

IllumiNation

JULY - SEP 2026

THE LIGHTING MAGAZINE BY ELCOMA

Illuminating a Legacy: Architectural Lighting of Laxminarayan Temple, Wardha, Maharashtra by Bajaj Electricals



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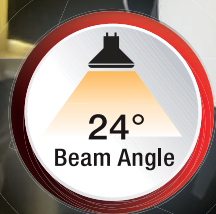


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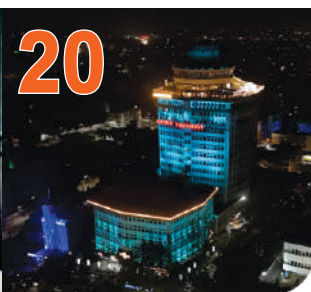


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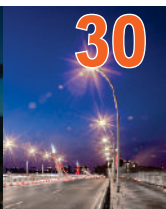
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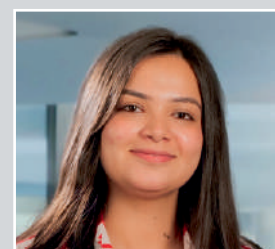
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Navigating the Storm, Lighting the Future

As we step into the second quarter of the financial year, one piece of good news stands out: the prolonged tensions in West Asia appear to be easing. The ceasefire framework taking shape between the US and Iran has pulled the crude prices down sharply from its 2026 peaks, offering some relief to the economies across the globe that have spent months absorbing higher input and logistics costs. Full normalization is still some way off — inventories are being rebuilt and Hormuz shipping is only gradually recovering — but the direction is, for once, the right one.

That relief, however, arrives alongside a different worry closer home. The IMD has flagged a below-normal southwest monsoon this year on the back of a strengthening El Niño, with the season already running in deficit through June. Rural demand, which has quietly outperformed urban consumption for eight straight quarters and underpinned much of the consumption story we have leaned on, is directly exposed here — a weak or unevenly distributed monsoon could soften that momentum through Q3 and Q4, even if India's stronger buffers of irrigation and reserves mean this is a headwind to watch rather than a crisis to fear.

It is worth pausing on why these two threads — Gulf tensions and a fickle monsoon — keep recurring in news columns, year after year. The honest answer is climate change, and it is no longer a distant or abstract risk. Europe has just lived through what meteorologists are calling its worst heatwave on record: temperatures crossing 45°C in Spain, all-time national records broken in Germany and France, over a thousand excess deaths, buckling roads and rail networks, and power grids straining under air-conditioning demand in a continent barely built for this kind of heat. Scientists are explicit that such an event, occurring this early and this intensely in June, would have been "virtually impossible" without human-caused warming. These are not isolated anomalies; they are previews. And when heatwaves scorch European harvests in the same season that a weak Indian monsoon threatens kharif output, the compounding effect on global food security is real and immediate, not theoretical.

This is precisely why the responsibility on governments and industry, including ours, cannot be limited to compliance and incremental targets. Indian corporations, and policymakers alike, need to move from stated intent to demonstrable, accelerated climate action, because the cost of delay is now visibly measured in lives, crop yields, and grid failures on two continents at once. Our industry's contribution may look modest against the scale of the problem, but it is real, deployable today, and directly aligned with where the country needs to go.

A macro backdrop that still favours us

Despite these headwinds, India's underlying growth engine remains intact. The economy sustained strong momentum through the year, exports touched a record high in FY 2025–26, and the country's trade and remittance position continues to reflect a healthy external sector. Most relevant to us, the Union Budget's FY27 allocation has pushed public capital expenditure to its highest-ever share of GDP, with sustained focus on highways, railways, metro networks, ports, and urban infrastructure. This capex push — up manifold over the past decade — translates directly into fresh lighting demand across street, area, architectural, and industrial applications, even as we navigate softer consumption-led segments.

A once-in-a-generation upgrade cycle

Against this backdrop, our industry has a compelling story to tell. The first wave of LED adoption in India, now nearly a decade old in many installations, delivered real savings over conventional lighting — but by today's standards, it was a first draft. The next generation of high-efficiency LEDs offers substantially better lumen efficacy and lumen maintenance over life, married to far superior thermal and electronic design. Paired with connected and smart controls — dimming, daylight harvesting, occupancy-based switching, centralised monitoring — these solutions let customers extract savings well beyond what first-generation LEDs ever could, while improving the quality and consistency of light itself.

This matters well beyond individual electricity bills. As India works toward a low-carbon growth path, and as its grid comes under mounting pressure from electric mobility, data centres, and rising per-capita consumption — the same grid, incidentally, that struggles

when extreme heat drives simultaneous air-conditioning surges, as Europe just discovered the hard way — efficient, intelligently managed lighting is one of the most immediately deployable levers we have. This is a story our industry should be telling more actively to specifiers, institutional buyers, and policymakers alike.

Raising the floor on quality

A significant regulatory development will reinforce this. With the Bureau of Energy Efficiency revising the Standards & Labelling programme for LED lamps, products manufactured and sold from 1st January 2027 will need to meet higher performance benchmarks — improved efficacy (improvement of over 16.6% from current levels), better lumen maintenance across the rated life, and, critically, tighter control of flicker and strobe effects, which have long been a nuisance and a common shortcoming of poor-quality, substandard products in the market. For an industry that has occasionally had to compete on price against products cutting corners on quality, this revision is a welcome levelling of the playing field, and one that should meaningfully strengthen consumer trust in LED lighting as a category.

Building the platform for what's next

On the industry-collaboration front, the recent curtain-raiser for LIGHTING WORLD AND HOME TECH — ELCOMA's new initiative with ACEXM7 — was a strong signal of intent. The inaugural exhibition, scheduled for 15–17 February 2027 under the theme "Illuminating Innovation and Connecting Smart Living," promises to be a landmark platform bringing together buyers and sellers of advanced lighting and intelligent living technologies. I would encourage our members to participate actively and help shape this into the flagship platform our industry deserves.

Taken together, the picture ahead is a mixed but navigable one: cooling geopolitical tensions offset by monsoon uncertainty, a sobering reminder from Europe's summer of just how urgent the climate conversation has become, and — set against all of it — an industry equipped with genuinely better products, a strengthening quality floor, and a government still spending at record scale on the infrastructure that will carry us forward. The opportunity is there. What we make of it is up to us.

Finally, my sincere thanks to all members who continue to contribute articles to ILLUMINATION. Your insights greatly enrich the magazine, and I look forward to your continued participation in the issues ahead.



AMAL SENGUPTA

Secretary General, ELCOMA

Resilient Growth Path for India's Lighting Industry amid Global Challenges



Dear Members and Industry Colleagues,

As we move into the second quarter of the financial year, the Indian lighting industry remains optimistic about its growth prospects despite strong global headwinds. The recent geopolitical tensions arising from the Gulf war and the resulting LPG crisis have impacted input costs and created pressure across supply chains. However, the performance of the lighting sector during the first quarter of FY 2026–27 has shown encouraging signs, supported by a stabilising economic environment and sustained domestic demand.

India's economic fundamentals continue to demonstrate resilience. The country's total exports reached an all-time high of USD 863.11 billion in FY 2025–26, compared to USD 825.26 billion in the previous year, registering a growth of 4.59 percent. This presents a healthy opportunity for industries such as lighting to further expand their manufacturing and export capabilities.

Leading global financial services firms have projected India's GDP growth for FY 2026–27 at approximately 6.7 percent despite continuing geopolitical concerns in West Asia. Economists anticipate a gradual normalisation in economic activity as supply-side pressures ease and commodity prices moderate over the coming quarters. It is encouraging to note that rural consumption has remained resilient and has outpaced urban demand for eight consecutive quarters, supported by favourable monsoons and benign inflation. This resilience in domestic demand is expected to support the growth momentum of the lighting industry.

On the international trade front, the recent Free Trade Agreements signed with developed economies have given India preferential access to markets representing nearly 70 percent of global GDP, as highlighted by the Ministry of Commerce & Trade. These agreements can become a major strength for Indian industry if we continue to improve product design, packaging, branding, and innovation with a stronger outward-looking approach aimed at global markets. The lighting industry is well positioned to benefit from these developments, particularly as a large share of our finished products are manufactured domestically.

I am also pleased to share that ELCOMA, in collaboration with ACEXM7, recently organised a grand curtain raiser event in Delhi to launch the brand LIGHTING WORLD AND HOME TECH. This initiative aims to establish a premier buyer-seller platform focused on advanced lighting solutions and intelligent living technologies. The first exhibition of its kind is being planned from February 15–17, 2027, with the theme of “Illuminating Innovation and Connecting Smart Living.” I strongly encourage all our members to actively participate in this landmark initiative, as it promises to provide an unprecedented platform for collaboration, innovation, and business opportunities across the ecosystem.

I would like to sincerely appreciate the efforts of the ELCOMA Secretariat and all our contributors for continuously enriching ILLUMINATION with valuable insights and industry perspectives. Let us continue to foster innovation, uphold regulatory integrity, and collaborate with renewed energy to take the lighting industry to even greater heights.

Thank you for your continued support and cooperation.

Warm regards,

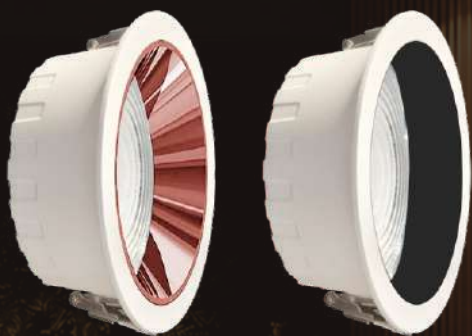
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How Sustainability and Smart Tech are Redefining India's Homes

IllumiNation interview with Mr. C Arun Kumar, Head of Consumer Business, Greater India - Signify

You've had a long and distinguished career. Looking back, what are some of the most defining lessons that have shaped your understanding of consumers, technology, and business growth?

Having had the opportunity to work with a trusted brand that has played a significant role in shaping how people experience lighting in their homes and communities, one of my biggest learnings has been that consumer expectations never stand still. As lifestyles evolve, innovation must evolve alongside them.

Today's consumers are looking beyond functionality alone. They seek solutions that enhance comfort, wellbeing, convenience, aesthetics, and the overall quality of everyday living experiences.

At Signify, we strongly believe that innovation creates meaningful impact only when it is accessible, reliable, and relevant to people's lives. This philosophy continues to shape how we approach product development and consumer engagement. Whether it relates to lighting, connected home experiences, immersive entertainment, or energy-efficient innovations, our focus remains on creating solutions that combine technology with real human needs.

Another important learning is that customer-centricity and sustainability go hand in hand with long-term growth. Consumers today are increasingly conscious about personalization, energy efficiency, and smarter living, and this continues to influence the direction of innovation across the home improvement ecosystem.

Over my nearly three-decade-long journey across both businesses, I have also learned that lasting growth is built through strong teamwork, continuous learning, and creating meaningful value for customers at every stage of the business.

The lighting industry has evolved from a focus on products and energy efficiency to experiences, connectivity, and intelligent ecosystems. What do you believe has been the most significant shift over the last decade?

The most significant shift has been the transformation of lighting from a purely functional utility into an intelligent, connected, and experienced-driven ecosystem. Consumers increasingly expect lighting to shape ambience, support wellbeing, enhance entertainment, and respond to how they live and feel at any given moment.

The rise of IoT-enabled ecosystems and smart adaptive controls has accelerated this transition significantly. Consumers are discovering that they can programme scenes for a dinner party, shift the colour temperature as the evening winds down, or sync their lighting with music all from a smartphone. Platforms like Philips WiZ have become popular precisely because they make this level of personalisation accessible to everyday users, not just early adopters. Sustainability continues to remain a strong driver of innovation, with consumers increasingly seeking energy-efficient and environmentally friendly solutions.

Signify has been at the forefront of several industry transitions. From conventional lighting to LEDs, connected lighting, and smart home solutions. As consumer expectations continue to evolve, how is the company positioning itself for the next phase of growth and innovation in India?

At Signify, innovation is at the heart of everything we do. The next chapter in the lighting industry, as I see it, is about building intelligent ecosystems rather than selling individual products. The home is becoming a connected, responsive environment, and lighting is one of the most visible and emotionally resonant entry points into that world.

It is interesting to observe how consumers are engaging with this transition. There is growing curiosity about immersive lighting experiences, innovations like Philips LightTheatre, for instance, have attracted considerable interest from homeowners who want their entertainment spaces to feel more cinematic and personalized. Similarly, smart lighting platform Philips WIZ is seeing adoption not just among tech enthusiasts but among a much broader base of consumers who are discovering the convenience of voice control and automated routines.

We are also strengthening our experiential retail footprint through Philips Smart Light Hubs and exclusive WiZ stores across India. These immersive experience centers allow homeowners, architects, and interior designers to explore the transformative potential of smart and decorative lighting firsthand.

On the manufacturing and innovation front, our focus on local manufacturing, R&D, and consumer-centric innovation enables us to continue delivering globally advanced solutions that are tailored for Indian consumers and evolving lifestyles. Today, 98% of our products are designed in India, reinforcing our commitment to developing solutions that are relevant to local needs while leveraging global innovation capabilities.

Indian consumers today are investing more consciously in their homes than ever before. What are some of the key shifts in consumer behaviour that you believe are shaping the future of the home and lifestyle segment?

Consumers today are increasingly looking for solutions that combine functionality, aesthetics, personalization, and sustainability. Homes are becoming more expressive, experiential, and technology-driven spaces, influencing how consumers approach home improvement decisions across categories,

including lighting, fans, and connected home solutions.

We are seeing strong demand for products that enhance comfort, convenience, and wellbeing while complementing modern lifestyles and interior preferences. Consumers are also becoming more conscious about energy efficiency and are actively seeking solutions that deliver superior performance with smarter energy use.

Another important shift is the growing preference for immersive and customizable experiences. Consumers want greater control over ambience, comfort, and personalization, whether through connected technologies, adaptive controls, innovative fan technologies, or design-led products that seamlessly integrate into modern homes.

Homes today are increasingly becoming an expression of personal identity, lifestyle, and aspirations. How is this shift influencing consumer preferences and purchase decisions?

Consumers today want products that align with their lifestyle, aesthetic preferences, and everyday experiences. The functional and the aspirational have converged. A product is no longer evaluated simply on what it does, but on how it makes a space feel, and by extension, how it makes the person living in that space feel. This is a meaningful shift for the lighting and home solutions industry.

Design is being taken far more seriously. Consumers are looking for products that integrate seamlessly into a considered interior, that complement the overall aesthetic rather than just performing a task. At the same time, technology must be intuitive — complexity is a barrier to adoption, regardless of how sophisticated the underlying capability.

What is perhaps most interesting is the growing appetite for customization. Consumers want the ability to tailor their

environment, to create a relaxed ambience for one moment and an energizing one for the next. The popularity of tunable white and colour-changing lighting reflects exactly this desire for a home that adapts to life rather than remaining static.

Tier II and Tier III markets are emerging as important growth centers for brands. How are consumer aspirations, technology adoption, and purchasing preferences evolving across these markets?

One of the most encouraging trends I have observed is the growing convergence in aspirations across metropolitan and emerging urban markets. Consumers in Tier II and Tier III cities are increasingly design-conscious, digitally connected, and well-informed about the choices available to them, supported by greater smartphone penetration and rising digital literacy.

Consumers across these emerging urban markets are embracing connected lighting, decorative products, and energy-efficient solutions with genuine enthusiasm. Through our growing network of Philips Smart Light Hubs and connected retail experiences across India, we are enabling more consumers to experience the latest lighting innovations firsthand.

Our focus remains on making innovative and energy-efficient lighting solutions more accessible while delivering products that align with evolving consumer preferences around design, comfort, and sustainability.

As connected lifestyles become more mainstream, consumers across emerging markets are increasingly embracing smart lighting solutions that offer convenience, energy efficiency, remote control, scheduling capabilities, and enhanced functionality.

Gen Z consumers are entering their

prime earnings and spending years. How do you see this generation influencing the future of home improvement, technology adoption, and smart living?

Today's Gen Z consumers are digital-first, experience-driven, and highly conscious about how technology integrates into their daily lives. They expect connected solutions to be intuitive, personalized, and seamlessly embedded into their living spaces.

This generation places a strong emphasis on self-expression and seeks products that combine technology, design, convenience, and sustainability. They are increasingly drawn to solutions that enable greater personalization, whether through connected home ecosystems, customizable experiences, or design-led products that reflect their individual lifestyles.

Gen Z consumers are also highly aware of energy efficiency and environmental impact, accelerating the adoption of smart and sustainable technologies across categories such as lighting, fans, and home automation.

As this generation's purchasing power grows, their preference for seamless digital experiences, intelligent controls, and products that enhance comfort and wellbeing will play a significant role in shaping the future of smart living.

Sustainability is becoming an increasingly important consideration for consumers. How do you see the relationship between sustainability, innovation, and consumer choice evolving in the coming years?

Sustainability and innovation are becoming increasingly interconnected, and consumers today are actively seeking solutions that are energy-efficient, long-lasting, and environmentally responsible.

At Signify, sustainability is a core pillar of

our product strategy and an integral part of our design philosophy. Our focus is on creating innovations that deliver exceptional performance while significantly reducing energy consumption and environmental impact.

Products like our UltraEfficient LEDs and Philips UltraShine range reflect this approach by delivering superior illumination with smarter energy use. Connected lighting and intelligent controls are also enabling consumers to monitor and optimize energy consumption more effectively.

As consumer awareness continues to grow, sustainability will increasingly shape purchase decisions, product innovation, and the future direction of the lighting industry.

AI, automation, and connected technologies are rapidly reshaping the smart home ecosystem. Do you believe India is approaching an inflection point in smart lighting adoption, and what factors will determine its growth over the next five years?

India is moving steadily toward a new era of connected and intelligent lighting. The growing adoption of IoT-enabled devices, smart home ecosystems, voice assistants, and app-controlled technologies is creating strong momentum for smart lighting solutions.

Consumers today are increasingly seeking convenience, automation, personalization, and immersive experiences, and connected lighting is becoming an important part of that evolution. Platforms like Philips WiZ already enable users to personalize scenes, automate routines, and seamlessly manage lighting experiences through apps and voice assistants.

The integration of AI, voice assistants, and intelligent scheduling capabilities is further accelerating adoption by making smart lighting more intuitive,

personalized, and responsive to consumer preferences.

Over the next few years, factors such as increasing digital adoption, rising consumer awareness, greater accessibility of smart technologies, and the growing focus on sustainability and energy efficiency will continue to accelerate smart lighting adoption across India.

Looking ahead, what excites you most about India's consumption story over the next decade, and where do you see the biggest opportunities for businesses serving the modern consumer?

What is most exciting is the rapid evolution of consumer aspirations and the growing appetite for innovation, connected experiences, and smarter living solutions across India.

Consumers today are increasingly looking for products that combine technology, personalization, sustainability, aesthetics, and

convenience. This is creating strong opportunities for businesses that can deliver meaningful innovation and immersive experiences that enhance everyday living.

We believe the future will be shaped by intelligent lighting ecosystems, connected homes, energy-efficient innovations, and highly personalized experiences that seamlessly integrate technology with lifestyle. At Signify, we remain committed to driving this transformation through innovation, customer-centricity, sustainability, and connected living solutions that unlock the extraordinary potential of light for brighter lives and a better world.

We also see significant opportunities emerging from India's manufacturing and innovation ecosystem, which has the potential to position the country as a global hub for innovative and sustainable lighting solutions.

IN A LIGHTER VEIN

How do you pass your free time?

In my free time, I enjoy catching up on current affairs, cooking, and spending quality time with my family and friends. Nothing beats a good binge-watch for me.

What are your hobbies?

My hobbies include cooking and maintaining a regular fitness routine. I believe that it's important to keep the body and mind healthy.

What is your favourite movie?

As for my favourite movie, I am a big fan of Rajnikant movies. His charismatic screen presence and unique style are always enjoyable to watch.

What is your favourite food?

When it comes to food, nothing beats curd rice for me. It's a simple yet comforting dish that I can never get enough of.

What is your favourite Holiday Destination?

For holidays, I love visiting scenic places in Karnataka as it's closer to home. Additionally, I recently visited Da Nong, it is a fabulous place known for its beautiful beaches & modern infrastructure.

INTERVIEWED BY ILLUMINATION
EDITORIAL TEAM

Developments, Smart Solutions & Power electronics in the Lighting

IllumiNation chats with Mr. Shashank Chawan, General Manager- India Region, Inventronics SSL India Pvt Ltd.

How do you define long-term success in the lighting and power electronics industry?

For me, long-term success means staying relevant through innovation, earning customer trust through quality and reliability, and creating value for customers while adapting to evolving technologies and market needs. In a rapidly evolving industry, companies that continuously adapt while maintaining strong relationships and operational excellence are the ones that achieve lasting success.

On the basis of your 35+ years of experience in the Power Electronics, including 17 Years in lighting Industry, what guiding principles shape your approach to critical business decisions?

My approach to critical business decisions is guided by four key principles: customer-centricity, innovation, integrity, and long-term sustainability. I believe in balancing data-driven analysis with industry experience, while ensuring that every decision creates value for customers, employees, and business partners. Building trust and staying adaptable in a changing market have been the cornerstones of my leadership journey.

How do you foster talent development and motivate cross-functional teams?

I believe talent development is driven by continuous learning, empowerment, and providing opportunities for growth. To motivate cross-functional teams, I focus on creating a shared purpose, encouraging open communication, and recognizing contributions. When people feel valued, trusted, and aligned with common goals, they are more engaged, collaborative, and capable of delivering outstanding results.

Which global markets or segments do you see as most promising for LED and smart lighting solutions?

Global economies are all striving for growth & due to heavy infrastructure investments all across the globe provides opportunities for businesses.

What strategies have proven most effective in building strong channel partner relationships?

The key to building strong channel partner relationships is trust, transparency, and a vision for growth. Consistent engagement through training programs, technical support, conference, and marketing initiatives helps strengthen partnerships and creates long-term value. Equally important is ensuring reliability in product quality, service, and supply chain performance, as these factors directly impact a partner's ability to serve customers effectively.

When partners feel valued and supported, they become strong advocates for the brand, driving mutual success and long-term growth.

Persistently high oil prices are straining India's economy by raising import bills, inflation, and currency pressures, but resilient domestic demand and policy support may cushion growth. For the lighting industry, higher input and logistics costs pose challenges, yet energy-efficient LED and smart lighting solutions are likely to benefit as households and businesses seek ways to cut electricity expenses. How do you see smart lighting technologies evolving in the coming period?

Rising energy costs are expected to accelerate the adoption of smart lighting solutions, as customers increasingly seek ways to improve energy efficiency and reduce operating expenses. Going forward, lighting systems will become more intelligent and connected through sensors, wireless controls, and data analytics. Smart lighting will evolve from

a standalone product to a key component of smart buildings and smart cities, delivering not only energy savings but also enhanced comfort, operational efficiency, and sustainability.

What role does product design, packaging, and branding play in capturing domestics and international demand?

Robust & reliable design, All terrain packaging and Brand Value plays important role in success as repeat orders & customers return to you for these 3 aspects.

How can innovation in lighting contribute to India's sustainability and net zero goals?

Lighting innovation is a powerful enabler of India's sustainability and net-zero goals. Advanced LED technologies, smart controls, sensors, and connected lighting systems can significantly reduce energy consumption and carbon emissions. Furthermore, innovations in driver technology, lighting controls, and integrated management systems can help cities, industries, and commercial buildings optimize energy consumption and reduce their environmental footprint. Smart street lighting, for example, can significantly lower energy usage while improving urban infrastructure and public safety. As India moves toward its net-zero goals, the lighting industry will continue to be a key enabler by delivering intelligent, energy-efficient, and sustainable solutions.

One of the areas that holds tremendous potential is the integration of Artificial Intelligence (AI) in lighting. What are your thoughts on this and how it can reshape the lighting industry?

Artificial Intelligence (AI) has the potential to fundamentally transform the lighting industry by making lighting

systems more intelligent, adaptive, and responsive to user needs. Traditionally, lighting has been focused on illumination and energy efficiency. With AI, lighting can evolve into a dynamic system that continuously learns, analyzes data, and optimizes performance in real time.

In your opinion, how do revised and upgraded standards and compliance requirements enhance the sales in local markets and export worthiness?

Sustainability, Energy saving & safety are driving forces behind standards upgradation & tighter compliances help achieve them. Also, this pushes thinking & developing products to meet standards and offer global world class products.

How do you ensure customer satisfaction while scaling operations?

Ensuring customer satisfaction while scaling operations requires a strong focus on quality, process excellence, and customer engagement. Robust systems, efficient supply chains, skilled teams, and continuous feedback mechanisms help maintain consistency as the business grows. The key is to scale responsibly while continuing to deliver the reliability,

service, and value that customers expect.

How can India leverage FTAs and programs like Make-in-India to strengthen its role in global lighting markets?

India is uniquely positioned to become a global hub for lighting and power electronics manufacturing. Initiatives such as Make in India, coupled with strategic Free Trade Agreements (FTAs), can significantly enhance the country's competitiveness by attracting investments, strengthening local manufacturing capabilities, and improving access to international markets.

To fully capitalize on these opportunities, collaboration between industry and government will be essential. Continued focus on innovation, quality standards, R&D, sustainability, and ease of doing business will help Indian companies move up the value chain and establish themselves as trusted global suppliers.

With its strong engineering talent, growing manufacturing base, and expanding domestic market, India has the potential not only to serve local demand but also to emerge as a key contributor to the global lighting industry's future growth.

IN A LIGHTER VEIN

How do you pass your free time in weekends?

Weekends - visit friends, self-improvement books & keeping house clean.

What are your hobbies?

TV & Books

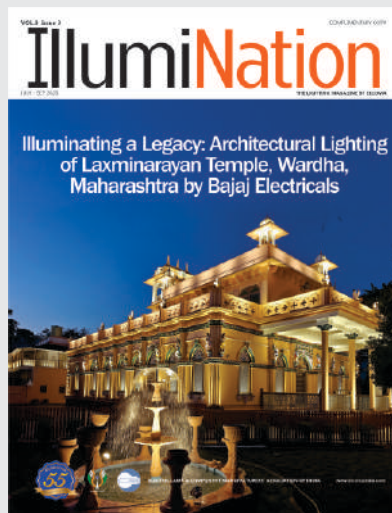
What is your favourite movie?

Indian Food

What is your favourite Holiday Destination?

Japan, Europe

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Where Heritage Meets Modern Engineering





Where Heritage Meets Modern Engineering

Some projects go beyond engineering—they become a tribute to history, values, and shared cultural legacy. The recently completed façade lighting of the historic Laxminarayan Temple is one such initiative—enhancing architectural beauty while honouring a defining chapter in India's social and cultural evolution.

Standing at the heart of Wardha, the iconic temple reflects the values that have shaped the Bajaj family and continue to inspire the Bajaj Group. Through a thoughtfully designed architectural lighting system, its legacy now shines brighter—offering a compelling visual expression of faith, inclusivity, and responsible nation-building.

Lighting with Sensitivity and Purpose

This project extended far beyond aesthetics. The mandate was to enhance architectural brilliance while preserving the temple's spiritual essence and historical authenticity.

The result is a carefully curated façade lighting solution that balances technology with reverence.

Warm 3000K lighting has been used to highlight intricate architectural detailing while maintaining a calm and sacred ambience. Each lighting element is

thoughtfully positioned to accentuate form, texture, and craftsmanship—without overpowering the structure.

An intelligent dimming control system adds flexibility, visual comfort, and energy efficiency—allowing illumination to adapt seamlessly to different occasions.

The transformation is subtle yet powerful. Details once visible only in daylight now emerge gracefully after sunset, enriching the overall visual and devotional experience.

Enhancing the Temple's Visual Identity

A defining achievement of this project lies in its ability to elevate architectural grandeur while preserving spiritual authenticity.

As dusk sets in, the illuminated temple emerges as a glowing symbol of faith, equality, service, and progress. Beyond enhancing visibility, the lighting strengthens the emotional connect between devotees and the legacy the temple represents.

The result is a compelling visual narrative—bringing heritage alive in a contemporary context while preserving its timeless character.

Engineering Excellence in Service of Heritage

This initiative highlights how modern engineering can meaningfully contribute to heritage conservation. By integrating advanced lighting technology with thoughtful design, the project demonstrates how infrastructure can respectfully enhance historic landmarks.

Executed within a challenging one-month timeline, the project reflects the dedication, coordination, and expertise of multiple teams across Bajaj Electricals.

From design and engineering to procurement, execution, and supply chain—every stakeholder played a critical role. This collective effort embodies the spirit of ownership, collaboration, and excellence that defines Bajaj Electricals.

Continuing a Legacy of Responsible Nation-Building

At its core, the story of the Laxminarayan Temple is a story of enduring values—faith without exclusion, progress without compromise, and development grounded in responsibility.

These principles have guided the Bajaj family for generations and continue to shape the Group's vision.

By illuminating this landmark, Bajaj Electricals has gone beyond execution—it has contributed to preserving and celebrating a legacy that remains deeply relevant today.

As the temple glows each evening, it stands as a powerful reminder: heritage and innovation need not stand apart. Together, they can inspire communities, honour the past, and light the way toward a more inclusive and responsible future.

Heritage Illuminated. Values Preserved. Legacy Continued.

AUTHOR: BAJAJ ELECTRICALS LTD

Views expressed in this article are those of the contributors and do not necessarily reflect those of the editors or publishers

HPL Illuminates Patna's Iconic Bismaun Building with RGB Façade Lighting

Innovation meets illumination at the iconic Bismaun Building, one of Patna's most celebrated landmarks. Reinforcing its expertise in architectural lighting, HPL has transformed the building's façade with its state-of-the-art RGB Façade Lighting solutions, creating a vibrant visual identity that enhances the city's skyline after dark.

Engineered for superior performance and reliability, HPL's advanced RGB façade lights envelop the landmark in a spectacular display of dynamic colours, highlighting its architectural elegance while adding a modern aesthetic appeal. The programmable lighting system enables captivating colour-changing effects that can be customized for national events, festivals, commemorative occasions, and special celebrations, making the building a striking focal point throughout the year.

Designed with energy efficiency and long-term durability in mind, the lighting solution delivers high-performance illumination with minimal power consumption, ensuring sustainable operation without compromising on



visual impact. The precision-engineered luminaires provide uniform light distribution and vivid colour rendering, bringing the building's architectural features to life with exceptional clarity and brilliance.

This prestigious façade lighting project reflects HPL's commitment to delivering innovative, energy-efficient architectural lighting solutions that seamlessly combine technology, design, and performance. By transforming one of Patna's most recognizable landmarks into a dynamic canvas of light, HPL continues to redefine urban landscapes and set new benchmarks in façade illumination.

This project stands as another testament to HPL's capability in executing landmark architectural lighting installations that elevate public spaces while celebrating the spirit and identity of the city.

AUTHOR: HPL ELECTRIC & POWER LTD

Views expressed in this article are those of the contributors and do not necessarily reflect those of the editors or publishers





Lighting the Future with Innovation and Efficiency

HPL is one of India's leading LED lighting manufacturers, recognized for its extensive portfolio of innovative and energy-efficient lighting solutions.

With a strong commitment to quality, reliability, and compliance with industry standards, HPL offers a comprehensive range of products, including LED lights, COB lights, panel lights, downlights, spotlights, street lights, floodlights, and decorative lighting solutions.



CREST
LED TRACK LIGHT



TWIN GLOW PRO
DUAL COLOUR DOWNLIGHT



EDGE LUME
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LEDVANCE Façade Lighting Lights Up Hazarduari Palace and Nizamat Imambara



LEDVANCE proudly contributed to the façade lighting of two of Murshidabad's most iconic heritage landmarks—**Hazarduari Palace** and the **Nizamat Imambara** —

bringing together advanced lighting technology and heritage conservation to transform these historic monuments into captivating nighttime landmarks.

Located on the banks of the Bhagirathi

River in West Bengal, Hazarduari Palace is a remarkable 19th-century architectural masterpiece renowned for its Neoclassical design and its famous "Palace of a Thousand Doors." Standing opposite the palace, the Nizamat





Imambara, the largest Imambara in India, represents another significant symbol of Murshidabad's rich Nawabi heritage. Together, these monuments form one of India's most treasured historical precincts.

Executed under the guidance of the Archaeological Survey of India (ASI) with the support of Indian Oil Corporation Limited (IOCL), the lighting design was developed by the Lucent Worldwide design team, while **LEDVANCE supplied the complete façade lighting solution** for the project.

The lighting scheme was designed with conservation at its core. Warm white colour temperatures (2200K–3000K) were carefully selected to enhance the monuments' architectural character while preserving their historic ambience.

Precision optics and controlled grazing illumination highlight the intricate columns, arches, and façade details without creating excessive glare or light pollution.

To maintain the monuments' visual integrity during the day, LEDVANCE luminaires were supplied with custom RAL-finished housings that seamlessly blend with the architecture. Installation followed strict ASI conservation guidelines using non-invasive mounting techniques, ensuring no damage to the heritage structures, while all electrical conduits and cabling were carefully concealed from public view.

The project demanded meticulous planning and compliance with the Ancient Monuments and Archaeological Sites and

Remains (AMASR) Act, demonstrating how modern lighting can successfully coexist with heritage preservation. Today, the illuminated Hazarduari Palace and Nizamat Imambara stand as vibrant nighttime landmarks, extending visitor engagement, enhancing tourism, and celebrating India's rich architectural legacy.

This prestigious project reflects LEDVANCE's commitment to delivering sustainable, high-performance lighting solutions that preserve the authenticity of heritage monuments while creating memorable visual experiences for generations to come.

AUTHOR: LEDVANCE PRIVATE LIMITED

Views expressed in this article are those of the contributors and do not necessarily reflect those of the editors or publishers



ELCOMA and ACEXM7 Launched 'Lighting World & Home Tech Expo 2027'



The Electric Lamp and Component Manufacturers Association of India (ELCOMA), in strategic association with ACEXM7, has announced the launch of the inaugural **Lighting World & Home Tech Expo**, scheduled for **15–17 February 2027** at Hall no. 14, Bharat Mandapam, New Delhi.

Positioned as a high-impact **B2B + B2C exhibition and knowledge platform**, the Expo will bring together the complete lighting and home-technology value chain—from lamps, luminaires and components to smart controls, automation, AV integration and energy-management systems. The platform aims to accelerate innovation, adoption of standards-compliant solutions and quality-led growth across India's rapidly evolving lighting and connected-living market.

"Lighting World & Home Tech Expo is a timely, future-focused initiative that creates a dedicated stage for advanced lighting and connected-living solutions. It will enable manufacturers, brands and innovators to engage meaningfully with specifiers and buyers, showcase differentiated technologies and build scalable partnerships," said **Mr. Parag Bhatnagar, President, ELCOMA**.



India's lighting sector continues to demonstrate steady growth. As per industry estimates compiled by ELCOMA, the Indian lighting market, valued at around **USD 3.83 billion in 2025**, is projected to reach **USD 5.12 billion by 2031**, supported by rising demand for energy efficiency, digital controls and compliance-driven products.

The convergence of lighting and home technology is further reshaping the market. Smart lighting, IoT-enabled systems and integrated building solutions are emerging as fast-growing categories,

aligned with the expansion of smart homes, intelligent infrastructure and sustainability-driven design.

“Connected fixtures, intelligent drivers and interoperable control ecosystems are becoming central to delivering measurable gains in energy efficiency, comfort, safety and lifecycle value,” said **Mr. Amal Sengupta, Secretary General, ELCOMA.**

Designed as a curated annual exposition, **Lighting World & Home Tech Expo** will connect manufacturers and brands with architects, lighting designers, interior designers, developers, MEP consultants, system integrators, EPCs, facility managers and discerning B2C buyers. The Expo will feature curated exhibition zones, technical conferences, panel discussions and buyer-seller interactions, with focus themes including smart controls, connected ecosystems, human-centric lighting, compliance and intelligent building integration.

A curtain-raiser event was held on **12 May 2026** at **India Habitat Centre, New Delhi**, featuring the signing of an MoU between ELCOMA and Ace Exhibitions, followed by a panel discussion on **“The Future of Smart Lighting & Home Tech in India.”**



Media coverages:

अगले साल से शुरू होगा 'लाइटिंग वर्ल्ड एंड होम टेक एक्सपो'

नई दिल्ली, 13 मई (एजेंसियाँ)। आधुनिक लाइटिंग समाधान और नयी पीढ़ी को होम टेक्नोलॉजी को समर्पित देश की पहली प्रदर्शनी 'लाइटिंग वर्ल्ड एंड होम टेक एक्सपो' की शुरुआत अगले साल से होगी।

लैंप, लाइटिंग उपकरण और कंपोनेंट बनाने वाली भारतीय कंपनियों के संगठन एल्कोमा और लाइफस्टाइल, तकनीक और होम सॉल्यूशन से जुड़े विविध व्यापार मेलों और उपभोक्ता प्रदर्शनियों के आयोजक एस एक्जिबिशन मिलकर इस प्रदर्शनी का आयोजन करेंगे। दोनों संस्थाओं ने यहां इंडिया हैबिटेड सेंटर में बुधवार को आयोजित एक कार्यक्रम में इसके लिए एक सहमति पत्र (एमओयू) पर हस्ताक्षर किए।

इस प्रदर्शनी का पहला आयोजन 14 से 16 जनवरी 2027 तक भारत मंडपम् में होगा। यह बिजनेस टू बिजनेस (बी2बी) और बिजनेस टू कस्टमर (बी2सी) दोनों के लिए एक बड़ा मंच होगा, जहां लाइटिंग और स्मार्ट होम टेक्नोलॉजी से जुड़े सभी उत्पाद प्रदर्शित किए जाएंगे। इसमें लैंप, लाइटिंग उपकरण, कंपोनेंट्स, ऑटोमेशन सिस्टम, एल्वो इंटीग्रेशन, कर्जा प्रबंधन और स्मार्ट होम समाधान शामिल होंगे।

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8 **विविधा** **14 मई, 2026** **गुरुवार** **पंजाब केसरी** **DELHI**

लाइटिंग वर्ल्ड एंड होम टेक एक्सपो अगले साल होगा

नई दिल्ली, (पंजाब केसरी): एल्कोमा और एस एक्जिबिशन ने मिलकर 'लाइटिंग वर्ल्ड एंड होम टेक एक्सपो' शुरू करने की घोषणा की है। यह भारत का पहला ऐसा मंच होगा, जो आधुनिक लाइटिंग समाधान और नई पीढ़ी को होम टेक्नोलॉजी को समर्पित होगा। एक्सपो का पहला आयोजन 14 से 16 जनवरी 2027 तक भारत मंडपम् में होगा। यह बी2बी और बी2सी दोनों के लिए एक बड़ा मंच होगा, जहां लाइटिंग और स्मार्ट होम टेक्नोलॉजी से जुड़ी पूरी श्रृंखला प्रदर्शित की जाएगी। इसमें लैंप, लाइटिंग उपकरण, कंपोनेंट्स, ऑटोमेशन सिस्टम, एल्वो इंटीग्रेशन, कर्जा प्रबंधन और स्मार्ट होम समाधान शामिल होंगे।

यह पहल ऐसे समय में शुरू हो रही है, जब भारत में लाइटिंग और स्मार्ट होम सेक्टर तेजी से बढ़ रहे हैं। वर्ष 2025 में लगभग 3.83 अरब अमेरिकी डॉलर का भारतीय लाइटिंग बाजार 2031 तक 5.12 अरब डॉलर तक पहुंचने की संभावना है। वहीं स्मार्ट लाइटिंग बाजार 2025 के करीब 1.2 अरब डॉलर से बढ़कर 2034 तक 11.5 अरब डॉलर से अधिक हो सकता है। इसका मुख्य कारण आईओटी आधारित सिस्टम, मानव-केंद्रित लाइटिंग और वॉयस कंट्रोल तकनीक का बहुत उपयोग है। इसी तरह भारत का स्मार्ट होम बाजार 2025 के 5.2 अरब डॉलर से बढ़कर 2031 तक 24.1 अरब डॉलर तक पहुंचने का अनुमान है।

स्मार्ट लाइटिंग और होम टेक्नोलॉजी के भविष्य को नई दिशा, भारत मंडपम् में लगेगा एक्सपो

लोकप्रिय न्यूज़ और बिजनेस

नई दिल्ली: एल्कोमा और एस एक्जिबिशन ने मिलकर 'लाइटिंग वर्ल्ड एंड होम टेक एक्सपो' शुरू करने की घोषणा की है। यह भारत का पहला ऐसा मंच होगा, जो आधुनिक लाइटिंग समाधान और नई पीढ़ी को होम टेक्नोलॉजी को समर्पित होगा। एक्सपो का पहला आयोजन 14 से 16 जनवरी 2027 तक भारत मंडपम् में होगा। यह बी2बी और बी2सी दोनों के लिए एक बड़ा मंच होगा, जहां लाइटिंग और स्मार्ट होम टेक्नोलॉजी से जुड़ी पूरी श्रृंखला प्रदर्शित की जाएगी। इसमें लैंप, लाइटिंग उपकरण, कंपोनेंट्स, ऑटोमेशन सिस्टम, एल्वो इंटीग्रेशन, कर्जा प्रबंधन और स्मार्ट होम समाधान शामिल होंगे।

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How Surya's Customized Lighting Solutions are Powering NCRTC's Modern Transit Infrastructure

Surya Roshni Limited, one of India's most trusted names in lighting, wires & cables, fans, home appliances, PVC pipes, water pumps, water tanks & steel pipes, has strengthened its position as a leading provider of lighting solutions for large-scale infrastructure projects through its contribution to the National Capital Region Transport Corporation's (NCRTC) Rapid Rail Transit System (RRTS).

As India accelerates investments in

modern public transportation networks, the need for reliable, energy-efficient and aesthetically integrated infrastructure solutions has become increasingly important. The NCRTC's Rapid Rail Transit System, one of the country's most ambitious urban mobility projects, represents a significant step towards transforming regional connectivity across the National Capital Region. Supporting this vision, Surya partnered with NCRTC to deliver customized indoor lighting solutions across 18 elevated RRTS stations, reinforcing its expertise in

addressing the unique requirements of large public infrastructure developments.

The project involved the design, development and deployment of specialized lighting systems for key station areas, including platforms, concourses, Foot Over Bridges (FOBs) and Back-of-House (BOH) spaces. Unlike conventional off-the-shelf products, the lighting solutions supplied for the RRTS corridor were specifically engineered to align with NCRTC's design, performance and operational

requirements. This approach enabled the creation of a cohesive lighting environment that enhances passenger experience while ensuring long-term efficiency and reliability.

A major highlight of the project was the introduction of two customized lighting solutions developed exclusively for NCRTC. The first, known as the BOOM Light, was installed across platform and concourse areas. Designed as a compact yet highly efficient luminaire, the BOOM Light delivers superior illumination while optimizing energy consumption. Its high luminous efficacy ensures enhanced visibility, improved passenger comfort and operational

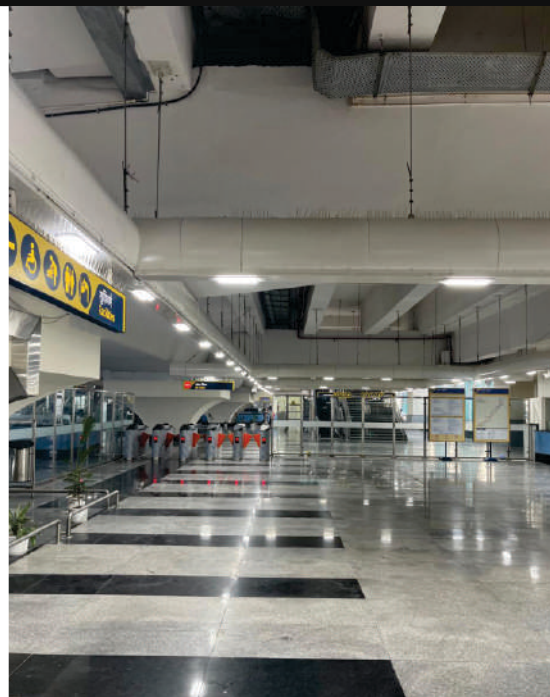


efficiency, making it particularly suitable for high-footfall transit environments where performance and energy savings are equally critical.

The second customized solution was the Oculus High Bay Light, popularly referred to as the “Donut” light due to its distinctive circular design. Installed primarily across Foot Over Bridges and other designated indoor areas, the Oculus luminaire was specially developed to complement the architectural aesthetics of the stations. The 50W fixture was manufactured in a customized RAL shade to seamlessly integrate with the station interiors, combining visual appeal with high-performance illumination. The result is a modern and visually cohesive transit environment that reflects the contemporary design philosophy of the RRTS network.

Beyond aesthetics, the lighting systems deployed for the project incorporate advanced technologies aimed at delivering superior performance in demanding public infrastructure settings. The solutions offer higher luminous output with lower power consumption, enabling greater energy efficiency without compromising illumination quality. Their compact design allows for seamless integration within station architecture while maintaining high performance standards.

The successful implementation of customized lighting solutions across 18 elevated stations highlights Surya's ability to combine innovation, engineering excellence and customer-centric design. The project demonstrates



how lighting can play a vital role in enhancing safety, functionality and passenger experience while supporting broader sustainability objectives through energy-efficient technologies.

With over 50 years of industry leadership and an annual turnover exceeding ₹7,500 crore, Surya has consistently evolved to meet the changing needs of both consumers and infrastructure projects. The company's extensive manufacturing capabilities, strong focus on research and development, and commitment to quality have enabled it to deliver lighting solutions for a diverse range of applications, including residential, commercial, industrial and infrastructure sectors.

Today, Surya's lighting solutions are trusted across some of India's most significant infrastructure developments, reflecting the company's ability to provide customized, technology-driven products that meet stringent performance standards. Its contribution to the NCRTC Rapid Rail Transit System further strengthens this legacy and showcases its capability to support next-generation

urban mobility projects through innovative lighting solutions.

As India continues to invest in smart cities, transportation networks and sustainable infrastructure, the demand for specialized lighting solutions is expected to grow significantly. With its proven expertise, strong manufacturing backbone and presence in over 50 countries, Surya remains well positioned to partner with leading infrastructure developers and contribute to projects that shape the future of urban living.

The NCRTC project stands as another example of Surya's commitment to delivering high-quality, customized lighting solutions that combine energy efficiency, durability and design excellence. By partnering with NCRTC on one of India's most advanced transit systems, Surya has once again demonstrated its ability to illuminate infrastructure that powers progress and improves the everyday experiences of millions of commuters.

AUTHOR: SURYA ROSHNI LTD

Views expressed in this article are those of the contributors and do not necessarily reflect those of the editors or publishers

Tuticorin Airport: A Chettinad Silhouette, Illuminated by Signify

At Tuticorin Airport, lighting is more than illumination—it is intelligent infrastructure that enhances safety, sustainability, passenger comfort, and architectural identity

Client: Airports Authority of India (AAI) | Contractor: KEC International Lighting Partner: Signify Innovations India Ltd.



Fig. 1 — The Passenger Terminal Building's colonnaded façade under a multi-hue dynamic lighting scene. Individually addressable RGB fixtures wash each fan-lit arch in a different hue, while a continuous parapet cove line traces the building's full elevation.

A New Gateway, Reimagined After Dark

Airports are more than transportation hubs — they are architectural landmarks that define a city's first impression. At the newly developed Tuticorin Airport, Signify Innovations India Ltd. has delivered a complete, intelligent lighting ecosystem that fuses functionality, sustainability and architectural storytelling into a single, coherent design language.

Spread across 17,340 square meters, the terminal is equipped to handle 1,350 passengers during peak hours and 20 lakh passengers annually, with future expansion capacity up to 1,800 peak hour passengers and 25 lakh passengers annually. The building is equipped with all the modern facilities and passenger amenities with multiple aerobridges along with car parking facilities and new approach road.

Inspired by the famous Chettinad houses of the region, the intuitive form of the new terminal will create a unique architectural identity in southern region and will add a

new dimension to the terminal design. Strong references to the local culture and traditional architecture will be expressed by the building's architecture.

The scope spanned the entire campus: the Passenger Terminal Building, the Air Traffic Control Tower, the Fire Station, exterior and landscape lighting, and — the project's signature achievement — a fully dynamic RGB architectural façade lighting system that gives the terminal a distinct identity after sunset.

Every element of the scheme was developed through advanced photometric simulation and engineered to comply with IS 3646 (Part 1) for interior illumination and IS 1944 (Parts 1 & 2) for exterior lighting, ensuring optimal maintained illuminance, visual comfort, safety and operational efficiency across the airport campus.

Reading the Façade: Architecture as a Lighting Canvas

The terminal's street-facing elevation is organized as a long, low colonnade — a rhythmic sequence of arched, fan-light windows framed by slender pillars

beneath a projecting cornice and an illuminated parapet band. The design draws on Chettinad architecture, the distinctive regional idiom of the Chettinad mansions of southern Tamil Nadu, known for their pillared verandas, ornamentation and generous arched openings, reinterpreted here for a contemporary transit building. That vocabulary gives the lighting designers a naturally modular canvas: each bay, each arch and each pillar become an independently controllable point of light rather than a single, flatly floodlit surface.

The concept aligns with carefully integrating architectural lighting that accentuates the terminal's geometry, creating a refined night-time identity while maintaining controlled light distribution and minimizing spill and glare toward the airfield and approach roads

The design responds to that rhythm with three distinct architectural lighting layers, each addressing a different plane of the façade:

- Parapet lining — a continuous run of Grazers tracing the roofline,

defining the building's architecture against the night sky and carrying the thematic color narrative across the full length of the terminal.

- Arch and fan-light accenting —linear fixtures wash each radiating fan-light in color from below, turning the row of arches into a repeating decorative motif reminiscent of stained glass, while the deep-set reveals create shadow depth that reinforces the arch geometry.
- Pillar and portico grazing — vertical illumination on the pillars and entrance portico by using narrow beam flood lights, picks out the fluting style and capitals of the columns, anchoring the composition at pedestrian scale and guiding arriving passengers visually toward the entrance.

Rather than a generic wash of light, a curated palette of specialized fixtures was deployed to accentuate individual structural features.

Intelligent Lighting Design

High-performance LED recessed linear luminaires, recessed downlights and LED troffers were selected throughout the interior to achieve excellent illumination uniformity while minimizing energy consumption. Precision-engineered prismatic diffusers provide superior glare control, creating a visually comfortable environment for passengers, airport personnel and operational staff — a critical requirement in a 24-hour transit environment where visual fatigue must be minimized.

The entire installation was developed in accordance with GRIHA rating for energy efficient building with sustainability features using high-efficacy LED technology and optimized Lighting Power Density (LPD) to reduce energy demand and long-term operating costs without compromising on the visual quality of light.

Smart Controls for Smarter Infrastructure

A centralized Philips Dynalite lighting management system is the intelligence behind the installation enabling

- Intelligent dimming and scene control
- Centralized monitoring and scheduling
- Daylight-responsive lighting operation that trims interior output as ambient light changes
- Enhanced operational flexibility
- Extended luminaire life through optimized dimming profiles
- Significant energy savings

The result is a future-ready lighting infrastructure that combines operational efficiency with an exceptional, ever-changing user experience.

Architectural Identity After Sunset

As daylight fades, the airport transforms into an iconic visual landmark through its programmable, dynamic façade lighting system. Comparing Fig. 1 and Fig. 2 illustrates the range built into the scheme: the same architecture can read as a multi-hued, festive composition. Philips Uni Range with DMX Control System is

backbone that makes the façade's changing scenes.

By precisely tailoring the optics to their respective architectural targets, the design succeeds in creating dramatic depth and shadow contrasts while strictly eliminating light pollution and spilling. Elevating this structural beauty is an intelligent control spine powered by a Philips DMX controller. The advanced digital management system grants complete, individual control over every luminaire, allowing the facade to serve as a dynamic canvas. This flexibility allows the airport to mark national occasions, festivals or civic events with a dynamic color identity, while defaulting to a calmer, energy-conscious palette for routine operations.

Delivering Excellence

From concept development and detailed lux calculations to installation, commissioning, system integration and final performance validation, every phase of the project was executed with engineering precision and close collaboration among architects, consultants, contractors and airport authorities.

The successful completion of this project demonstrates Signify Innovations India Ltd.'s expertise in delivering world-class airport lighting solutions that combine intelligent controls, sustainable engineering, standards compliance and architectural innovation.

AUTHOR: SIGNIFY INNOVATIONS INDIA LIMITED

Views expressed in this article are those of the contributors and do not necessarily reflect those of the editors or publishers



Fig. 2 — The same elevation reprogrammed to a monochromatic magenta scene. Demonstrating the system's full-spectrum colour-changing range, this scene shows how a single hue can unify the cove line, arch washes and column lighting into one cohesive, saturated composition — useful for festival, brand or occasion-based lighting scenes.

Lighting for Motorists

Performance, Comfort and Luminance Parameters

Road lighting is far more than a matter of energy efficiency — it is a decisive enabler of driver safety and visual well-being. In our previous edition we examined how road lighting forms an integral part of public infrastructure and how demanding it is to implement well. The distinction between an 'effective' solution and merely an 'efficient' installation is never more consequential than when we consider the luminance environment experienced by a motorist at speed. This article explores the perceptual and photometric principles that govern quality road illumination.

Visual Performance of a Motorist

The visual performance of a motorist is shaped by variety of parameters, many of which are evaluated using different performance criteria. Any object within a driver's field of view — whether static or dynamic — must become visible quickly. Crucially, that visibility shifts continuously as the vehicle moves, altering the driver's visual environment with every passing second.

Detection alone is not enough. The movement or change in appearance of a visual scene must also be registered. Once an object is spotted, the motorist must execute a chain of tasks: recognising the hazard, judging speed and distance, and initiating a response. A fleeting moment of visibility may be wholly insufficient; the object must remain detectable for long enough to allow a safe reaction. A longer effective reaction time translates directly into safer driving. These realities demand that the photometric characteristics of road lighting be rigorously investigated and specified with safety as the primary criterion.

Contrast and Object Detection

At lower light levels, colour discrimination diminishes markedly

compared to brighter conditions. Under the relatively modest illumination of a road environment, the perception of an object depends principally on the difference in luminance between the object itself and its immediate background — a quantity expressed as luminance contrast:

$$C = (L_o - L_b) / L_b$$

where L_o denotes object luminance and L_b the background luminance. The minimum contrast required to make an object just perceptible is termed the threshold contrast. This threshold is not fixed; it depends on the luminance of the surroundings — the adaptation state of the observer's eye. Importantly, as background luminance increases, the threshold contrast decreases, thereby improving the probability of object detection. This relationship underscores the value of maintaining adequate average road surface luminance.

Real-World Motorist Circumstances

Laboratory measurements of threshold contrast are, by necessity, conducted under controlled conditions. Field conditions, however, present a far more complex challenge. The potentially viewable object may not be detected in practice, and therefore the threshold contrast required in real driving scenarios must be set appreciably higher than

laboratory values suggest.

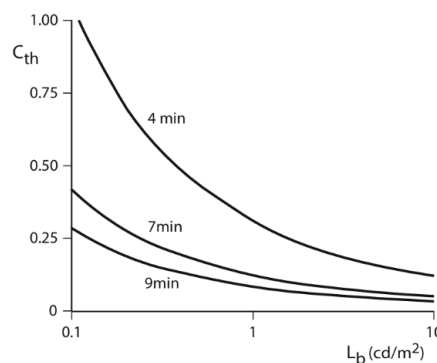
Drivers must continuously scan the road ahead for hazards, operating against a non-uniform visual scene that makes instantaneous object detection inherently difficult. Objects may appear suddenly and without warning, leaving minimal time for the driver to react and manoeuvre safely. This leads to two clear conclusions: road lighting must provide a sufficient average luminance level across the carriageway, and that luminance must be distributed as uniformly as possible. In road lighting, most objects are seen in negative contrast — the luminance of the object is lower than that of the background. Research indicates that negative contrast is more effective in rendering objects visible and therefore demands a lower threshold contrast value than positive contrast scenarios.

“Road lighting must provide not only sufficient luminance, but luminance that is uniform — the two are inseparable from driver safety.”

The Silhouette Principle

The central goal of road lighting is to make objects on the carriageway readily visible. In fixed road lighting installations, objects are predominantly perceived as silhouettes against a luminous background — the road surface itself. Experimental work has confirmed that objects with varying reflective properties, from low to high reflectance, become progressively visible as background luminance increases, with the majority appearing in negative contrast, i.e. as silhouettes.

Because the road surface forms the background against which virtually all carriageway objects are seen, providing an adequate average luminance level is essential. Equally important is the uniformity of that luminance: a uniform



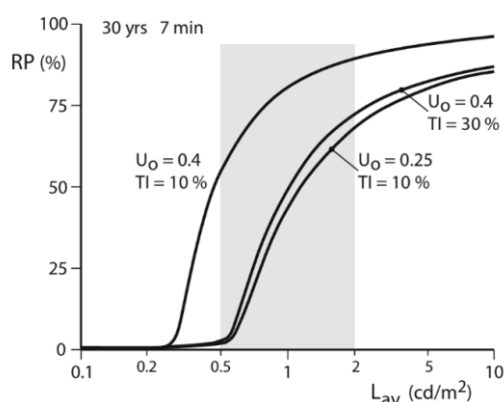
road surface provides consistent contrast conditions, allowing objects to be detected reliably across the full width and length of the road. The parameter used to quantify this uniformity is the Overall Uniformity ratio — the ratio of minimum to average luminance (L_{min} / L_{avg}). A high ratio is crucial; at lower ratio visual performance deteriorates, as it makes it harder to see objects in darker areas of the road.

Revealing Power

Three fundamental road lighting parameters — road surface luminance, luminance uniformity, and glare — together govern the visibility of objects, and hence the visual performance of road users. The concept of 'revealing power' encapsulates the combined effect of these three variables on an observer's ability to detect an object.

Experimental findings quantify these effects clearly. For a 30-year-old observer with good uniformity (Overall Uniformity, U_o) and controlled glare (Threshold Increment, TI), increasing luminance to the recommended level can improve revealing power from 50% to 70–80%. The darker object is identified more readily — a further affirmation of the silhouette principle.

With luminance held constant, reducing



U_o from 0.4 to 0.25 diminishes revealing power by approximately 50%. The impact of glare is equally significant: at luminance level of 1 cd/m², raising TI

from below 10% to 30% drops visual performance from 80% to 50%. These figures are derived from studies using a 30-year-old observer as the baseline. For older age groups, the required luminance level, uniformity, and glare control standards are all higher, reflecting the well-documented decline in visual acuity and contrast sensitivity with age.

Visibility and Road Surroundings

The challenges facing a motorist extend beyond the carriageway itself. Sudden appearances of pedestrians, animals, or debris from the verge or adjacent areas represent a significant hazard, particularly in adverse weather. The severity of these encounters increases with the age of the driver. Research consistently demonstrates that providing a measured level of light on the areas flanking the travel lanes yields a meaningful improvement in driver awareness and reaction time.

Visual Comfort for Motorists

Visual comfort is a subjective dimension of road illumination quality, but its consequences are measurable and significant. Insufficient visual comfort contributes to accelerated fatigue and a decline in both visual performance and situational awareness. Effective road safety demands attention to both comfort and performance — the two are complementary, not alternatives.

To sustain a high level of visual performance over an extended journey, the road user must feel at ease within their visual environment. If obtaining the information needed for safe driving requires sustained effort — if the scene appears harsh, straining, or disorienting — the driver will experience fatigue more rapidly. This degrades not only visual acuity but also broader cognitive awareness. Because visual comfort is a subjective experience that varies between individuals, it must be

assessed alongside objective luminance metrics, and both must be addressed in the design of quality road lighting. Research confirms that illuminance levels, road surface luminance, and glare each exert a measurable influence on visual comfort.

Lighting Parameters for Performance and Comfort

The photometric characteristics of road lighting installation are the quantifiable bridge between engineering design and driver experience. They must be clearly defined, precisely specified, and rigorously assessed during both the design and commissioning stages. The key parameters are road surface luminance, Overall Uniformity (U_o), Longitudinal Uniformity (UL), Threshold Increment (TI) for glare, and Surround Ratio (SR).

Luminance Level

Average road surface luminance is the primary quality parameter in road lighting for motorists. The human eye is most comfortable, and most capable, when adapted to an appropriate level of light. The zone extending from approximately 60 to 160 meters ahead of the driver forms the visual adaptation field — the background against which objects are perceived. It is this zone that determines the eye's state of adaptation and therefore governs the effective threshold contrast. The initial 60 meters are typically within the reach of the vehicle's headlights and are accordingly excluded from the background luminance calculation.

Uniformity

Luminance uniformity is not merely a comfort parameter; it is a safety imperative. As the luminance level in any part of the road surface falls, the threshold contrast in that zone rises, making objects in that area harder to detect. The eye adapts to the overall luminance field it perceives, and once adapted to a higher average level, areas of lower luminance become effectively 'blind spots' in terms of object detectability.



Both Overall Uniformity (U_o — the ratio of minimum to average luminance across the road surface) and Longitudinal Uniformity (U_l — the ratio of minimum to maximum luminance along the road axis within a single lane) must meet the values prescribed by applicable standards. The alternating pattern of bright and dark patches produced by poorly designed or maintained installations accelerates driver fatigue and simultaneously reduces the probability of detecting a hazard located in a darker zone. Longitudinal uniformity addresses this directly by ensuring that the light distribution within each lane is consistent in the direction of travel.

Glare

Both discomfort glare and disability glare must be controlled within prescribed limits. Disability glare reduces the contrast of objects on the road by introducing a veil of stray light across the retina, effectively raising the threshold contrast required for detection. It is quantified as the Threshold Increment (TI), which expresses the increase in contrast needed to maintain the same level

of object visibility in the presence of glare as would be achieved without it. TI is a function of the equivalent veiling luminance produced by the luminaires and the prevailing road surface luminance.

Most standards specify a maximum permissible TI value for each road lighting category. Effective control of disability glare is widely regarded as the primary indicator of glare management quality; a luminaire design that achieves good disability glare restriction will generally also maintain discomfort glare at an acceptable level.

Surround Ratio

Consider a scenario in which the carriageway is well lit with excellent luminance levels, but the area immediately beyond the kerbline is dark. A pedestrian or animal stepping onto the road from the verge provides virtually no warning to an approaching driver until the last moment — a situation that can have fatal consequences. Adequate illumination of the area flanking the road not only reduces this hazard but also

enhances visual guidance, helping drivers judge the geometry of the road ahead and anticipate curves or junctions.

The Surround Ratio (SR) addresses this requirement. It is defined as the ratio of the average horizontal illuminance within 5-metre strips on either side of the carriageway to the average horizontal illuminance of the road surface itself, calculated independently for each side.

A limitation of the traditional SR formulation is that a satisfactory average can mask a very low illuminance value on one side when offset by a high value on the other. To resolve this, European standards have introduced the Edge Illumination Ratio, which evaluates the illuminance ratio on each side independently. The reference strip width on both the road and the kerbside is taken as equal to the width of a single carriageway lane, providing a more spatially meaningful and safety-relevant assessment.

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Inventronics Introduces Ultra-Wide Voltage LED Drivers for Sports Lighting



Smart and Efficient Power Solutions for Modern Sports Venues

Sports venues today need more than just bright lighting. They require lighting systems that are energy efficient, easy to control, reliable, and capable of supporting different events and activities. To meet these needs, Inventronics offers the NFS and NFM LED Driver Families, developed specifically for sports lighting and high-mast lighting applications.

Designed for Sports and Large Outdoor Lighting

Lighting in stadiums, sports arenas, training grounds, and large outdoor facilities must perform reliably under demanding conditions. The NFS and NFM driver families are designed to deliver high efficiency, precise dimming, and advanced control features for these applications.

Both series operate over a wide input voltage range of 180–528Vac, making them suitable for installations in different regions and electrical environments around the world.

High Efficiency for Lower Energy Costs

Energy consumption is a major consideration in large lighting installations. The NFM family delivers efficiency of up to 98%, while the NFS family reaches up to 97% efficiency.

Higher efficiency helps reduce energy use, lower operating costs, and minimize heat generation inside the luminaire. The non-isolated design further improves overall system efficiency while maintaining reliable performance.

Flexible Dimming and Control

Sports lighting often requires different lighting levels for matches, training sessions, broadcasting, maintenance, and energy-saving operation.

The NFS and NFM families support:

- DALI-2 and D4i controls
- DMX/RDM protocols
- 0-10V and PWM dimming (only NFM series)
- Deep dimming down to 0.1%
- Dim-to-Off functionality with very low standby power consumption

These features allow operators to adjust lighting levels as needed while helping reduce energy consumption when full output is not required.

Ready for Connected Lighting Systems

As smart lighting becomes more common, the NFS and NFM families provide features that support connected and intelligent lighting networks.

Key features include:

- Integrated power metering for energy monitoring
- Adjustable Output Current (AOC) through NFC programming
- Compatibility with intelligent lighting control systems
- Fast control response for professional sports lighting applications

These capabilities simplify installation and commissioning while providing useful operational data for facility management.

Built for Long-Term Reliability

Outdoor lighting systems are often exposed to harsh weather conditions and electrical disturbances. The NFS and NFM families are designed to provide reliable operation over a long service life.

Key reliability features include:

- 10kV differential mode surge protection
- 10kV common mode surge protection
- Robust thermal management
- Lifetime up to 100,000 hours
- Global safety and performance certifications

These features help reduce maintenance requirements and improve system uptime.

Multiple Power Options

The NFS and NFM families are available in several power ratings to support different lighting requirements.

NFM Series - 680W / 880W / 1200W

NFS Series - 600W / 1200W / 1800W

The NFS family also offers multi-channel configurations, providing additional flexibility for high-power sports lighting installations.

Supporting the Future of Sports Lighting

Sports facilities continue to demand higher efficiency, better control, and improved lighting performance. Inventronics is committed to supporting these needs with innovative LED driver solutions.

With high efficiency, a wide input voltage range, advanced control options, deep dimming capability, and proven reliability, the NFS and NFM driver families provide a strong foundation for modern sports lighting systems.

AUTHOR: INVENTRONICS SSL INDIA PVT LTD

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An overview on Star & Labelling scheme as per new regulation of “THE BUREAU OF ENERGY EFFICIENCY”

To establish a comprehensive framework governing the display of essential information on labels, including their particulars, manner and time-limits, to establish the process for applying for and granting permission to affix such labels, the following regulations were published:

REGULATIONS

CHAPTER I (General)

1. These regulations may be called the Bureau of Energy Efficiency (Appliance Labelling and Compliance) Regulations, 2026.

2. These regulations shall come into force on the 1st day of January 2026.

CHAPTER II (APPLIANCE LABELLING AND REGISTRATION)

3. No label on any appliances or equipment as specified in Schedule A and Schedule B of these regulations shall be affixed without prior written permission from the Bureau.

4. Application for permission for label display-

(1) Each company that manufactures or sells or imports appliances or equipment as specified in Schedule A of these regulations shall be required to register with the Bureau and submit an application accompanied by a one-time application fee of five thousand rupees.

(2) A company registered under sub-regulation (1) of this regulation shall be required to apply for registration for each and every equipment or appliance separately and shall submit an application accompanied by a label security deposit of three lakhs rupees per appliance or equipment: Provided that in the case of a small-scale industry, the label security

deposit shall be fifty thousand rupees only.

(3) A company shall apply accompanied by a model registration fee of five thousand rupees per application: Provided that a company that manufactures or imports or sells the appliances or equipment's specified in Schedule B, may register their company/appliances or equipment's in accordance with the procedure provided in the Operational Manual.

5. Grant of permission-

(1) The Bureau shall complete the scrutiny of applications received under regulation 4 of these regulations as per the procedure laid down in the Operational Manual under regulation 16 of these regulations within a period not exceeding thirty working days from the date of the receipt of application: Provided that in cases where discrepancies are found in the applications received, the Bureau shall put these applications on hold and shall provide the applicants a period not exceeding sixty days to take suitable action, failing which the application shall be cancelled.

(2) After being satisfied that the applications received under regulation 4 of these regulations comply with all the requirements specified in these regulations, the Bureau shall -

(a) register the company and appliances or equipment;

(b) grant permission to affix labels on permitted models for a period of three years;

(c) make entries in the permittee register.

(3) The Bureau may revoke permissions granted for affixing labels, if the permittee fails to comply with the specific energy

performance standards fixed under the Act, with respect to the appliance or equipment under Schedule A and Schedule B;

6. Particulars to be displayed on the label- On every appliance or equipment as specified in Schedule A and Schedule B of these regulations, the following particulars shall be displayed on its label, namely-

(a-j) name of appliances or equipment/ Brand / Model No/Energy performance parameter/ Label Series/rated capacity/star level or endorsement/country of origin/ BEE Logo/ any other appliances or equipment specific parameters as specified in Schedule C of these regulations. (Refer Sample label as below)

7. Manner of display of label-

(1) There shall be a label along with a Quick Response code embedded with particulars required under regulation 6 of these regulations on every appliance or equipment as specified in Schedule A and Schedule B of these regulations, in accordance with the manner provided in Schedule C of these regulations, for that appliance or equipment.

(2) The permittee shall ensure that the label is-

(a-b) easily visible; and appears on every registered unit or model at both online and offline point of sale.

(3) The star label may be printed or pasted on the packaging box of every unit of the registered model.

(4) The design, colour, size, content and placement of the label shall be as specified in Schedule C of these regulations.

(5) The label along with Quick Response

code shall be of self-adhesive material.

(6) The markings required as per the provisions of Schedule C of these regulations shall be legible, indelible and durable. The Quick Response code shall be placed adjacent to the star label of the respective appliance, and the dimensions of Quick Response code shall be such, as specified in Schedule C of these regulations on a minimum basis.

8. Time-limit for display of labels—

(1) A label shall be displayed on every appliance or equipment as specified in Schedule A of these regulations within a period of six months from the date of commencement of these regulations while transitioning from voluntary to mandatory regime.

(2) When the energy performance standards for an appliance or equipment shall be revised, the permittee shall stop production of appliances or equipment under the expired standards; and undertake preparatory measures.

(3) For a dummy display unit, a duplicate or replica of the star label corresponding to the model, shall be shown on the dummy units. The label shall clearly mark with the word “dummy” to indicate that it is not an original label.

(2) For every voluntary appliance or equipment, the permittee shall pay to the Bureau a label fee as per Schedule B.

(3) The label fee specified under sub-regulations (1) and (2) above, shall be paid quarterly within a period of thirty days from the date of closure of each quarter of the financial year.

(4) The permittee shall furnish to the Bureau a statement containing details of production of labelled appliances or equipment and the accrued labelling fee due for each quarter within a period of thirty days from the date of closure of each quarter of the financial year and a reconciliation of the production data which is duly certified by a Chartered Accountant, shall be submitted to the Bureau within a period of two months from the date of closure of each financial year: Provided that on failure to pay the label fee within the period specified under this regulation, the Bureau may recover the amount due with interest thereon at ten per cent. per annum from the label security deposit made under regulation 4 and if complete labelling fees are not recovered within a period of one year from the last date of submission, the Bureau may cancel all labels granted to the permittee and publish the name of the

permittee in the newspapers as a defaulter.

(5) The prepaid label fee shall be payable by the permittee at the time of Quick Response code

requisition on the web portal of the Bureau of Energy Efficiency, namely, Standards and Labelling web portal, with effect

from the 1st day of April, 2027 onwards: Provided that, in the absence of the above-mentioned prepaid label fee mechanism on the web portal of the Bureau, sub-

regulations (3) and (4) of these regulations shall remain in force.

10. Refund of label security deposit-

11. Mode of Payment

CHAPTER III (LABELLING COMPLIANCE AND ENFORCEMENT)

12. Compliance verification by the Bureau

13. Label verification

14. Check testing

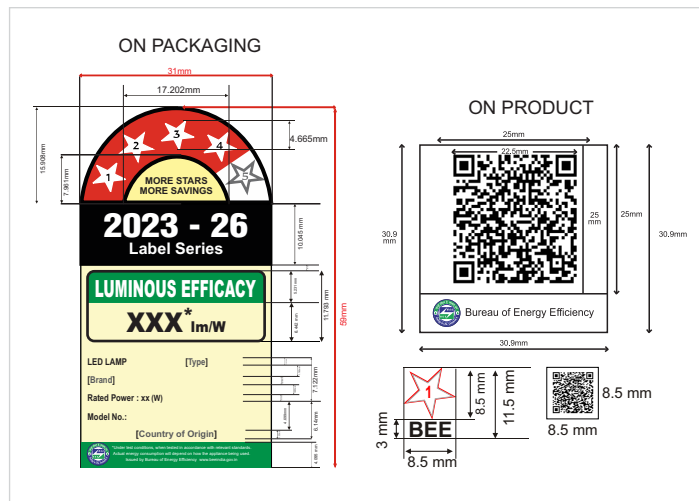
15. Failure in check testing— (1) If the appliance or equipment fails in the check test, the Bureau or State designated agency shall—

(a) publish within a period of two months for the benefit of the consumers, the details including but not limited to the name of the permittee, brand name, model name or number, logo and other specifications, in any national daily newspaper, electronic or social media or on the website of the Bureau or any other manner as it deems fit. The Bureau shall recover the cost of publishing such advertisement from the permittee limited to the amount of security deposit as specified in regulation to withdraw all the stocks from the market to comply with the directions of the Bureau;

(2) In the event, the permittee fails to comply with the directions issued under sub-regulation (1) of this regulation, the Bureau shall pass an order to withdraw the permission to affix the label granted to the permittee for said appliance or equipment category under regulation 4 for a minimum period of three months or till the compliance has been made and also send a copy of such order to all the State designated agencies.

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ELECTRIC LIMITED**

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9. Label Fee—

(1) For every mandatory appliance or equipment, the permittee shall pay to the Bureau a label fee as per Schedule A.

Beyond Brightness: Designing for Visual Comfort in Modern Workspaces

Modern LED lighting has transformed indoor illumination by improving energy efficiency, luminous efficacy, and design flexibility. However, visual comfort remains a critical performance parameter that is often under-addressed in lighting design. One of the major contributors to poor visual comfort is glare, which may cause visual fatigue, irritation, reduced visual performance, and decreased workplace productivity. The Unified Glare Rating (UGR) is widely used as a standardized metric for assessing discomfort glare in indoor lighting installations. Although UGR values are frequently presented as product-level specifications, the actual glare experience depends on the complete lighting installation, including luminaire optics, room geometry, surface reflectance, mounting height, spacing, and observer position. This paper discusses the concept of glare, the significance and limitations of UGR-based assessment, and practical design strategies for achieving low-glare indoor environments. It further examines low-UGR product approaches such as advanced optical systems, recessed luminaire geometry, layout optimization, and balanced interior reflectance

1. Introduction

Indoor lighting has traditionally been assessed through quantitative parameters such as illuminance, wattage, lumen output, and energy efficiency. With the widespread adoption of LED technology, lighting systems have become more efficient, compact, and versatile. However, the increasing brightness and optical intensity of modern LED luminaires have also made visual comfort an important concern in indoor

environments.

In offices, educational institutions, healthcare facilities, retail spaces, and hospitality interiors, occupants are exposed to artificial lighting for long durations. Poorly controlled brightness may lead to discomfort, eye strain, reduced concentration, and lower productivity. Therefore, lighting design must move beyond the narrow goal of illumination and address how comfortably people can see, work, and interact within a space.

2. Concept of Glare in Indoor Lighting

Glare is a visual sensation caused by excessive or uncontrolled brightness within the field of view. It occurs when the luminance of a light source or reflected surface is significantly higher than the adaptation level of the observer's eye. Glare can affect users both physiologically and psychologically by creating discomfort, irritation, and visual disturbance.

Two major types of glare are relevant in indoor lighting design. Discomfort glare

causes irritation, visual fatigue, and unpleasant visual sensation without necessarily reducing the ability to see objects clearly. It is commonly experienced in offices, classrooms, hospitals, and other indoor spaces where occupants remain under artificial lighting for long periods. Disability glare directly reduces visual performance. It occurs when excessive brightness causes light scattering within the eye, thereby lowering contrast sensitivity and making visual tasks more difficult. Unlike discomfort glare, disability glare can impair visibility and task accuracy.

Both types of glare are important in workplace lighting because they may influence user wellbeing, visual acuity, and productivity.

3. Unified Glare Rating: Definition and Importance

The Unified Glare Rating is a standardized metric used to quantify discomfort glare in indoor lighting systems. It is widely used as a design and assessment method for predicting visual

Table 1. General Interpretation of UGR Values

UGR Value	Visual Comfort Interpretation	Typical Design Relevance
5-10	Very low or almost imperceptible glare	High-comfort visual environments
<=16	Excellent visual comfort	Premium offices and design-sensitive workspaces
<=19	Standard office comfort benchmark	General office and workplace lighting
22-25	Acceptable but may cause discomfort in sensitive tasks	Circulation or less visually demanding spaces
28-30	Poor visual comfort	Industrial or non-critical areas only
40	Intolerable glare	Unsuitable for occupied workspaces

discomfort caused by luminaires in indoor spaces. UGR values are generally interpreted on a scale where lower values indicate better visual comfort. The source document presents the scale from approximately 5, representing imperceptible glare, to 40, representing intolerable glare.

In practical lighting design, office environments commonly target UGR ≤ 19 , while premium workspaces may aim for UGR ≤ 16 . These benchmarks are useful because they translate an otherwise subjective experience into a measurable design criterion. However, the usefulness of UGR depends on correct interpretation and application in the actual installation context.

4. UGR as a System Parameter, Not Merely a Product Feature

A common misconception in the lighting industry is that UGR is only a product feature. This assumption is incomplete because UGR is a property of the complete lighting installation, not only the luminaire. A luminaire may be optically designed to enable low glare, but the final UGR value depends on multiple installation-related variables.

Key variables include room dimensions and geometry, ceiling, wall and floor reflectance, luminaire mounting height, spacing-to-height ratio, orientation of luminaires, observer position, viewing direction, background luminance, and the number and arrangement of luminaires. Therefore, a product labelled as low-UGR may not automatically deliver low glare in every real-world installation. Lighting designers must verify performance through appropriate calculation, simulation, or project-specific validation.

5. Methodological Basis of UGR Determination

UGR is determined by assessing the brightness of luminaires within the observer's field of view, the background luminance, observer position, viewing

direction, and angular relationship between the observer and luminaires. In practical applications, UGR may be determined through lighting design software such as DIALux or Relux, or through standardized tabular methods used for quick estimation.

Lighting design software allows designers to model actual room geometry, luminaire placement, surface reflectance, and observer positions. These tools are useful for project-specific glare evaluation. The tabular method provides approximate UGR values based on standard room assumptions and predefined luminaire arrangements. However, this method is limited because the standard room may not accurately represent real interiors.

6. Limitations of the Tabular UGR Method

Although the tabular method is practical for quick estimation, it has important limitations. It generally assumes standardized room reflectance values, such as 20% floor reflectance, 30-50% wall reflectance, and up to 70% ceiling reflectance. However, many modern interiors use white or highly reflective surfaces with reflectance values higher than these assumptions.

The method is also limited to rectangular rooms, fixed viewing directions, and individual luminaire types. It does not adequately account for complex layouts, mixed luminaire systems, diagonal viewing directions, or modern interiors

with unusual geometry. Thus, tabular UGR values should be treated as indicative estimates rather than final proof of visual comfort.

7. Design Strategies for Low-Glare Indoor Spaces

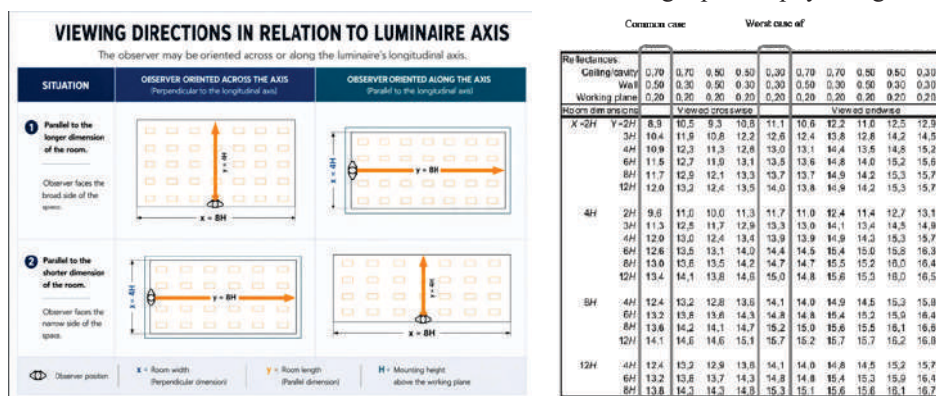
Low-glare lighting is achieved through an integrated design approach. Major design levers include advanced optical systems, luminaire geometry, layout optimization, and balanced interior reflectance. Optical technologies such as nano optics, hybrid lens optics, prismatic diffusers, and beam-control systems help manage luminance distribution and reduce direct brightness in the observer's field of view.

Luminaire geometry also plays a critical role. Deep recessed luminaires, inset designs, controlled beam angles, and proper shielding reduce direct exposure to bright LED sources. This is especially important in workspaces where occupants frequently look across the room or toward ceiling-mounted luminaires.

Layout optimization includes proper luminaire spacing, mounting height, spacing-to-height ratio, and orientation relative to user viewing directions. Balanced interior reflectance is equally important because excessively bright or dark surfaces can increase discomfort by altering contrast and background luminance conditions.

8. Applied Case: Havells Lighting Low-UGR Product Approach

Havells Lighting positions glare control as a core design philosophy integrated

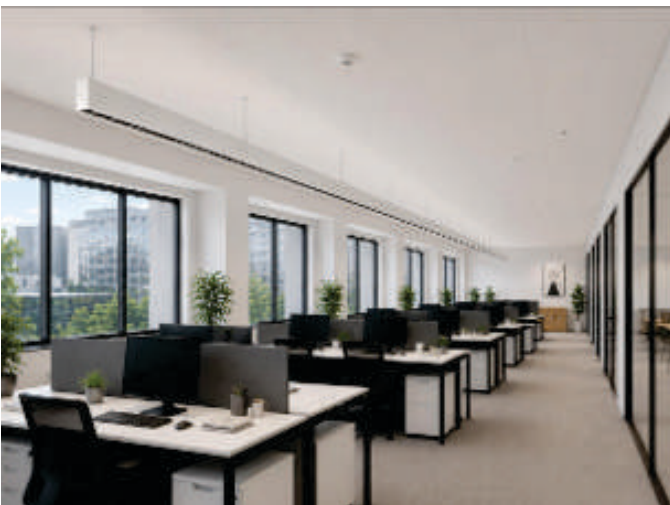


into optics, architecture, and electronics rather than as an afterthought. Three product examples illustrate this approach.

Olivia Panels are office-oriented lighting solutions designed for $UGR < 16$. Their key features include luminous efficacy greater than 130 lm/W, hybrid lens optics, ultra-slim backlit design, flicker-free drivers, THD $< 5\%$, and compatibility with DALI and DYNAMIK systems. These characteristics make them suitable for offices, educational institutions, and healthcare environments where critical visual comfort is required.



Lilac Linear Systems are designed for architectural flexibility while maintaining low glare. Hybrid lens and reflector optics enable $UGR < 16$, while suspended and deep-inset configurations support both direct and indirect lighting effects. These luminaires are suitable for open offices, corridors, collaborative zones, and modern architectural interiors.



Pharos Downlights use deep recessed optical design and multiple beam-angle options. Their hybrid lens-reflector optics enable $UGR < 19$. These features make them suitable for retail, hospitality, and premium indoor spaces where visual comfort and ambience are equally important.



9. Conclusion

Visual comfort is a fundamental component of modern

indoor lighting design. Although LED technology has improved efficiency and flexibility, glare remains a major challenge in offices, educational spaces, healthcare facilities, retail environments, and hospitality interiors. UGR provides a useful framework for evaluating discomfort glare, but it must be understood as an installation-level

parameter rather than a simple product label.

Effective low-UGR design requires an integrated approach involving optical engineering, luminaire geometry, layout planning, surface reflectance control, and accurate simulation. Products such as Olivia Panels, Lilac Linear Systems, and Pharos Downlights illustrate how advanced optics and design-conscious engineering can help create visually comfortable spaces.

The true measure of lighting quality is not merely how bright a space is, but how comfortably it enables people to see, work, and thrive.

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Signify Strengthens Human-Wildlife Coexistence Efforts in Uttar Pradesh Through Flagship CSR initiative Har Gaon Roshan



In line with its #BrighterLivesBetterWorld vision, Signify reaffirmed its commitment to creating safer, resilient, and sustainable rural communities through its flagship CSR initiative Signify Har Gaon Roshan at the Human-Animal Conflict: Challenges and Future Strategy event, Dudhwa National Park, Uttar Pradesh.

The event was graced by **Dr. Arun Kumar Saxena**, Hon'ble Minister of State (Independent Charge), and **Shri K. P. Malik**, Hon'ble Minister of State, Forest, Environment and Zoological Parks Department, Government of Uttar Pradesh. Additionally, **V. Hekali Zhimomi**, IAS Principal Secretary, Environment, Forest and Climate Change Department, Government of Uttar Pradesh, and **Anuradha Vemuri**,

Principal Chief Conservator of Forests (Wildlife), Government of Uttar Pradesh, senior policymakers, forest officials, members of the Tharu tribal community and conservation experts were also present to address challenges faced by communities residing in forest fringe areas where a host of reasons increase the vulnerability to human-wildlife encounters.

Signify Har Gaon Roshan CSR initiative updates shared during the event:

- **Terai region impact:** Successfully impacted over 400 forest fringe villages, since 2019
- **Wider Footprint:** Installed over 9000 LED streetlights across 400 villages in Uttar Pradesh (in and around Pilibhit, Dudhwa, Amangarh Tiger Reserves, Katarniaghat Wildlife Sanctuary, Nagina, Chitrakoot, and Bahraich)
- **Future Expansion:** Signify presented a

Letter of Intent (LoI) for the installation of 1500 additional LED streetlights across 67 villages with high rate of human-wildlife conflict in the Katarniaghat landscape.

- **Coffee Table book launch:** focused on the impact of the recent project in Dudhwa National Park through real stories, illustrating how access to light has helped create safer public spaces and enhance community resilience.

Addressing the gathering, Hon'ble Minister of State (Independent Charge), **Dr. Arun Kumar Saxena**, highlighted the growing challenge of human-wildlife conflict in forest landscapes and emphasized the need for collaborative efforts involving government departments, experts, civil society organizations, CSR initiatives and local communities to develop practical and sustainable solutions. He commended Signify for its contribution to community safety and rural development through **Signify Har Gaon Roshan CSR initiative** and congratulated the organization for expanding its support to forest fringe communities across Uttar Pradesh.

Through Har Gaon Roshan, Signify continues to support rural communities through innovative lighting solutions that improve safety, strengthen community resilience, and contribute to sustainable development outcomes, working in partnership with BharatCares.

AUTHOR: SIGNIFY INNOVATIONS INDIA LIMITED

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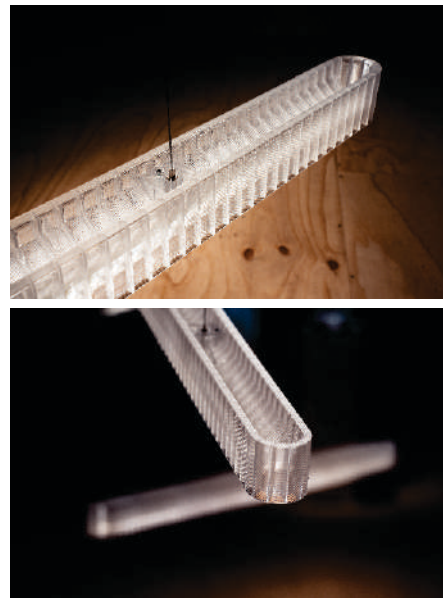
Signify Puzzle pendant: A glowing continuous light, that is a perfect match for your office spaces

Taking shape in modular lighting design. Puzzle blends performance, sustainability, and a bold visual language into one striking modular concept. The pendant luminaire features a shadow-free glowing light effect, smart system readiness, and modern aesthetics. Designed by renowned designer Florent Coirier and brought to life through cutting-edge 3D-printing technology. Puzzle sets a new benchmark for circular lighting design with its printed parts made from 75% recycled PET materials.

- Continuous glowing light effect.
- Smart-system and Interact ready from the start.
- Office compliant.

- Printed with 75% recycled PET material.
- Linear today. Limitless tomorrow.

Puzzle's design features clear, elegant shapes and a structure composed of square cells, celebrating the interplay of light and structure. Through the use of 3D printing, we minimize waste and eliminate the need for heavy molds, resulting in a more efficient and eco-friendly production process. Configure Puzzle to match your needs, it is now available in 4 and 5 feet (~1.2 meters and ~1.5 meters) as a linear pendant luminaire and is perfect for office environments. The sleek geometry and system-compatible functionality make it as smart as it looks.



Introducing the Fluence Range of Luminaires by Bajaj Electricals Professional Lighting

Designed for the evolving needs of modern workspaces, the Fluence range by Bajaj Electricals goes beyond illumination to create environments that inspire productivity, creativity, and comfort. With refined forms, clean geometries, and versatile configurations, Fluence enables cohesive lighting across open workstations, collaboration zones, breakout areas, and executive cabins.

Fluence Stretch Lighting Solution transforms ceilings and walls into luminous architectural surfaces, making light an integral part of design. Available in customizable square, rectangular, circular, and oval forms, it offers flexibility in size, diffuser graphics, and finishes. Ideal for offices, retail, healthcare, airports, and hospitality, it delivers stunning visual impact with

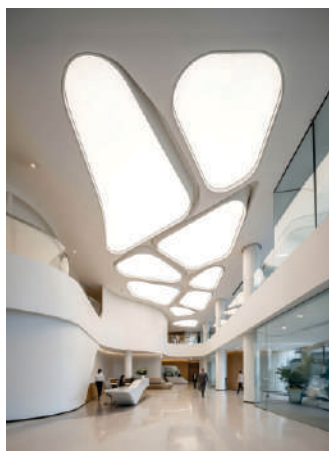
uniform, glare-free illumination.

Fluence Decorative Suspended Luminaire combines elegant circular designs with superior performance. Offered in ring and fully diffused formats, it enhances reception areas, boardrooms, meeting rooms, and executive cabins with

premium aesthetics and efficient illumination.

Both product families are **Bajaj Illumiga-enabled**, offering smart controls.

Fluence by Bajaj Electricals — Beyond Illumination. Designed for Experience.



Redefining Premium Indoor Lighting with Orient Electric's Grace Batten Range

As the demand for energy-efficient and user-centric lighting continues to grow, Orient Electric's premium **Grace Batten** range offers innovative solutions that combine performance, comfort, and durability for modern indoor spaces.

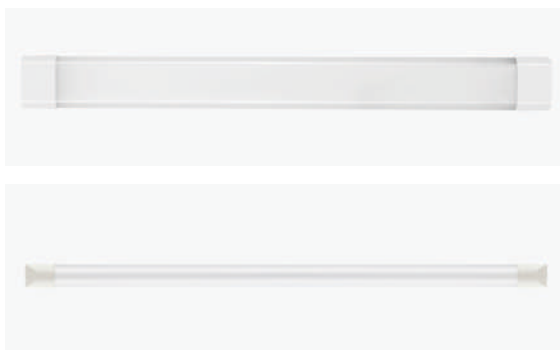
The **Grace Dual Lite Batten** introduces an innovative **Up-Down lighting design**, enabling users to choose between two distinct lighting modes. **Work Mode** delivers bright, direct downlight for focused tasks, while **Relax Mode** provides soft indirect uplight to create a warm and comfortable ambience. Built with a durable polycarbonate body, the batten ensures long-lasting performance while helping reduce energy consumption, making it an ideal choice for homes, offices, and hospitality spaces.

Complementing the range is the **Grace Radiant Batten**, designed to deliver superior illumination with an efficacy of **125 lm/W**. Its sleek yet robust polycarbonate housing offers excellent impact resistance, efficient heat dissipation, and enhanced product life. The batten provides bright, uniform lighting with improved visual comfort, making it suitable for offices, retail outlets, corridors, educational institutions, and other commercial environments.

A key advantage of the Grace Radiant Batten is its ability to achieve **up to 20% energy savings** compared to conventional LED battens while maintaining the same brightness levels. This translates into lower

power consumption, reduced electricity costs, and a more sustainable lighting solution.

With these range, Orient Electric continues to drive innovation by delivering premium lighting solutions that enhance user experience while meeting the evolving demands of energy efficiency, reliability, and modern design.



INDUSTRY NEWS

ELCOMA 3rd GB Meeting on 10th July 2026

The 3rd Governing Body Meeting of the year 2026 was held on 10th July 2026 at Lutron office, Gurgaon, and this event was sponsored by M/s. Lutron Electronics (India) Private Limited Ltd. 27 participants representing ELCOMA members, mostly from the GB were present in the meeting. In this meeting, Mr. Parag Bhatnagar welcomed all participants. He acknowledged that the industry has faced challenging times despite significant investments in manufacturing and R&D. Encouragingly, growth is now visible, with the replacement market contributing alongside new lighting points. On the consumer side, the demand for lighting points has increased. Overall, he conveyed optimism for growth in both B2C and B2B segments. He emphasized the importance of strengthening liaison with Government authorities and highlighted the need for ELCOMA to engage more actively with architects and lighting consultants, who can add value through creative lighting solutions.

Mr. Bhatnagar then formally proceeded to start the meeting, after reading the minutes of the previous Governing Body meeting held on 24th April 2026, which was approved. After the President's address, Mr. Amal Sengupta, Secretary General of ELCOMA read out Secretary General's points to the GB. The committee reports were presented by Ms. Sudeshna Mukhopadhyay, Mr. Nitish Poonia & Mr. Santosh Agnihotri.

The meeting came to an end with a vote of thanks by the President, Mr. Parag Bhatnagar. Mr. C Arunkumar volunteered to sponsor the next GB/AGM by Signify Innovations India Limited, which will be held in New Delhi in October 2026.



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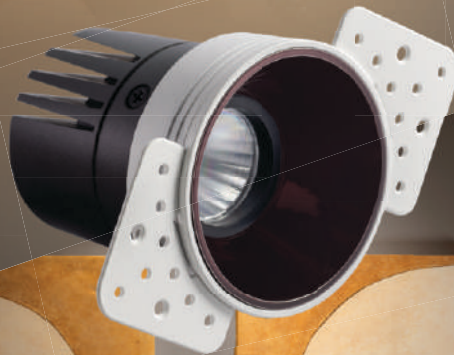
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COB Downlighter
Range

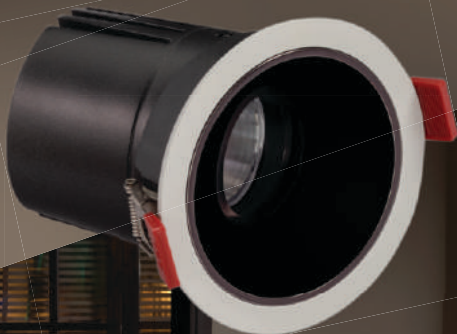
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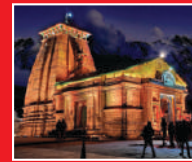
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