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## ARCHITECTURE UPDATE

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### Special Feature

Energy Efficient Lighting

### Cover Story

'Building' Sustainable Future

### Interview

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# Adopting Sustainable Approach Need of the Hour



**KAJOL TAMANG**

**I**nventions and revolutions are two vital catalysts for the evolution of the human lifecycle. The world has been constantly witnessing inventions which are larger than life and revolutions which have changed and shaped human lives beyond one can fancy. The origination of every new inventions have maximum chances of turning into a commodity, considering how Thomas Edison in 1879 made the first public demonstration of his incandescent light bulb and then a year later in 1880 the commercialisation of his incandescent light bulb began.

Every innovation has its integral pros and cons. Today electric lighting burns upto 25% of the average home and energy budget. During Edison's public demonstration he had said, "We will make electricity so cheap that only the rich will burn candles." Right 130 years later our conquest is for energy efficient lighting which has enforced the industry to invest into discovering new technology which has resulted into stability.

The growth of energy efficient lighting in India is rampant as we

# Journey from Incandescent to LEDs

The rapid development of technology has significantly accelerated the growth of energy saving lightings which has led the industry towards advanced transformation, higher proceeds and effective initiatives.

now have lightbulbs such as halogen incandescents, compact fluorescent lamps (CFLs), and light emitting diodes (LEDs) which have more advantages comparing to the traditional incandescents. Therefore the government plans to phase out incandescent bulbs by 2020 by imposing gradual bans on production and sale starting with high voltage lamps, and encourage consumers to use energy efficient alternatives.

Tushar Gupta, Executive Director, NTL Lemnis India Pvt. Ltd., says,

"The growth of energy efficient lighting in India is remarkable due to its ROI, low maintenance cost and environment friendliness. Apart from this, EESL's initiatives to provide free LED lamps in the rural areas and subsidised lamps in urban areas are ensuring large-scale adoption of this technology across the country."

With a belief that the future belongs to energy efficiency considering the evolving work culture, and increasing energy cost, customers are looking at energy saving opportunities, Anuj Dhir, VP & Business Head, Commercial Lighting Business, Wipro Enterprises (P) Ltd., opines, "With higher awareness about

energy efficient products, customers are now accepting LED based lighting solutions. With use of proper LED luminaires in lighting design, one can save up to 50% energy in certain areas.

As customers are willing to invest, the initial investment is not a big challenge any more. We anticipate that future developments in technology will enable use of LED-based solutions in all lighting applications."

According to Harshavardhan Chitale, Vice Chairman and MD, Philips Lighting India, "Organisations are upgrading to energy efficient LED lighting as it offers high return on investment with significant reductions in their power bills. A significant portion of our sales in the professional segment are LED products, with big scale organisations taking a step further towards smart connected lighting. This intelligent lighting generates an additional 30% energy savings over and above the 50% savings offered by just switching to LEDs."

In India, the lighting technology market can be divided into incandescent bulbs, CFLs, TFLs and LEDs. The LED lighting market has shown the maximum growth in current years and the demand for CFLs has also increased, while the growth of incandescent bulbs has almost stagnated. Luminous efficacy is the most applicable framework for lighting technologies.

Speaking about technology used for producing energy efficient lighting, Hada, says, "ATPL provides Lutron Quantum System which is the state of the art lighting management system that aims to provide energy savings and management with real time monitoring and control of lighting in a commercial space. The system comprises hardware and software. Hardware consists of dimming modules for lighting. Motorised shades that move with the sun trajectory, occupancy sensors, daylight sensors, time clock controls. The

software consists of data that is gathered from various sensors and time clock and then provides control and monitoring to maximise energy savings."



NTL Lemnis



ATPL



Wipro Lighting

With an inception of providing energy efficient solutions to its customers, Dhir, explains how technology has been a key to their finesse. "Now, with the emergence of big data, the internet of things and connected digital lighting, it is going to bring much more intelligent functionality into our lighting systems. Hence, this trend will play an important role in making cities more livable, enjoyable and safer, at the same time making it more economically sustainable.

Wipro's Power on Ethernet (PoE) based smart and connected lighting solutions cater to personalised work spaces, granular level of occupancy detection, daylight harvesting and greater control of lighting with highly flexible scheduling," he adds.

With a commitment to develop energy efficient and innovative products that are better suited for smarter homes, offices, retail outlets, hypermarkets etc. Chitale says "We offer broad range of full featured, energy saving light products and solutions that reflect the best in energy saving technology present in the market today. We have designed a range of solar lanterns and home lighting systems that enable off-grid communities to access safe, renewable lighting after dark."

Lighting has a major role to play when smart cities project are initiated as its maximum coverage is for the exterior lighting. According to Gupta, "We Believe in adaptation therefore we keep advancing our products technically to be ahead in the market trends. With changing trends and techniques, we are also integrating the new technologies to make the product more robust, sturdy and compact. For example,

in thermal management, we are integrating the mechanicals to develop and design products that can actually withstand the worst of conditions."

Energy efficient lighting is an important segment for smart cities as they are eco-friendly, cost-effective, saves energy and also they are long running. With the proliferation of network infrastructure be it Wi-Fi or cellular data in every business, houses, and public place, all buildings and public areas are destined to become smart. Internet of Things (IoT) is taking over across all domains and lighting is not an exception. Dhir points out, "Street lighting will no longer be an isolated sphere but part of a networked urban infrastructure. With smart and connected lighting solutions, LED luminaires can be connected to a network which further can be centrally controlled using software. This 'Smartification' will enable illumination of various urban areas - precisely according to the lighting requirements each particular areas. In a smart city, street lights will fulfil many more functions than mere illumination."

While in commercial spaces energy saving lighting have become a need due to minimum resources and maximum usage. Hada, opines, "Lighting constitutes a major chunk of the energy consumption in a commercial space. Therefore energy efficient lighting is a low hanging fruits as it allows reduction in energy usages with out compromise of any aspect of ambience or convenience. Lighting controls further enhance the flexibility to change light levels depending on usage requirement thus further increasing chances of energy efficiency."

Urban populations are growing rapidly and 60 percent of the world's population are predicted to be living in cities by 2030 with more than 70 billion light points. Lighting will play a significant role in the development of smart cities of the future as it pervades every area of an individual's life – home, work, on the road and in public places. Chitale adds, "Philips lighting is helping to pave the way for massive urban growth by developing a people-centric blueprint for lighting and Internet of Things (IoT) services in the smart city of the future. Public lighting is installed everywhere: where people live, work, play and travel. Its primary function is to provide energy efficient, quality light to enhance public safety and enhance the urban landscape."

Energy saving lighting products not only uses 25-80% less energy resources than traditional incandescents, it also saves money

and last longer. Hada elaborates how ATPL deals with Lutron Lighting Controls that cater to all three major sectors where lighting is used- namely residential, hospitality and corporate/ commercial sector. "In residential, Preset lighting control systems namely homework's cater to convenience and ambience aspects

of lighting controls. In hospitality the major focus is on achieving the correct ambience with lighting controls. Hotels such as ITC who are very energy conscious also stress on reducing energy consumption through controls. Here again the preset Lighting control systems play a role. In commercial or corporate settings the main driver for automation is the ability to reduce power consumption through the usage of sensors such as occupancy sensors and day light sensors. This is all then monitored and measured through a LMS called Quantum Systems from Lutron. In the last 3-4 years this sector has experienced tremendous growth in these requirements." he added

Gupta, explains, "NTL's DNA has innovation, design and research as its mainstays. Our products have elegant and robust design which is suited to Indian power conditions. We have a range which showcases a high performance, energy efficient LED light for road lighting applications. With the option of customising the wattages to achieve the desired lux levels and specially designed optics, with highest quality lens for desired coverage, this product can be used in public areas, parking lots and highway lighting applications. It gives a high efficacy thereby consuming significantly lesser energy and offers longer life."

If technology is not accessible to the masses who need it the most it definitely does not fulfil it's core purpose. Traditional bulbs still have a higher consumption in non-urban areas in India due it's reasonable pricing and mostly because they do not have any other alternatives. Therefore, the government of India has initiated the 'Ujala Scheme' which aims to spread the message of energy efficiency across the country. UJALA scheme aims to promote efficient use

of energy at the residential level to create awareness of consumers about the efficacy of using energy efficient appliances as to reduce the high initial costs thus facilitating higher uptake of LED lights by residential users.



Wipro Lighting



NTL Lemins



ATPL



NTL Lemnis



Wipro Lighting

NTL Lemnis started the replacement of incandescent bulb to LED lamps back in 2006 and have been creating awareness about LED lighting since 2009 before the government's initiatives. "We have supplied more than 1.5 crore bulbs and were one of the major suppliers to EESL till 2015-16. During this period, more than 2/3rd of our facility was being utilised for servicing governments orders. In future, we are planning to participate in the government's rural and urban street light projects," added Gupta.

At Wipro, they have been promoting the development of a sustainable eco-friendly infrastructure which encourages energy conservation and promote optimum use of resources, mitigating the negative impact on environment and people. Dhir explains, "We have designed and provided lighting solutions and products to over 60% of the green buildings within the country. Our Force Green Initiative comprises innovation & design, usage of advanced LED technology, experience and expertise, eco-friendly manufacturing processes, Restriction of Hazardous Substances (RoHS) compliant components, energy optimisation techniques. Our philosophy of reduce, reuse and recycle makes us market leader in Green Building Solutions. At the same time, we regularly conduct symposiums and seminars to educate our customers and prospects about the importance of shifting to LED based lighting solutions and implementing lighting controls for optimum energy utilisation."

LEDs have long been proposed as a primary light source as they have high grossing demand considering the raising cost of energy. The potentials of LED as an effective light source is currently at it's epitome. One can only hope for a gradual pace towards higher energy efficient lighting in the near future. ▲



**Alok Hada, Director, Anusha Technovision Pvt. Ltd.**

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