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Comtest customers were recognised for their efforts at the recent Channel Partner Day.



Guests were treated to a day of presentations, awards and entertainment.



Jannie Dirks, Comtest Sales Director, Francesco Pagin, Fluke Sales Manager for the Africa region, Barend Niemand, Comtest CEO and Faye al Nobani, Fluke Sales Director for the Middle East and Africa region.



After the formalities, guests were treated to a spectacular Barnyard show.

At the end of 2022, Comtest hosted its clients at an extravagant Channel Partner Day at the Barnyard in Menlyn. The day started off with informative presentations from Comtest staff and an awards ceremony, and culminated in a spectacular musical show, 'The 90s vs. The Noughties'.

Load shedding couldn't dampen the spirits as the day got underway and guests settled down with a cup of coffee, ready for the presentations. Francesco Pagin, Fluke Sales Manager for the Africa region explained the company's vision for the test measurement market both locally and internationally. "Fluke has a long history of innovation, and our goal is to assist our customers to utilise the power of our products and solutions in the best way possible," he said. "As our founder, John Fluke Senior said, "Our customers have the right to get a little more than what they paid for." Pagin noted that the core criteria of Fluke products will always be accuracy, reliability, ruggedness, ergonomics and safety and that the company is thankful to retain global leadership through its partnership with Comtest.

Next up, Faye al Nobani, Fluke Sales Director for the Middle East and Africa region, noted that this year is Fluke's 75th year as leaders in the test instrument market, and that the company was kicking off the celebrations at the event in Johannesburg. "Fluke is looking ahead to expand its expertise and to accelerate progress. The company is designing its strategy to future trends, for instance solar, electric vehicle, connected devices and new software." As such, the plans for 2023 locally include releasing more products aimed at the solar market and working closer with channel partners.

Barend Niemand, Comtest CEO and Jannie Dirks, Comtest Sales Director then took to the stage and highlighted the core values of the company, which

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Pratley Putty used in efforts to protect rhinos



Poaching remains the greatest threat to African rhinos. According to one report, there have been 2 707 recorded rhino poaching incidents in Africa since 2017, 90% of which took place in South Africa. In the ongoing efforts to prevent poaching incidents, Pratley Quickset® Putty is being used with great success to assist with inserting VHF tracking devices into the horns of black and white rhinos.

To preserve the rhino population, conservation efforts like the Black Rhino Range Expansion Project (BRREP) were developed to protect black rhinos. The project aims to translocate black rhinos from the saturated Ezemvelo KZN Wildlife to other Big 5 game reserves, explains Dinokeng Game Reserve GM, David Boshoff. The black rhino numbers will be boosted by expanding the land available

for their conservation to create new breeding populations.

"We are the only BREPP programme in Gauteng with a good population of black and white rhinos. Three years ago, we commenced with the VHF tracking programme to protect our rhinos against poaching," continues Boshoff.

The first step in the VHF tracker programme in the Dinokeng Game Reserve is to locate the relevant rhino in this 19 000-ha game reserve via helicopter, whereafter it is darted with a quick-acting sedative by an experienced veterinarian.

The VHF transmitter is fitted into the rhino's horn by drilling a small hole in the inert or dead part. The procedure is quick and causes no harm or pain to the rhino, following which the hole is plugged with Pratley Quickset® Putty. This ensures the device remains in place and provides long-term protection for the rhino's horn.

Boshoff reveals that dental adhesive was used initially until a veterinarian came up with the idea of using the versatile Pratley Quickset® Putty, which has proved more than up to this important job of assisting with the preservation of black rhinos in the wild.

Pratley Quickset® Putty is a slightly water-soluble, hand-mouldable, quick-setting putty-like adhesive. The characteristics of the putty allow it to be further shaped and moulded on the horn without causing any discomfort to rhinos in the wild. Once the VHF tracker is placed in the horn, scientists and other researchers monitor the rhino's movements for any abnormal activity to indicate it is being targeted by poachers.

"This is not the first time Pratley Adhesives have been used in conservation projects," comments Mark Bell, Pratley's National Sales and Marketing Manager for Adhesives. A green sea turtle had its damaged shell repaired with Pratley Putty, while researchers have successfully used Pratley Putty to adhere radio transmitters to the scales of pangolins while studying them in the wild.

"Many of our adhesive products are very well suited for on-the-go, outdoor applications, and we are happy that they have assisted many conservation initiatives over the years and continue to do so," highlights Bell.

A recent project by Oceans Without Borders to preserve the coral reefs around Mnemba Island near Zanzibar saw Pratley Putty being used to secure coral fragments and restore endangered coral reefs off the coast of Zanzibar.

According to the 2022 State of the Rhino Report from the International Rhino Foundation, illegal trade in rhino horn continues to spur poaching, with an estimated 1 000 rhino horns traded every year. The global rhino population is estimated to be under 27 000.

The BRREP commenced in 2003 to counter the dramatic decrease in the number of black rhinos, resulting in their near extinction in the 1990s. The project is a partnership between the World Wildlife Fund (WWF), Ezemvelo KZN Wildlife and the Eastern Cape Parks and Tourism Board, supported by the Ford Wildlife Foundation.

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The top 5 skills every electrician needs



Working towards becoming a professional registered electrician is time-consuming and complex however it leads to an incredibly rewarding profession that is always in high demand. According to BusinessTech, electricians earn up to R382,117 a year (2017 data) and, along with electrical engineers, top the National Scarce Skills List. But what are some of the personal and professional skills that are most valuable in this specific field of work?

Whether you're a seasoned electrician who's been in the business for years or if you're a newly trained electrician who has recently registered with the DOL, these skills come in handy to outperform your competitors and do your job to the best of your ability.

Problem-solving skills

It's no surprise that problem-solving skills tops this list, considering that during their day-to-day electricians have to apply their minds to solving electrical problems that their clients have. Every day, various challenges present themselves and oftentimes they run from more simple tasks like choosing the right cable size to more complex tasks like planning the layout and installation of electrical wiring, equipment and fixtures. Diagnosing problems, troubleshooting and conducting tests are also a big part of the job and require strong problem-solving skills. Learning to evaluate the strengths and weaknesses of alternative solutions is a vital skill for successful electricians to master.

Communication skills

Customer service and people skills are vital for any electrician as the job requires a lot of communication. An electrician that works for a large company might not have as much direct communication with customers but instead, their communication will mainly be with other team members while an electrician that works as a private

contractor for themselves or through a company might have much more interaction with customers, builders, architects, homeowners, tenants etc. In either scenario, the electrician needs to handle the interaction in a way that makes themselves seem informed and trustworthy, puts the other party at ease and helps them feel comfortable.

Electricians are often called at a time of crisis when a homeowner or tenant has an urgent electrical situation and emotions are running wild, it is imperative for the electrician to make the other party feel reassured and take them through the process in a way that makes them feel comfortable.

Business skills

Not every electrician acts as an independent contractor with many being employed permanently by a company, but for most, the private contractor route does come into play at some point in their careers. Electricians with an entrepreneurial mindset have a lot of options to hone in on their business skills and create opportunities for themselves that lead to a great career trajectory. However, for the average contractor having basic business skills like invoicing, managing finances, keeping track of inventory etc. goes a long way to a successful career.

Basic math skills

Now, this is not to scare anyone away. By no means do you have to know calculus or trigonometry but having basic maths skills goes a long way in ensuring that routine calculations for things like measuring currents and volts are read and interpreted correctly. The level of maths required is fairly basic – handling addition, subtraction, multiplication and division with confidence should be sufficient. Generally, this level required is attained with a primary school and high school education up to grade 9, with the SETA, recognised

training courses covering any relevant mathematical knowledge required.

Attention to detail

As an electrician, it is imperative to always maintain a detail-orientated approach to ensure the smaller details aren't overlooked. Attention to detail also comes in handy to follow work according to strict technical standards. Electricity is highly dangerous, and that can't be taken lightly. The strictest attention to detail needs to be followed to ensure that everyone is safe and not put in harm's way. Following procedures and electrical safety rules are non-negotiable.

These skills are both inert in a person but are also to some degree teachable. With determination, any would-be electrician can learn these skills and any established electrician can master them to do their job to the best of their ability.

Enquiries: www.citiqprepaid.co.za

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include high ethical standards, a focus on excellent service from top to bottom, a vision to leave and breathe change management, and an end goal to maximise returns for all stakeholders, customers and end users. "The Channel Partner Programme was launched in 2020, and despite the interruption of Covid, the results speak for themselves," explained Niemand. Dirks noted that the company has achieved 30% growth since 2019 in a challenging market, much of which is down to the sales team which clocked half a million kilometres during 2022, visiting over 2000 end users.

Next, it was time for the much-anticipated awards. The following companies walked away with the accolades:

Best Performing Channel Partner per Region

- **North West:** Voltex Rustenburg
- **KwaZulu-Natal:** Magnet Electrical Supplies
- **Mpumalanga:** Electro Field Services
- **Gauteng:** Tooltech
- **Eastern Cape:** Haslop & Mason Engineering
- **Limpopo:** Giant Marketing
- **Western Cape:** Flo Specialized Product Solutions

Channel Partners with the most sales activities at the end-user level:

- **North West:** Applecon
- **KwaZulu-Natal:** Magnet Electrical Supplies
- **Mpumalanga:** Bolt & Engineering
- **Eastern Cape:** EPM Electronic & Power Manufacturing

- **Limpopo:** Giant Marketing
- **Western Cape:** Technosales
- **Free State:** AME Welkom
- Best Marketing Activities:** Magnet Electrical Supplies
- Best New Channel Partner:** ARB Electrical Wholesalers
- Best International Channel Partner:** Central Technical Supplies
- Best Electrical Wholesaler:** Adendorff
- Best Overall Performing Channel Partner:** Bolt & Engineering

After the formalities, the guests were joined by Comtest office and factory staff who all enjoyed a hearty lunch before settling in for the dazzling musical show.

Enquiries: www.comtest.co.za



The first and only CAT IV instructor in Africa is from WearCheck

Condition monitoring specialist company, WearCheck, is proud to announce that its Asset Reliability Care (ARC) division officially has Africa's first and only CAT IV instructor, after technical and training manager, Louis Peacock, passed his final exam with flying colours.

CAT certification is achieved through the Mobius Institute, a worldwide provider of education in reliability improvement, condition monitoring and precision maintenance. WearCheck is one of a few certified Mobius training centres for Africa, and now the only centre having a local person presenting the CAT IV course.

Training courses are run by WearCheck anywhere, any date, on demand.

The CAT courses include Vibration CAT I (junior analyst and data collector), Vibration CAT II (intermediate analyst and data collector), Vibration CAT III (senior analyst with supervisor roles) and Vibration CAT IV (expert analyst with additional roles and expert techniques).

For the stringent CAT IV certification, students must pass the exam with >70% and work through 52 hours of on-line videos during part one. Part two entails 40 hours of classroom-based instructor-led coursework and students must have

the required number of years' condition monitoring experience as per (ISO 18436-2), (ISO 18436-1, ISO/IEC 17024), (ISO 18436-3) certification.

The CAT IV course covers:

- Advanced signal processing.
- Cross channel measurements.
- Dynamics (mass/stiffness/damping, natural frequencies, modes).
- Resonance testing (run-up/coast down tests, impact tests, ODS, modal analysis).
- Corrective action (flow control, resonance correction, isolation, and damping).
- Proximity probe and casing measurements.
- Orbit and centreline plot analysis.
- Rotor dynamics (natural frequencies, modelling).
- Journal bearings (design, fluid film instabilities).
- Flexible rotor balancing.
- Torsional vibration.

Peacock, who aced the course with an 80-90% pass rate, had this to say, "I relished the challenges presented by the comprehensive course material, and I'm pleased that all the extra hours of hard work have paid off. One thing is for sure – the CAT-IV course transforms a very good vibration analyst into a vibration



Louis Peacock (right) WearCheck's technical and training manager for the company's Asset Reliability Care (ARC) division has achieved a major success, qualifying as the first and only CAT IV instructor on the African continent after he passed his final exams with flying colours. The vibration analysis superhero is pictured here receiving his certificate from Philip Schutte, WearCheck's ARC manager (left).

superhero!"

Peacock's high marks earned him a distinction, which enables him to register as the first and only CAT IV instructor in Africa – a feat that nobody else on the continent has yet achieved.

There are only eight other CAT IV analysts in Africa, but Peacock is the first and only instructor. On a global level, there are only 249 CAT IV analysts, broken down

as follows: Africa (9), Asia (55), Australia (29), South America (13), North America (25), Europe (93) and Middle East (25).

Following Peacock's lead, several additional WearCheck ARC technicians achieved other CAT certification in 2021/2022: CAT I (12), CAT II (8) and CAT III (2).

Enquiries: www.wearcheck.co.za

How to hire the right electrical contractor for your business

Asking the right interview questions is key to finding a new electrical contractor who has the right skills, experience, and attitude to make a positive impact on your team. It is also the best way of expanding your team with qualified contractors, growing your electrical business, and taking on more work

General interview questions for electricians

Start your interview with these general questions to get a feel for the electrical candidate, their experience, and what skills they'll bring to your team.

- Why are you interested in the position?
- Why did you choose to become an electrician?
- What are your biggest strengths and weaknesses?
- Do you have any additional certifications or licenses?
- What is the most important skill an electrical contractor should have?
- What kind of electrical jobs do you work on in your current position?
- What's the biggest electrical challenge you encountered in your last role?
- What types of electrical systems have you worked with in the past?
- Where do you see yourself in five years?
- Why should we hire you?

Technical questions for electricians

Test your electrical applicant's skills and knowledge with these technical interview questions for electricians:

- What is the difference between a breaker and a fuse?
- How would you go about troubleshooting an existing electrical system?
- What types of wiring might be used for a residential electrical job?
- What are the most common defects of

a PLC?

- What are the differences between wiring a high-voltage and low-voltage system?
- Tell me about the most complicated electrical problem you have faced and how you solved it.
- Have you used electrical contractor software in the past?
- What tools, equipment, or machines do you use on the job site?
- Tell me about any energy-efficient upgrades you've recommended for a customer.

Behavioural interview questions for electricians

Behavioural or scenario-based questions can give you a better insight into how your candidate will respond in certain situations. Here are some scenario-based interview questions you should ask:

- What would you do if you noticed another electrician doing something unsafe on the job?
- How do you deal with an unhappy customer?
- How do you stay safe on dangerous job sites?
- How do you make sure all electrical systems and equipment are working properly?
- What do you do if you have incomplete instructions on the job?
- Have you ever made a mistake on the job? How did you handle the situation?
- How would you handle a customer who disagrees with the best way to fix an electrical issue?
- How do you go about identifying the cause of an electrical problem?
- Tell me about a time when you went above and beyond for a customer.

Electrical apprenticeship interview questions

Offering an electrician apprenticeship is a



great way to attract aspiring electricians to your small business. Here are some questions to ask when interviewing an electrician apprentice:

- Why do you want to become an electrical contractor?
- Have you ever worked in the electrical industry before?
- Tell me about a time you had to overcome a challenge in your last position.
- What is your three-year plan?
- Have you received any electrical training yet? If so, tell me about it.
- What would you consider to be the most important safety precaution for an electrical contractor?
- Do you prefer to work alone or in a

team?

- What types of electrical problems have you worked on in the past?

Compensation and next-steps questions

End your interview with questions about their salary expectations and potential start dates. Here are a few questions you can ask:

- What are your salary expectations for this role?
- Can you provide a list of references?
- When would you be available to start?
- Do you have a valid driver's license?
- Do you have any questions for me?

Enquiries: www.jobber.com



New appointment a sign of big things to come for HellermannTyton

HellermannTyton South Africa is pleased to announce the appointment of Jaco Liebetrau as Sales & Marketing Director, effective January 2023. Liebetrau will be based in Johannesburg, and will be responsible for the sales, marketing and product divisions of the global cable management solution group's South African subsidiary. His key focus will be driving the company's ambitious growth strategies in South Africa and the wider sub-Saharan African markets – both in electrical and automotive.

With a vast and varied work history behind him, Liebetrau joins HellermannTyton from Bosch Building Technologies where he most recently held the position as General Manager Southern Europe & Africa for the Fire Systems & Security Division based in Milan, Italy. Before this he had various other senior roles within the Bosch group over a period of 13 years as Country Business Director for the Bosch Building Technology division and was based in Munich, Germany for four years where he was Sales and Marketing Director of their global Engineered Solutions & Software division.

Gerhard van Rooyen, HellermannTyton Managing Director, notes that the company wants to leverage off Liebetrau's international exposure and experience. "Jaco brings a wealth of experience and a fresh perspective, which will bolster our already strong management team and fits in with our growth strategy and where we plan to take the business," he says.

Liebetrau's experience comprises over 23 years in the corporate environment, working in multinational organisations both locally in South Africa and internationally. He has a marketing and sales background, which is backed up by knowledge of the tech industry from his time with organisations such as Vodacom, Cell C and Siemens.

"I have worked in diverse international companies, leading technical, sales as well as product teams and I am experienced in growing the business, optimising channels and agile change management," he says, "I am very

fortunate and blessed to have received the opportunity to join yet another multinational company such as HellermannTyton."

As Liebetrau recently returned back to South Africa, he can now spend more time with his family, but also join a well-positioned, innovative company with a deeply entrenched culture. "HellermannTyton is a very diverse

and innovative company" he says, "with activities, products and services in many market segments. This allows us to increase market penetration whilst developing new markets."

As a tech ambassador, he strongly believes that technology will shape the electrical industry going forward. "These are exciting times and although growth comes with risks, if we define

our strategy and we follow it through, together with technology, digitalisation and innovation, we can definitely shape this industry." Van Rooyen agrees; "HellermannTyton is well-positioned with more than 55 years' service to the South African electrical industry, and we plan to build further on this strong heritage."

Enquiries: www.hellermanntyton.co.za



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Jaco Liebetrau, Sales & Marketing Director.

WEG's withdrawal boards boost uptime at Ghana gold plant

A process plant at a gold mine in Ghana has become the first in Africa to install WEG's fully withdrawable WEG CCM06 boards, which safely improve the plant's flexibility when isolating selected circuits for maintenance and repair.

"The customer's existing motor control centre (MCC) regulated many operations, which all had to be shut down when attending to a single item of equipment," says Foster Yeboah, regional sales manager for West Africa based at Zest WEG's Ghana branch. "This led to significant downtime, which the customer wanted to avoid."

The mine required a solution that would allow the plant to isolate the electrical feed to specific equipment, allowing targeted maintenance to be conducted on those items without necessitating a complete plant shutdown, says Yeboah. The answer came in the form of a double containerised electrical house or E-house with a key element of this solution being the fully withdrawable boards.

"The WEG CCM06 boards are compartmentalised functional units which can be turned off and pulled out, without affecting the power to the other units," he explains. "This is a valuable feature when considering that important equipment such as mills and discharge pumps must ideally operate continuously to keep the plant efficient."

With the new MCC, operators will now be able to conduct a straightforward process of isolating the unit they want to attend to – simply by opening a latch, turning a shaft and drawing out the relevant board. It is then secured to allow work to proceed safely on the specific equipment, while the plant continues running. Yeboah emphasises that access to the live parts is not possible when the functional units are removed, significantly enhancing safety.

"Once a board is taken out, the design ensures that there is no risk of electrical shock to the operator," he says. "To further

enhance safety, the board can also be placed in 'test' mode for safe testing procedures."

This allows it to receive and display signals for testing while being disconnected from mains power. The system also includes smart relays so that operators can control the MCC remotely.

"In our experience many process plants in our region operate under the same constraints as this customer, having to completely shut down when maintaining equipment," says Yeboah. "With this innovative fully withdrawable board solution, we fully expect there to be considerable interest by other operations."

He highlights that a plant's energy costs can also be significantly reduced by limiting the number of stoppages and restarts. With electric motors consuming a substantial portion of the energy in a process plant, continuous operation is an important factor in economising power consumption.

"Motors use much more energy on start-up so by reducing the number of times they are stopped and started, plants can cut back on the peak starting current that pushes up energy costs," he says.

The fully withdrawable boards are among a range of other WEG equipment which has been included in the E-house, which was constructed by Zest WEG at one of its South African manufacturing facilities.

A major advantage with E-houses is that all equipment can be installed and tested before shipping to site, and factory acceptance tests (FAT) can also be conducted virtually to expedite customer sign-off.

Yeboah concludes by saying that Zest WEG's Ghana office, with its team of competent sales engineers, has been running for more than 10 years and also boasts a training centre for upskilling customers' teams.

Enquiries: www.zestweg.com



The double containerised electrical house.



The WEG CCM06 is a compartmentalised functional unit which can be turned off and pulled out.



Training being done at the Zest WEG Ghana branch.

CBI :energy's new managed smart electricity metering system

CBI :energy has announced general availability of its single and three-phase Class-1 managed smart metering product at Voltex branches nationwide, with other suppliers receiving stock shortly.

This affordable managed smart meter allows technical users, as well as property owners, business managers and managing agents, to gather, analyse and act on real time electricity consumption data for an entire site, or individual large electrical loads. The "managed" part is key in that CBI :energy constantly monitors all installed meters to ensure correct operation and secure transmission of data.

The CBI :energy EC-320CM-W (single phase) and EC-330CM-W (three phase) connected electricity meters communicate over Wi-Fi with a managed cloud infrastructure. Developed and manufactured in South Africa, the CBI :energy Managed Smart Metering product has a suggested retail price of R2,490 (single-phase) and R4 580 (three-phase), which includes three years of the managed service subscription.

"This is the product the market has been waiting for... an affordable, commercial grade internet-connected smart meter that provides detailed, granular data for better electricity billing management as well as powerful facilities management and automation capabilities. We're delighted to be CBI :energy's first and largest supplier of these devices to

electrical contractors around South Africa," said Ahmed Baig, MD of the Voltex Group.

- Billing-grade: four-quadrant Class 1 (better than 1% accuracy) metering of both electricity generation and consumption.
- Commercial-grade specifications: 80A per phase in-line, more through external CT, complies with SANS/IEC 62052 part 11 and 21, SANS 1799.
- Data generated at one-minute intervals for key metrics – real and reactive power, real and reactive energy, voltage, current and power factor.
- Energy consumption rated against customer's electricity tariffs to give them detailed current and historic information on their Rands and cents costs.
- Fast and easy installation: 26mm (single) or 52mm (three phase) wide, DIN and mini rail mount.
- Communication: use an existing 2.4GHz Wi-Fi network, or connect multiple devices to share a single LTE wireless router for low cost, flexible deployment.
- Integration: easily move data to other software systems through the secure API.

CBI :energy is a division of CBI electric: low voltage, a South African designer, manufacturer and supplier of quality low voltage electrical distribution, protection, and control equipment, including circuit breakers, residential current devices, surge protection, wiring accessories, and metering products. Headquartered in Johannesburg, South Africa, the company is a subsidiary of JSE-listed industrial group Reunert, with international operations across Africa, Asia, Australia, Europe, and USA.

Enquiries: www.cbi.energy



The CBI :energy EC-320CM-W (single phase) and EC-330CM-W (three phase) connected electricity meters communicate over Wi-Fi with a managed cloud infrastructure.



The Voltex team with Stan Wilson from CBI.



Simplified safety compliance testing

Comtest is offering a unique Fluke tester to the market, in that it sources both ac and dc steady-state voltage for Hi-Z and Lo-Z instruments, thus simplifying safety compliance testing.

The Fluke® PRV240 Proving Unit provides a safe and convenient method for 'test before touch' TBT verification of electrical test tools without placing the electrician or technician in potentially hazardous electrical environments, which would generally involve using known live voltage sources.

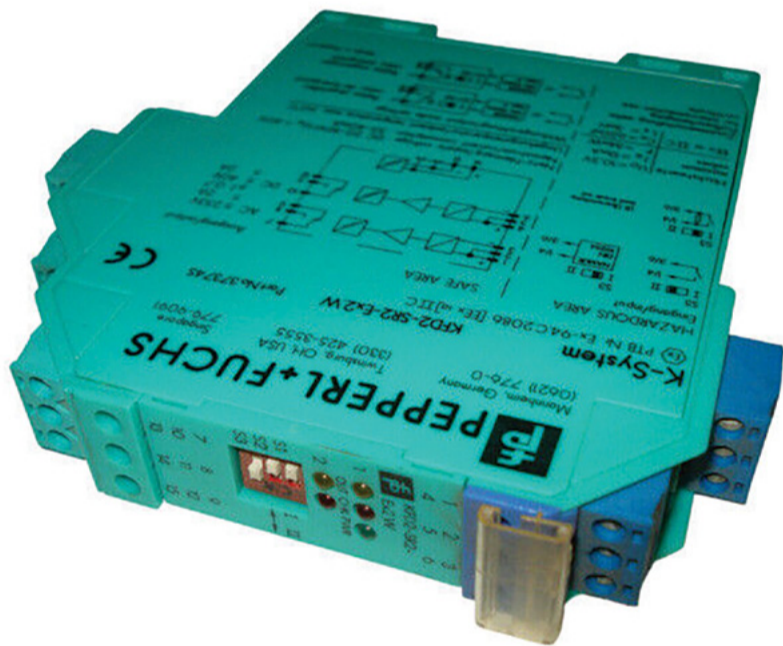
In contrast to using a known live source, using the PRV240 does not require personal protective equipment (PPE) for tester verification. Use of the PRV240 reduces the risk of shock and arc flash compared to verification of test instruments on high-energy sources in potentially hazardous electrical environments because the PRV240 provides a known voltage in a controlled, low-current state in accordance with safe work practices.

The pocket-sized PRV240 sources 240 V of both ac and dc steady-state voltage for testing of both high- and low-impedance multimeters, clamp meters, and two-pole testers, eliminating both the need for multiple verification tools and the use of a known high-energy voltage source for test

instrument verification. To avoid accidental contact, the voltage is supplied through recessed contacts that are activated only when test probes are inserted into the modules insulated access points. A single LED indicates the sourcing of the voltage to verify the test tool, simplifying test tool verification without the need for PPE.

The proving unit can perform up to 5 000 tests per set of four AA batteries and comes with a TPAK magnetic hanging strap for easy accessibility.

Enquiries: sales@comtestco.za, or for more product information, visit <https://bit.ly/3EJgELU>



Switch amplifiers for multiple voltage ranges

Some applications require different supply voltages. What previously had to be solved with several switch amplifiers can now be handled by a single device of the new switch amplifier product family from Pepperl+Fuchs.

In mechanical engineering or, for example, for field box installations, users often face the problem that the application requires the use of several switch amplifiers with different power supplies. For plant operators, this means they have to keep several components in several places at once: on stock, in catalogues, in planning and, of course, in the service technicians' toolbox.

The new KF08-SR-Ex* product family of switch amplifiers from Pepperl+Fuchs

offers a solution that is both efficient and reliable. The new components feature several highlights: incoming supply from 19-30 V dc or 90-253 V ac, use in intrinsically safe applications, and classification for safety applications up to SIL 2.

There are numerous technical features that make the new switch amplifiers efficient and powerful. Within an application, they transfer binary signals from NAMUR sensors or mechanical contacts from the hazardous area to the safe area. A proximity sensor controls the load on the control system via a changeover relay contact; the operating direction can be reversed. All modules feature line fault monitoring so that during a fault condition, the relays de-energise and the fault is indicated via LEDs in accordance with NAMUR NE44.

Enquiries: www.pepperl-fuchs.co.za

Power surge protection or no claims say insurers

Last year, South African short-term insurers reported a 60% increase in claims for destruction to people's property due to power surges as a consequence of load shedding. Now, some of these companies are demanding that homeowners have a surge protection device (SPD) installed or else they won't be able to claim for damage caused by a power surge.

Dr Andrew Dickson, Engineering Executive at CBI-electric: low voltage, cautions consumers to check the fine print on their policies to see whether this applies to them. "If they don't, they could be in for a nasty – and costly – shock should their home be hit by a power surge."

He explains that, with load shedding, when the electricity is turned back on at a substation, it can send through a voltage pulse of several thousand Volts into the network. "The problem is that the average home runs on 230 Volts, so when the lights come on again, all electrical items, including your lights and appliances, may receive an unexpected voltage spike, followed by a power surge of the returning main supply. This only lasts for a microsecond, but it is enough to result in a point of failure within equipment which may cause significant damage."

"While they may be a grudge purchase, SPDs can limit the high peak voltages, diverting that extra electricity away from your distribution board. Plus, they cost a lot less than having to buy a new TV, or worse, your fridge or gate motor," points out Dr Dickson.

Describing how SPDs work, he says, "In the event of a voltage surge, where voltage is greater than what a home's appliances can generally handle, these devices clamp the voltage, providing a path to ground where the excess energy is dumped, limiting the excess voltage spreading into

the home, and thereby keeping the voltage at an acceptable level. Different SPDs can absorb different amounts of energy. If these levels are exceeded, it could affect the device which is why all SPDs have an indicator to show the user that it is either operational or at the end of its life."

"Your insurance company will likely prescribe the kind of SPD you should use," shares Dr Dickson. "Typically, this is a Class 2 SPD which is installed within the distribution board by a licensed electrician. This will then prevent the spread of over-voltages within the electrical system and protects whatever is connected to it. For sensitive electronic devices like TVs, routers and home entertainment systems, you might want to supplement this with Class 3 devices at the point of consumption which is typically a plug-in adaptor."

To ensure that homeowners are able to claim should a power surge still cause damage, he advises that they follow the SPD installation requirements contained within their policies. "They should also check the devices after load shedding or a storm to see if the indicator still shows that they are in good working order. While SPDs are risk mitigation measures, they will eventually fail so need to be checked on a regular basis, especially with Eskom announcing that 'protracted load shedding' will continue for the foreseeable future."

"With this year's rise in inflationary pressure forcing South African consumers to cut back on discretionary spending, can they afford not to have SPDs in place? Not only could this prevent them from having to repair or replace expensive appliances, but also potentially thwart them from becoming victims of crime through power surges knocking out alarm systems and electric fencing. Just like having an insurance policy, people often underestimate the benefit of these devices until after an event has occurred," Dr Dickson concludes.

Enquiries: www.cbi-lowvoltage.co.za

Narrow power supply with a high power density

The new, slim generation of Uno Power power supplies from Phoenix Contact stands out with its easy system diagnostics via DC OK-LED and switching relay contact. The high power density makes the power supplies the solution for industrial applications with limited space.

The devices are particularly suitable for use in industrial applications and for urban infrastructure. In machine building, the power supplies find their place in small systems with basic requirements. In urban infrastructures, the devices stand out with their Power over Ethernet capability for the voltage range of 48 to 56 V. With a power of 240 W, the power supply can power multiple PoE end-users, such as in combination with a PoE switch. The narrow overall width also effectively saves space in the control cabinet. The devices are alignable without a minimum clearance to neighbouring modules. Compared with other products on the market, using the Uno Power power supply provides

excellent energy savings, achieved through low no-load losses below 0,3 W and optimised efficiency. With efficiency coefficients of over 94% at nominal load, just a small amount of electrical energy is converted into heat energy. The efficient technology in the small housing covers loads from 25 to 480 W.

For simple system diagnostics, there is a floating relay contact available for the performance classes from 120 to 480 W. The temperature range of -40 to 70°C makes the devices flexible for outdoor installations. This enables a reliable device start even in extreme cold.

Enquiries: www.phoenixcontact.co.za





Starting strong! Annual competition winners announced

As another challenging year drew to a close, Sparks Electrical News offered its readers the opportunity to start 2023 on a positive note with its annual competition. Launched at the beginning of December 2022, the competition was open to all readers and entries streamed in from all corners of the country. Known for its great offerings, this year's competition was no different as the magazine teamed up with South Africa's leading electrical companies who donated a number of amazing prizes.

Once the deadline for entries into the competition had closed at the beginning of January, the Sparks team visited the companies who had sponsored the prizes to perform the draw. Were you one of the lucky winners?



Jannie Dirks and Leanne Cole from Comtest.



HellermannTyton's Natasha Van de Loo.



Maureen Zulberg and Imtiaz Ahmed Baig from Voltex.



Radiant Lighting's Anthony Lloyd.



Werner Havenga and Ravi Naidoo from Waco.



CONGRATS!



Anthony Lloyd from Eurolux.



Margaret Maree and Chamz Singh from LEDVANCE.



Crabtree's Gillian Taylor and Pieter Knoetze.



Charmaine Tshabalala from Vermont Sales.



Mark Jenkins from Three-D Agencies.

HERE ARE THE WINNERS

Comtest

- 2 x Fluke TLK225
- Winners:** Allister Vivier from S&AV Agencies and Nathalie Lerm from Rholif Grindgrod

Crabtree Electrical

- A R2000 Makro gift card
- Winner:** Ockert Grobler from Skyla Electrical

Eurolux

- A FS310 NightWatcher
- Winner:** Wisdom Mandaza from Letaba Crushers

HellermannTyton

- **Hamper including:**
- Heatshrink kit (various colours and sizes)
- INSULOK cable ties
- Insulated Screwdriver Kit
- Compact Digital Multimeter 600V
- Multipurpose Lubricant
- Red and blue electrical insulation tape
- Helacons
- Moleskin Notebook
- HellermannTyton coffee mug
- HellermannTyton gaming mouse pad
- Winner:** Abednego Salmane from Schneider Electric

Ledvance

- A branded cooler bag, powerbank, Earpods, 12V Car Lighter USB adaptor and LEDVANCE products

- Winner:** Lisa Lenferna de la Motte from EXEL Electrical Engineering

Radiant Lighting

- AV744 Hummer: Jump Start 24 V and 12 V, 27 000 MAH

Winner: Thabiso Mthethwa from JKJ Pumps

Three-D Agencies

- 3 x UT61B+ Multimeters
- Winners:** Bob Maitland Stuart from WATT Projects, Mercia Matimu Zulu from Eskom, and Edward Thrash from EnergyDrive

Vermont Sales

- TC20002 Drill and impact driver twin pack
- Winner:** Pieter du Toit from NMISA

Voltex

- 2 x solar panels
- Winners:** Phiwe Mbongwa from MegChem and Stelio Zayannakis from Union Electrical Wholesalers

Waco

- 64 Piece Waco Chrome Vanadium Toolbox
- Winner:** Clinton Roberts from Afrilek Automation

Congratulations to all the winners, and thank you to the advertisers who once again spoiled Sparks Electrical News readers with a host of great prizes.

Driving energy transition in the mining industry

By Erik Pretorius, Head of Sales: Africa and Australia, ABB

Mining houses are confronted with the same energy transition as other industries and have an urgent responsibility to transform the way they mine through technological change. It is clear that the energy needs of the modern mine simply cannot be met sustainably with diesel machinery alone. There has to be a transformation and ABB is committed to working with mines to bring about that transformation.

We care deeply about the health, safety, and well-being of our planet as much as we do the people who inhabit it. Our vision is for CO₂-free and energy-efficient mines to help combat climate change, creating sustainable progress for today and future generations. We work hand in hand with our clients and partners to convert existing mines from fossil fuel energy to all electric. In this way, ABB can assist the mining industry to meet its sustainability goals, while staying competitive and ensuring high productivity.

ABB Ability eMine™ makes the all-electric mine possible, with fully integrated electrification and digital systems from mine to port. The solution includes a portfolio of electrification and digital systems to accelerate decarbonisation in the mining sector. We support the mining industry from the early mine design stage to convey the full benefit posed by electrification, assisting with designing the hauling process to optimise it with electrical solutions that match mine constraints and help meet production targets.

The solution also focuses on supplying power to mining vehicles, with fit-for-purpose electrification to achieve the most optimised electrified process. In addition, the solution integrates with ABB Ability™ applications to plan, monitor, and control processes to optimise operations and energy usage.

A key component of keeping the all-electric mine running is ensuring that the equipment performs when required and that trucks can charge when they need to. We provide charging station solutions to meet the needs of modern mining operations and interface with all vehicles. eMine™ is vehicle type and OEM agnostic



in that it supports an interoperable approach based on proven standards to provide any solution needed to charge battery electric vehicles (BEVs).

A new pilot innovation known as ABB Ability™ eMine™ FastCharge is set to become the world's fastest and only fully automated charging system for haul trucks, offering up to 600 kW of power. Designed for the harshest environments, this flexible system can be easily installed anywhere to charge a truck without human intervention, and at the highest power on the market today to minimise downtime.

The solution includes ABB Ability™ eMine Trolley System technology to reduce diesel consumption by up to 90% while haul trucks are on a trolley system, which also reduces energy costs and environmental impact. In addition, electrified trucks run at a higher speed for a better speed-on-grade. Current trolley technology is based on diesel hybrids and can be supported by ABB's Trolley System to assist with the successful transition to an all-electric mine. The system is ideal for heavy-duty vehicles such as those used for inclined hauling, an application that battery-only solutions cannot cater for at present.

We are committed to creating sustainable progress for today and future generations by helping our mining clients through their energy transition. ABB Ability™ eMine makes the all-electric mine possible, with fully integrated electrification and digital systems from mine to port. From design to ongoing service, ABB is the partner that can transform today's mine operations while improving the world beyond them.

Enquiries: www.abb.com

The world's first SF6-free 420 kV gas-insulated switchgear technology

Hitachi Energy has announced it will provide the world's first sulphur hexafluoride (SF₆) free 420-kilovolt (kV) gas-insulated switchgear (GIS) technology and a state-of-the-art modular prefabricated grid connection solution at a key node at TenneT's power grid in Germany, supporting the leading European grid operator to achieve its carbon neutrality goals.

This project covers a major grid connection upgrade which significantly extends the operating life of existing power assets to ensure the longevity and continued efficiency of the existing power infrastructure. The global technology leader will deliver innovative EconiQ™ 420 kV GIS that uses a game-changing technology that eliminates SF₆ with reliable and scalable solutions for the lowest carbon footprint.

TenneT is a major transmission system operator in the Netherlands and Germany, supplying power to some 42 million homes and businesses in both countries. The company aims to be a driving force behind the energy transition by investing in eco-efficient technologies to reduce greenhouse gas emissions. As a transmission system operator, TenneT is a key player on the historic path to a safe, reliable and carbon-free energy system.

To support TenneT on its transition to SF₆-free solutions, Hitachi Energy will contribute pioneering technologies, unique system integration capabilities, engineering expertise and extensive experience with local grid code requirements to strengthen the grid connection at the 220-megawatt (MW) Erzhausen

pumped storage power plant near Hanover. This project uses Building Information Modeling, a consolidated and collaborative digital working method that allows decision-based 3D modeling and improves facility management via a digital twin for the life cycle of the power asset. The entire project will be completed in 2026.

In this project, Hitachi Energy will install three bays of EconiQ 420 kV GIS to enable the transmission of large amounts of electricity over long distances while eliminating significant volumes of SF₆. This eco-efficient innovation remains similar in size while being 100 percent as reliable as the conventional GIS solution based on SF₆. This installation will effectively avoid the addition of nearly 2 300 kg of SF₆, equivalent to removing the CO₂ emissions of around 1 150 passenger vehicles per year.

"We are proud to collaborate with TenneT in their efforts to accelerate the energy transition and strengthen the power infrastructure in Germany," said Claudio Facchin, Chief Executive Officer of Hitachi Energy. "At Hitachi Energy, we are championing the urgency of the energy transition through innovation and collaboration. Through our modular prefabricated grid connections and EconiQ high-voltage switchgear technology, we are supporting our customers to reduce their carbon footprint and enabling a more sustainable, flexible and secure energy system."

EconiQ is Hitachi Energy's eco-efficient portfolio for sustainability, where products, services and solutions are proven to deliver exceptional environmental performance. Hitachi Energy has placed sustainability at the heart of its Purpose and is advancing a sustainable energy future for all.

Enquiries: www.hitachienergy.com

Time to pick up the pace with implementing EV manufacturing

By Viren Sookhun, Managing Director at Oxyon



Viren Sookhun, Managing Director at Oxyon

Vehicle manufacturing is the third-largest manufacturing industry in South Africa, and Europe represents 44% of the current vehicle export market. However, the European Union (EU) is set to put an end to the sales and purchasing of gasoline-powered vehicles as early as 2030, in favour of Electric Vehicles (EVs) and other green transport solutions. This poses a significant threat to our manufacturing sector and our economy as a whole. The recently opened production lines at Ford, intended for EVs, ultimately turned to rolling out more gasoline powered cars, and currently we have no ability to produce greener transport. We need to start implementing and ramping up EV production capability as a matter of urgency, and a Temporary Employment Services (TES) provider can help.

Imports only

In terms of South Africa's own energy transition, because all of the currently available electronic vehicles are imported, EVs are currently out of the price range of the majority of consumers, which poses another problem. While new models are going to come into the market in future, if they could be locally manufactured, they would become more affordable and would also carry a reduced carbon footprint, making them a more attractive option.

The reality is that there is no need to import these vehicles when we have production capacity locally. The lines of our plants must be extended to begin to introduce EVs as part of manufacturing capability. With growing choice and availability will come increased adoption levels, which will then allow manufacturers to scale out further and grow the market.

Perfectly placed

With our major export market under threat, the vehicle manufacturing sector needs to undergo a significant overhaul to ensure its continued future. We will need to build capacity in EV manufacturing as well as the manufacturing of key components required in the EV industry. South Africa's transportation infrastructure and geographic location makes it an ideal location to establish an EV manufacturing hub, but this will take time, and if we delay any longer it will effectively be too late.

The opportunity exists and the supply chain is already beginning to formulate itself, with lithium-ion battery facilities being opened in the Vaal area and the Western Cape and petrol stations increasingly beginning to incorporate charging stations at their operations. However, there is a lot of work that still needs to be done.

We have to start somewhere

The reality is that if we do not begin, we will be left behind and an entire industry that contributes significantly to our economy will be left behind. Vehicle manufacturers need make this part of their agenda as a matter of urgency, even if they begin with a single model and scale as demand grows.

To do this, we also need skilled workers. By looking to a TES provider that delivers turnkey employment solutions, the vehicle manufacturing sector can speed up the roll out of EV manufacturing. The conversion of lines to EV manufacturing can be run as a Business Process Outsourcing (BPO) solution, turning this into a productivity-based model to ensure efficiency. In addition, a TES partner offers flexible staffing solutions, the ability to manage HR and recruitment as well as the capability to create and run skills development and transfer programmes. A specialist TES provider in the EV sector would be an ideal long-term partner in saving South Africa's vehicle manufacturing industry.

Enquiries: info@oxyon.co.za

Schneider Electric introduces the most sustainable modular single-phase UPS of its kind

Schneider Electric has introduced the APC Smart-UPS Modular Ultra, the most sustainable uninterruptible power supply (UPS) of its kind. This UPS provides customers with more scalable power in the smallest footprint, freeing up space for critical IT, or other equipment while maximising uptime and lowering total cost of ownership.

With APC Smart-UPS Modular Ultra, Schneider Electric completely reinvents the single-phase modular UPS category to meet evolving customer needs around distributed edge computing and hybrid IT environments.

Designed to help IT professionals and solution providers face ongoing IT deployment pain points in edge and distributed IT, Smart-UPS Modular Ultra is the first single-phase modular UPS with Lithium-ion technology. Its highly modular, scalable and redundant design provides up to 2.5x more power density than any comparable modular UPS. Higher

power capacity in the smallest footprint, longer battery life and lower Total Cost of Ownership enables customers to scale and add resiliency as the business needs change.

Meeting today's IT infrastructure challenges

Organisations are relying on digital technologies to scale at the edge. As they create new products and services for customers or improve customer experience, they must also become more operationally efficient and sustainable by transitioning to digital-first connected operations.

Worldwide spending on edge computing is expected to reach \$176 billion in 2022, increasing 14.8% over 2021. According to a newly commissioned IDC white paper in partnership with Schneider Electric, while edge computing is a significant enabler of the digital-first paradigm, cybersecurity, reliability and skills remain top challenges when transitioning to a digital-first connected ecosystem.

"To meet the evolving needs of today's digital world, the local, regional and cloud data centres of the future must be designed to be sustainable, resilient, efficient and adaptable. The introduction of the Smart-UPS Modular Ultra further strengthens the innovative Smart-UPS Ultra portfolio with 3kW and 5kW UPSs and now the Modular Ultra 5-20kW,"

said Tarunjeet Sarao, Senior Vice President, Transactional & Edge Line of Business at Schneider Electric. "Smart-UPS Modular Ultra, the most sustainable modular UPS in the industry, provides a whole new level of resiliency and power protection with scalable power in an unmatched size, 50% smaller than any comparable UPS. The result is best-in-class power protection in a scalable and redundant design that saves space, time and money."

Smart-UPS Modular Ultra has more power in the smallest footprint to enable more space at the edge

At 50% smaller, 60% lighter and 2.5x more power density than comparable offerings, Smart-UPS Modular Ultra is the smallest, lightest and most powerful modular 5-20kW UPS within the industry. With its next-generation semiconductor technology, Smart-UPS Modular Ultra's innovative compact design provides customers with more space for critical IT infrastructure and other equipment. Its modular design delivers scalable power protection, and for the first time, enterprises can benefit from up to 20kW power protection within a single-phase modular UPS.

Smart-UPS Modular Ultra's design enables companies to scale their power and runtime needs supporting ongoing business growth and delivering best-in-class power protection

without compromising sustainability. Its component modularity allows fast installation, increased serviceability and higher resiliency.

Increased sustainability with lower Total Cost of Ownership

The Smart-UPS Modular Ultra is designed for circularity and lithium-ion technology, enabling the highest embodied carbon reduction of any UPS in its class. This innovative, sustainable and scalable UPS will be Green Premium™ Certified, Schneider Electric's commitment to environmental sustainability.

Smart-UPS Modular Ultra's Lithium-ion batteries provides up to 3x the battery life of VRLA UPS and do not need to be replaced under normal operating conditions. Lithium-ion helps companies save on costs such as battery replacements, reducing time and money spent on maintenance. Further, with a five-year warranty, Smart-UPS Modular Ultra saves on your Total Cost of Ownership over 10 years.

APC Smart-UPS Modular Ultra is EcoStruxure™ Ready, allowing for cloud-based or on-premise monitoring and management, data-driven recommendations and enhanced visibility across multiple UPS devices and sites with EcoStruxure IT solutions. Connectivity is available via the Network Management Card.

Enquiries: www.se.com

Capacity building of EPC Practitioners for KwaZulu-Natal to become leaders in industry as solution providers

During the launch of the EPC Practitioner Skills Programme in KwaZulu-Natal at the Durban University of Technology Steve Biko Campus, CEO of the Energy Water SETA (EWSETA), Ms. Mpho Mookapele, had a powerful message during her welcoming address relating to Environmental, Social, and Governance (ESG) in Africa, and emphasised finding solutions to some of the common challenges faced in embedding ESG practices in all aspects of Energy Efficiency. Expressing her excitement for what the EPC Practitioner Skills Programme can bring for the youth in their personal development journey, but also in their new roles as interns in the workplace she added "Look beyond auditing and identify opportunities for you to become a solution creator" Ms. Mookapele said.

The welcoming address was followed by Prof. Prathaban Moodley, General Manager for Applied Energy R&D and Innovation at the South African National Energy Development Institute (SANEDI), explaining the importance of all interventions to save us from the current energy crisis. Whilst highlighting various opportunities in the Energy space, he said "It's an incredible opportunity for KZN students as this programme fits into the demand side to start help solving the energy crisis."

The Energy Performance Certificate (EPC) Practitioner is an individual who performs an assessment of a building facility to compile and collect data and information required for verification towards an Energy Performance Certificate (EPC) for buildings.



EPC launch event with the partners: Energy Water SETA, South African National Energy Development Institute (SANEDI), Durban University of Technology (DUT), Thekwini TVET College, Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ), the Institute of Energy Professionals Africa NPC (IEPA) and the KZN EPC Practitioner Skills Programme Interns.

This is in terms of the EPC Regulation signed into effect in December 2020, and effective for compliance in December 2025 after the initial 2022 deadline was extended, by the Minister of Minerals Resources and Energy (DMRE) in terms of Act number 34 of 1998.

South African building owners are required by law to submit their building data for the National Building Energy Performance Register (NBEPR) and display an EPC in the foyer of the building. This must be done through a South African National Accreditation System (SANAS) EPC Inspection Body in accordance with the EPC Regulation requirements, and the relevant standards.

The South African National Energy Development Institute (SANEDI) – the body responsible for the NBEPR, in partnership with the Institute of Energy Professionals Africa NPC (IEPA), undertook a Skills Programme in the Quality Council for Trades and Occupations (QCTO) registered EPC

Practitioner qualification code SP220323 at the beginning of 2022 to develop skills to meet the requirements of the EPC Regulation. IEPA is a QCTO Skills Development Provider (SDP) and was the Development Quality Partner (DQP) for the EPC Skills Programme together with a Steering Committee. With the necessary skills available, the DMRE can strive to meet the goals set with the implementation of EPCs.

There are currently 8 SANAS accredited EPC Inspection Bodies, with a total of 17 Technical Signatories and over 40 EPC Practitioners who are ready to serve the building owners and assist with getting buildings ready for inspection, or to inspect buildings and issue EPCs for you. In addition, a lot of training is available, including registered qualification, and many building owners are already using these platforms to upskill their building managers, facilities managers, electricians, and other staff

members to get their own buildings ready for EPC Inspection Bodies to issue their EPCs. There are many ways to approach this as a building owner yourself or using the skills already available to you on a part-time basis, through the programs developed.

The students form part of Cohort 2 of the pilot of the scheme and will commence their practical modules at the Durban University of Technology (DUT) Steve Biko campus Library.

The Institute of Energy Professionals Africa will be assisting the Thekwini TVET College Central Office, Melbourne and Springfield Campuses' to establish the EPC Practitioner Skills Programme as part of their QCTO Accredited Qualifications.

It is amazing to see these partnerships come into effect to not only focus on job creation, but to also secure future skills and expertise for the growth of the Energy Industry.

Enquiries: www.iepa.org.za



LED lighting donated to Matolweni Community Crèche

BEKA Schröder is proud to have been involved in a heart-warming project where LED luminaires were donated to Matolweni Early Childhood Development Centre in Drayini Village, outside of Idutywa, Eastern Cape.

The original Matolweni Early Childhood Development Centre was a mud hut crèche. High crime rates have initiated efforts to upgrade the facility. The community was introduced to the Samarpan Foundation headed by Nicola Irvine. Over the past few years, the community, with the financial and technical assistance of the Foundation, have built a new facility using recycled materials and community labour.

The project has morphed from being an Early Childhood Development Centre to being a facility that offers adult computer skills training and a sewing facility, as well as a kitchen to supplement the nutritional needs of the local children.

Once the building was completed, the centre was looking for assistance with the internal and external lighting. BEKA Schröder,

through the Schröder Together Fund, donated the supply and installation of 32 x BEKA VAPOURLINE linear LED luminaires, 12 x BEKA SERIES 30 LED bulkheads and 40 x LED downlighters, 3 x OMNISTAR-MAXI LED floodlights, in addition to contributing towards kitchen equipment for the school feeding scheme, computer equipment for the women's computer room and sewing machines and equipment for community sewing lessons.

What started as an Early Childhood Development Centre has metamorphosed into a community centre offering nutrition to the children, with the primary school next door, furthermore offering education and personal development, with a focus on marginalized women, to the community.

Samarpan Foundation is a charitable not-for-profit entity, established in September 2006 in New Delhi. They work to provide global support and assistance of any kind where there is humanitarian, ecological, environmental and animal welfare need.

BEKA Schröder locally develops and manufactures energy-efficient LED lighting products, designed and suitable for local conditions. The company is extremely proud to be associated with this very special project in bringing lighting to a community.

Enquiries: el@beka-schreder.co.za



Original Facility



New Facility



Old Classroom



New Computer Training Room



From left to right: Peter Badenhorst (Regional Manager BEKA Schröder), Janeane Hamman (Financial Manager BEKA Schröder), Ronald Victor (builder), Fezeka Mbiko (project driver and local councillor), Daniel Kasper (Regional Director BEKA Schröder), Masakhane Qudalele, Leon Fillis.



The OMNISTAR-MAXI LED floodlight provides general area lighting.

Researchers call for consistent measure of light pollution

A team of researchers from Sweden and the U.S. is pushing to establish a common methodology for how to define light pollution and measure its astronomical, ecological, and human consequences.

Many studies have claimed ill effects of light at night (LAN) on stargazing, on flora and fauna, and on people's health, but the lack of a uniform approach can make it difficult to reach universal conclusions and is hindering efforts to tackle the problems on a broad scale, note the authors of a paper published at the recent Lux Europa 2022 conference in Prague.

"In all three fields (astronomical, ecological and human), a plethora of methods are used for measuring the dependent and independent variables," they point out in *An Overview of the Adverse Effects of Outdoor Light at Night and the Research Methods Used in Different Areas*. "This has unfortunately resulted in significant difficulties in comparing responses between geographical areas, species, and effects of LAN on human health. For example, despite the large number of studies performed on LAN impacts in all three fields, it is very challenging to assess if the lighting in a specific location has a

negative impact and if so, how to reduce it to avoid inducing light pollution."

The authors, led by Annika K. Jägerbrand of Halmstad University in Halmstad, Sweden, say there is a compelling need to resolve the inconsistencies, because a multitude of studies do indeed, in their own manner, illustrate the damaging effects of light at night across all three areas.

For example, they point to the lose-lose proposition that light at night can sometimes make some species more vulnerable to predators who normally only work by day, while in other instances it can shrink feeding grounds by undermining natural habitats, as pointed out in different studies.

But the methods applied in light pollution studies vary widely, they note.

"In ecology, for example, it is very rare to report light exposure levels for the organisms studied," the authors say. "Inadequate reporting of lighting conditions in studies claiming to show significant effects of LAN makes the results and conclusions questionable since the studies cannot be repeated and because it is unknown whether effects can be attributed to LAN or to other influencing or confounding parameters." They also pointed out that existing studies do not always adequately



rule out non-lighting factors.

Jägerbrand co-wrote the paper with Maria Nilsson Tengelin of the Swedish government's RISE Research Institutes of Sweden and with Dorukalp Durmus of Pennsylvania State University in University Park, Penn.

The three did not study light pollution per se; rather, they examined previously published research, and concluded that

"The study design and reporting of lighting conditions were not robust and there is an urgent need for establishing standardised experimental procedures, and for collecting data for the dependent and independent variables as well as for environmental and confounding factors that can influence the results in significant ways."

Enquiries: www.ledsmagazine.com



Lighting and sustainability

Over the past couple of years, sustainability has become a key topic, touching every aspect of our lives, lighting included. This article describes the major touch points between lighting and sustainability, including examples of what some of the leading local lighting companies are doing with regards sustainability.

Climate change is a major driver behind the growing importance of sustainability. The need to reduce CO2 emissions calls for a transition from fossil fuels to renewables. Energy efficiency plays a key role in this transition as it reduces the need for fossil fuels on one hand and at the same time reduces the investment needed for the change-over to renewables. Driven by the conversion to Solid State (LED), lighting has made huge progress when it comes to energy-efficiency.

There is, however, still a huge potential for further energy reduction in lighting. There is a perception in the market that 'as long as it is LED, it is energy efficient'. While this is true, LED efficacy is also a clear example of 'good, better, best'. A strong focus on price means that the average LED bulb on offer in South Africa has an efficacy of roughly 80 lm/W, while one of the leading suppliers has announced a bulb with an efficacy of over 200 lm/W.

Indoor projects are often realised with edge lit panels with a 100 lm/W efficacy while recessed LED luminaires offering 140 lm/W are available. One of the major reasons behind all this is the fact that part of the lighting industry still talks in 'Watt' when it comes to expressing the light output instead of using the correct parameter 'lumen'. This hampers the uptake of the more efficient LED solutions.

An additional energy saving technology – the use of sensors/lighting controls – is not always considered and hence the full energy saving potential is not always grasped.

Lighting and the use of hazardous materials

That fluorescent lamps contain a tiny amount of the hazardous material mercury is a well-known fact. A lesser-known fact is that due to the reduction in energy use when changing from incandescent lamps to compact fluorescent lamps less mercury is emitted in coal fired power plants, given the fact that coal contains trace amounts of mercury. The conversion to LEDs means that when it comes to mercury, two birds are being killed with one stone as LEDs do not contain mercury and the further reduction in energy-use when changing to LEDs means less mercury is emitted by coal-based electricity generation. LEDs, like other electronic goods, can have some negative environmental impact as they contain minimal amounts of lead, copper, nickel and silver.

As LEDs need electronics for proper operation, we need to look beyond the light source. Both Electronic Control gear (used e.g., to operate compact fluorescent lamps) and electronic LED drivers (like many other electronic devices) consist of electronic components mounted on a Printed Circuit Board which is then placed into a housing. The various electronic components may contain hazardous materials, like lead, mercury, some heavy metals, flame retardants, and certain phthalates.

Lighting and circularity

Circularity is considered the next frontier of sustainability. It means that a product is created with its own end-of-life taken into account. In a circular economy, once the user is finished with the product, it goes back into the supply chain instead of the landfill. While the conversion to LEDs resulted in improvements on the two previous aspects of energy-efficiency and the use of hazardous materials, this is not the case when it comes to circularity. This is strange given the longer lifetime of LEDs compared to traditional light sources.

In the case of traditional lighting, we saw one component, being the light source, being replaced on a regular base, while the other parts like the luminaire and all its internal components were discarded at the end of the technical – or economical life. Occasionally some of the internal components, like the control gear or lamp holder needed replacement but given the standardisation of these components this was in many cases feasible. With LEDs the situation is rather different. To start with, in reality the long lifetime of LEDs is often being sacrificed due to cost pressure (operating the LEDs at a high current reduces the costs but it also decreases the lifetime).

LEDs are often embedded into the LED luminaires and, when some of the LEDs fail, often the full luminaire needs replacement, as is the case with the popular side-lit LED panel. The electronic LED driver is often the weakest component.

Given the huge variety of LED drivers and the more complicated matching of drivers and LEDs (both operating current and forward voltage must match) finding a suitable replacement driver is a challenge. Again, this often can lead to a situation where the full luminaire is thrown away in case of a driver failure. So, the conversion to LEDs has led to a situation where, in many cases, luminaires are no longer being repaired but simply replaced leading to increased waste. Additionally, the conversion to LEDs has led to a shift in materials used.

Traditional light sources like incandescent lamps and fluorescent lamps were mainly made up from glass and some metal (lamp foot/lamp caps). If we look at the LED alternatives available today (LED bulbs and LED tubes) we see an increased use of plastics. The same is valid for luminaires. Recessed luminaires for T8 and T5 fluorescent tubes were made from metal while today's LED panels have a high plastic content. Metal open channels for fluorescent tubes are now being replaced with plastic LED battens.

The lighting industry has taken some measures to increase repairability via standardisation of some components like LED modules (via the Zhaga consortium); however, the impact is limited. A concept like 'Light as a Service' (LaaS) has the potential to increase the circularity of (LED) lighting. The LaaS concept entails that the lighting supplier remains the owner of the lighting installation while the user pays a monthly or yearly fee for the use of the installation. Because the supplier is also responsible for the maintenance of the installation the supplier will make sure the installation can be easily repaired or upgraded when the LaaS term is finished. The uptake of LaaS is however very slow, especially in South-Africa where end-users seem reluctant to go for longer term commitments, despite the fact that LaaS would allow them to have an energy-efficient lighting installation without an upfront investment.

Local versus global sourcing

The conversion to LEDs combined with the general trend towards globalisation has increased the share of import of lighting products into South-Africa, with the majority of imported products coming from Asia. The transport of all these products contribute to CO2 emissions. Local sourcing would decrease the need for transport and hence this is preferred from a sustainability perspective. Covid-19 and the impact on supply chains has exposed the vulnerabilities of global sourcing and this, together with the increased transport costs might lead to a higher share of local sourcing. A technology like 3D printing will also contribute to this.

Health and well-being

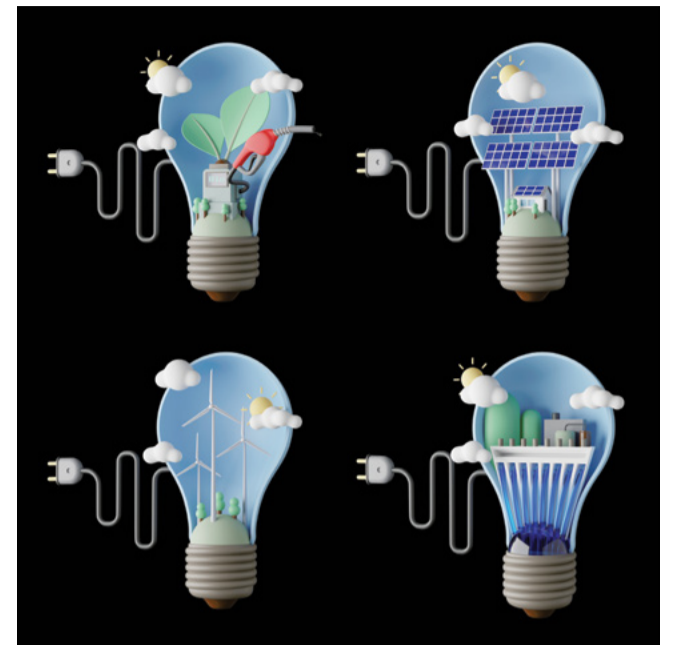
With sustainability such a broad topic we also need to consider the relation between health & well-being. There is both a growing understanding of and focus on the health aspects of lighting. Light levels and the spectral distribution of light impact humans and the circadian rhythm. (Outdoor) Lighting also has an impact on wildlife. There is growing awareness of the need to reduce light pollution, while there is more and more knowledge available on the impact of colour temperature (CCT) on various species, e.g., a lower CCT of outdoor lighting reduces the harmful impact on insects.

Conclusion

There is a strong relation between sustainability and lighting and the growing importance of sustainability will have a large impact on the lighting industry. Demand will gradually shift to the most efficient solutions, there will be a growing demand for control solutions and repairability/ replaceability/circularity will grow in importance. Lighting companies with a pro-active sustainability approach will be able to benefit from all of this.

BEKA Schröder

BEKA Schröder is part of the renowned Schröder group and is one of the pioneers of LED lighting in South-Africa. Sustainability is a topic close to the heart of the Schröder family shareholders for generations. Recently a cohesive, company-wide sustainability strategy was developed, called 'Together for our Future'. Circularity is a key element of Schröder's sustainability approach. Circularity focuses on reducing the environmental burden by valorising the flow of all materials. It is mainly defined in opposition to the traditional linear economy: take, make and dispose. In a circular economy, products are part of a value network where they will be used for as long as possible. Then, depending on their characteristics, they can be reused, refurbished, upgraded or



recycled. Schröder takes circular economy into account, right from the offset. Before we start to design our products, we incorporate it into their DNA. After a careful analysis of the potential circularity of our luminaires, Schröder decided to introduce a 'circular lighting' product label. This label acts as a circular indicator for our customers.

Enquiries: za.schreder.com/en/together-our-future

Regent Lighting Solutions

Regent Lighting Solutions (RLS) positions itself as an African lighting solutions and luminaire manufacturer. RLS aims to grow as a company while trying to minimise any negative social – and environmental impacts. It addresses sustainability in different ways:

- On the sales side RLS advises its customers in detail about the energy-use of the various lighting solutions while placing more and more emphasis on the use of sensors and controls as these further reduce energy-consumption.
- On the product side RLS is taking steps to move away from a linear economy to a more circular economy as all its products are designed for disassembly, enabling future harvesting of parts. By using aluminium as the dominant manufacturing material, RLS products are easily recycled. RLS ensures that all electronic waste is disposed of correctly and in accordance with the industry's waste management act.
- RLS is fully up to date with its Atmospheric Emissions License (AEL). An AEL is a permit allowing license holders to demonstrate certain processes or appliances are operated in accordance with national air quality regulations.
- Since end of 2014 a 300 kwp roof top grid-tied photovoltaic solar system generates ca 400 000 kWh per year, saving 41 500 tons of CO2, equivalent to 99 cars being taken off the road per year, 128 homes powered per year and 14293 trees cleansing the air per year.

Enquiries: www.regentlight.co.za/about-us/sustainability

Tridonic

Tridonic South-Africa, part of the ZumTobel group, is one of the leading lighting technology providers to the South-African market. Tridonic is convinced that the lighting industry must develop solutions for the biggest challenge to date, namely safeguarding our planet and its natural resources. Tridonic's aim is to create solutions and products which are deeply rooted in the circular economy supporting our customers in their sustainable projects.

Cradle to Cradle or C2C is the focus of the 'Sustainable Tridonic' programme. It is a design concept aimed at developing safe, circular and responsibly manufactured products. The goal is not only to minimise negative effects but also to leave a positive environmental footprint. Cradle to Cradle is about seeing waste as a nutrient for new products. At Tridonic, we believe that C2C can change the lighting industry by promoting new and highly ambitious design rules. To put words into action Tridonic is proud to announce that for the first time anywhere in the world, a company in the electronics sector has been awarded the Cradle to Cradle Certified® in Bronze Sustainability Certificate for a lighting component. Apart from the C2C approach Tridonic's wide range of LED modules, LED drivers and lighting controls enable South-African customers to implement very energy-efficient lighting solutions.

Enquiries: www.tridonic.com/com/en/tridonic-sustainability.asp

Non-compliance is not an option

The first month of the New Year is already behind us, and I am sure that we are all asking ourselves what 2023 has in store for us. I am sure that despite the predictions of some economists, 2023 will be a good year, better than 2022 and more like the business as we knew it pre-pandemic time.

The first BHA School of Lighting webinar that I presented on 26 January 2023 was titled: "Standards and Compliance: The Consequences of Non-Compliance". It is regrettable that many professionals simply pay lip service to standards when it comes to lighting.

I am well-aware that our SANS 10114-1:2020 for Interior lighting falls short on detail when compared to EN 12464-1:2021 on the same topic. Similarly, SANS 10389-1:2003: Exterior lighting Part 1: Artificial lighting of exterior areas for work and safety are very outdated when compared to EN 12464-2:2014 with a similar title.

More recently, on 21 October 2022, the Department of Employment and Labour published the Occupational Health and Safety Act, Act 85 of 1993 draft Physical Agents Regulations in the Government Gazette No 47337 and called for public comment within 90 days. I am not sure how many submitted their comments, but my observation and subsequent comments addressed the issue of including random tables and extracts from existing SANS documents which I regarded as over-stepping their role and purpose. I accept that there should be regulations to give effect to the Act, but not to encroach on

the domain of another state organisation.

The reason that I made that statement is that many will simply use the tables that I referred to above without having any knowledge of the other content contained in the standards which provide explanations and give understanding as to why the data is included in the tables.

This is even more important and underscores the reason why I have placed such emphasis on Standards and Compliance in webinars and workshops over the past decade. It is why our students at BHA School of Lighting study Standards, Regulations, and Compliance. They write an extensive examination on the subject. In addition, they study how to adapt the standards to provide for visually demanding tasks in the workplace in accordance with IES TM-24-13. They go beyond that and learn about visual and non-visual effects of lighting.

Now, I cannot emphasise the importance of compliance enough. It can ruin the professional careers engineers and architects irrespective of the Professional Indemnity Insurance cover they may hold. In cases where an insurer finds that the professional has been negligent, the claim against their professional indemnity cover can be repudiated. Similarly, the owner/operator of a facility may have public liability insurance cover. In the event of a visitor or patron to the business being injured whilst on the premises and they lodge a legal claim for compensation for medical or any other injuries maintaining that insufficient lighting was the cause of the injuries: and if it is found that the lighting was lacking or inadequate, the consequences of non-compliance could be



disastrous if the insured level is too low or, worse still, if the insurer repudiates its owner/operator's claim. Litigation could follow. If a court finds in favour of the claimant, it could spell disaster, and even liquidation for a small or medium size private business.

Some may think that I am over-dramatising. All that I have tried to explain, is real. I am often engaged by investigators into claims ranging from a few million rands to claims in six figure amounts. I do full measurement and verification with comparison to the applicable standards including emergency lighting standards. Of course, most measurement is carried out at night. Thereafter, a detailed factual report is prepared supported by photographs, TR28 Site Photometry Records in accordance with International best practise. The report is submitted to the investigators who in turn collate the various reports to submit to the insurers.

So ... remember, non-compliance is not an option. I know that there are cases where budget constraints resulted in non-compliance with standards and regulations. If I were faced with that situation, I would tell the client that I could not continue and expose myself to such risks of claims and would spend time to explain the possible consequences that they could face in the future. When the gravity of non-compliance is explained to the client, they understand and make the necessary changes to the budget to ensure compliance. I have never had a single case where a client was not able to make the funds available. Compliance will also give the client/operator and eventually the tenant peace of mind that they will not be at risk of non-compliant lighting.

I am always available to answer any questions you, the readers, may have.

Enquiries: phil@bhalighting.co.za

Smart lighting can aid 'aging in place'

By 2050, the number of older adults aged 50 and older is expected to double, comprising 20% of the total US population. The overwhelming majority want to age in place, but experts say the current housing stock is ill-equipped to handle those desires.

Lighting can be controlled based on motion through simple solutions that only require the replacement of a light switch in many cases. Combined with circadian lighting, this can also facilitate better sleep schedules which can improve occupant well-being as well as alertness, potentially reducing chances of accidents for those aging in place.

Natural light and views are important elements when designing for one's health and well-being. However, seniors with limited mobility often opt to keep window coverings closed, viewing the task of opening blinds and curtains as too much of a hassle for little perceived benefit. Motorised (or automated) window shading solves this issue by diminishing the exertion on the part of the occupant. When set to a schedule by a professional integrator, shades can raise and lower themselves throughout the day without any input needed. Even if control of the shading is delivered via a remote, that still provides a far more senior-friendly technology solution with the potential of improved circadian entrainment.

For those with accessibility issues, voice control can become a powerful tool for controlling home functions.



Voice assistants like Alexa, Google Home or Apple HomeKit can control home functions and even be used to program specific notifications for those aging in place. Imagine a senior forgets to turn off the back porchlight before returning to their bed on the second floor of their home. When they are in their bed, they notice the light out back flooding into their room, potentially impacting their sleep. Connecting a smart light through a voice control hub, a simple command can be programmed to shut off the light, rather than requiring the individual to walk back downstairs to

turn it off. While simple, this level of customisation allows an integrator to identify specific pain points in a homeowner's daily routine and develop specific, individualised aging in place automation.

Many people with an aging parent know that technology support can become an endless task for family and friends, however. Smart home devices should only be deployed if there is adequate nearby support to keep the smart home devices operating as intended.

Enquiries: www.lightnowblog.com

Trends in smart hotel rooms

ABI Research expects 6.4 million smart hotel room devices to ship worldwide in 2027. That's double the smart hotel devices that shipped in 2022. Some of the early adopters are Mandarin Oriental Hotel Group and Hilton. Many more brands are expected to adopt smart hotel technology in order to open up brand differentiation opportunities. Smart hotel technology also allows hoteliers and hospitality managers to better compete with the Short-Term Rental market (think Airbnb and VRBO), while simultaneously reducing operating expenses.

Smart hotel rooms deploy IoT technologies such as smart locks, smart thermostats, smart blinds, voice control front end, smart lighting, and smart speakers to provide a higher level of connectivity. These technologies create new opportunities in hotel building management and attract customers or travellers who want more convenience and greater control over their hotel stay, especially younger travellers that are experienced with smart home features.

There are two essential goals: operating efficiencies and guest room amenities. Operating efficiency often involves HVAC and lighting control that reduces carbon footprint and energy usage. Reducing hotel staffing is another operating efficiency. For example, Hilton's Digital Key (using their smartphone APP to open room doors), as well as APP checkout, both reduce front desk traffic and staffing requirements.

Smart occupancy sensors, including in-room motion sensing and smart lock guest tracking, enable hoteliers to track which rooms and areas are being used in real-time. This enables optimizing energy consumption from HVAC, lighting, and other building management systems.

Guests value smart technologies that provide greater control, contactless stays, climate control, and an easier way of interacting with hotel services.

Source: www.smarthotel.nl



Special function light bulbs

For close to three decades, Eurolux has been pivotal in bringing the latest innovations in the lighting industry to South African businesses and consumers. What started out as a modest Cape Town operation has flourished into an impressive company with a nationwide footprint, including links into Africa and the Middle East. Apart from standard lighting, the company also offer speciality lighting in the form of the below light bulbs.

Switchable light bulbs

Different occasions call for different ambiances. Sometimes the same space is used for relaxing, working, entertaining and hobbies. The ability to adjust the colour temperature of the lighting in the room with the flick of a switch allows you to set the scene. This 7W switchable LED opal globe features three different colour variations. Switch between warm white (3000 K), natural white (4000 K) and daylight (6500 K).

Flicker flame light bulbs

Flicker flame light bulbs mimic the look of a real flame, creating a similar effect to Victoria-style gas lamps that feature a dancing flame. This style of light bulb is ideal for providing essential illumination and adding character to spaces like the front

door area, patio/entertainment area and dining room. Install them in wall sconces, chandeliers, candelabras and pillar mount fixtures for a cosy glow. This LED flicker flame bulb has three modes – flickering, normal and automatic low to high dimming. It has a lifespan of 15000 hours and a colour temperature of 1400 K.

Day/night light bulbs

Day/night light bulbs are a plug in and play solution that do away with the need for separate sensors. They have an automatic sensor that can register the difference between day and night, prompting the bulb to turn on when light levels drop in the evening and turn off again at dawn. The day-night sensor of this 10W LED light bulb has a 20-30 second delay to allow the electronics to adjust to the light conditions. The benefits of an LED day/night light bulb are numerous. LEDs have a generous lifespan and use less electricity in comparison to their incandescent counterparts. The internal light sensor means that you can be assured that your lights will automatically come on, even when you are not home (great for safety and security). It's little wonder then that these bulbs are gaining popularity among homeowners for economical, environmental and safety reasons. This 10 W cool white



globe has a lifespan of 25 000 hours and a colour temperature of 4000 K.

Mosquito repellent light bulbs

Few things ruin a summer evening on the patio more than pesky winged visitors like mosquitoes, moths and other insects. With warmer weather approaching, now is the time to get your outdoor entertainment and braai area ready, and lighting solutions

should not be neglected. Unlike ordinary light bulbs that attract insects to their glow, mosquito repellent bulbs produce a wavelength of light that they don't like, repelling them from the area and giving you a pest-free zone. This 6 W LED mosquito repellent globe offers an orange glow and has a lifespan of 15000 hours.

Enquiries: www.eurolux.co.za

Helping customers understand the value of outdoor lighting

For homeowners, there's no better feeling than the peace of mind than driving home after dark and finding their property illuminated by a well-placed outdoor system. Or the enjoyment of late summer and early fall evenings in the beautiful soft glow of twinkling lights.

Practically speaking, lights can make a home safer and less attractive to criminals. According to recent studies, a home break-in occurs every 26 seconds, making outdoor lighting a necessity.

And, if you have customers thinking of selling their homes, most real estate agents agree outdoor lighting increases a property's value by creating the perception that a house's livable space extends to the outside.

While almost every home has some form of outdoor lighting, new technology allows customers to increase the function of their exterior lights. You can teach your residential customers about what's available to increase the attractiveness, security, and value of a home through lighting designed for the outdoors. In the process, you can grow your business by highlighting relatively simple steps that can make a big impact.

Here are five ideas that can help homeowners to see the (outdoor) light.

Encourage your clients to think in zones

One of the first and most important steps is to discover how your customer uses their outdoor space and recommend the best light for each area. Visit your customer's home at dusk and take a walk around their yard. Creating different zones is the ideal way to create a comfortable outdoor area while ensuring homeowners have the right light to meet their needs. Brighter lights work well for an outdoor kitchen, bar, or grilling area, while warm lights and cosy seating encourage relaxing and visiting with friends. Uplighting draws attention to a special landscaping feature. A current trend is moonlighting, in which soft lights are installed high in trees or other structures to cast a silvery glow that looks like moonlight.

Introduce layering using a combination of lighting solutions

Layering light is another way to help homeowners create a warm, welcoming outdoor space. And, it can increase the area's functionality and flexibility. There are three main types of lighting layers. Ambient light is the most basic and highly functional of the three. It's the general light you get when you turn on a switch to find your way around. Accent light highlights a specific feature, like a backyard waterfall or a special tree.

Finally, task lighting is a practical, focused light needed to do a specific task, such as cooking or reading.

Add lighting solutions to walkways and stairs

Path lighting provides residents and guests with increased safety and peace of mind. It's a necessity that can also make your customer's yard more inviting. Low-voltage or even solar-powered solutions work well to provide the soft light needed to illuminate stairways and other garden paths. When lighting a customer's pathway, consider placing lamps 10 to 15 feet apart, staggering them on both sides

of the walkway. This will create the right lighting to guide their path without causing glare or too much brightness.

Program your customers' lights

One benefit of smart outdoor lighting is never having to drive up to a dark house. Programmable outdoor lights give the homeowner fewer things to worry about. They can also help save money on energy bills. Your customers may choose to leave pathway lighting on all night while turning off other lights not being used. It's particularly handy when homeowners are on vacation, making a home look lived in and deterring crime.

Keep in mind a few practical tips when recommending and installing outdoor lighting.

Make sure the lighting and lighting controls are graded for outdoor use and low voltage. Look for products that are durable and withstand wind, rain, and dust. It will be worth it in the long run, instead of replacing inexpensive products every year or so.

By implementing some – or all – of these tips, you can delight your customers and grow your business.

Enquiries: www.ecmweb.com

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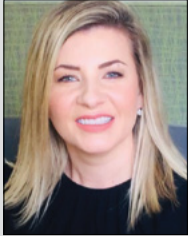


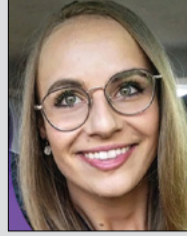
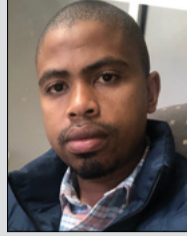





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MISSING DAYS

There is a man with his horse going to town. The man went to the town on Monday. He stayed there for three days and then he came back on Friday. How? His horse was not tired, the man wasn't sleepy.

JANUARY SOLUTION

The woman is an employee of the department store. She is filling the shopping cart with trash and taking it out to the dumpster.

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- Tools of the trade
- Energy measurement and supply
- Lighting

APRIL 2023 FEATURES

- MCCs and motor protection
- Cables and cable accessories
- Lighting

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