

## MICROWAVE VS INFRARED OCCUPANCY SENSORS -ENHANCING EFFICIENCY AND INTELLIGENCE IN MODERN ELECTRICAL DESIGN

In modern electrical design, efficiency and intelligence are no longer luxuries—they're expectations. Among the most practical tools driving this shift are microwave and infrared occupancy sensors. These devices do more than switch lights on and off, they offer



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**SENSORS**  
RELIABLE DETECTION  
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**MICROWAVE SENSOR**  
OL700C-BK

INSTALLATION HEIGHT: 2 - 6m

ENERGY EFFICIENT | IP20 | AUTOMATIC LIGHTING

Detection Range: 360° 1-8m (radius)

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**INFRARED SENSOR**  
OL05C-BK

INSTALLATION HEIGHT: 2.2 - 4m

IMPROVES SECURITY | IP20 | ENERGY EFFICIENT

Detection Range: 360° 1-6m (radius)

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**INFRARED MOTION SENSOR**  
OL15-BK

INSTALLATION HEIGHT: 1.8 - 2.5m

PIVOTABLE | IP65 | ADJUSTABLE

Detection Range: 180°/360° 12M Max  
Built-in Day/Night Sensor

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**ROOM OCCUPANCY SENSORS**

**1 & 3 PIR SENSORS**  
OL06A-BK | OL06B-BK

INSTALLATION HEIGHT: 2.2 - 4m

EASY INSTALLATION | IP20 | AUTOMATIC LIGHTING

Detection Range: 360° 3-12m (adj)

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**ROOM OCCUPANCY SENSOR**  
OL41-BK

INSTALLATION HEIGHT: 1.8 - 8m

EASY INSTALLATION | IP20 | AUTOMATIC LIGHTING

Detection Range: 360° 6M (adj)

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responsiveness and energy control that traditional systems cannot match.

At their core, occupancy sensors detect the presence of people within a space and automatically control lighting, and in some cases, HVAC systems. This eliminates the all-too-common issue of lights being left on in unoccupied areas—something that quietly drives up energy costs over time.

Infrared (PIR) sensors detect changes in heat within their field of view. Everyone emits body heat, and when someone enters or moves within a monitored space, the sensor detects this change and triggers the connected system. These sensors are highly reliable in enclosed areas such as offices, boardrooms, corridors, and restrooms. They perform best with a clear line of sight, making them a dependable and cost-effective choice for straightforward installations.

Microwave sensors, on the other hand, take a more advanced approach. Rather than relying on heat, they emit high-frequency electromagnetic waves and measure the reflections from moving objects. This enables them to detect motion through certain materials, such as glass, plastic, and even thin walls. As a result, microwave sensors are particularly effective in larger or more complex environments, such as warehouses, car parks, and open-plan spaces, where broader, more flexible coverage is required.

One of the standout advantages of microwave sensors is their sensitivity. They can detect even the slightest movement—such as hand motion at a desk. This makes them ideal for areas where occupants may remain relatively still for extended periods. However, that same sensitivity requires careful calibration during installation to avoid false triggers caused by movement outside the intended detection zone.

A key benefit shared by both technologies is energy efficiency. By ensuring that lighting and electrical systems operate only when needed, businesses and homeowners can significantly reduce electricity consumption. Over time, this leads to lower utility bills and a reduced environmental footprint—an increasingly important consideration in today's energy-conscious world.

Modern occupancy sensors also feature adjustable settings, including time delays, sensitivity levels, and ambient light thresholds. This allows systems to be tailored to specific environments, ensuring optimal

performance without unnecessary activation. Some advanced models integrate seamlessly with smart building systems, enabling centralised control and monitoring.

From a safety and convenience standpoint, these sensors also play a valuable role. Automatic lighting in stairwells, entrances, and outdoor areas improves visibility and reduces the risk of accidents, while also providing a level of security by ensuring spaces are never left in complete darkness.

In the end, the choice between microwave and infrared sensors isn't about which is better—it's about which is right for the application. Each has proven its worth over time. Used correctly, they form the backbone of efficient, intelligent lighting systems that save energy, reduce costs, and offer a level of practicality that older methods simply can't match.

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## Safe & simple: Hager's HWS series, the new standard in air circuit breakers

In low-voltage distribution systems, equipment selection is rarely limited to performance alone. Physical footprint, installation practicality, and project timelines often play an equally critical role in what ultimately gets specified. Within this environment, the hws series is Hager's standard Air Circuit Breakers (ACBs)

range for everyday applications, built for reliable protection and easy installation in constrained spaces.

The hws series sits alongside the hw+ range, Hager's advanced Air Circuit Breaker solution for more complex requirements. This standard range offers a higher-value solution, giving specifiers

the flexibility to match the right level of capability to each project without compromising Hager reliability.

### Performance under pressure

Performance requirements continue to rise in modern electrical installations, particularly under more demanding operating conditions.

The hws series of ACBs is designed to operate at ambient temperatures of up to 50°C without de-rating, maintaining



# :hager

## hws series air circuit breakers

The new standard for safety, reliable performance, and flexibility.

- ▶ Breaking Capacity up to 85 kA
- ▶ Frame Sizes (HWS2 & HWS4)
- ▶ Ratings: 320 – 4000 A



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stable performance in high-temperature environments.

The range extends up to 85 kA breaking capacity and is available in two frame sizes (hws2 and hws4), covering applications from 320 A to 4000 A. A Pollution Degree 4 rating further supports use in environments where dust and moisture are more prevalent and can impact long-term equipment performance.

### Designed for the workbench

Installation benefits become most apparent during assembly and wiring, where efficiency and consistency are critical. Screw-less terminal blocks for accessory wiring support faster, more consistent terminations in repetitive build environments, while rear connections can be configured for horizontal or vertical installation up to 4000 A, allowing alignment with existing busbar layouts without redesign. A modular accessory system then enables additional functions such as motor operators, shunt trips, and undervoltage releases without extensive rewiring.

### Certified protection

Compliance and protection coordination remain central to the design. The hws series complies with IEC 60947-2 standards and carries CE and CCC certifications, confirming conformity with international safety requirements for low-voltage switchgear.

Protection settings are adjusted using rotary dials on the built-in OCR trip unit. It uses LSI (Long-time, Short-time, and Instantaneous) protection, allowing the breaker to respond differently depending on fault severity and ensuring faults are isolated correctly within the distribution system.

As installation environments continue to evolve, the role of switchgear extends beyond protection alone. The hws ACB series reflects this shift, treating performance, configurability, and practical installation considerations as part of a single design requirement.

The hws range is available through ElectroMechanica, with local technical support and stock holding to assist with project requirements.

[www.em.co.za](http://www.em.co.za)



### Powering ahead: energising the future

With May's vibrant energy, I am excited to present this month's edition of Sparks. Our May issue is filled with illuminating insights and important updates, focusing on three pillars shaping the future of the electrical industry: Solar & Energy Efficiency, Earthing, Lightning & Surge Protection, and Lighting.

In recent years, the global shift towards sustainable energy has gained significant momentum. Our Solar & Energy Efficiency feature explores the latest innovations, practical applications, and policy changes driving solar adoption across industries and communities. We present success stories and expert insights that

highlight the importance of maximising energy output while minimising environmental impact—an essential goal for every forward-thinking professional.

Safety is at the heart of electrical work. This issue's Earthing, Lightning & Surge Protection section emphasises grounding techniques for reliability and the latest surge protection devices that safeguard infrastructure and personnel. With more extreme weather, these strategies are vital.

Lighting, one of the most dynamic sectors in our field, continues to develop rapidly. In this edition, we examine new technologies, design trends, and regulatory considerations shaping

contemporary lighting solutions. Whether it's improving energy efficiency or enhancing the user experience, lighting professionals will find inspiration and practical ideas in these pages.

Sparks keeps you informed, inspired, and connected. We hope this issue sparks ideas and supports your drive for a safer, smarter, and more sustainable electrical industry.

The June issue will cover DBs, Switches and Sockets, Tools and Tooling, and Lighting. If you have any news to share with the industry, please email me. The deadline for submissions is 13 May 2026.

Minx Avrabos  
sparks@crownc.co.za

### Powering precision: ACDC Dynamics partners with Hugong to strengthen welding solutions in South Africa

In today's industrial landscape, reliability and consistency are essential. Businesses can't tolerate variability in performance or results. That's why having equipment you can rely on, day after day, makes all the difference.

To meet this demand, ACDC Dynamics has partnered with Hugong, a global leader in welding and cutting technology. This collaboration combines world-class manufacturing with strong local support to provide reliable solutions across South Africa.

Hugong has over 60 years of experience in manufacturing welding equipment. It is one of China's largest producers in this sector and is listed on the Shanghai Stock Exchange. The company supplies products to more than 110 countries and has been consistently ranked as China's leading exporter of welding and cutting machines since 2013. This global presence demonstrates a strong commitment to quality, innovation, and performance.

Hugong's product range is designed to cater to the needs of modern industry. With more than 18 product series and over 2,000 SKUs, it supports a broad spectrum of applications. These include DIY projects, light industrial work, and demanding heavy-duty environments.

Its equipment is utilised across key sectors such as automotive, structural steel, pipeline construction, power generation, and shipbuilding. Each solution is designed to operate effectively in real working conditions while maintaining consistent output and efficiency. As the official distributor of Hugong in South Africa, ACDC Dynamics ensures that this advanced technology is easily accessible to the local market.

Customers benefit from:

- Reliable product availability across the country
  - Competitive solutions suited to specific applications
  - Access to local technical expertise and support
  - A trusted national distribution network
- This means quicker access to the right equipment, less downtime, and higher productivity on site. More importantly, customers gain peace of mind knowing they are supported by both a global manufacturer and a well-established local partner.

As industry advances, ACDC Dynamics remains committed to providing practical, reliable, and high-performance solutions. Contact us today for more details about Hugong or to explore all our electrical solutions at [sales@acdc.co.za](mailto:sales@acdc.co.za).



### MILWAUKEE®: Precision tools for test and measurement

When it comes to reliable, accurate results, MILWAUKEE®'s range of test and measurement devices stands out among professionals across industries. These tools are designed to deliver precise readings and rapid results,

making them indispensable in demanding environments.

#### Laser Distance Meters (LDMs)

A highlight of the MILWAUKEE® lineup is the Laser Distance Meter, a must-have for any professional toolkit. These devices provide instant, safe, and highly accurate measurements between two points—even those that are otherwise inaccessible. The LDM30 model boasts ±2 mm accuracy, while the LDM50 offers ±1.5 mm precision. Both models include helpful features such as memory storage, a convenient belt clip,

and an automatic shut-off function. With an IP54 rating, they are built to withstand tough job-site conditions.

#### Auto voltage/continuity testers

MILWAUKEE®'s Auto Voltage and Continuity Testers are engineered for durability and ease of use. They feature backlit LCD screens for clear visibility in any lighting condition, and their rugged, overmoulded construction provides protection in all working conditions.

#### Infrared Temp-Gun™

The 10:1 Infrared Temp-Gun™ is another standout, capable of measuring a 1 m spot from up to 10 m away. With a wide temperature range of -30°C to 400°C, this tool is ready for any task. Its premium LCD and simplified user controls make scanning fast and efficient.

#### Essential electrical testing tools

For electrical professionals, MILWAUKEE® offers essentials such as the Fork Meter and Digital Multimeter. The Fork Meter features a non-contact voltage detector and a side-mounted dial for easy one-handed operation. The Digital Multimeter delivers accurate readings, with a high-contrast display and versatile contact temperature measurement.

#### Upgrade your toolkit

Whether you're measuring distances, checking voltage, or monitoring temperature, MILWAUKEE®'s test and measurement devices form the foundation of a reliable professional toolkit. Browse the full selection online to find the right tools for your trade and experience an instant improvement in accuracy and efficiency.





## Introducing the Apollo Shadow Range: proudly made in South Africa by Lesco Manufacturing

Lesco Manufacturing is proud to introduce the Apollo Shadow. It is a bold new addition to the Apollo wiring device family, designed for the modern South African interior.

With its straight-edged frame, matte-textured finish, and signature curved side profile, the Apollo Shadow casts a subtle shadow on the wall, blending seamlessly into contemporary spaces while making a quiet style statement.

Available in white and black, the range includes switches, isolators, sockets, dimmers, blanks, and USB combination units, covering all everyday electrical needs in one cohesive collection.



[www.lescosk.com](http://www.lescosk.com)

## The ECA response to the R3 reduction in the fuel levy

The R3 reduction in the fuel levy is too small to offer relief to the struggling consumer.

Businesses are fighting to stay afloat, and we rely on customers to afford our services. When we succeed, we generate income and pay taxes. These taxes are sufficient and must be used efficiently and properly, rather than funding corruption or causing negative headlines.

We are informed that nearly 50% of the fuel price comprises levies and taxes. These should be reduced by 50%, as governments elsewhere in the world have done. Namibia has already cut its fuel levies by 50%. Why don't we follow suit? It is unacceptable that people from Botswana and Eswatini buy fuel in South Africa and then sell it in

their countries at lower prices than we do.

We are victims of taxes and levies, and they are squeezing us endlessly. The government already earns enough from businesses through income tax. The heavy burden of fuel taxes and levies is unmanageable. Now, we must also suffer from price fluctuations caused by distant conflicts that have nothing to do with us. It is unfair for the citizens of this country that we merely create costs and pass them on to consumers.

The ECA(SA) urges the government to cut fuel levies by a meaningful amount. Paying nearly R30 per litre of diesel is utterly unjust.

[www.eca.co.za](http://www.eca.co.za)

## Rollers excel where profits balance on a knife-edge

Polymer component specialist manufacturer igus has developed a range of lubrication-free, long-life knife-edge rollers designed to improve product transfer between conveyor belts in high-speed production environments.

The company's knife-edge rollers are specialised guide rollers used at the transfer between conveyor belts. They allow conveyor belts to wrap around a very small radius so that products can transfer smoothly from one belt to another with the smallest possible gap. This prevents snags and stops smaller items from dropping between conveyors.

Knife-edge rollers are commonly used in automated production lines, packaging equipment, and food processing systems where seamless, efficient product transfer is required for typical applications such as baked goods, packaged foods, small goods, and sensitive electronics, among others.

According to igus product specialist Juan-Eric Davidtz, igus uses its world-renowned tribologically optimised polymer materials for the rollers, which deliver low-friction, lubrication-free operation while enabling extremely tight belt deflection. "Machine builders and conveyor system designers rely on our knife-edge rollers to maintain consistent product flow while keeping conveyor layouts compact. The smaller the belt deflection radius, the smoother the transfer between conveyors, thereby improving production efficiency and reducing product losses.

"This is what sets igus knife-edge rollers apart, as our iglidur materials are engineered specifically for industrial motion applications and contain embedded solid lubricants. As a result, the rollers operate dry with no need for grease or oil lubrication," he says.

Juan-Eric adds that the lubrication-free design prevents contamination, reduces maintenance

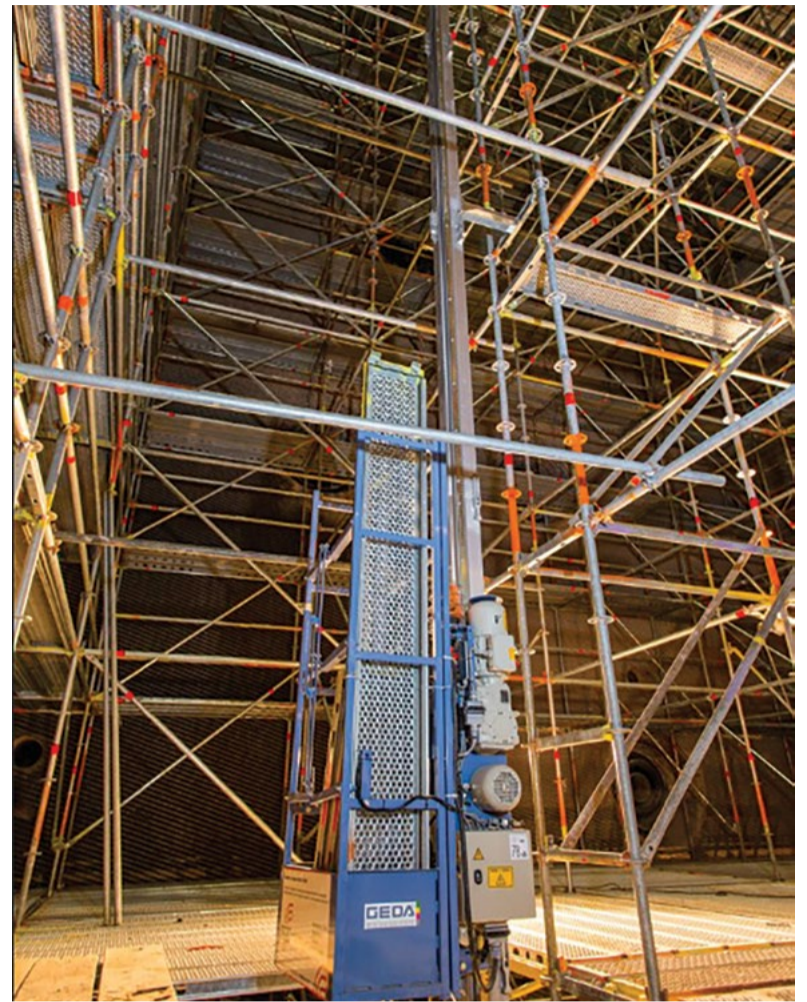


requirements, and significantly extends the lifespan of the rollers. This means the rollers can operate reliably for extended periods and can be used in all environments, including hygienically sensitive environments such as pharmaceutical, engineering, food and beverage processing plants.

The igus knife-edge rollers are also tougher than steel alternatives. They offer higher wear resistance and lower friction, which allows them to operate smoothly in continuous-duty conveyor systems. Their polymer construction also provides good chemical resistance and corrosion protection in chemical processes, while the lightweight design can reduce drive loads compared with conventional metal rollers.

We are continuously communicating with designers keen to exploit these advantages across a wide range of applications. With a broad selection of standard sizes and customised configurations, it enables OEMs and machine builders to precisely match roller geometry and dimensions to their conveyor systems. This is important in high-speed production environments where even small interruptions can lead to downtime and where the reduction of downtime equates to improved profitability," Juan-Eric concludes.

[www.igus.co.za](http://www.igus.co.za)



## SkyJacks expands portfolio with GEDA 300 Z Boiler Hoist

Maintenance in high-value industrial environments, such as silos and boilers, often faces space constraints, with limited access sometimes available only through a 45 cm manhole, hindering the effectiveness of traditional lifting equipment. This leads to reliance on manual handling, which is time-consuming and physically demanding. SkyJacks introduced the GEDA 300 Z Boiler Hoist, designed for tight spaces.

Industries such as energy, mining, and manufacturing perform maintenance in vertical structures, where safely moving materials between levels is critical. Without effective lifting systems, operations slow down, increasing downtime and safety risks. Manual handling reduces productivity and increases fatigue, making it harder to meet deadlines.

The GEDA 300 Z features a modular, lightweight design that fits through narrow openings, including 45 cm manholes. It can be assembled by two people in about 40 minutes in confined spaces, creating a functional hoist that traditional systems can't operate in.

Darryn Jacobs, SkyJacks MD, notes that many maintenance environments weren't designed for modern equipment, but the GEDA 300 Z changes that by enabling safe, efficient lifting in hard-to-reach spaces.

The hoist improves workflow and efficiency by enabling organised material movement between levels, reducing waiting times and enhancing team coordination, thereby speeding up maintenance.

With a lifting capacity of 300 kg and a height reach of 100 metres, it suits various maintenance tasks. Its durable construction ensures longevity in tough environments, while its compact size suits tight spaces.

Safety features include overload protection, electromagnetic brakes, limit switches, emergency stops, and a secure load platform, ensuring personnel and material safety and compliance with safety standards.

These safety measures help maintain a safe working environment without compromising efficiency, promoting sustainability and long-term workforce wellbeing.

Industries such as power generation, mining, petrochemical, and industrial construction benefit from the GEDA 300 Z, especially where confined-space maintenance is common, helping reduce downtime and improve performance.

SkyJacks offers ongoing support for servicing, safety inspections, spare parts, technical assistance, and operator training to ensure reliable operation and compliance with safety standards.

Jacobs emphasises that the GEDA 300 Z provides a smarter, safer, and more efficient maintenance approach in challenging environments, creating value through reduced downtime and improved safety.

As industries prioritise uptime, safety, and efficiency, the GEDA 300 Z is becoming essential for transforming maintenance in confined industrial spaces.

[www.skyjacks.co.za](http://www.skyjacks.co.za)

## HDGASA is raising solar installation standards in South Africa

As competition in the PV sector has intensified, robust specifications have often been reduced to cut costs.

“Steelwork, though a minor investment, is crucial for plant durability. However, quality and corrosion control are often overlooked”, says HDGASA Executive Director Robin Clarke.

### Where sun meets steel

Clarke says HDGASA works with PV installers to update outdated specifications and ensure materials are

suited to local conditions.

He highlights corrosion protection as essential, noting hot dip galvanising can provide over 40 years of protection—longer than many plant components.

However, he cautions that thinner steel and reduced galvanising may be inadequate in harsh environments, even if they suffice in milder conditions.

Clarke urges project owners to rigorously assess environmental and soil conditions before selecting materials. He warns that, despite industry awareness, cost pressures



**Steelwork, though a minor investment, is crucial for plant durability. However, quality and corrosion control are often overlooked.**

may still result in suboptimal choices. Project owners and professionals should actively prioritise site-specific material assessments over cost-cutting.

Rooftop solar systems have also faced challenges as early installations often overlooked roof condition. Now, assessments are routine to ensure roofs can support solar systems for the required investment period.

### Shining a light on localisation

Clarke is concerned that imported steelwork remains common despite local capacity, creating accountability issues and specification mismatches.

He stresses that project owners and decision-makers should actively choose local suppliers to help ensure quality and

accountability.

Clarke says many companies aim for sustainability and use HDGASA guidance, but face competitors who cut costs by compromising standards or lack expertise.

### Solar-powered solutions

He explains that pressure to minimise capital costs discourages robust specifications, but HDGASA is working with suppliers to ensure value and accountability as the sector grows.

He concludes that design criteria must be tailored to each site and strongly urges project owners and designers to consult corrosion experts during planning to ensure accurate, site-specific assessments and long-term success.

[www.hdgasa.org.za](http://www.hdgasa.org.za)



## The Khauta Solar Project: Trinasolar is pioneering South Africa's renewable energy future

South Africa's renewable energy sector is growing quickly, with the 510 MW Khauta Solar Project marking an important milestone. As one of the country's largest solar farms, it includes two contracts delivered simultaneously: Khauta South at 352.5 MW and Khauta West at 157.8 MW, both located in Welkom, Free State Province. Trinasolar, working with a top South African EPC company, provided high-performance modules and comprehensive commercial and technical support, including post-contract adjustments.

The project's impact exceeds its scale; it showcases the maturity of South Africa's solar sector. Successfully delivering two major contracts simultaneously required strong coordination among all parties and established a new regional standard for utility-scale solar. With 10 GW of installed capacity, South Africa now ranks among the top 20 solar PV markets globally. The Khauta project not only marks a significant milestone in this development but also demonstrates the trust that developers and EPCs have in Trinasolar.

Completing a project of this scale presented unique challenges. Zaheer Khan, Regional Director – South Africa, Trinasolar, said, “Utility projects are complex, with evolving specifications, shifting timelines, and significant logistical demands. Our team provided ongoing support, adapting to requirements and working closely with the contracted EPC. This partnership helped overcome industry-wide hurdles such as supply chain logistics and grid connections, demonstrating that strong alliances and technology enable South Africa to deliver large-scale renewable projects.”

Trinasolar's collaboration with local partners extends beyond supply agreements. Their role encompasses the entire project lifecycle, from initial discussions to technical and after-sales support. The contract with Mulilo for the 220 MW Orkney Solar Project affirms their long-term presence in South Africa. The company aids the renewable energy sector through training, workshops, and knowledge sharing via TrinaHub, and encourages local wellness and youth initiatives.

South Africa's solar market is experiencing two main shifts: expansion in utility-scale projects and increased adoption of solar-plus-storage. Recent procurement rounds have set records, shifting focus to dispatchable



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power, not just daytime generation. Trinasolar's product range addresses these needs, with advanced modules and battery storage systems suitable for local conditions.

The outlook for South Africa's

renewable energy sector is positive. With a strong pipeline and supportive policies, the country is prepared for significant solar expansion. Grid access remains the main obstacle, but with investment and collaboration, the sector is well-

placed for sustained growth. Trinasolar's innovation, sustainability initiatives, and local partnerships position it at the forefront of this transition.

[www.trinasolar.com](http://www.trinasolar.com)



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## Africa's Green Economy Summit 2026: turning climate goals into action

Africa's Green Economy Summit (AGES) 2026 concluded in Cape Town with a call to action: harness digital innovation, reform water financing, and redesign agriculture for a net-zero Africa. Over 600 delegates from 42 countries agreed that with the right policies and financial tools, the continent can transform climate risks into opportunities.

### Pioneering new models for climate finance

The summit centred on climate finance, examining green, blue, and wildlife bonds such as the "Rhino Bond," and emphasised that communities should be stakeholders, not merely beneficiaries.

Sanlam Investment Group CEO Carl Roothman emphasised the urgency of acting at scale, while Iain Banner of Go Green Africa described the green and blue economies as the "new operating systems" for Africa.

### Government calls for practical collaboration

Deputy Minister Narend Singh urged a move from policy to action, referencing South Africa's Just Energy Transition Partnership. He called for local value chains and mineral beneficiation to generate jobs and advance technology.

### A digital imperative for climate action

Integrating climate change and digital transformation was a central theme. World Bank's Siddhartha Raja highlighted that data centres can support renewable energy but must be resilient against climate risks, from floods to e-waste.

Chrissy Meier from the Digital Impact Alliance warned that African cities lack local data for climate strategies and highlighted the risks of using non-African data in AI models.

### Making water infrastructure bankable

In a panel discussion on water project financing, Obadiah Mungai of the World Resources Institute Africa stated that



enhancing governance and data can make water projects more appealing to investors.

Louise Stafford of The Nature Conservancy stated that Cape Town's investment in catchment restoration is more cost-effective than desalination. The panel agreed that blended finance and preparation make water resilience an investable opportunity.

### Strengthening food security through renewable energy

Energy instability threatens food systems. Henry Roman of the International Water

Management Institute called for a holistic water-energy-food approach and data tools for farmers.

Ian de Jager of I&F Engineering observed that farmers are using small-scale hydropower to produce energy and income. Andrea Campher of Standard Bank stressed that emissions profiles now matter as much as product quality.

AGES 2026 demonstrated that integrating climate goals into Africa's essential systems fosters real progress. The upcoming summit is scheduled for March 2027 in Cape Town.

## Efficiency, reliability, and returns: why expert O&M will secure South Africa's energy future

By: Dane Links, Head of Operations & Maintenance and Hanno Mostert, Chief Asset Management Officer at Sustainable Power Solutions (SPS)

South Africa's clean energy sector is shifting from merely installing capacity to focusing on consistent performance. As companies rely on embedded generation for stability and cost control, daily operations and maintenance (O&M) become central to energy reliability and financial success.

O&M ensures power plants operate efficiently throughout their lifespan through supervision, monitoring, maintenance, fault detection, and on-site work. Many organisations lack the expertise to manage complex, modern distributed generation systems that combine multiple technologies, making performance management more difficult. This is why more companies prefer specialist O&M

providers, as the increasing complexity of energy assets—including energy storage, wind, and advanced software—requires focused technical skills.

Traditional maintenance methods are no longer sufficient; problems can occur between site visits, reducing efficiency and output. Modern O&M employs real-time data, sensors, analytics, and technologies like drones and infrared imaging for early fault detection and performance optimisation. Outsourced O&M provides the technical expertise and monitoring systems necessary to maintain performance, allowing internal teams to concentrate on core priorities.

A dependable O&M partner enhances performance and transparency, helping owners understand and sustain asset value.

As the adoption of clean energy increases, resilience becomes crucial. Data-driven operations and maintenance (O&M) along with expert partners are vital for managing environmental and operational challenges. South Africa's



Dane Links.

energy future relies on expanding capacity and ensuring existing assets provide consistent value through modern O&M practices, supporting dependable and sustainable energy systems.

[www.sps.africa](http://www.sps.africa)

## ZF SolarBoost increases vehicle uptime and reduces the carbon footprint for bus operators



The new retrofit solution ZF SolarBoost provides clean, reliable power to 24V battery systems of medium to large city buses and coaches, helping bus operators reduce fuel costs, extend battery life, and improve operational efficiency. The easy-to-install solar panels generate electricity during vehicle operation and continuously charge the battery.

ZF SolarBoost offers bus fleet operators an intelligent solution to reduce fuel and battery costs while improving sustainability. Specifically designed for buses, ZF SolarBoost provides clear operational benefits. It increases vehicle uptime by decreasing the need for battery recharging and minimising maintenance. The longer battery lifespan helps lower maintenance costs: based on daily experience from bus operators, it is possible to save the equivalent of one onboard battery per vehicle each year.

By generating renewable energy during vehicle operation, bus operators actively support climate protection, as onboard systems no longer rely solely on the vehicle's electrical supply. Furthermore, thanks to the additional energy source for charging the battery, the load on the engine is reduced, which, depending on operating conditions and weather, can decrease fuel consumption by up to 3.5 per cent.

Another key benefit is the plug-and-play feature, which usually requires no drilling or rewiring and thus allows quick, scalable deployment across entire fleets with minimal downtime. Installation in the operator's workshop can be completed using standard tools, supported by a ZF video tutorial. Additionally, the system connects to the operator via Bluetooth, enabling real-time monitoring through an app.

The sturdy and fully adaptable design resists vibration and weather conditions, ensuring a longer lifespan than many similar products. A five-year warranty and the availability of repair kits offer extra peace of mind for users. ZF SolarBoost emphasises ZF's strategic dedication to sustainability and innovation. The system is a scalable, future-ready solution that enhances bus fleet efficiency and environmental friendliness. By combining straightforward installation, durable and flexible panels, and measurable operational advantages, ZF SolarBoost offers bus operators a practical way to lower costs, boost uptime, and promote climate-friendly mobility.

[www.aftermarket.zf.com/en/](http://www.aftermarket.zf.com/en/)

## The new meeting place for South Africa's C&I energy market

**R**E+ South Africa Conference launches in June as a dedicated platform for businesses pursuing clean energy solutions. Bringing together stakeholders from key sectors at the Gallagher Convention Centre (2-3 June 2026), the event occurs alongside RE+ South Africa and helps shape the future of energy.

### Why this conference matters?

The C&I energy market is evolving due to rising costs, security concerns, new regulations, and growing ESG demands. Many businesses are still seeking ways to turn strategies into effective actions.

The RE+ South Africa Conference tackles these challenges by providing business

and energy leaders with practical, business-led insights. Participants can expect real-world case studies from leading companies, advice on PPAs, financing, and risk management, as well as updates on policy and regulation. The sessions will also cover emerging topics like ESG compliance and energy asset lifecycle planning.

Register now to secure your place—early bird rates end on 30 April 2026. Join this exclusive forum of energy leaders and help drive change in South Africa. Contact the RE+ South Africa team for enquiries.

Register now for your delegate pass: <https://bit.ly/4cix2FW>



## Bridging Africa's energy divide: powering progress and prosperity

**A**frica's development depends on expanding energy grids. In 2025, electricity demand will grow by 5.2%, yet over 600 million Africans still lack reliable power, limiting opportunities in education, healthcare, and industry.

The backbone of Africa's economic growth is reliable energy grids. Modern, interconnected transmission and distribution networks are essential for delivering electricity efficiently over vast distances. Investing in resilient grid systems increases energy capacity and ensures a reliable power supply, directly supporting prosperity and improving quality of life.

Innovation and collaboration are driving improvements in the grid. The adoption of smart grids and the integration of renewable energy, such as solar and wind, are strengthening grid capacity and reliability. Smart grids use digital technology to monitor and manage electricity flow, making systems more responsive and cost-effective. Regional cooperation, exemplified by initiatives such as the Southern African Power Pool, enables countries to share resources and balance supply and demand, thereby making energy systems more robust and accessible.

Energy poverty remains a critical obstacle. Power disruptions severely affect manufacturing, healthcare, and small businesses, causing downtime, lost sales, and higher costs from reliance on backup generators. According to 2025 estimates, unreliable electricity costs African nations

between 2% and 6% of GDP annually. More than 25% of firms in major economies such as Ghana, Angola, and Nigeria report substantial sales losses due to outages. Reliable electricity is especially vital for small and medium-sized enterprises and rural communities, where stable power enables job creation and economic activity.

Bridging Africa's energy gap requires more than technical solutions; it demands bold investment and policy reform. Although Africa holds 40% of the world's solar potential, it accounts for less than 2% of installed solar capacity. The International Energy Agency estimates that annual grid investment must rise from \$10 billion to nearly \$50 billion by 2030 to expand transmission lines, modernise existing infrastructure, integrate renewable energy, and improve rural access. Achieving this will require attracting private capital through public-private partnerships and modernising regulatory frameworks to encourage innovation and integrate renewables. Africa's success stories, such as the Ethiopia-Kenya Power Interconnection Project, demonstrate that investment, partnership, and regulatory reform yield tangible benefits. The continent has the necessary resources. Now is the time for leaders, investors, and policymakers to step up, commit to decisive action, and accelerate efforts to electrify Africa's future. The path to sustainable growth depends on making reliable energy access a reality for all.



## Energy Efficiency as a service – now you can have your cake and eat it too

By Thabang Byl, Buildings Segment Lead at Schneider Electric



**B**uildings are, by their very nature, energy-intensive. Fortunately, there are well-known solutions that allow businesses and facility managers to manage this energy use. But, and isn't there always a but, it does come at a cost.

Today, advanced technologies such as Building Management Systems (BMS), Uninterruptible Power Supply (UPS), and integrated workspace management software go a long way towards optimising energy use and ensuring a continuous supply. Unfortunately, these technologies can be quite costly, leaving businesses struggling to balance operational efficiency with sustainability goals.

Enter Energy Efficiency as a Service (EEaaS). Whilst similar to its older sibling, Energy as a Service (EaaS), it essentially operates as a subset, focusing primarily on reducing energy consumption through upgrades such as efficient lighting, HVAC systems and insulation.

In South Africa, EEaaS offers the opportunity to achieve quick cost savings while also reducing the carbon footprint. Indeed, in a country that is perpetually facing rising energy costs and supply challenges, EEaaS is not only good for the environment but also for business.

### EEaaS at work

Like EaaS, EEaaS shifts the financial burden from capital expenditure (CapEx) to operational expenditure (OpEx). This allows commercial property managers and owners to retrofit existing facilities with energy-efficient solutions and monitoring technology without incurring upfront costs.

Also, by partnering with specialised service providers, organisations can access ongoing support, analytics, and maintenance, ensuring the optimal operation of their systems. As with other 'As-a-Service' models, this results in a sustainable strategy that drives significant cost savings and operational efficiency while allowing businesses to focus on their core activities.

### Models of flexibility

As-a-Service (AaaS) models, such as Software-as-a-Service (SaaS) and Everything-as-a-Service (XaaS), have seen significant global success and adoption across industries.

In fact, the global XaaS market continues to expand at a rapid pace, driven by the flexibility and scalability of these models. In a recent Accenture survey, 85% of executives cited AaaS models as complementing existing revenue streams.

Like many AaaS models, the successful



Thabang Byl, Buildings Segment Lead at Schneider Electric

implementation of EEaaS often relies on financial backing to ensure scalability and sustainability.

These institutions play a crucial role in providing the necessary capital, structured as operational expenditure, to facilitate the widespread adoption of energy-efficient technologies. This collaboration not only mitigates financial risks for businesses but also undoubtedly accelerates the transition towards a more sustainable energy future.

At Schneider Electric, we offer a comprehensive EEaaS model that enhances energy resilience, sustainability, and efficiency without requiring upfront capital investment. Key features include:

- **Customised solutions:** tailoring energy management services to meet specific organisational goals, such as reducing carbon footprints or enhancing energy reliability.
- **No upfront costs:** allowing customers to avoid capital expenditures by opting for predictable monthly payments.
- **Integration with renewables:** incorporating solar and battery storage to enhance sustainability.
- **Risk mitigation:** managing the entire process from planning to implementation, thereby reducing financial and operational risks for customers.
- **Microgrid technology:** implementing microgrids to provide decentralised energy solutions, thereby improving resilience and reducing costs.

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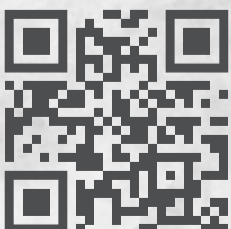


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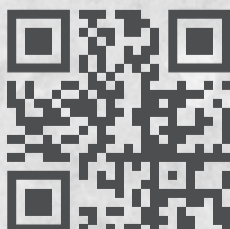
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## Lightning Threat - mystery and clarity

**M**isunderstandings, misconceptions, misinformation, ignorance, and arrogance still hinder sound decision-making in the lightning protection industry, impacting property owners and asset risk managers across South Africa.

### Misunderstanding 1: SANS 10313 versus SANS 62305

In 2026, SANS 62305 ("Protection against lightning") is the primary standard for mitigating lightning-related damage and injury in South Africa.

Since its 2007 adoption, it has evolved through several editions; the current 2025 Edition 3 introduces critical data on ground strike-point density and clarifies

- What isolated lightning protection systems are,
- The role of lightning surge protection measures, and
- The relevance of thunderstorm warning systems in any mitigation solution.

Every property owner in South Africa has the right to know if they are at risk from lightning. SANS 62305 offers a way to measure that risk across four sections covering:

- The intelligent context of lightning threat
- Quantifying lightning risk,
- Mitigation methods to protect against direct lightning strikes, and
- Mitigation measures to protect against lightning surges from indirect lightning strikes.

SANS 10313, derived from SABS 03 (1952), has been aligned with SANS 62305 and is

currently at Edition 3.3 (2018). It serves a supplementary role, focusing on additional methods for protection against direct lightning strikes.

### Misunderstanding 2: LPS versus LSPM

A clear distinction must be made between:

- Lightning Protection Systems (LPS): Systems designed to safely intercept and conduct lightning to ground.
- Lightning Surge Protection Measures (LSPM): Measures that limit transient overvoltages caused by lightning.

### Lightning presents both

- A primary threat - direct strike energy capable of destruction and fatality, and
- A secondary threat - widespread surge effects causing damage beyond the strike point.

The secondary threat accounts for substantial annual insurance losses due to inadequate or incorrect surge protection.

A common misconception is that an LPS addresses all lightning risks. In reality, an LPS protects against direct strikes at specific structures, while LSPM provides broader protection against surges from nearby lightning activity.

This confusion is compounded by the concept of "internal" and "external" LPS:

- The external LPS intercepts and safely dissipates the lightning discharge.
- The internal LPS mitigates transient overvoltages resulting from that discharge.



### Misunderstanding 3: preparation for lightning protection

Effective lightning protection begins with human behaviour and preparedness, not as an afterthought.

A critical first step is determining whether sufficient warning exists before a storm to take protective action. Examples include:

- moving people from exposed areas such as golf courses or sports fields, and
- unplugging sensitive electrical equipment.

Such actions should be incorporated into formal standard operating procedures (SOPs) to ensure timely execution.

Where procedural measures alone are insufficient, engineered solutions are required:

- LSPM to reduce surge-related risks, and
- LPS to mitigate direct strike hazards.

### Get informed

The SAIEE Lightning Chapter will host a webinar on this subject on 27 May 2026. For inquiries, email [lightningchapter@saiee.org.za](mailto:lightningchapter@saiee.org.za)

For more information about lightning protection in South Africa, contact the Earthing and Lightning Protection Association (ELPA) - [info@elpasa.org.za](mailto:info@elpasa.org.za)

## Surge Protection in South Africa: safeguarding your electrical systems

By Minx Avrabos

**S**outh Africa's frequent thunderstorms, ageing power infrastructure, and regular load shedding make surge protection crucial. Power surges can damage or destroy appliances and electronics. This article explains why surge protection matters, how it works, and the best practices for implementing it.

### Understanding power surges

A power surge happens when the voltage in an electrical circuit exceeds the normal level, usually 220-230 volts in South Africa. Surges can be caused by several factors.

- **Lightning strikes:** South Africa experiences some of the world's highest lightning strike rates, especially in the Highveld region.
- **Load shedding and power restoration:**

The sudden return of power after load shedding often causes voltage spikes.

- **Faulty wiring or equipment:** Malfunctions or short circuits can trigger surges within a building.

Even small, repeated surges gradually weaken electronic components, while large surges cause immediate, catastrophic damage. Surge protection is vital. Given the risks, one must see surge protection as essential rather than optional for South African homes and businesses. Replacing appliances, computers, or sensitive manufacturing equipment can be costly and result in data loss or reduced productivity. Insurance companies may exclude coverage for surge damage, especially if you fail to install surge protection.

### How surge protection works

Surge protection devices (SPDs) are built to detect excess voltage and safely redirect surges to earth, preventing them from reaching and damaging connected equipment. There are three main types of surge protection:

- **Primary/whole-house protection:** Installed at the main distribution board, these devices protect the entire property from external surges, such as those caused by lightning or grid switching.

- **Secondary/point-of-use protection:**

These plug-in devices safeguard individual appliances or electronics, such as computers or TVs.

- **Specialised protection:** Some sensitive equipment, such as medical devices or industrial controls, may require tailored surge protection solutions.

### Best practices for surge protection

Layered approach: Combining whole-house and point-of-use surge protectors offers the best defence, as not all surges are stopped at the main board.

Regularly test and replace surge protectors, as repeated surges wear them out. Always follow manufacturer recommendations. Ensure you choose certified SPDs that meet recognised standards (such as SANS or IEC) to guarantee reliability and effectiveness.

Ensure proper grounding, as surge protection only works with adequate earthing. Ask a qualified electrician to inspect your property's grounding system.

Frequent lightning, unstable power, and load shedding make surge protection vital for South Africans. By understanding the risks and taking steps to mitigate them, you can protect your equipment and prevent costly damage.



”

A power surge happens when the voltage in an electrical circuit exceeds the normal level, usually 220-230 volts in South Africa. Surges can be caused by several factors.

## Dehn Africa's DEHNventil M2 Series: advanced surge protection for modern infrastructure

In today's digitally driven world, the reliability of electrical systems is crucial. Surge protection devices (SPDs) play a vital role in safeguarding sensitive equipment from transient overvoltages caused by lightning strikes, switching operations, and other electrical disturbances. DEHN Africa, a leading provider of surge and lightning protection solutions, has set a new standard with its DEHNventil M2 series, offering sturdy, intelligent, and comprehensive protection across a wide range of applications.

### Cutting-Edge protection technology

The DEHNventil M2 series is a Type 1+2 surge arrester designed to provide maximum protection for low-voltage installations. It is suitable for use in main distribution boards in industrial, commercial, and residential settings. The series features a modular design that combines high discharge capacity with ease of maintenance. Its core technology ensures the reliable diversion of surge currents, safeguarding critical infrastructure such as data centres, hospitals, and manufacturing plants from costly downtime and equipment damage.

### Key features and benefits

One of the key features of the DEHNventil M2 is its sophisticated monitoring capabilities. The device has a status indication system that provides clear visual signals of its operational condition,

enabling proactive maintenance and reducing the risk of unnoticed failures. The series also includes a patented "Thermo Dynamic Control" disconnecting device that automatically isolates the SPD if overloaded, ensuring the ongoing safety of the installation without compromising system integrity.

Furthermore, the DEHNventil M2's modular design allows for the easy replacement of individual protection modules without disconnecting the main power supply, simplifying maintenance and minimising operational downtime. Its compact size and compatibility with standard busbar systems make it a flexible option for upgrading existing installations or incorporating into new projects.

### Sustainable and reliable

DEHN Africa prioritises sustainability and product durability in the DEHNventil M2 series. The devices are built to withstand harsh environmental conditions, including extreme temperatures and high humidity, making them suitable for Africa's diverse climates. Rigorous testing ensures compliance with international safety standards, guaranteeing dependable performance throughout their service life.

### Conclusion

The DEHNventil M2 series from DEHN Africa marks a major step forward in surge protection technology. Its combination of high efficiency, smart monitoring, and easy-



**“The DEHNventil M2's modular design allows for the easy replacement of individual protection modules without disconnecting the main power supply, simplifying maintenance and minimising operational downtime.”**

to-use design makes it an essential part for anyone wanting to safeguard valuable electrical systems from the constant danger

of overvoltage events.

[www.dehn-africa.com/en-za](http://www.dehn-africa.com/en-za)

## SME Lightning Protection and Earthing: celebrating 40 years of excellence

At SME Lightning Protection and Earthing, they take pride in leading the way in safeguarding your assets against unpredictable natural forces. With over 40 years of experience, they are the only SABS ISO9001:2015-certified company in the sector. They specialise in comprehensive lightning protection and

earthing solutions, tailoring each to their clients' specific needs.

In 2025, SME Lightning Protection and Earthing and their Group of Companies celebrated a significant milestone, marking 40 years of delivering quality protection and operational excellence across Southern Africa and beyond.

**“With over 40 years of experience, they are the only SABS ISO9001:2015-certified company in the sector. They specialise in comprehensive lightning protection and earthing solutions, tailoring each to their clients' specific needs.”**



SME Lightning Protection and Earthing has grown from humble beginnings into a trusted name in lightning protection and earthing solutions, built on technical expertise, operational excellence, business integrity, and an unwavering commitment to safety.

Over the past 40 years, they have:

- Delivered thousands of successful project installations
- Partnered with leading industries and institutions
- Invested in local talent and community upliftment
- Stayed ahead with cutting-edge technology and protection standards

### In 2025, they proudly celebrated the following milestones:

- SME Lightning Protection and Earthing - 40 Year Anniversary
- SME Lightning Protection and Earthing Coastal - 15 Year Anniversary
- SME Lightning Protection and Earthing Inland - 10 Year Anniversary
- SWE Lightning Protection and Earthing Namibia - 15 Year Anniversary
- SME Lightning Protection and Earthing - new operations in the Western Cape

They recognised and rewarded their Best of the Best Performance Award Winners 2025, and felt humbled and proud as they celebrated their Long Service Award employees for their exceptional loyalty and commitment to the business.

The 2025 celebration was truly special, with 10 employees achieving five years of service, nine employees reaching 10 years, and three employees marking an impressive 20 years with SME.

[www.sme.co.za](http://www.sme.co.za)

## ELPA: safeguarding South Africa from lightning risk

As South Africa's leading authority on earthing and lightning protection, the Earthing and Lightning Protection Association NPC (ELPA) sets vital standards to safeguard people, property, and infrastructure. Born from the urgent need for reliable protection in a country prone to frequent, intense thunderstorms, ELPA plays a crucial role in lightning safety.

ELPA's mission is to ensure that earthing and lightning protection systems in South Africa meet the highest safety standards. It partners with engineers, contractors, regulators, and industry stakeholders to provide guidance, training, and certification for the design, installation, and maintenance of lightning protection systems. By promoting compliance with South African National Standards (SANS) and international best practices, ELPA helps reduce lightning-related damage and fatalities.

ELPA maintains a national register of certified professionals and compliant installations. This register assures property owners, insurers, and regulators that only qualified experts handle critical protection work. ELPA also offers workshops, technical resources, and public awareness campaigns to promote understanding of robust earthing and lightning protection.

[www.elpasa.org.za](http://www.elpasa.org.za)

## Pro Lightning: pioneering electrical solutions in South Africa

**Pro Lightning**, a South African-based company, has swiftly become a leading name in the electrical solutions industry. Focusing on innovation, dependability, and customer-centric service, Pro Lightning has established itself as a trusted partner for both residential and commercial clients across the country.

Founded in Johannesburg, Pro Lightning began as a small business with the aim of providing high-quality electrical services, prioritising safety and efficiency. Over time, the company has expanded its range to include a comprehensive suite of solutions, such as lightning protection systems, surge protection, earthing, and various electrical installations and maintenance services. This extensive expertise allows Pro Lightning to serve a diverse client base, from homeowners seeking reassurance to large industrial facilities requiring complex, customised systems.

A key element of Pro Lightning's success is its commitment to quality and compliance. The company strictly adheres to South African National Standards (SANS) and global best practices. This ensures that every project meets stringent safety and performance criteria. Its technicians engage in continuous training to stay up to date on new technologies and regulatory updates in the electrical sector.

Innovation is at the heart of Pro Lightning's ethos. The company invests significant resources in research and development to keep pace with the latest trends in lightning and surge protection technology. This proactive strategy enables Pro Lightning to deliver state-of-the-art solutions that



protect people, property, and sensitive equipment from the damaging effects of electrical surges and lightning strikes—a crucial need in South Africa, where thunderstorms are frequent and often intense.

Customer service is another cornerstone of Pro Lightning's reputation. The company takes pride in transparent communication, swift response times, and customised solutions tailored to each client's specific needs. From initial consultation and risk

assessment to installation, testing, and after-sales support, Pro Lightning offers a reassuring client experience at every stage.

Looking ahead, Pro Lightning is committed to expanding its presence throughout South Africa and the broader African continent. With a strong focus on quality, innovation, and customer satisfaction, the company aims to shape the future of electrical solutions—empowering homes, businesses, and communities to thrive despite the challenges posed by lightning and electrical surges. The journey is just beginning, and Pro Lightning is eager to lead the way forward.

[www.prolighting.co.za](http://www.prolighting.co.za)



With a strong focus on quality, innovation, and customer satisfaction, the company aims to shape the future of electrical solutions—empowering homes, businesses, and communities to thrive despite the challenges posed by lightning and electrical surges.

## Latest trends in lightning protection systems in South Africa

By: Minx Avrabos

With around 26 million lightning strikes each year, lightning protection is both a legal requirement and critical for safety in South Africa. Evolving technology and changing climate are driving new trends in lightning protection, which is important for all electrical contractors and building professionals.

### Surge Protection Device (SPD) integration

The integration of advanced surge protection devices is rapidly gaining traction. With the proliferation of sensitive electronics in homes, businesses, and industrial settings, SPDs are now standard in most Lightning Protection System (LPS) installations. Modern SPDs offer real-time monitoring, modular designs for easy upgrades, and remote fault notification—crucial for maintaining uptime in data centres and critical facilities.

### Early Streamer Emission (ESE) systems

Early Streamer Emission technology,

which preemptively emits upward leaders to intercept lightning before it can strike a structure, is becoming more prevalent in South Africa. ESE air terminals are particularly valuable for protecting large or complex sites such as mines, airports, and industrial plants, where conventional systems might be impractical or less effective. Local regulations require that ESE systems comply with SANS/IEC standards for proven effectiveness.

### Smart monitoring and IoT solutions

Digital transformation is influencing LPS, with smart sensors and IoT-based monitoring systems now available. These solutions enable real-time tracking of system health, ground resistance, and strike events. Smart monitoring improves maintenance scheduling and allows for rapid response after a lightning event, reducing downtime and repair costs.

### Eco-friendly and aesthetic installations

Modern building designs in South Africa increasingly prioritise aesthetics and



sustainability. As a result, lightning protection components are being manufactured with low-profile designs and corrosion-resistant materials. Copper and aluminium alloys are favoured for their longevity and reduced environmental impact, while custom finishes help LPS blend seamlessly with building exteriors.

### Compliance with updated standards

The South African Bureau of Standards (SANS) regularly updates lightning protection requirements to align with international best practices. The latest SANS 10313 and SANS/IEC 62305 standards emphasise comprehensive risk assessment, proper grounding, and

mandatory periodic inspection. Contractors must stay informed about these changes to ensure legal compliance and optimal system performance.

### Conclusion

As lightning risks intensify due to climate variability, South Africa's approach to lightning protection is becoming more sophisticated. The latest trends - ranging from advanced surge protection and ESE technology to smart monitoring and sustainable materials - offer improved safety and value for clients. For electrical contractors, staying ahead of these trends is essential for delivering reliable, future-proof solutions in a lightning-prone nation.



Modern SPDs offer real-time monitoring, modular designs for easy upgrades, and remote fault notification—crucial for maintaining uptime in data centres and critical facilities.



## Turning industrial lighting on its head - reimagining the function and form of the luminaire

In a previous **Sparks** article, we examined the development of the StadiLux floodlight and how constraints can inspire innovation in lighting design. The same approach is evident in another project by the same designer and lighting engineer, Urbain du Plessis, the South Africa-born engineer whose work encompasses both stadium lighting and industrial systems. While StadiLux rethought how high-power sports lighting could be engineered, the Matrixx® intelligent luminaire system challenged an even more fundamental concept: the very idea of what an industrial luminaire should be.

For decades, industrial lighting followed a straightforward pattern. A lamp, a driver, a reflector, and a housing were assembled into a fixture and mounted high above a factory or warehouse floor. As technologies developed, lamps changed—mercury vapour was replaced by metal halide, and later LEDs superseded both—but the basic concept largely remained the same.

Matrixx® took a different approach. Instead of creating a better fixture, the engineering team asked a more revolutionary question: what if lighting were considered a system rather than just a product?

The project originated in Australia at Vivid Technology Ltd, a company founded in 2011 to develop high-efficiency technologies for large industrial settings. From the beginning, the aim was not just to produce more efficient lighting but to create a fully integrated intelligent lighting platform. The result was Matrixx®: a modular architecture that combines lighting hardware, sensors, energy-management software, and data analytics.

Unlike traditional lighting upgrades that merely replace fixtures, Matrixx® was designed as a 'system of systems' comprising four interconnected layers: an energy management system, a lighting control system, a luminaire system, and an installation system. These layers work together to transform lighting from a passive electrical load into an active operational platform.

### Rethinking the luminaire

At the heart of Matrixx® is a modular architecture that breaks the luminaire into several interacting components rather than a single sealed fixture.

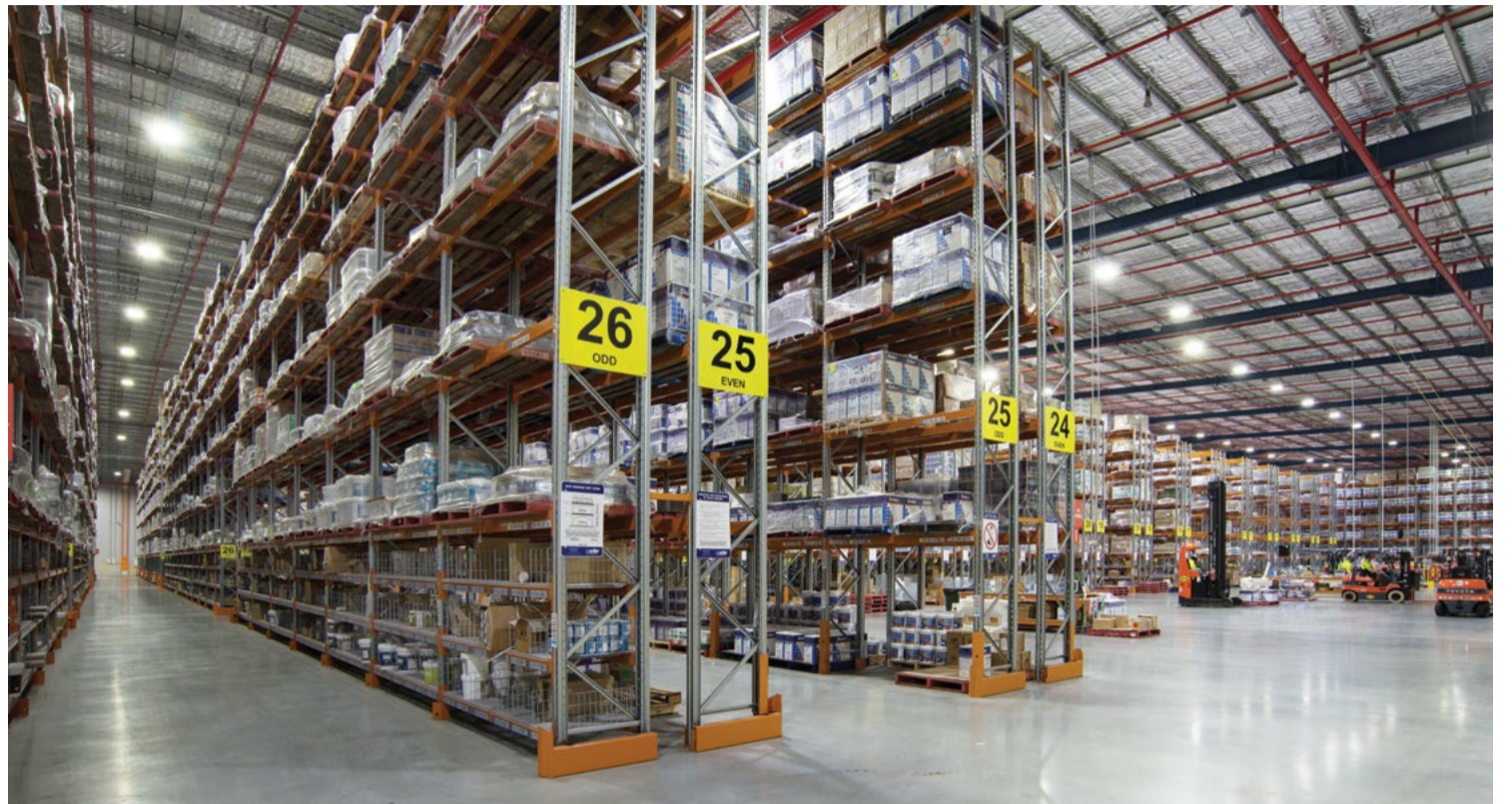
### Light engines

Instead of a single large luminaire, Matrixx® employs independent LED light engines—high-efficiency optical modules intended for mounting heights between 10 and 15 metres. Each light engine features sealed solid-state optics that connect the LED directly to the environment, removing the usual pathways where dust or moisture could impair optical performance.

### The powerpack

Power and intelligence are separated from the light source. Each PowerPack functions as both a power supply and an edge computing control hub. Rated at approximately 1.2 kW, a PowerPack usually drives six light engines while continuously monitoring operating parameters across the network.

Separating the optical components from power and control electronics allows the system to evolve as technologies advance—



The 23,000 m<sup>2</sup> Dulux distribution centre in Marsden Park, New South Wales, is illuminated to 150 lux by a MATRIXX® system, with an average consumption of just 1 W/m<sup>2</sup>.

without replacing the entire luminaire.

### Plug-and-Play Infrastructure

Perhaps the most radical change lies in the installation architecture.

Traditional "smart" lighting installations rely on extensive field wiring and electrical terminations. Matrixx® replaces this with a plug-and-play cabling system in which power, data and sensor cables are factory-tested, bar-coded and delivered ready to install.

On-site, installers simply connect components together. This dramatically reduces installation time, eliminates wiring errors and allows the system to be modified or upgraded without dismantling the entire lighting installation.

### Intelligence at the edge

Central to the system is the Lighting Control Unit (LCU).

Unlike many modern lighting platforms that rely heavily on cloud connectivity, the LCU operates autonomously on site. All operating logic is stored locally, creating an enduring cyber-secure air-gapped network that continues to function even if external communications are unavailable.

A single LCU can coordinate hundreds of sensors and lighting nodes across large industrial facilities. Occupancy sensors, daylight sensors, and environmental sensors continuously monitor site conditions, enabling the system to dynamically adjust lighting behaviour.

The aim is straightforward: deliver the right light, in the right place, at the right time.

### Lighting becomes data

One of the most significant milestones in the Matrixx® evolution was the addition of cloud-based analytics.

Two software platforms extend the system beyond the physical site:

- Cloud Konnekt, which manages secure communications between installations and remote monitoring systems
- Klarity, a web-based analytics platform that provides real-time insight into lighting performance

Through these tools, operators can monitor installations across multiple sites and benchmark performance globally, down to



Matrixx® took a different approach. Instead of creating a better fixture, the engineering team asked a more revolutionary question: what if lighting was considered a system rather than just a product?

individual light engines. Lighting—traditionally invisible once installed—becomes a continuous stream of operational data.

### Engineering challenges

Developing Matrixx® required advances across multiple engineering disciplines.

Among the most significant were:

- Solid-state optics 'Smartreflector', combining automotive free-form reflector technology with specialised polymers to precisely shape light distribution.
- Software-defined LED drivers allow electrical characteristics to be reconfigured through firmware rather than hardware redesign.
- High-performance thermally conductive adhesives, enabling structural bonding between metals, polymers and glass while maintaining thermal performance.
- Edge-deployed machine learning, enabling Lighting Control Units to continuously monitor system performance and maintain operational rules autonomously.

Equally important was the development of digital site-design workflows. Engineers could model entire installations—including every luminaire, sensor and cable—before construction began. Each component was then tracked during installation using a bar-coded system.

In effect, the lighting installation became a fully engineered network rather than a collection of individual fixtures.

### Real-world performance

Across multiple deployments in industrial and logistics facilities, Matrixx® routinely demonstrated remarkable results.

Energy reductions of 85%–91% alongside improved lighting uniformity and reduced maintenance requirements, with lighting energy consumption below 1W/m<sup>2</sup> in large distribution centres.

By integrating precise optical engineering with intelligent control systems, the platform provided improved lighting quality while using a fraction of the energy needed by traditional LED industrial lighting.

Matrixx® also created value across the broader ecosystem. Electrical contractors could install large systems rapidly using simplified plug-and-play infrastructure. Property owners used intelligent lighting upgrades to modernise facilities and extend leases. Tenants could deploy the system without major modifications to existing infrastructure.

### Lighting as infrastructure

Perhaps the most important outcome of the Matrixx® project is conceptual.

By integrating hardware, sensors, control networks and analytics, Matrixx® demonstrated that lighting can function as digital infrastructure rather than simply illumination.

The luminaire becomes a node in an intelligent network—one capable of autonomously sensing, analysing and optimising for the environment in which it operates.

Matrixx® challenged long-standing assumptions about what a luminaire is and what it can do.

And once lighting becomes part of the digital nervous system of the client's business, its potential reaches far beyond simply turning the lights on.



## Powering progress: smarter energy, safer systems, better light

As South Africa continues to address changing energy needs, the discussion is no longer solely about keeping the lights on; it's about powering our future more efficiently, safely, and sustainably. Across sectors, three key areas are increasingly shaping the electrical landscape: solar and energy efficiency, earthing and surge protection, and lighting innovation.

The rise of solar adoption marks one of the most notable shifts in recent years. What started as a response to energy insecurity has evolved into a broader movement towards energy independence and sustainability. However, solar is only part of the solution. True efficiency depends on how energy is generated, stored, and utilised. Businesses and households alike are becoming more conscious of the need to optimise consumption through smarter system design, efficient components, and load management. The emphasis is shifting

from merely generating power to using it intelligently.

Alongside this change, the importance of strong electrical protection cannot be overstated. Earthing, lightning, and surge protection systems form the foundation of electrical safety, yet they are often neglected until a failure occurs. With the growing integration of sensitive electronic equipment and renewable energy systems, the risks linked to poor grounding or insufficient surge protection are heightened. A well-designed protection system not only defends infrastructure but also ensures continuity, minimizes downtime, and safeguards long-term investments.

Equally transformative is the evolution of lighting. No longer just a functional necessity, lighting now plays a vital role in energy efficiency, productivity, and environmental impact. The widespread adoption of LED technology has already achieved significant energy savings, but



the next frontier lies in intelligent lighting systems. From occupancy sensors to daylight harvesting and smart controls, lighting is becoming more adaptive, reducing unnecessary consumption while enhancing user experience.

Importantly, these three areas are not isolated; they are interconnected parts of a modern electrical ecosystem. A solar installation lacking proper surge protection is vulnerable. An energy-efficient lighting system without smart control is incomplete. A building without adequate earthing jeopardises the integrity of every connected system.

As the industry evolves, the focus must remain on quality, compliance, and innovative design. The goal is not only

to meet current needs but also to build resilient, efficient systems capable of adapting to future demands. By combining innovation with safety and sustainability, the electrical sector is well-positioned to support South Africa's ongoing development.

The future of energy relies on a range of solutions rather than just one; working together to develop systems that are efficient, secure, and durable.

For those aiming to implement these solutions effectively, working with a trusted electrical distributor like Voltex, which offers a comprehensive range of products and expertise, can make all the difference.

[www.voltex.co.za](http://www.voltex.co.za)



The rise of solar adoption marks one of the most notable shifts in recent years. What started as a response to energy insecurity has evolved into a broader movement towards energy independence and sustainability.

## Beka Schröder sets a new benchmark for stadium lighting in Africa

DHL Stadium has reached a remarkable milestone. It has become the first venue in the Southern Hemisphere—and the very first in Africa—to achieve FIFA field certification under the prestigious "FIFA Quality Programme for Floodlights – FIFA Quality Pro" standard.

This groundbreaking certification not only enhances DHL Stadium's reputation on the global stage but also emphasises its dedication to sustainability. It further highlights Africa's swift adoption of innovative sports technology. The recognition is anticipated to attract more international events to the continent. This will create greater opportunities for local athletes, sports professionals, and fans to enjoy world-class competitions at home.

FIFA's Quality Pro standard for floodlights signifies the highest level of excellence in sports venue lighting. It guarantees that stadiums deliver consistent, high-quality illumination, meeting the demanding requirements of international tournaments, live broadcasts, and large-scale spectator events. This level of certification is generally reserved for only the most advanced facilities worldwide. Achieving this milestone represents a major advancement for sports infrastructure on the continent and reinforces Africa's capacity to meet and surpass global standards for professional sporting venues.

The advanced OMNIBLAST system incorporates energy-efficient LED technology, sophisticated control systems, and precisely engineered optics. These innovations guarantee high-quality illumination. They also provide considerable energy savings and lower maintenance needs over time. The system's flexibility

enables customised lighting scenes, enhancing the spectator experience and supporting a range of sports and entertainment events.

The installation and certification process was a collaborative effort involving stadium management, lighting engineers, and FIFA's technical team. This partnership highlighted the importance of cross-disciplinary expertise in achieving such a high standard. It set a precedent for future sports infrastructure projects across Africa. Central to this success is the installation of the OMNIBLAST floodlighting solution. Designed to deliver exceptional illumination performance, OMNIBLAST ensures optimal visibility for players, officials, broadcasters, and spectators. It meets the strict technical and quality requirements established by FIFA.

Looking ahead, DHL Stadium's success is likely to motivate other venues across Africa. More will aim for similar progress in sports lighting and infrastructure. By establishing a new standard for excellence, the stadium shows how investment in technology can promote wider development within the sports sector.

Our team remains committed to advancing lighting technology through continuous research and development. We strive to provide progressively better solutions for sports venues worldwide. We believe that offering first-class facilities is vital for nurturing talent and creating unforgettable moments for athletes and fans alike. The certification process involved rigorous testing. We verified lighting performance, uniformity, glare control, and overall compliance with international broadcasting and sporting



standards. Achieving FIFA Quality Pro certification confirms that the lighting installation at DHL Stadium can support top-tier international matches and televised events.

DHL Stadium's recognition stands as a testament to innovation, collaboration, and shared vision. This milestone opens the door to a new era of sporting excellence across Africa. World-class standards will become the norm rather than the exception.

As the lighting manufacturer behind

this landmark project, we are proud to contribute to a development that not only elevates a world-class venue but also sets a new benchmark for stadium lighting across Africa and beyond.

This milestone demonstrates ongoing dedication to innovation, quality, and performance. It guarantees that modern sports venues are well-equipped to provide exceptional experiences both on and off the field.

[www.za.schreder.com](http://www.za.schreder.com)



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## NatureConnect by Signify

### Why is daylight important?

Daylight is important because it helps to regulate our biological clock, also known as the circadian rhythm. Exposure to natural daylight during the day helps entrain our bodies to the natural light-dark cycles, which in turn improves our overall health and well-being. Additionally, daylight provides us with vitamin D, which is important for bone health and immune function. It can also improve our mood and productivity and help us feel more connected to the natural world.



To learn more, please visit [www.signify.com/NatureConnect](http://www.signify.com/NatureConnect)



### Daylight in Buildings

Daylight should be a significant source of illumination for all spaces with daylight openings. Daylight is strongly favoured by building occupants for adequately illuminating indoor surfaces, with high colour rendering and illuminance, direction, and spectral composition variability throughout the day and seasons.

In interiors with side windows, however, the available daylight decreases rapidly with the distance from the window. Besides, direct sunlight can be a major source of discomfort glare and can cause overheating of the space. Weather conditions may also influence daylight intensity and distribution, thereby affecting indoor illuminance uniformity. Exposure to sunlight and the effective hours of sunlight exposure in an indoor space depend, obviously, on the outside weather conditions, but also on the orientation of the building façade.

For any space with daylight openings, it is recommended to use shading devices to reduce the risk of glare and to avoid direct views of the sun or its reflection. Personal lighting control can include daylight control using shading systems.

Buildings typically have multiple rooms with no direct access to daylight, either because they have no exterior walls or because they are located inside the building, far from windows that open to the outside. Also, in the case of renovations, it is not always economically feasible, or even permitted, to create openings in a building's facades because of existing architectural heritage legislation.

### Summary

Daylight is the most natural light source we have on Earth and is favoured by building occupants because it supports a healthy circadian rhythm and therefore improves our overall health and well-being. However, daylight is not always (easily) accessible in many parts of a building. Daylight regulations, standards and building certification therefore include many exemptions to allow spaces in buildings where people spend long hours indoors, with no access to daylight.

NatureConnect by Signify brings the benefits of natural light indoors, creating comfortable, engaging and attractive environments. Although it cannot be formally positioned as Daylight, it is the best alternative, delivering a sunlike, human-centric light experience that positively impacts sleep quality, entrains the human circadian system, and improves mood and productivity. It is indistinguishable from a real window, providing a daylight effect, a view to the sky, and a greater sense of spaciousness. NatureConnect by Signify applies light recipes with high melanopic values to boost people's energy while offering comfortable, functional lighting.



 Simple  
 Reliable  
 Affordable

# Innovative Sensor Control

For Projects seeking basic controls and incremental energy savings





Elevating the energy savings capabilities of lighting solutions, further improving their energy sustainability while, offering simple, reliable, and an affordable lighting solutions is the principal objective of the EcoSet basic controlled solution. Whether for office, parking or industry applications, EcoSet has several solutions to offer based on your specific needs and preferences.

**Simple system architectures**  
designed to provide broad options – wired or wireless;

**Energy savings at the core.**  
Sensors built into each solution come with functions such as movement and daylight detection;

**Easiest way to do commissioning.**  
One-Touch commissioning for office application;

**Wireless grouping at its simplest and reliability.**  
Whether for an office or warehouse using mesh network;



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## Why quality matters: moving beyond cheap lighting imports

By Aurora Lighting Africa

**A**cross many African markets, demand for affordable lighting solutions continues to grow rapidly. Rapid urbanisation, infrastructure development, and increased electrification have created significant opportunities, but they have also opened the door to an influx of low-cost, low-quality lighting imports. While these products may appear attractive on price, the long-term consequences often tell a very different story.

At first glance, cheaper lighting solutions seem like a practical way to reduce upfront capital expenditure. For contractors, developers, and procurement teams working within tight budgets, the appeal is understandable. However, focusing solely on initial cost overlooks a far more important metric: total cost of ownership.

Low-quality lighting products frequently suffer from poor component design, inadequate thermal management, and substandard materials. The result is premature failure, inconsistent performance, and higher maintenance requirements. In environments where reliability is critical, such as industrial facilities, public infrastructure, and commercial operations, these shortcomings can lead to costly disruptions, safety risks, and reputational damage.

Lifecycle cost analysis paints a clearer picture. High-quality lighting solutions, particularly those built with advanced LED technology as specified by Aurora Lighting Africa, offer significantly longer lifespans, greater energy efficiency, and reduced maintenance costs. Over time, the savings in energy consumption and replacement costs far outweigh the initial price difference. In essence, investing in quality is not an expense it is a strategic decision that delivers measurable returns.

Beyond economics, there are broader implications to consider. Poor-quality lighting can compromise safety, especially in industrial, commercial, manufacturing,



and retail settings. Inadequate illumination or sudden failures increase the risk of accidents and operational downtime. In public spaces, unreliable lighting can negatively impact security and community well-being.

There is also an environmental dimension. Inferior products often have shorter lifespans and are more likely to end up in landfills, contributing to electronic waste. In contrast, high-quality lighting solutions are designed with durability, efficiency, and sustainability in mind, supporting Africa's growing commitment to responsible development and environmental stewardship.

Another critical factor is compliance. As regulatory frameworks across Africa continue to evolve, there is increasing emphasis on energy efficiency standards and product certification. Cheap imports frequently fail to meet these requirements, exposing businesses to legal and financial risks. Choosing reputable, compliant lighting solutions ensures not only performance but also peace of mind.

The path forward for the African lighting industry lies in shifting the conversation from price to value. Stakeholders must



When lighting fails prematurely or underperforms, the hidden costs quickly outweigh any initial savings.

begin to prioritise performance, reliability, and lifecycle benefits over short-term savings. This requires education, awareness, and a commitment to higher standards across the supply chain.

Ultimately, lighting is more than just illumination it is an essential component of productivity, safety, and quality of life. By moving beyond cheap imports and embracing quality-driven solutions, Africa can build more resilient infrastructure, reduce long-term costs, and create environments that truly support growth and development.

In a market full of choices, the question is no longer "How much does it cost?" but rather, "What is it truly worth?"

"Too often, procurement decisions are driven by short-term budgets rather than long-term value," says Managing Director Scylagh Clunnie. "When lighting fails prematurely or underperforms, the hidden costs quickly outweigh any initial savings."

[info@aurora-africa.com](mailto:info@aurora-africa.com)

## IESSA - Interior Lighting Course - 27th & 28th May 2026

**T**he Illumination Engineering Society of South Africa (IESSA) is excited to announce its highly anticipated Interior Lighting Course, expertly delivered by lighting specialist André Blignaut. This comprehensive programme is designed for individuals who have completed the Basic

Concept Course or have a solid foundation in lighting principles, ensuring all participants are well-prepared to delve deeper into the intricacies of interior lighting design.

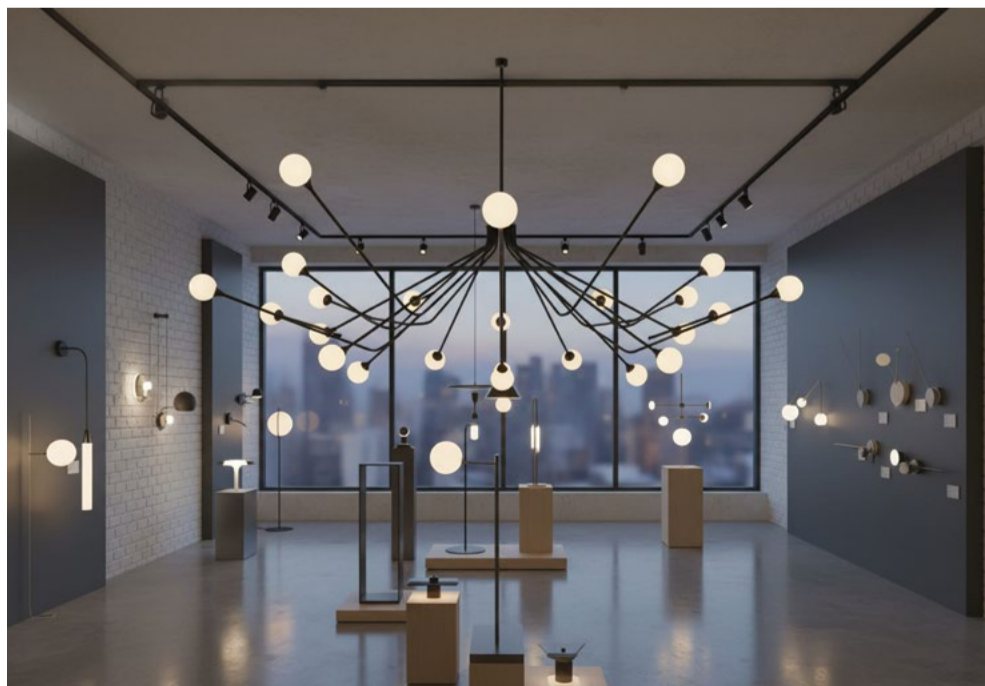
The course promises to deliver in-depth knowledge and practical skills for those seeking to excel in the interior lighting

industry. From foundational theory to advanced applications, André Blignaut will guide attendees through the latest trends, technologies, and standards in interior illumination. Participants will gain valuable insights into designing effective lighting solutions for a range of indoor environments, enhancing both aesthetics and functionality.

A special early-bird discount of 20% is available to those who register before May 1, 2026, making it an opportune time for professionals and enthusiasts to advance their expertise at a reduced rate. Prospective students are encouraged to act promptly, as the final registration deadline is May 15, 2026.

To secure a place on this sought-after course, interested individuals should request the registration form and send any enquiries to [info@iessa.org.za](mailto:info@iessa.org.za). Don't miss this opportunity to enhance your skills under the guidance of a leading expert in the field. The IESSA Interior Lighting Course marks a significant step forward for anyone passionate about creating exceptional lighting environments.

[www.iessa.org.za](http://www.iessa.org.za)



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