded inferior products currently available in the market. The iSpectrum Series is a 84 Watt modular LED grow light system with spectral distribution ranging from 410 to 740nm. It is equipped with 2 manually adjustable spectral channels. The iSpectrum Pro's 5 spectral

Image Courtesy: Lumileds



Luxeon XF-3014 CV Flexible Led Strip...

channels can be individually adjusted, allowing for custom intensities and spectral distributions. The control and scheduling features are all conducted through leoLED's iOS and Android App. Besides providing the choice of tailoring the output spectrum to the

specific crop for accelerated growth, the 'Sleep Mode' manipulates a photochromic response, putting plants to sleep faster, and making the dormant phase of the plants shorter. The user can then raise the lighting cycle, thus raising production and yield. This scientifically proven feature is unique to leoLED horticultural lights. ■

Website:
www.leoledgrow.com

Cree introduces better LED bulbs 460 / 815 lumens for 40 / 60 watts incandescent replacement

Image Courtesy: Cree



As the number of consumers buying LED bulbs continues to increase, the quality of their experience becomes even more important. The most important characteristics of LED bulbs are light quality, longevity and, of course, energy efficiency. Despite this, some manufacturers seeking to cash-in on the technology's popularity are driving LED bulbs to CFL-like

performance, lifetimes and light quality. In contrast, today, Cree, Inc. introduces a better LED bulb. Unlike compromised bulbs, the new Cree LED bulb delivers an even better light with better performance, a longer life and more energy savings.

In keeping with Cree's belief that customers should not compromise, the new bulb is built to deliver true LED performance in colour quality, light output and dimming. It has an improved longer lifetime of over 27 years (30,000 hours), lasting as much as six times longer than some LED bulbs. Its proven 4Flow Filament Design ensures that it looks and lights like a traditional incandescent. The

new bulb also provides consumers with a higher colour rendering index of 83 to better display colours, true ENERGY STAR compliant omni-directional distribution for all-around light, and is fully dimmable with most standard dimmers and suitable for enclosed fixtures. The new Cree LED bulb delivers 460 / lumens for the 40-watt replacement and 815 lumens for the 60-watt replacement in soft white (2700K) and daylight (5000K) colour temperatures and consumes up to 85% less energy during its lifetime. ■

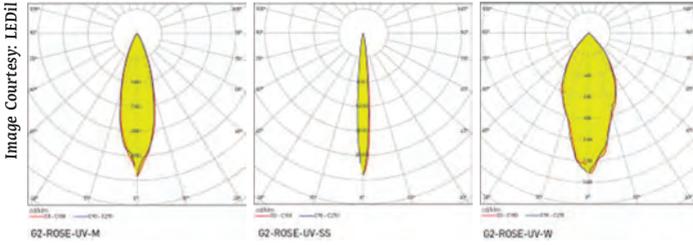
Website:
www.cree.com



Index to Advertisers

Company Name	Page No
Atco Controls (India) Pvt Ltd.....	Inside Front Cover & 1
BAG Electronics (India) Pvt Ltd.....	Inside Back Cover
Covestro (India) Pvt Ltd.....	5
Crompton Greaves.....	56
Dollar Electrical Industries.....	19
DSM Lighting.....	15
Fiem Industries.....	23
Finolex Cables Ltd.....	9
K-Lite Industries.....	29
LED Expo 2015.....	35
MLS India.....	51
Philips Lumileds Lighting Company.....	Back Cover
Setsuyo Astec.....	11
Surya Roshni.....	7
UL India Pvt Ltd.....	3
Veto Switchgears & Cables Ltd.....	13
Worldex India Exhibition & Promotion Pvt Ltd.....	17

The next generation of ROSE- UV: performance and durability improved



G2-ROSE-UV family is a full family of lenses designed for domed high power UV-LEDs gaining popularity in the market.

With the addition of G2-ROSE-UV family to previously released G2-NIS033U family LEDiL is now offering a thorough solution to the market with a full set of lenses for both flat packaged and domed UV-LEDs.

LEDiL's second generation UV lenses are manufactured from special optical grade silicone capable of withstanding heavy exposures of UV radiation which makes these lenses suitable for modern NDT and curing applications.

New optical grade silicones have been tested in heavy UV exposure over 6000 hours without noticeable change in the transmission.

Features and Benefits

- UV optics for 3535 sized dome LEDs from LedEngin, Nichia and LG
- Made of optical grade silicone with very good UV-withstanding

Typical Applications

- Non-destructive testing
- Curing applications
- Anti-bacterial lighting.

Website:

www.ledil.com

An innovative flashing light for cyclists from Brightside Bike Lights

Image Courtesy: Brightside Bike Lights



Bright amber and sideways...

Brightside Bike Lights have created an innovative light that focusses solely on protecting the SIDE of a cyclist. This double ended light shines an amber flashing light

from both sides of the bike helping protect cyclists from side impacts.

Mounted to the frame of the bike, the light produces a number of different flashing or constant lights to warn motorists of the cyclist's position, just as the front and rear lights currently do. With over 70% of accidents happening at junctions and roundabouts, the light completes the all-round visibility that we all need as road users. This currently overlooked aspect will keep cyclists much more visible when their

other lights aren't facing the motorist.

As a car driver and as a keen cyclist, Aidan Gribbin has created Brightside to stop the 'now you see me, now you don't' problem that most cyclists face.

The Brightside light features: USB-rechargeable Water resistant, easily removable Unmistakable and familiar warning colour, and wide 78 degree beam light and small at 76mm.

Website:

www.brightside.bike





If it's lighting
it has to be
Crompton



Iron and Steel Industry



Cement Industry



Automobile



Textile Industry



Health Care



Retail Lighting



Hospitality

Total lighting solution from **Crompton**

Crompton Greaves Limited

Lighting Division. Tower 3, 1st Floor, East Wing, Equinox Business Park, LBS Marg, Kurla (W), Mumbai 400 070. www.cgglobal.com

North:
011 23460700
011 23460800

East:
033 22827750
033 22822154

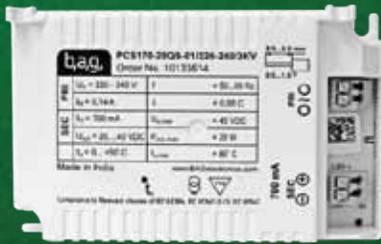
West:
022 61929400
022 61929402

South:
044 42247500
044 42247502

Resilient Against Adverse Power Condition

German Technology Working Specifically For India

Warranty 3 Years



Square - PCS Series



Linear - UCS Series

Sr. No.	Features	PCS	UCS
1	Non-dimmable 1-channel ECG for constant current operation of LED modules	YES	YES
2	ECG extensively protected against abnormal operating conditions at the output e.g. short-circuit, open circuit or overload	YES	YES
3	Certified as thermally protected device	YES	YES
4	Conformance with international regulations, regarding safety and operation	YES	YES
5	Surge protection upto 3kV	YES	YES
6	Mains overvoltage protection upto 320 VAC	YES	YES
7	Degree of protection-IP 20	YES	YES
8	Total harmonic distortion (THD)- <20%	YES	YES

Product Variant

Sr. No.	PCS	UCS
1	28W, 700mA	20W, 350mA
2	32W, 800mA	20W, 500mA
3	36W, 900mA	20W, 700mA
4	40W, 1000mA	35W, 700mA

'A COMPANY YOU CAN TRUST, PRODUCTS YOU CAN RELY UPON'

BAG electronics (India) Pvt. Ltd.

Head Office : Survey No. 19, Kondhwa Road, Yewlewadi,
Pune - 411048. Tel. No. +91-20-30450708
Mob.: 91-9921829011 / 9822225338
e-mail : salesindia@BAGelectronics.com
Website : www.BAGelectronics.com www.BAGelectronics.co.in



Your Sales Contacts Pick any One

Pralhad Shejwalkar Mob.: +91 9921829011 Tel. : +91 20 30450708 Email Id : p.shejwalkar@bagelectronics.com
Siddhant Naik Mob.: +91 8378994277 Tel. : +91 20 30450708 Email Id : s.naik@bagelectronics.com

Subrata Mukhopadhyay Mob.: +91 9836691112 Email Id : s.mukhopadhyay@bagelectronics.com
Sarad Gairola Mob.: +91 9820094621 / 9322608149 Email Id : s.gairola@bagelectronics.com

If you wish to write to our Managing Director then please write at mdindia@bagelectronics.com

Sales Office : • Delhi • Mumbai • Kolkata • Chennai

Follow us on @bagelectronics like us on BAG electronics (India) Pvt. Ltd.

SMS BAG to 56677 for your free gift



The choice
for color
has never
been more
black and white.

There are some lighting designs where optimal color isn't just a luxury—it's an absolute necessity. Luckily, our LUXEON Color LED Family is up to the challenge. With the broadest available spectrum of colors—from Far Red to Mint—and an unmatched quality of light, our portfolio of mid and high power color LEDs is the clear choice for the most color-dependent applications. When color really matters, look to LUXEON Color LEDs to make your boldest designs shine.

See more. lumileds.com/color



LUXEON Color LEDs

- Ideal for architectural, entertainment and emergency vehicle applications
- New form factors and consistent focal length produce best quality of light in the industry
- Engineered to create a smoother image and eliminate the undesirable halo effect



LUMILEDS ILLUMINATION LEDs

LUXEON HIGH POWER LEDs • LUXEON MID POWER LEDs • LUXEON CoB LEDs • **LUXEON COLOR LEDs** • LUXEON UV LEDs • MATRIX PLATFORM