... feature one

LED lighting with its high efficacy, energy saving and superior colour rendering is ideal for Casinos which need to be well-lit for long hours.

Photo: Stéphane Brugger | Courtesy: Lightemotion

LED ALL THE WAY

LED lighting gaining ground in India has introduced dramatic changes in the interior designs and heralding a paradigm shift in the lighting industry.

Lighting has come a long way from performing the basic function of illuminating a space. More so since the advent of LED (Light Emitting Diodes) that is contributing significantly towards shaping the appearance and aura of a space . Apart from being cost effective and energy saving, LEDs with higher luminous efficacy, vibrant colour options, varying temperatures and a wide range of designs, customised controls etc., have opened up a whole new world of exciting and innovative design possibilities.

"Lighting which was earlier used for the basic purpose of illumination, today complements architecture, furniture and creates an ambiance. It is basically a statement of style, class and individuality. LEDs have transformed the very nature of lighting by opening up immense possibilities and every single day heralds a new opportunity" points out **Arun Gupta, Managing Director, NTL Group.**

Photo courtesy: Sources Unlimited

These down lighters with groundbreaking design, allow for infinite design compositions and give the space an artistic appearance.

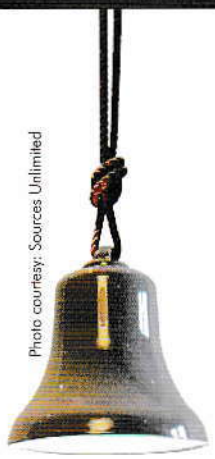
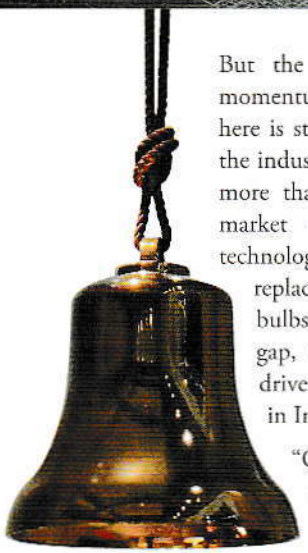


Photo courtesy: Sources Unlimited



These bell shaped lights made of polycarbonate aluminium with dimmers on string provide an ethnic touch to the space.
Price range : € 995 to 2390

But the opportunities are yet to gain momentum in India as LED lighting market here is still in its nascent stage . However, the industry pundits predict that by 2030, more than 80 per cent of the lighting market will be dominated by LED technology. Government's initiatives to replace incandescent bulbs with LED bulbs, increasing energy demand-supply gap, declining prices are expected to drive the growth of LED lighting in India.

"Globally, residential, architectural and outdoor lighting are leading the LED lighting growth charts, with residential applications accounting for over 40 per cent share. In India, Government schemes are steering the demand in the residential segment. The demand is also likely to increase majorly in street lighting, as also in commercial and office projects as the real

STYLE SETTERS

Nikunj Shah, **Director – Lighting, Sources Unlimited**

LED lighting systems are very popular in quality conscious clients world over and are widely used in airports, hotels, high-end residences and commercial spaces. The trend setting brands in this industry include Erco, Iguzzini, Flos, Xal, Oty, Linea, Vibia, and Simes. These brands also carry technical values like LED Bin, CRI (Color Rendering Index), Dimming etc.

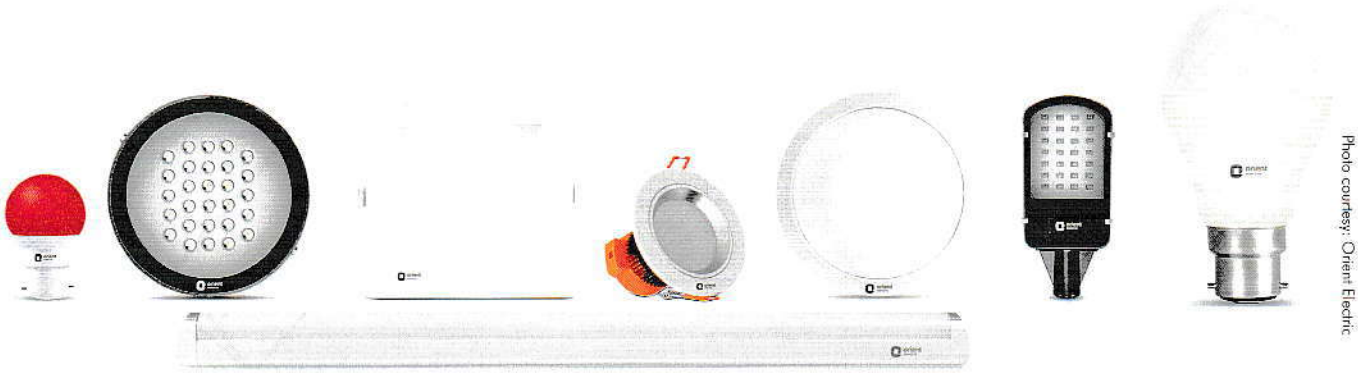


Photo courtesy: Orient Electric

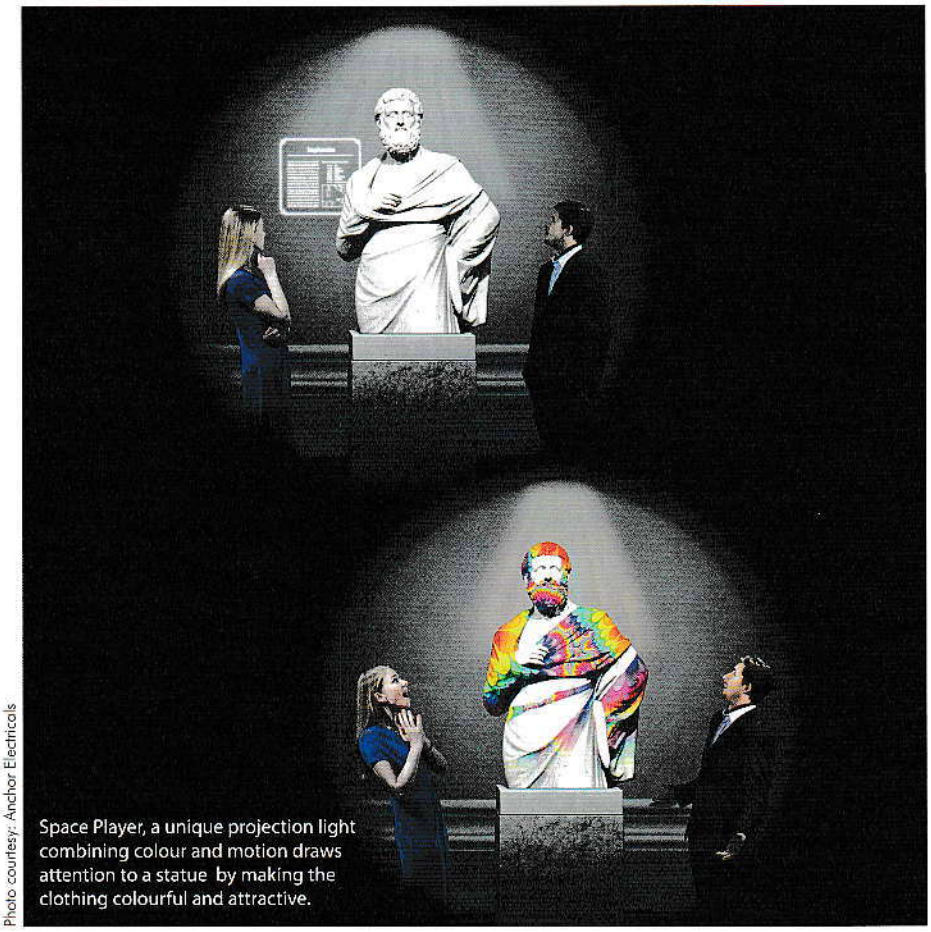
This range of LED lights – from night lamp, recess panel lights to down light and street light for residential, commercial and industrial applications come with high lumen efficacy at prices ranging between ₹ 75 and ₹ 12,650.

CHINESE CHOICE

Puneet Dhawan,

Senior Vice President and Business Head – Lighting, Orient Electric

Changing consumer preferences and government initiatives to promote LED lighting has significantly increased the acceptance of LEDs in China, where focus is largely on automation. Chinese manufacturers and interior designers are experimenting with different forms and dimensions of LED luminaires and are also exploiting the wide range of choices in colour and brightness to enhance the aesthetic appeal of the interiors.



Space Player, a unique projection light combining colour and motion draws attention to a statue by making the clothing colourful and attractive.

Photo courtesy: Anchor Electricals

estate industry comes out of the slump" states Gupta.

Market March

"The Indian lighting fixtures market is expected to grow at the CAGR of 17 percent from 2013-2018 as per a research report from Tech CRI" reveals **Ashok Gangar, Director Sales & Marketing, Anchor Electricals.** "At present it is showing a steady growth of 14 percent CAGR in the conventional lighting type and 38 per cent CAGR in LED luminaires. As per ELCOMA's recent report LED lighting

INTEGRATED IMAGE

Ashok Gangar,

Director – Sales & Marketing, Anchor Electricals

The new trend is in integration of electricals and electronics, including remote controlled LED lighting and lighting controlled through home automation. Additional features include scenario control, colour changing lighting for all premises etc. Several new LED technologies are paving the way for more innovations like the Light Measurement Index called "FEU" which measures human sense of brightness and is an innovation that turns the focus in lighting design from the conventional "illuminance," the amount of light striking a surface, to "luminance," the human sense of brightness. Blue LED is another major breakthrough.

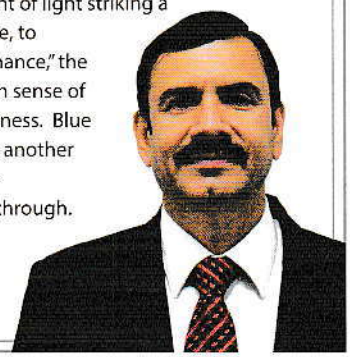


Photo courtesy: The Ministry of Light

The Executive cabin in this office has been equipped with Dimmable Occupancy Sensors and a remote for override, saving on energy consumption.

DESIGN DIMENSIONS

Praveen Thampi,

Creative Director, The Ministry of Light

LED Lighting has opened up a whole new avenue in designing interior spaces, especially because of the miniaturisation of luminaires. With conventional lamps, the sizes and shapes of luminaires were limited, but with LEDs the options are limitless. This has largely impacted the way we perceive interior spaces, with lighting adding a new dimension to interior designs from ceiling, wall to flooring.

Photo courtesy: The Ministry of Light

The columns tapered like fins with miniature narrow beam LED downlighters between each fin, create a lively stylish ambience at this office cafeteria.

industry is poised for an aggressive growth of about 40 percent per annum to become a 80-120 billion rupees industry by 2020."

Some of the major players in the organised sector include Philips, GE Lighting, Halonix, Havells, NTL Lemnis, Osram, Surya Roshni, Wipro, Trilux, Anchor, and Bajaj Electricals. However, the market is also flooded with poor quality imported and indigenous products, creating a negative image for the LED technology.

"Substandard product suppliers and duplication are two major problems faced by the industry. A good product is vulnerable to imitation and they are sold at a marginally lesser price and are often mistaken for the original. There is a lot of difference between regular products and good quality energy efficient products, which becomes evident over the long run" states **Jayanth Jain, Chief Executive Officer, GM Modular.**

Buyers should realise this difference and go for quality products aver industry professionals : "Quality is determined by the lighting fixture's design, illumination, longevity, thermal management and cost. Buyers must enquire about the brand of LED chip being used in the fixture, check for efficacy of the luminaire i.e. Lumens per watt, the heat management of the LEDs used as that will ensure the lifespan of the LED light .One should see that the lighting

Photo: Stéphane Brugger | Courtesy: Lightemotion

An array of different lighting forms – from recessed ceiling lights, pendants to task lighting – create a dazzling ambience.

LED LEADS

- LED business in India is estimated to reach ₹5,000 Crore in 2016. Growth in the residential segment is predicted to be over 70 per cent in 2020
- Globally architectural lighting will remain the early adopter of LED lighting, with its market share reaching almost 90 per cent by 2020. Japan and Europe will be the fastest-growing regions for architectural lighting.
- The global outdoor LED lighting market will reach $1.9 billion by 2017.
- The market share of LEDs in street lighting worldwide will grow from 53.3 per cent in 2014 to 93.8 per cent in 2023.
- Street lighting application accounts for majority of the market revenues in Indian LED lighting market

Note: Culled from various sources

Photo: Martine Doyon | Courtesy: Lightemotion

Different hues of lighting add a magical effect to this space.

SECTOR STATUS

Arun Gupta,

Managing Director, NTL Group

The LED lighting usage is most visible in the retail and hospitality industry. Smart lighting technology that uses sensors to recalibrate the needs based on the natural light availability, dynamic coloured LEDs for different areas are the trends in these two sectors today as these establishments need to reduce their energy consumption and get quick return on investment. LEED allows hoteliers to earn credits for optimising energy use. LED lights also enhance the visual appeal of spaces and create the desired mood and ambience.

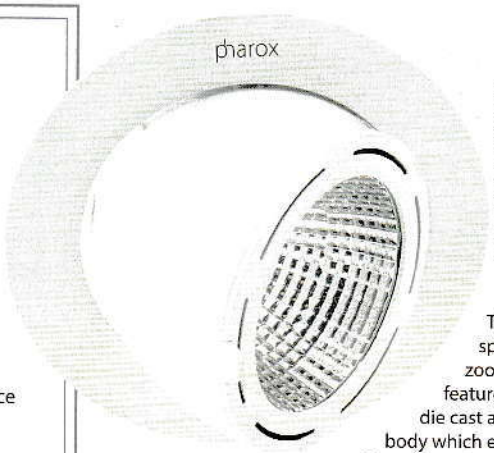


Photo courtesy: NTL Group

This recessed spotlight with zoom in/zoom out feature and pressure die cast aluminium body which ensures efficient heat dissipation, can be rotated up to 320°.

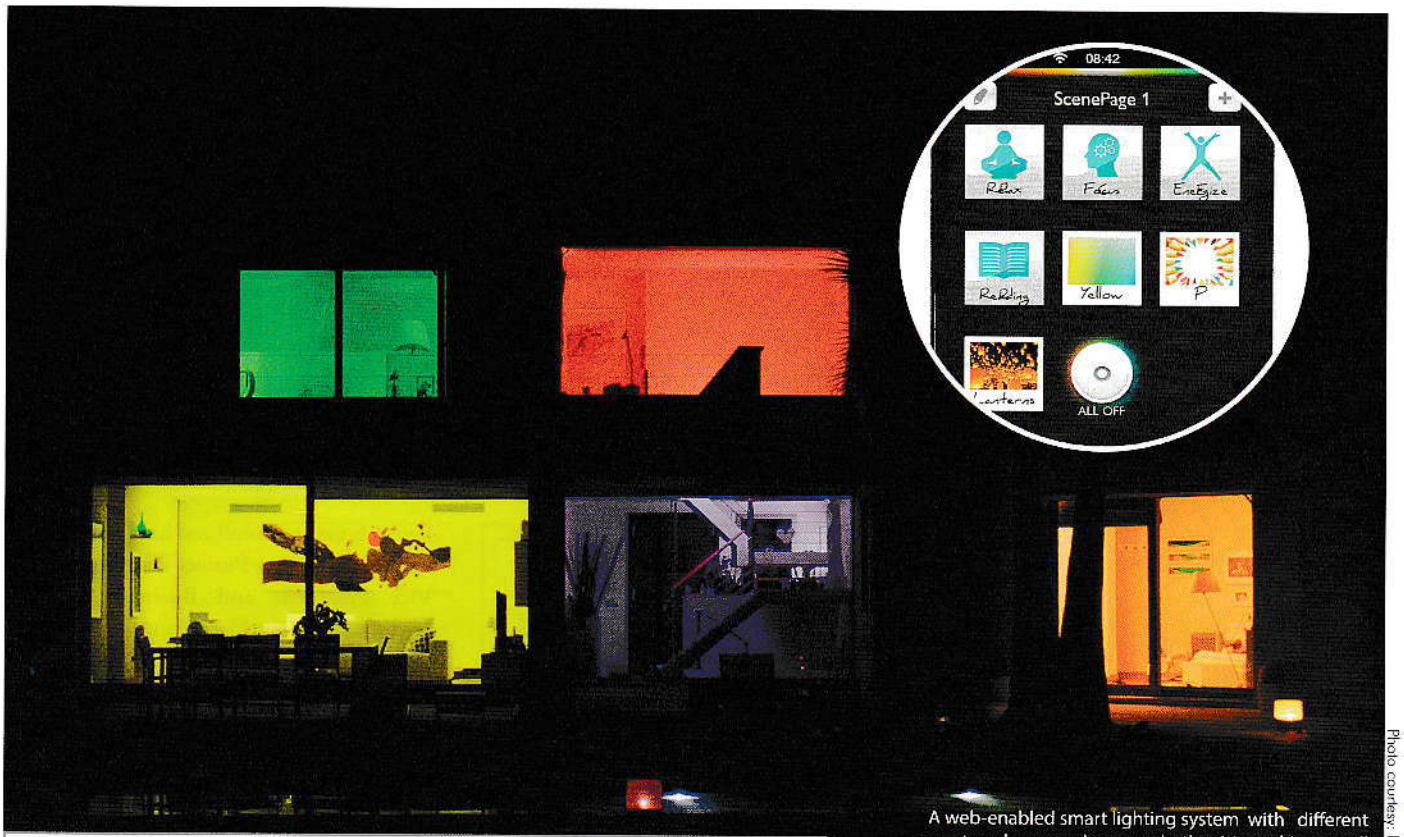


Photo courtesy: Philips Lighting

A web-enabled smart lighting system with different ways to colour your home - whether it's washing a wall with colour or drawing attention to a key design feature- transforms this residential space from a cold functional set-up to a warm and dynamic living space.

CONNECTING CONCEPT

Harsh Chitale,

Chief Executive Officer, Philips Lighting – South Asia

The major shift in LED segment has been the transformation from a product based solution to a comprehensive connected lighting solution. The new LED lighting systems can now connect and interact seamlessly with smart controls, networks, devices as well as apps. Consumers can also seamlessly integrate their lighting systems with their WiFi network and control its operation through their smart phones and personalize their lighting experience at home.

Compact, portable with 120 lumen output and 16 million colours this Living Colors Bloom lighting can be used to light a space with a splash of colour, or highlight a favourite spot or set the scene by choosing an image.

Photo courtesy: Philips Lighting

Photo: Stéphane Brugger | Courtesy: Lightemotion

The interplay between decorative and functional lighting creates an inviting feel-good atmosphere in this hotel lobby.

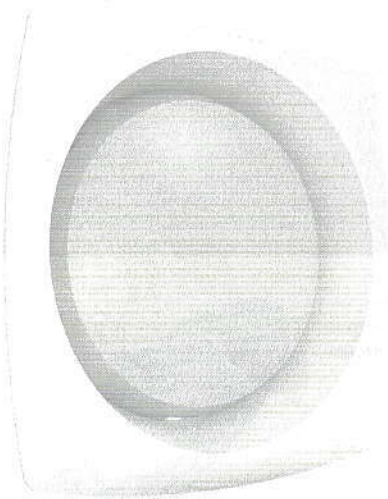


Photo courtesy: Corvi

This down light with an output of 150 lumens per watt, has less glare due to its low UGR value of under 19.

PURCHASE POINTS

Vimal Soni,

Chief Executive Officer, Corvi LED

LED lighting is gaining popularity in India, largely for indoor purposes due to energy savings and reduced maintenance. But there is a pressing need for end user education since no two LED lights are same - they might consume the same wattage but the light output could range from 60 Lumen per watt to 150. Other important aspects such as power factor, warranty, glare rating should also be considered for the right purchase.

fixture is easy to install and has the capability to retrofit" advises **Puneet Dhawan, Senior Vice President and Business Head – Lighting, Orient Electric.**

Solar LEDs have also entered the market and they have their own benefits. "Solar supported LED has several advantages, especially in semi-urban and rural areas, as it offers an environment friendly off-grid lighting solution which also reduces electricity costs by up to 50 percent. The solar powered LED also has a lower total cost of ownership compared to conventional electricity" avers **Harsh Chitale, Chief Executive Officer, Philips Lighting – South Asia.**

Organic LED or O-LED is another emerging trend says **Praveen Thampi, Creative Director, The Ministry of Light** "This will dominate the LED Luminaire design in the near future as it has the potential to encroach into ceiling tile space, floor tile space, furniture and accessories and even glass partitions. O-LEDs is a flat light

INDIAN INDUSTRY

Jayanth Jain,

Chief Executive Officer GM Modular

By 2030 India's primary energy supply, at a conservative estimate, will need to grow about 4 times and electricity supply by 5 to 7 times of today's consumption. Therefore the use of energy efficient products like LED, home automation etc. has become quite popular. In the professional sector LED is already invincible for its exemplary light output and lower costs. LED technology generates little heat and thanks to the innovative design of the light source, totally new options are available in terms of design and function.

Photo courtesy: GM Modular

This modular down light lasts 30 times longer than the incandescent lamp and is easy to maintain.

Photo courtesy: Anchor Electricals

Space Player, a unique lighting equipment helps in lighting up the food on the table and make it look delicious. It can also help project menu on the table

emitting technology, made by placing a series of organic thin films between two conductors. When electrical current is applied, a bright light is emitted. Currently there are restrictions in the size of an O-LED panels, however they have already reached sizes of 2ft x 2ft, which opens up opportunities for a whole array of products like lit ceilings, self-lit display panels, suspended designer luminaires, wall panels with glowing O-LED panels etc"

Evidently a phenomenal revolution is in the making in the LED lighting.

TEXT: Janaki Krishnamoorthi

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LED LURES

EQUO FLOOR LAMP FROM KONCEPT INC

Counter balanced for feather-light adjustability, this slim floor lamp with warm or cool colour options, inbuilt touch strip for dimming and on/off control, optional occupancy sensor and LED rated lifespan of 50,000 hours is available in silver, black, orange or chrome finish. Winner of 11 awards including iF product design award and Red Dot product design award.

Price : $360 for Chrome finish and $299 for other finishes.

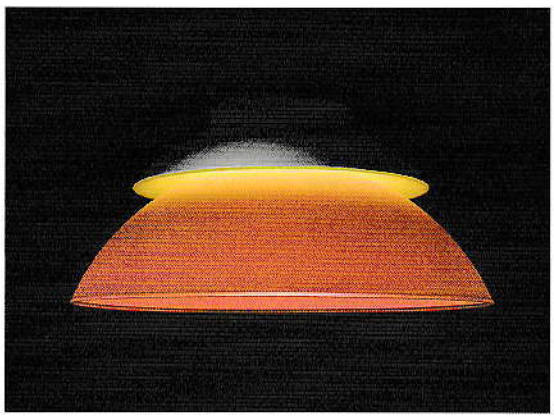
ETERNAL GRACE DELIGHT FROM ORIENT ELECTRIC

This sleek LED batten fitting has luminous efficacy of 110 lumens/watt and maintenance-free life of 30,000 hours. With a power factor kept at more than 0.9 it saves up to 80 per cent more energy than conventional tubes.

Price: ₹900.

SKYLUX FROM BAJAJ ELECTRICALS

With upgraded LED technology in both light emission and power electronics, Skylux, an indoor commercial luminaire has a constant current output driver with operating range 150-265 V AC supply voltages. Available in recessed and surface mounted versions with different ceiling options, Skylux won the SEAD Award of Global Efficiency Medal in 2015.



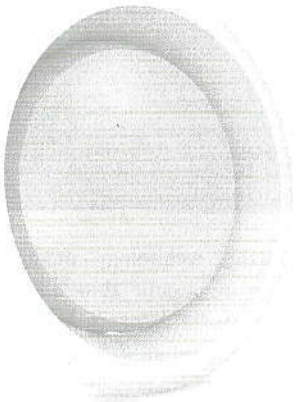
HUE BEYOND CEILING FROM PHILIPS LIGHTING

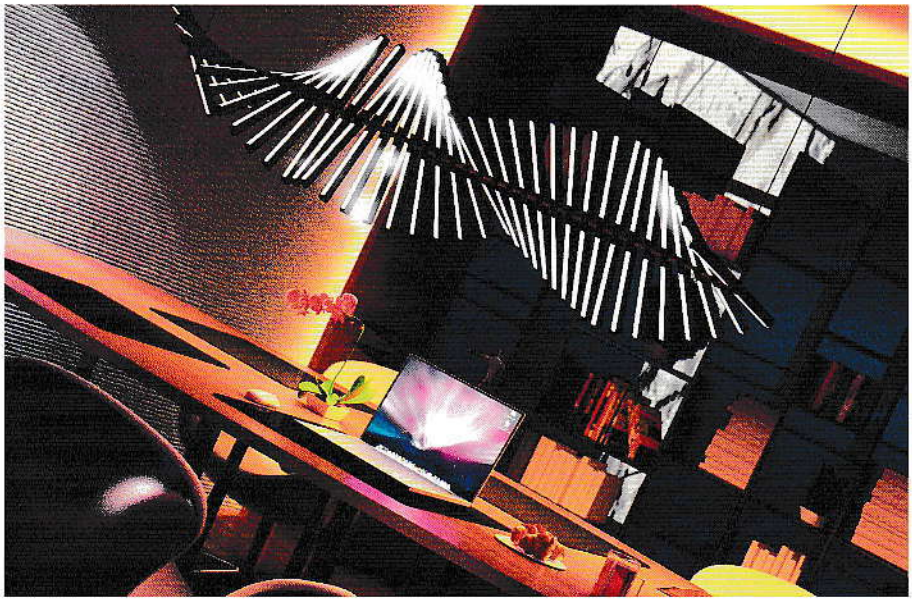
One of the Hue range of connected smart lighting solutions, this IOT (Internet of Things) lighting enables users to create and control the lighting brightness and colour through an app on their Smartphone or tablet.

Price of Hue product range : ₹ 6,750 to ₹ 27,500

DOWNLIGHT FROM CORVI

Highly efficient with an output of 150 lumens per watt, this down light is dimmable and has an inbuilt driver, a power factor of above 95, and UGR value of under 19. Won the Red Hot Design Award this year.





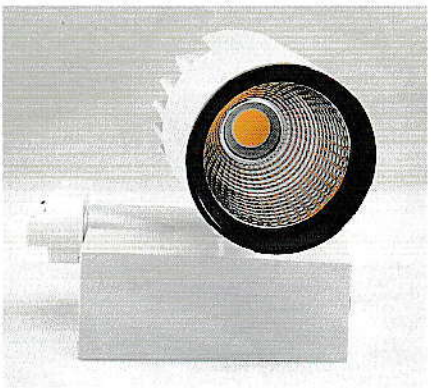
RHYTHM FROM VIBIA AT SOURCES UNLIMITED

This innovatively designed pendant lamp composed of different modules of stickers, allows for infinite horizontal and vertical configurations resulting in amazing shapes. It has an inbuilt LED strip and polycarbonate diffuser

Price: € 1,350 – 5,240

PHAROX DECORA TRACK LIGHT FROM NTL LEMNIS

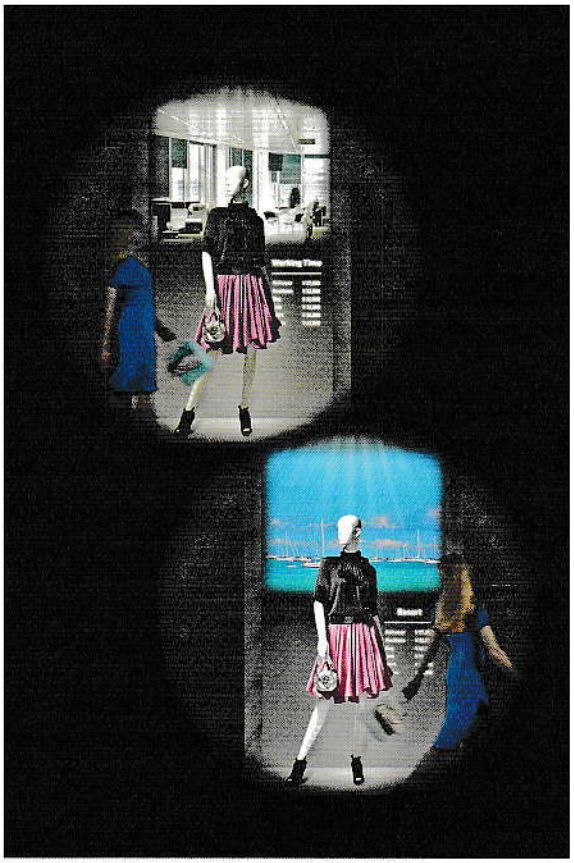
This dimmable luminaire with great rendition of colours, 180° rotational ability is ideal for malls, retail showrooms, art galleries, hotels et al.



It has a customisable hinge for re-aiming the spot light from the ground with a pole. Price: ₹ 5950(25W) and ₹ 8550(35W).

G-LUX FROM GM MODULAR

First ever-modular LED Downlight, it has a detachable driver, higher luminosity saving over 85 percent of energy. Approximate price: ₹ 1,000 onward



SPACE PLAYER FROM PANASONIC AT ANCHOR

This unique projection light introduced by Anchor in India can create a wide variety of ambient lighting like lighting up an object while projecting video or product descriptions onto the surrounding space, or capturing the attention of customers on a product on display through moving illuminations. Price: ₹ 350,000.

LED PROJECTS

PROJECT 1

PROJECT: Klubhaus St. Pauli, Hamburg, Germany

PROJECT PERIOD (conception to completion) 2011-2015

PROJECT ARTIST (concept, design including light design and planning) : Urbanscreen GmbH & Co KG / akyol kamps : bbp architekten bda GmbH.

The Klubhaus is a six storey-building housing music clubs, theatres and offices. The content displayed is divided in 3 sections: artistic content, advertising and self-promotion of the resident establishments. One third of the displayed content consists of a set of artistic video compositions, displayed when no advertising or informational content is on. For advertising contents generated by third parties, a comprehensive design guide has been developed to ensure high aesthetic quality.

"The main part of the façade is composed of semi-translucent, gold-shaded metal plates in varying depth in which the imaging elements and light sources are integrated. They are arranged in an offset pattern that responds to the overall architectural construction. The metal panels of the main façade are equipped with LED meshes in varying resolutions as well as indirect RGB-lighting sources. In the elevator area, the high resolution LED-stripes are integrated into the insulating glass units" explains Janna Schmidt, Artistic Manager at Urbanscreen. The Klubhaus has become a new medium for innovative forms of visual communication.

PROJECT 2

PROJECT: HDFC Corporate Office, Mumbai

YEAR OF COMPLETION: 2014

LIGHTING DESIGN: The Ministry of Light

PROJECT COST (Luminaires & Lighting Controls): ₹4 Crore

One of the highlights of the project is that the interior lighting was fully compliant to CIBSE LG7 Standards. LED Techzone Luminaires, LED I-Ski Downlighters have been used. Every workstation has a built-in intelligent Task light, which automatically turns-on and off as per the workstation occupancy and also automatically dims up and down to suit the employees' diverse lighting needs. The use of Task lights, has reduced the number of luminaires in the ceiling by almost 50 per cent as compared to conventional lighting for an office space.

All the cabins and meeting rooms are equipped with dimmable Occupancy Sensors and a Remote for Override. All the conference rooms and board rooms are equipped with multi-channel lighting Control systems which are integrated with the A/V System so that various lighting scenes can be stored and recalled at the touch of a button

"This has paved the way for a clean uncluttered ceiling system design, making the space look elegant. With extensive use of LED luminaires the power consumption has also gone down drastically with a Lighting Power Density of only 0.45W/Sq.ft, which is way below the LPD Criteria prescribed by LEED for Green Buildings" avers Praveen Thampi, Creative Director, The Ministry of Light.

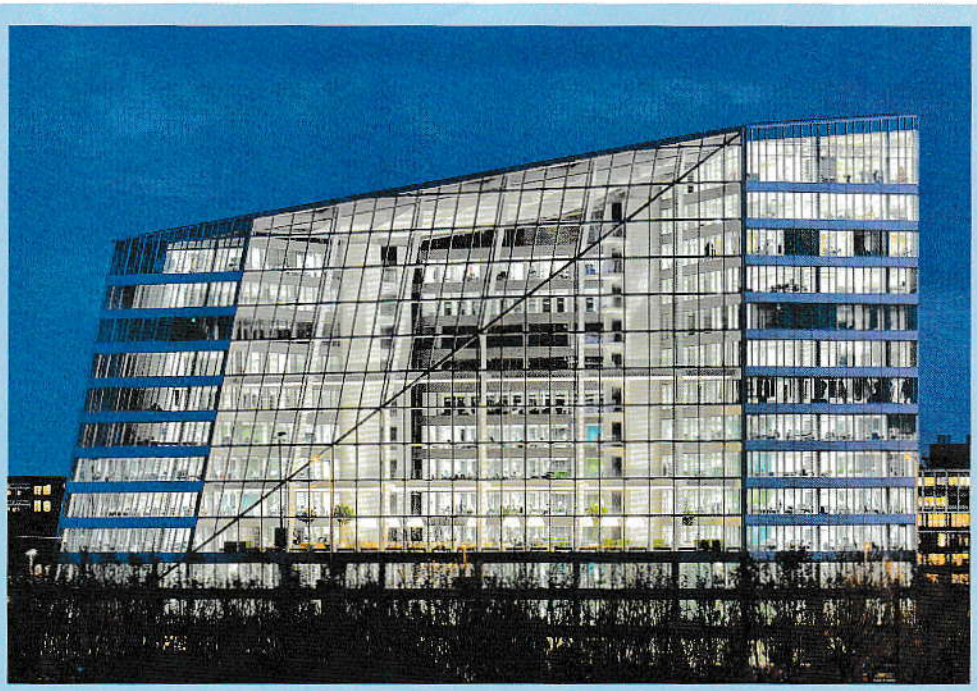
PROJECT 3

PROJECT : The Edge Amsterdam, Netherlands

DATE OF INAUGURATION: 2015

LIGHTING DESIGN AND SYSTEMS: Philips Lighting

INTERIOR DESIGN: Babette Bouman, Fokkema & Partners Delft,



The Edge is a multi-tenant office building which received an outstanding score of 98.36 percent, the highest ever awarded from BREEAM, the world's leading design and assessment method for sustainable buildings. It has a host of sustainability features, including solar panelling, aquifer thermal energy storage for heating and cooling, rainwater harvesting etc

A key aspect of the sustainable design is a connected lighting system from Philips which was created with three main objectives : seamless integration with the building, provision for customised solutions and smart interfaces that allow individuals to control their environment. This enables the employees to personalise the lighting and temperature at their workspaces via a Smartphone app.

The system uses nearly 6,500 connected LED luminaires to create a 'digital ceiling' in the building's 15 storeys. With integrated sensors in 3,000 of these luminaires that work with Philips Envision lighting management software, the system captures, stores, shares and distributes information throughout the illuminated space. Facility managers use the software to visualise and analyze this data, track energy consumption and streamline maintenance operations. The system uses 750 Power-over-Ethernet (PoE) switches to connect lighting fixtures to the building's IT network. With PoE, ethernet cables send both power and data to the luminaires, eliminating the need for separate power cabling.

LIGHTING FACTS IN NUTSHELL

- 6,500 luminaires over 15 floors
- 3,000 luminaires with integrated sensors
- 750 PoE switches to provide connectivity and power
- €100,000 expected savings in energy costs and €1.5m in space utilisation costs

PROJECT 4

PROJECT: Sarvana Stores, Chennai

YEAR OF COMPLETION: 2015

LIGHTING DESIGN AND SYSTEMS: Bajaj Electricals

PROJECT COST: ₹ 200 lakh

Saravana Stores is a retail store offering a wide range of textiles and accessories. The client requirement was for a good horizontal and vertical illumination with colour rendition to create day light like effect.

Bajaj LED Downlighters in place of conventional halogen and CFL Downlighters have been used here. Drone I, specifically designed for retail spaces is used in this project " Its deep recessed light source provides a superior glare control and the highly polished aluminium promises a good quality light distribution and high efficiency. The unique thermal management of this luminaire gives a splendid life for the light source and the driver. These Downlighters with high lumen punch and sharp angles created the right ambiance for the stores. The shift to LED lighting also resulted in significant savings in energy cost - Rs. 16 lacs savings per month.