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AWARDS SEASON RECOGNISES EXCELLENCE IN THE ELECTRICAL FIELD

From left to right: Besamandla (Aggeneys Solar Project) won the National Safety Award at the ECA(SA) Presidential Excellence Awards; Donne van Eeden, Electrobase CEO congratulates Major Tech's Pat Shaw on winning the 2019 Supplier of the Year award; TC Madikane (third from right) receives the SAIEE Engineering Excellence Award from Francesco Pagin (Fluke), George Debbo (SAIEE), and Sicelo Xulu (SAIEE).

Despite another demanding year in the South African electrical industry, three events at the end of 2019 recognised excellence and innovation in the field and, hopefully, provided a sign for positive change going forward.

First up, another spectacular ECA(SA) Presidential Excellence Awards took place at the Serengeti Lapa at the Birchwood Hotel in November 2019. Past entrants and new contenders vied for top honours and by the end of the evening, new benchmarks for excellence had been set in the 15 categories.

The 400 guests celebrated in fine style at what turned out to be the best awards yet – due in part to Mpho Popps who doubled up as MC and entertainer and amused everyone with his forthright brand of South African humour.

One of the most prestigious events on the ECA's calendar, the awards banquet was made possible by the sponsorship of Associate Members: Brother, Comtest, Copper Development Association Africa, HellermannTyton, Major Tech, Nestlife, Voltex, Schneider Electric, and newcomers SALT Employee Benefits and Citilec. Turn to page 6 to find out who walked away with the awards.

Next up, the Irene Country Lodge was chosen as the venue to celebrate the 2019 Electrobase Supplier of the Year Awards. To add some extra 'glitz and glamour', a 'Gatsby' theme was chosen, and everyone looked dashing in their 1920's attire.

Besides the 20-year celebrations, this year's event will be remembered by how close the results were as mere decimals decided the winner. Eventually, Major Tech took home the 2019 Supplier of the Year for the third year in a row.

Eurolux was awarded the 'Most Improved Supplier' award for 2019, while the Gold Award winners, in alphabetical order, were: Bright Star Lighting, Crabtree, Enerji Electrical, Eurolux, HellermannTyton, Major Tech/Veti, Stone Stamcor, Schneider Electric and Three-D Agencies. Congratulations also go to the Silver Award winners: Electrolux, Ledvance, Radiant and WACO. Find out who else won awards and see all the photographs from the event on pages 6 and 7.

Finally, excellence in engineering was in the spotlight as the South African Institute of Electrical Engineers (SAIEE) "celebrated visionaries, the engineers of change" at the 108th SAIEE Annual Awards Dinner held at the Sandton Convention Centre in Johannesburg at the end of 2019. The black-tie event, which coincided with the organisation's inaugural national conference, honoured the best in the industry for their contributions to the sector.

SEE ALL THE WINNERS IN THIS ISSUE:

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A view of things to come.

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Life Is On | Schneider Electric

A drive to bring the lighting industry together

Alex Cremer

ALEX CREMER, President of the Illumination Engineers Society of South Africa (IESSA) since 2018, believes that the lighting industry needs to work as one to create a sustainable industry which will support the thousands of people who operate in this in the space. IESSA plans to run a survey to get a full understanding of the size of the industry, and IESSA's goal is to use this information to bring all aspects of the industry together.

Sparks: How long have you been involved in the lighting industry?
AC: I started working at Giantlight in 2009, but how I ended up in the lighting industry was quite random. I had been working at Voda World as a customer care supervisor for five years and thoroughly enjoyed it but I got to a point in my career where there were no further growth opportunities. At the time my late uncle was working on a concept for electrified palisade fencing and this intrigued me tremendously. A friend then introduced me to Otto Horlacher from Giantlight and my journey in lighting began.

I was with Giantlight for three years; my core focus was on areas where I perceived there to be challenges and ended up taking over production. Working with Otto, I gained a huge amount of experience on product development and production.

I then worked at Regent Lighting Solutions, Dexitrade, Verbatim and Reeflite. In April of 2019, I was appointed as the National Sales and Marketing Manager at Nordland Lighting.

Sparks: What is the greatest change you have seen in the industry over the years?
AC: There have been huge changes. If you had said to me that we were going to be playing in the space where people talk about 180 lumens a watt on efficacy, I wouldn't have believed you. I started with what was referred to at the time as K2 LEDs, which had two legs that you could solder onto a board with a little thermal pad behind, and then we were running at maybe 80 lumens per watt.

Lighting has become extremely technical. So many measurement parameters are being used today and I don't think everybody fully understands the true implications of these. We talk about efficacy very loosely, but to me it is a very technical component. There is always going to be this technical difference between what the light source produces versus what the actual output is. I believe that's where a lot of people misuse information. Power factor used to be a big thing before efficacy took on such an important role. And then you have a whole lot of technical aspects to focus on; blue light hazard, flicker ratio percentages, stroboscopic effect, EMC …

Sparks: What would you say are the current challenges facing the South African lighting industry?
AC: It's a very difficult question because there are three aspects to our local industry. We've got local manufacturers, component companies who supply the local manufacturers, and importers. How to clearly define and position these companies is always going to be a challenge, as they all add value to the lighting industry.

I experienced the unfortunate reality of a company where I was working being liquidated. There were a few reasons for this, but the market has been driven into such a price sensitive space that companies have to be able to compete, and if they can't compete, then they are going to close their doors. *But how do we protect the local industry?* This is one of the current key drivers within IESSA; what are we going to do as an industry to protect ourselves? This is difficult to manage when you are a member-run organisation, run by members, for members, on a voluntary basis. We need the proverbial 'bench-sitters' to participate.

What I have to be clear about is that local manufacturers can't do what they do without the component suppliers. Whether you're a local manufacturing component supplier or an importer you still add value to local manufacture. And we need to work with importers. There are some who operate in a 'best practise' ethos; they have their LOAs in place and they do everything in the right manner. But it's those companies that are 'freeriding' that ultimately affect the local manufacturers and the companies that do participate correctly and that's going to be a key focus point for us in future.

Sparks: Have you had a mentor in the lighting industry?
AC: Absolutely. There are many. When I speak to Otto today, I still feel there's a teacher-pupil relationship, and I don't think it's ever going to change. He had a huge impact on my lighting career and taught me what was the foundation within my lighting career. From Randal Wahl at Regent and Manny Cross at Verbatim I learned the different ways of running a successful business. I think the biggest role model I've had from an IESSA perspective is Natasha van der Walt. We work incredibly well together, and from a mentoring perspective, she has definitely taught me a lot.

Sparks: What do you enjoy most about your role at IESSA?
AC: I enjoy how we operate within council, and how committed the individuals are, who go way beyond what's expected as a council member, bearing in mind that this is done in our free time and we don't get paid for it.

Sparks: Do you have any advice for the electrical contractors?
AC: Electrical contractors need to speak to individuals who speak lighting. Lighting is a language. The proverbial 'goed koop is duur koop' concept comes to mind; you've got to install the right product. I don't expect electrical contractors to know everything, but they've got to have a support structure that allows them to advise correctly. Unfortunately, there are a lot of 'car boot' traders in our industry, and invariably what happens is price gets driven down. We've got a wealth of information within IESSA; from a lighting design perspective, we've currently got 10 registered Accredited Lighting Practitioners (ALPs) who have an intricate knowledge of what should be used.

Sparks: Do you have a favourite quote?
AC: RTFM, Read the flipping manual and 'When life gives you lemons, make lemonade'. I think the big thing for me, which is why I'm also involved in Scouts, is it is simply a case of I want to have an impact and add value to people's lives. And if I can do that through IESSA, through scouting, and the people I am working with at Nordland Lighting, I am able to add value to society.

Sparks: What's on your bucket list?
AC: There's a thing called the Put Foot Rally that happens every year; you take a certain class of vehicle and travel from Cape Town through Sub Saharan Africa and land up in Mozambique, and I'd love to do that. I've been very fortunate to travel a lot by virtue of the companies I've worked for, and I would love to be able to take my wife to some of the places I've travelled to. And finally, I would like to go back into motorsport again. I used to do off road racing and I'd love to be able to get back into that.

Enquiries: www.iessa.org.za

Office systems for the modern workplace

The evolution of technology has changed the way we work. While desktop computers are still standard, many office employees also use laptops, smartphones and other electronic devices – all of which connect to the internet. This, combined with a more open, collaborative layout, means that setting up a modern office system is vital to maintain productivity. But what exactly is an office system? An office system refers to the various components and elements of an office, from the physical equipment to the general layout and atmosphere. All these components and elements have a direct impact on how employees interact with one another and how they function within their roles. For employees to work efficiently and comfortably, they need to have sufficient sockets and outlets to plug in their devices. And these need to be located throughout the office - not just at their desks. Radiant's range of electrical office systems allows for the customisation of different work zones throughout an office, be it at an individual's desk, in the boardroom or in a collaborative workspace.

The Hera Range (Boardroom Unit)
1 x 16 A normal socket, 1 x Euro, 1 x HDMI, 1 x VGA, 2 x USB charger, 2 x RJ45 CAT 6, 1 x 3.5 audio,1 x AV group, hardwired with a 3 m supply cable.

The Olympus Range (Mini Desk Socket)
Made from hard, durable ABS fireproof plastic and supplied in three options.

The Poseidon Range (Desk Tower)
Aluminium body with hard, durable, especially high-grade-engineered plastic material for lifting mechanism and end caps.

The Apollo Range (Desk Mount)
Strong, durable, aluminium body with an almost limitless selection of customised options. Available in 4-way and 6-way options and can be customised to your needs. Fits on top or bottom of the desk, fitted with incoming and outgoing power connectors. Supply and interconnect cables are sold separately.

The Hades Range (Floor Box)
Made from ABS fireproof engineered plastic. Available in a 6-way and 8-way body. Modular electrical power outlet system available in a variety of outlet configurations as per requirements. To be fitted in the floor at workstations.

Enquiries: www.radiant.co.za

Seven strategies to maintain electrical distribution equipment

In order to achieve the benefits of personnel safety, equipment and goods protection, service continuity, energy efficiency and efficient spare parts management; plant managers should strategically schedule and employ a variety of practices to maintain electrical distribution equipment and optimise the total cost of ownership of their power infrastructures.

Schneider Electric experts explain that various strategies for electrical distribution equipment maintenance have varying effects on the above objectives.

Why maintain electrical distribution equipment?

1. **Increased safety:** protecting people, equipment and goods.
2. **Availability enhancement**: maximising service continuity.
3. **Aging asset performance:** Capex optimisation.
4. **Exploitation cost efficiency:** Opex optimisation.

Without maintenance, industries suffer emergency shut down situations that cause:

- Spare parts to be purchased at a premium.
- Labour to be purchased at a premium.
- Process shutdown costs (no production, ramp-down/up production, waste, etc).

However, these are only the visible operating costs; maintenance also helps to ensure energy-efficient equipment.

Using manufacturer's expertise

Modern and up-to-date maintenance practices have become a vital competitive advantage, thanks to their use in early detection by identifying problems before they require a major repair.

Carrying out maintenance that is professionally executed by highly qualified technicians is an ideal opportunity to optimise total cost of ownership (TCO) and both Capex and Opex, and create more value for businesses by enhancing availability at lower operating costs.

When maintenance is delivered by a manufacturer, the annual TCO is lower because the useful service life of equipment is extended. It also provides preventive, condition based (on-demand or continuous monitoring) and predictive (condition based with advanced analytics) maintenance practices that improve equipment reliability and reduce costly corrective maintenance and unplanned outages that result from equipment failure.

Types of maintenance

Corrective maintenance: A run-to-failure approach that simply lets equipment run until something breaks.

Preventive maintenance: Carried out at periodic and predetermined intervals or according to prescribed criteria and is intended to reduce the probability of failure or the degradation of the functioning of an item and its costly immediate corrective intervention. Preventive maintenance can be categorised in three levels, according to execution complexity: exclusive maintenance activities; advanced maintenance activities; and basic maintenance activities.

Condition-based maintenance: The goal here is to enhance equipment reliability, keeping it as close to its optimum condition as possible. It's the extension of preventive maintenance with testing and analytics (equipment condition diagnosis) and/or continuous monitoring and the ensuing maintenance actions.

Diagnostics: Equipment diagnostics consists of an equipment core functions assessment that carries out functional testing on kinematics, electric parts, and electronics. It is a natural, complementary and effective solution to on-site condition-based maintenance, when critical equipment serves highly demanding downstream processes that require permanently enhanced levels of availability.

Predictive maintenance: The pinnacle of maintenance management to minimise unscheduled downtime and reduce the overall cost of maintenance, while delivering peace of mind for electrical distribution infrastructure. It represents the application of the Just-In-Time (JIT) principle to preventive maintenance.

Reliability-centred maintenance: A new model to operate electrical distribution infrastructure within the context of digital factories solutions, from ideation to operation, with comprehensive facility modelling. Today, this new paradigm is reserved for green field industries with critical continuous processes built under a disruption-free specification, because shutdown penalties impact business sustainability.

Value-based maintenance and asset management: This considers the four benefits of maintenance, the drivers to create economical added value on existing equipment. Once the sources of value creation potential are calculated, the organisation can select the best mix of maintenance practices.

Maintenance periodicity

Rather than implement just one practise, plant managers should take advantage of the many maintenance options available.

Enquiries: www.se.com/za

'Engineers of change' honoured at SAIEE 2019 Annual Awards

Excellence in engineering was in the spotlight as the South African Institute of Electrical Engineers (SAIEE) "celebrated visionaries, the engineers of change" at the 108th SAIEE Annual Awards Dinner held at the Sandton Convention Centre in Johannesburg at the end of 2019. The winners were:

SAIEE Engineer of the Year: Monde Soni

Sponsored by Actom, the award recognises an engineer who energetically works towards promoting electrical science for the benefit of the Southern African community. Soni, a senior planning engineer at Eskom, facilitated the establishment of the SAIEE Load Research Chapter. He wrote a paper for CIGRE SA on "Bulk Energy Integration Studies" – a relatively new subject internationally and more particularly in developing countries. His methodology for bulk energy storage modelling and simulation is considered the first to be developed in South Africa. He currently also serves as an SAIEE Council Member on the institute's education and technology & knowledge leadership committees.

SAIEE President's Award: Stanley Bridgens

This prestigious award recognises the significant contributions of an engineer to the sector and is selected by the SAIEE President. Bridgens has made a massive contribution to the electricity supply industry over the course of his long career. He's a Fellow and Past President of the SAIEE, serving as a member of the institute for over 54 years. He started as an apprentice electrician in 1959 at the then Johannesburg Electricity Department (now City Power) and left after 43 years as the utility's director. He is recognised as a pioneer in the early implementation of a prepayment metering philosophy. After he retired, he joined the SAIEE's administrative staff and introduced much-needed financial management and governance processes and procedures that the institute still uses today.

SAIEE Women in Engineering Award: Bertha Dlamini

A new category of the awards, it seeks to recognise an individual for her contribution to promoting and inspiring women in engineering. Dlamini needs no introduction in the industry as a passionate advocate for the accelerated participation of African women and youth in Africa's power and energy sector. Using her vast network, she mobilises global stakeholders to work together to break down the barriers for women and young people in the industry. She is currently the President of African Women in Energy and Power (AWEaP). She has also been a strategic advisor to the Association for Municipal Electricity Utilities (AMEU) where she played a critical role in advancing gender mainstreaming in South Africa's energy sector.

SAIEE Engineering Excellence Award: Thembinkosi Cedric Madikane

Sponsored by Fluke, the award honours an individual who excels in electrical engineering and demonstrates above-average participation in the SAIEE and its activities. Madikane is a highly respected engineer with more than 24 years' experience in the industry. He heads up his own engineering company, Igoda Projects, that is celebrating its 20th anniversary this year. Madikane has a long history with the SAIEE, joining the institute as the Student Chapter Chairperson while he was studying at the then University of Natal (now University of KwaZulu-Natal). In 2006, he was crowned the SAIEE Engineer of the Year Award. Madikane's contribution and involvement in the SAIEE never ceased throughout the year and he was eventually appointed as the SAIEE President in 2016.

Keith Plowden Young Achiever: Michelle Govender

Sponsored by SGB-Smit Power Matla, the award recognising the most outstanding young achiever in electrical or electronic engineering of the year. Govendor is a force to be reckoned with as an Engineering Council of South Africa (ECSA) registered engineer and cybersecurity specialist for the World Bank-CIGRE African Utilities Initiative. She also serves an advisor for the Electricity Power Research Institute (EPRI) and as a member of the SABS SC 27 Technical Committee. Govender is passionate about connecting the youth with the engineering industry and is currently working on an initiative to connect aspiring founding engineers who are keen to start their businesses with South African engineers and CEOs.

SAIEE Centre of the Year: SAIEE Central Gauteng Centre

This award, which was introduced as a new category in 2018, seeks to honour the best among SAIEE's centres, recognising their contributions to the institute and the engineering profession. It's been a busy year for the SAIEE's Central Gauteng Centre as they distinguished themselves in hosting regular industry events, establishing three student chapters and recruiting a substantial number of new members. Established in 2015, the centre is still relatively young, but have wasted no time in making their mark as positive, disruptive and energetic force in the SAIEE. Showing their collective influence in the industry, they hosted, among others, the Minister of Public Enterprises, Pravin Gordhan and the former Deputy Prime Minister of Zimbabwe, Prof Arthur Mutambara, at their events in 2019.

SAIEE National Students Project Competition: Deswill Willemse and Kai Goodall Final year electrical, electronic and computer engineering students from academic universities and universities of technology compete to complete an intensive design project as part of the competition every year. Engineering students, Deswill Willemse from the Cape Peninsula University of Technology (CPUT) and Kay Goodall from the University of Cape Town (UCT) beat out 15 other students with their final year projects.

Enquiries: www.saiee.org.za

SAIEE Engineer of the Year: Monde Soni, Casbah Zwane (Actom) and George Debbo (SAIEE).

SAIEE Woman in Engineering Award: Sicelo Xulu (SAIEE), Bertha Dlamini and George Debbo (SAIEE).

SAIEE President's Award: Sicelo Xulu (SAIEE), Stanley Bridgens and George Debbo (SAIEE)

Standby power solutions boost production

Standby power systems from Cummins are providing extra protection at two glass-manufacturing facilities – in Lahore, Pakistan – that are growing their businesses; allowing production lines always to be on and operations to continue seamlessly, even in the event of a power outage. In both cases, Cummins offered a quality, reliable product at a competitive price. Cummins' authorised distributor Orient Energy Systems Pvt. Ltd. (OES) provided the project engineering and sales support, with technical expertise from the engineering team.

Ghani Glass Limited is almost doubling production capacity, from 300 to 550 tons/day, at its Model Town Extension plant. Five Cummins C1400D5 gensets will provide 5 MW of standby power for the facility, which is being renovated and expanded.

It manufactures float glass, used widely in construction and consumer products such as windows, doors, furniture, and mirrors, along with glass containers for pharmaceuticals, food and beverage. It is the top glass brand in Pakistan, and exports to over 26 countries.

Whereas glass tableware is the cornerstone of Tariq Glass Industries Ltd., the company launched its float-glass division five years ago. Tariq Glass is increasing the capacity of its Lahore Sheikhupura Road, Sheikhupura location, where it is building a new float-glass plant. A new customer, Tariq Glass cited the brand reputation of Cummins, along with strong customer service from the OES team, as its main reasons for entering into this partnership, which will assure reliable power at the new float-glass division for years to come.

Enquiries: +27 (0)11 589 8512

WORKING KNOWLEDGE WITH TERRY MACKENZIE HOY

Fixing electrical problems

There is a demon in all electrical things. Some people think electrical devices are merely wires and devices which, when connected, perform in a certain way. This is true, some of the time. In general, however, all electrical things stop working, sooner or later.

Let us consider one very ordinary three phase switchboard in my house; standard stuff. Incoming circuit breaker, circuit for lights, plugs on earth leakage, circuits to an out-building … nothing strange. Then, my tenant, who lives in the spare room, buys a new laptop. She says she doesn't want to go to the office (in the garden) since it is often raining (at the time of this incident, it was). However, the wi-fi signal in her room is not great and she thought that when using the laptop she could sit in the lounge (good wi-fi) and all would be fine. So, she bought the laptop and two days later the earth leakage (Elu) which supplies the socket outlets in her room tripped, which she blamed on the laptop.

I went to the DB, isolated the incomer, disconnected all the wires from the outgoing circuit breakers fed from the Elu (feeders to her room and others) and closed the Elu. It tripped. Since it was not feeding any circuit it was obviously defective. So, I took the Elu out, reconnected the supply to her room to another circuit and went off to buy a new Elu. Important note: This left the power supply to the electric gate motor disconnected. Not a big issue – the gate motor has a battery back up.

Two days later I installed the new Elu, connected all the circuits, turned it on…. and it tripped. So I disconnected all the wires from the outgoing circuit breakers fed from the Elu (feeders to her room and others) and closed the Elu. It didn't trip. I put back the wires one by one and when I connected the gate motor – trip. Let's sum up: The Elu was faulty, it was replaced and then the gate motor circuit tripped the Elu. I want you to stop and think about this: First, the Elu was faulty and then the replacement Elu worked, but one of the circuits was faulty. One has nothing to do with the other. Machoy's Law of Electrical Faults, states: 'All electrical faults come in pairs and seem to be related, but they are not'.

I thought a bit and then guessed that for the two days the gate had been running on batteries and it was raining, it was likely that the gate motor circuit had become damp. I waited two days. It stopped raining and I connected then the gate motor circuit and all was fine. But look at this series of coincidences: (a) rain causes tenant to buy laptop (b) Elu fails the same day due to an internal fault (c) diconnecting gate circuit causes the gate motor to go to earth (d) New Elu trips (e) Rain stops (f) New Elu works. Now, does that sound like a conspiracy or what?

It is very important that electricians not question too closely the reasons for electrical faults that occur in pairs or groups. Being rational about it is to misunderstand the universe. As an example, yesterday it occurred to me to phone a woman I had not seen or heard of for four months. I picked up my phone to find that she had sent me a message asking me to call … an astonishing co-incidence. These things happen to everyone and we just accept them.

In the same way, just accept the Law of Electrical Faults. Do not question it.

African Energy Outlook for 2020

The African Energy Chamber has announced the launch of its inaugural African Energy Outlook for 2020. The report analyses the state of the continent's oil and gas sector, highlighting current trends, opportunities and key challenges, and how they will impact the future of Africa's energy and economic development.

With a focus on crucial strategic and operational developments for 2020, the African Energy Outlook forms part of the African Energy Chamber's mission to play an instrumental role in laying the foundation that will ultimately allow Africans to benefit from the continent's resources.

The report looks at significant developments in major African oil and gas producers and offers key insights into the growth potential of the industry whilst examining the role of the public and private sectors. It also includes the African Energy Chamber's 'Top 25 Movers and Shakers to Watch' list, which profiles individuals who will play a big role in shaping the continent's energy economy in 2020. "We are delighted to announce the launch of the African Energy Outlook for 2020. In it, we study key factors that will contribute to the growth and development of Africa's oil and gas sector. These include regulatory and strategic reforms, finance and trading, foreign participation in Africa's energy sector and the role of gas developments on the continent," said Verner Ayukegba, Senior Vice President of the Africa Energy Chamber. "This document is not a compilation of what Africa is doing wrong but rather what it has done right and how it can build on this to unlock greater opportunities for growth and investment," he added.

The African Energy Outlook 2020 is now available for free download – visit www.energychamber.org

ECA(SA) Presidential Excellence Awards revealed

Installation of the Year – Residential Housing
Sponsor: Voltex
Winner: Vyfster Elektries (House Cesar)
Runners up: Vyfster Elektries (House Kluge); and Vyfster Elektries (The Hills)

Installation of the Year – Office Blocks
Sponsor: Citilec
Winner: W Edison Power (Nedport Developments – Park Square)
Runners up: MLE Electrical (Adapt IT Project); and Sensor Electrical (University of Pretoria Javett Arts Centre)

Installation of the Year – Hotels and Hospitals
Sponsor: Major Tech
Winner: Motlhakola Projects (Sparkling Tower)
Runners up: JNB Power (Prince Mshiyeni Memorial Hospital and St Paul's Anglican Church); and PJB Electrical (Dugong Beach, Mozambique)

Installation of the Year – Residential Complexes
Sponsor: Copper Development Association Africa
Winner: MLE Electrical Contractors (Blyde Lifestyle Centre and Jade Lifestyle Centre)
Runners up: Turner Electrical (1253 on Edge Hill, Queenswood, Pretoria); and Vyfster Elektries (Heritage Hill)

Apprentice of the Year: Male
Sponsor: HellermannTyton
Winner: Vincent Masuge (Masedi Electrical)
Runners up: Sello Hlako (Datalec); and Samkelekile Menziwa (SNC Lavalin)

Installation of the Year – Retail and Shopping Centres
Sponsor: SALT Employee Benefits
Winner: Dan Electrical (Tramshed Shopping Centre)
Runners up: DuziCube (Checkers, Noordheuwel); Edison Power (KwaDukuza Mall)

Apprentice of the Year: Female
Sponsor: Brother
Winner: Petronella Khakhu (Edison Power)
Runners up: Mamodiki Ntoi (SNC Lavalin); and Emelda Nkadimeng (Vinnies Electrical)

Another spectacular ECA(SA) Presidential Excellence Awards took place at the Serengeti Lapa at the Birchwood Hotel in November 2019. Past entrants and new contenders vied for top honours and by the end of the evening, new benchmarks for excellence had been set in the 15 categories.

The 400 guests celebrated in fine style at what turned out to be the best awards yet – due in part to Mpho Popps who doubled up as MC and entertainer and amused everyone with his forthright and brand of South African humour.

One of the most prestigious events on the ECA's calendar, the awards banquet, was made possible by the sponsorship of Associate Members: Brother, Comtest, Copper Development Association Africa, HellermannTyton, Major Tech, Nestlife, Voltex, Schneider Electric, and newcomers SALT Employee Benefits and Citilec.

Meritorious Award

Industry stalwart, Gary Abrahamson of Standard Electrical was awarded a Meritorious Award for his lifelong commitment to excellence in the electrical contracting industry and his unselfish mentoring of many of the top people in the industry, including the ECA's National Director, Mark Mfikoe.

Long Service Award

There weren't many dry eyes in the audience when Regional Director for the East/South Cape, Lucas Bowles – who has been with the ECA since 1983 – received a long service award as he retired on 15 December.

Top achievers

Once again, Besamandla dominated the awards and took home three trophies: Reticulation Contractor of the Year; National Safety Award; and Best Contributor to Renewable Energy. Edison Power won two categories: Installation of the Year – Office Blocks; and the National Safety Award.

The National Safety Award was shared by Besamandla (Aggeneys Solar Project) and Edison Power (Suncoast Casino); the coveted Reticulation Contractor of the Year was won by Besamandla for the Cape Town Data Centres project; and Besamandla also won the category, Best Contributor to Renewable Energy for the project for Airports Company SA, Port Elizabeth.

Award winners

Other recipients of awards in various categories are:

Installation of the Year – Industrial: RTC Control Systems (McCain, Delmas).

Installation of the Year – Residential Housing: Vyfster Elektries (House Cesar).

Installation of the Year – Residential Complexes: MLE Electrical Contractors (Blyde Lifestyle Centre and Jade Lifestyle Centre).

Installation of the Year – Hotels and Hospitals: Motihakola Projects (Sparkling Tower).

Installation of the Year – Retail and Shopping Centres: Dan Electrical (Tramshed Shopping Centre).

Installation of the Year – Office Blocks: Edison Power (Nedport Developments – Park Square).

Special Innovative Projects: Designer Lighting (Buffalo City Mobile Municipal App).

Best Contributor to Energy Efficiency: Elex Khanyisa (Green Point Stadium).

Woman-Owned Business of the Year: Andre Els Engineering.

Regional Excellence Award: Highveld Region, Chris Koen, Regional Director.

Apprentices

Apprentices from SNC Lavalin, Datalec, Edison Power, Vinnie's Electrical, and Masedi were all finalists with Petronella Khakhu from Edison Power taking the Female Apprentice of the Year, and Vincent Masuge from Masedi Electrical taking both the Male Apprentice of the Year and Overall Apprentice of the Year. Vincent won prizes from HellermannTyton to the value of R30 000.

Special Achiever Award

A Special Achiever Award was presented to Philile Mngadi, an apprentice at Edison Power, KwaZulu-Natal, who won the South African WorldSkills Competition and represented South Africa at the WorldSkills Competition in Kazan, Russia in August.

The ECA(SA) thanks everyone involved in this year's Presidential Excellence Awards for their individual and collective efforts in making the event so successful.

Enquiries: www.ecasa.co.za

Supplier of the Year: Major Tech – Andre Le Roux, Werner Grobbelaar, Donne van Eeden, CEO of Electrobase, Wayne Ternent, Pat Shaw, Howard Earley and Ian Greyling, Electrobase chairman.

Donne van Eeden congratulates Major Tech's Pat Shaw.

Electrobase suppliers gathered at the Irene Country Lodge at the end of 2019.

Most Improved Supplier: Eurolux – Anthony Lloyd receives the award from Ian Greyling.

Gold Award: HellermannTyton – Ian Greyling presents the award to Claude Middleton.

Gold Award: Bright Star Lighting – Ian Greyling with Dean Miller.

Gold Award: Crabtree – Pieter Knoetze and Ian Greyling.

Gold Award: Eurolux – Ian Greyling and Anthony Lloyd.

Gold Award: Major Tech – Andre Le Roux and Werner Grobbelaar flank Ian Greyling.

Recognising the industry's top electrical suppliers

Gold Award: Stone Stamcor – Mark Talbot receives the award from Ian Greyling.

Gold Award: Schneider Electric – Wally Springorum and Trevor Graham with Ian Greyling.

Gold Award: Three-D Agencies – Ian Greyling hands the award to Mark Jenkins and Ian Downard.

Silver Award: Electrolux – Luddy Carvalho with Ian Greyling.

Silver Award: Ledvance – Nelo Neves receiving the award from Ian Greyling.

The Irene Country Lodge was chosen as the venue to celebrate the 2019 Electrobase Supplier of the Year awards. Adding to the 'glitz and glamour', everyone looked dashing in their 1920's attire in line with this year's celebratory 'Gatsby' theme.

Electrobase this year marked 20 years of building strong relationships with its members and suppliers. But besides the 20-year celebrations, the 2019 event will be remembered for how close the results were – mere decimals decided the winner. On that note, Electrobase would like to congratulate Major Tech for winning the 2019 Supplier of the Year, for the third year in a row.

Eurolux took home the 'Most Improved Supplier' award for 2019, while the Gold Award winners, in alphabetical order, were: Bright Star Lighting, Crabtree, Enerji Electrical, Eurolux, HellermannTyton, Major Tech/Veti, Stone Stamcor, Schneider Electric and Three-D Agencies. Congratulations also go to the Silver Award winners: Electrolux, Ledvance, Radiant and WACO.

Enquiries: www.electrobase.co.za

As is tradition, Electrobase held a raffle to raise funds for a worthy charity – this year it was the Avril Elizabeth Home for the Mentally Handicapped. In another first for this event – the suppliers decided to nominate the best Wholesalers of the Year. Criteria for choosing the winners included, amongst others, loyalty to their specific brand, achieving monthly, quarterly and annual targets, support of training sessions and functions.

Third place went to Plumstead Electrical of Cape Town, second prize went to Century Electrical of Vereeniging and the first place went to Northside Electrical of Durban – congratulations to all three wholesalers!

Electrobase would like to thank the suppliers for scoring the wholesalers and donating some magnificent prizes to the winners, as well as all its members and suppliers for their support during the year.

Silver Award: Radiant Lighting – Alfred Weldon receives the prize from Ian Greyling.

Silver Award: WACO – Ian Greyling and Jaco Coetzee.

Wholesalers of the Year, 1st Place: Northside Electrical – Kevin Sparg and Major Tech's Pat Shaw.

Wholesalers of the Year, 2nd Place: Century Electrical – Aboo Moolla and Gabriel Marx with Claude Middleton from HellermannTyton.

Wholesalers of the Year, 3rd Place: Plumstead Electrical – Anthony Lloyd from Eurolux presents Bruce Gold, Glenn Gold and Morne Vermeulen with the award.

Manufacturing license for local panel builder

JB SWITCHGEAR SOLUTIONS was recently awarded official licensed manufacturing partner status for Logstrup's range of switchgear and controlgear assemblies. The official license handover was conducted by Morten R. Logstrup from Logstrup Denmark, accompanied by Ludi Erasmus of Electro-Modular.

JB Switchgears' MD, Johan Basson said this was an exciting development that further enhanced the company's objective to become a supplier of choice in the marketplace. The Logstrup system features extensive modularity to cover a wide range of applications, including heavy duty distribution boards and fully withdrawable motor control centres. Key benefits include free choice of devices and switchgear from most major brands, as well as comprehensive type test certification for compliance with IEC 61439-1/2 and IEC/TR 61641.

From left to right: Sulayman Ally – Director JBSS, Johan Basson – MD JBSS, Morten R. Logstrup from Logstrup Denmark and Ludi Erasmus – Electro-Modular.

JB Switchgear Solutions is a leading manufacturer of switchgear and controlgear assemblies in South Africa and has supplied equipment to projects around the world. The company is ISO 9001 certified, and a Level 3 BEE supplier. It is proudly South African, and enjoys strong working relationships with major OEMs, project houses and end-users.

Enquiries: info@jbswitchgear.co.za

Use independently verified, type-tested switchgear

Since 2015, both local and international standards have been amended and this has created some confusion of the compliance requirements of low voltage switchgear. Switchgear is indispensable in the transmission of electricity to power consumers. Inadequate testing and/or the purchase of untested products can have dire consequences to the supply of electricity as a result of increased explosions or malfunctions of equipment.

The South African National Standards (SANS) that apply to switchgear have been adopted from the International Electrotechnical Commission (IEC). In October 2015, IEC standard 61439 replaced SANS 60439:2004, which was the standard that applied to low-voltage switchgear and controlgear assemblies. The new standard allows for any one of the three types of design verification to indicate compliance to the standard (Verification by Type Testing, Verification by Calculation or Measurement, and Verification by Design Rules), whereas the previous standard required verification by testing without reference to all categories.

While SABS adopted IEC 61439 as SANS/IEC 61439: 2015; for South African use, the testing requirements also need to include the Wiring Code SANS 10142-1:2017.

"Switchgear end users are faced with exploding switchgear or malfunctioning equipment as a result of increased temperature rise, and these scenarios can be drastically reduced through ensuring that switchgear is independently tested and verified through type testing. Verification by type testing subjects the equipment to performance limits or 'destructive' testing, functional tests and, most importantly, includes temperature rise tests for indoor and outdoor applications. Most manufacturers prefer to conduct verification by calculation or by design rules as this is cheaper and does not have to be conducted in a laboratory. The critical gap is that these tests exclude destructive testing of the equipment and testing to South African conditions," says Garth Strachan, Acting CEO of SABS.

SABS has held several consultative engagements with the electro-technical industry to raise the concerns of inadequate testing of switchgear. In October 2018, SABS reintroduced partial testing or testing to customer specific requirements to enable type testing of switchgear.

"Independent type testing of switchgear through accredited laboratories may be an additional expense for manufacturers; however, it will provide assurance to switchgear end users that the equipment is safe to use, can withstand South African climatic conditions, and is functional. Switchgear end users are advised to review all the test reports provided by switchgear manufacturers to ensure the tests have been conducted by accredited laboratories and to ensure that type testing by a South African accredited laboratory is provided," says Strachan.

SABS, through its independent, third-party, National Electrical Test Facility (NETFA), which is accredited by the South African National Accreditation System (SANAS), is capable of conducting verification by type testing on a range of switchgear equipment.

Enquiries: +27 (0)12 428 6878

Dry-type transformers move into the mainstream

The uptake of dry-type transformers in South Africa is now well beyond 'niche' applications, with local specialist Trafo Power Solutions installing a range of sizes across various sectors.

"In recent months, we have been involved in projects from small 50 kVA low voltage lighting transformers, right up to 4,5 MVA medium voltage customised units," says David Claassen, managing director of Trafo Power Solutions. "These have been installed in healthcare facilities, commercial buildings, educational institutions, mines and data centres, as well as at solar energy plants."

Among its recent contracts, the company has supplied a number of lighting transformers. It has also provided outdoor instrument transformers to facilitate measurement of voltage on overhead lines. These cast-resin voltage transformers (VTs) typically have 33 kV, 22 kV and 11 kV primaries with 110 V secondaries with between 50 VA and 500 VA burden.

"These are substantially lighter than their oil-cooled equivalents and are, of course, safer due to the absence of oil in their design," he says.

In the mining sector, a recent contract was the installation of 200 kVA dry-type transformers. This is often a corrosive environment in terms of water and dust, so a high ingress protection (IP) rating was applied. Claassen adds that a range of materials and paint can also be specified by the customer to further withstand corrosion.

Data centres are a fast-growing aspect of the country's digital economy, and Trafo Power Solutions recently delivered and cold-commissioned two 2 MVA units for a data centre in Cape Town.

"Data centres obviously require the highest levels of reliability and protection for their electrical and electronic networks," he says. "The windings and core of our units were designed for a K factor of 13, given the high non-linear load. An electrostatic shield was also installed, along with surge protection of the highest order." There was substantial time pressure to complete the contract, but the flexibility and responsiveness that Trafo Power Solutions offers ensured on-time delivery.

At three small-scale solar plants, Trafo Power Solutions is providing three 800 kVA transformers which will step up power from 400 V to 22 kV. These applications involve a solar inverter for the 100% non-linear load, as well as an electrostatic shield between the primary and secondary windings.

Claassen emphasises that the business prides itself on the level of application engineering for each customer's specific requirements.

"We understand what we are supplying and the risks faced by the customer and we design the solution accordingly," he says. "Industry is certainly showing its faith that dry-type transformers can be applied in a growing range of applications."

Enquiries: www.trafo.co.za

David Claassen, managing director of Trafo Power Solutions, in front of a 10 MVA cast resin transformer ideal for high power demands.

Programme for Africa Energy Indaba 2020 announced

For the past 12 years, leaders and key stakeholders in the continent's energy sector have assembled for the annual Africa Energy Indaba.

According to the latest report from the International Energy Agency (IEA), Africa is experiencing the fastest rate of urbanisation in the world. The report states that cumulative investments of $2.6 trillion are required between 2019 and 2040 to meet rising energy demands and provide more accessible energy facilities to Africans.

Created around the 2020 theme, 'African Energy – Catalysing Investment and Business Opportunities', the newly released 2020 Conference Programme is set to establish an ideal platform to discuss how Africa can accelerate the development of energy infrastructure and projects to meet demand for energy on the continent.

The two-day programme will include plenary panels and interactive discussions with the aim of ensuring the growth and development of the African energy sector by structuring and advancing energy projects to bankability and providing the necessary business links, and the required finance, to enable the transaction process.

The conference takes place from 3-4 March 2020 at the Cape Town International Convention Centre.

Register for the conference and download the programme at www.africaenergyindaba.com/register-conference

Citiq prepaid lights up Port Elizabeth development – and marks a major milestone

CITIQ PREPAID has laid down a major marker in the Eastern Cape with its single biggest roll-out of prepaid electricity meters to date. The country's leading supplier of prepaid water and electricity submeters, Citiq Prepaid was commissioned to provide the electrical backbone for the redevelopment of Pier 14 in Port Elizabeth.

Located off Govan Mbeki Avenue in the city's busy downtown North End district, Pier 14 consists of an old office tower spanning four levels, with multiple retail spaces, including food, fashion and furniture, further below at street level. Owners GRITprop Investment (Pty) Ltd are currently repurposing the offices into affordable single-room residential apartments, a much-needed housing boost for Port Elizabeth's inner city. In total, 111 units are under renovation, with first occupation penciled in for early 2020.

Each flatlet will have its own Citiq Prepaid meter keypad with a small distribution box, allowing users to monitor their usage at all times. Apartments will receive their power courtesy of a single cable carrying live and neutral wires, as well as two communication strands, connected to one of four customised panels on each floor. Built by Eastern Switchgear in Sidwell, the panels house all the circuit breakers and primary meters.

East London's ARK Electrical was awarded the tender for the installation contract and has been on site with builders for two months already, chasing hard on January's deadline. Growth opportunities for electricians and smaller electrical businesses are definitely there when it comes to Citiq Prepaid, says the company's regional sales manager for Eastern and Southern Cape, Elwin Wait.

"We supply to wholesalers and wholesalers supply to contractors, we don't do the installation ourselves, and because the system is so easy to install, it means any qualified electrician can get on board with us by joining our loyalty programme (CIC)." Hardware aside, Citiq Prepaid's smart proprietary vending system also makes it easy for end-users to control their electricity usage, while offering landlords and body corporates a neat and tidy alternative to managing multiple utility accounts.

For property owners, paperwork is eliminated – no longer do they need to fret about mailing bills, hounding late-payers or bad debts piling up. It is these business advantages which position Citiq Prepaid as the perfect choice for residential sublets, apartment blocks like Pier 14, light industrial parks, staff accommodation and offices.

"Being a project on a large scale like this, metering is going to help the client because it takes away the strain of getting money from so many different tenants," says ARK electrician and construction manager, Tyrone Human. "They simply pay upfront for their electricity." Tenants using Citiq Prepaid's meters have the choice of buying their electricity tokens from any number of supermarkets, kiosks and petrol stations countrywide. Vendors receive payment and supply customers with a token number, which is then tapped into the keypad. A certain number of electricity credits, depending on the purchase amount, is immediately activated. Before the credits run out, users can simply buy more and top up, ensuring continuous supply into their homes or offices. This means usage can be monitored in real-time, unlike municipal post-paid accounts, says Gideon van Rensburg, an electrical technologist at consulting engineers CA du Toit, the appointed electrical contractors for the Pier 14 project.

Despite being relatively sizeable in scope, Pier 14 presented few problems for CA du Toit. "On the electrical side, it was straightforward," says Van Rensburg. "The design was basically just from an existing supply to that building and then installing new distribution boards, and from there we supplied each little flat with a distribution board.

He continues: "That's where the metering came in and we decided it was going to be much easier to have a split-metering system." Enter Citiq Prepaid – answering the call, delivering a smart solution and notching up a milestone along the way.

Enquiries: 087 55 111 11

Why electricians should recommend surge protection devices

Before the introduction of hi-tech electronic equipment such as computers, hi-fi systems, microwave ovens, televisions, etc. electrical surges were not considered a major problem. These hi-tech items require a stable power supply as they are very sensitive to fluctuations in electrical voltage and current. A power surge or transient voltage is a spike or increase in the normal voltage that the equipment is designed to operate at.

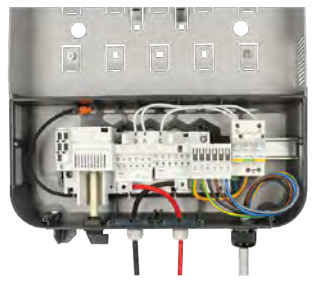
A simple explanation for this phenomenon is that if, in a normal household, the water pressure in the pipes were to increase significantly, the geyser would probably burst, In the same way, when electrical equipment sees a power surge, the electronic components 'burst'. The surge protectors act as pressure relief valves in the electrical system. Because of the vulnerability of this hi-tech equipment, some insurance companies are refusing to give insurance cover to equipment that has been damaged by lightning and/or voltage surges. It is now imperative to install surge protection devices (SPDs).

The most dangerous surges are those caused by direct lightning strikes to a building and can be calculated using the method specified by SABS. This risk increases if the building is located in an exposed position, such as on the side of a hill. Surges because of network switching and adjacent lightning strikes are usually the least dangerous but occur most frequently. There are three main categories of SPDs: current-diverting (Class I) and voltage clamping (Class II and Class III).

Class I SPDs (10/350) lightning current arresters can divert large surge currents such as direct lightning strikes, but must be used in conjunction with Class II SPDs. Whenever a building has external lightning protection such as a mast or conductors on the building, Class I SPDs must be installed. Class II SPDs (8/20) surge arresters can survive lower amplitude surges in areas where direct lightning strikes are not expected and must be installed in main distribution boards as a minimum requirement according to the regulations in SANS 10142-1. Although this regulation requires that the SPDs withstand a nominal surge current of 5 kA and a peak surge current of 10 kA it is recommended that higher rated SPDs be installed, say nominal surge current of 10 kA, and 25 kA peak surge current.

Class III SPDs (8/20) surge arresters are installed to dissipate any surges that are induced between the electrical distribution board and the equipment to be protected. These Class III SPDs must always be used in conjunction with Class II SPDs. If the Class III SPD does not have an internal disconnecting mechanism, the circuit that it is used on must also be supervised by an earth leakage device.

The figures in brackets (8/20) next to the SPD Class represent the response time in microseconds (µs). The first figure is the time that the SPD takes to ramp up to the maximum nominal discharge current. In this case, if the SPD had a nominal discharge current of 10 kA it would take 8 µs to ramp up 10 kA and then 20 µs to decay to 50 % of 10 kA (5 kA). From this it can be seen that when a Class I SPD with a ramp up and down figure of 10/350 is used although being able to handle a higher current it is much slower in doing so, which is why a Class II SPD needs to be used in conjunction with it to make the residual voltage low enough to safeguard the installed electrical devices.



There are SPDs on the market that combine Class I and II characteristics. Class III SPDs would normally be installed in individual circuits as close as possible to the item of equipment that is being protected and are available as individual plugin units and extenders (surge protector power strip). Many SPDs have flag or LED indications to show that the unit is healthy or 'blown', and these types should be used wherever possible. It is also worth noting that surges can be experienced on incoming telephone lines, data lines and antennas and that special SPDs are available for these applications.

Enquiries: www.safehousesa.co.za

Surge and lightning protection insurance for thatched roof buildings – with added aesthetic bonus

"The new insurance offering from lightning and surge protection company DEHN Africa is based on DEHN's modern high-voltage-resistant insulated (HVI) technology," explains Hano Oelofse, MD of DEHN Africa. The local insurance solution combines public and product liability, professional indemnity and the underwriting of electronic equipment insurance.

As an added aesthetic bonus, the HVI technology makes use of lightning masts only three metres or less in length that are installed directly onto the roof, rather than the traditional 30-metre freestanding lightning masts that have been the norm for decades when protecting thatched roofs from the direct effects of lightning strikes.

Direct lightning flash density measurements are high in large areas of South Africa, and direct lightning strikes can cause fires in these highly flammable roofs. Alternatively, lightning can cause a power surge, damaging electrical equipment and appliances in the same way as a power surge from an electrical utility source.

Because they are so potentially flammable compared to other types of roof, the insurance requirements on buildings with thatched roofs can be onerous – a thatched roof is regarded as a non-standard construction by many insurers. An insurance company therefore requires the owner of a thatched roof building to take steps to reduce fire risk.

Traditionally, external lightning protective equipment for thatched roofs has involved the use of a free-standing lightning mast, which must be higher than the thatched roof. The idea is that the lightning flash will 'seek' a pathway to the ground and thereby discharge itself through the lightning mast, preventing your flammable roof from being struck by the lightning instead.

However, the masts are very visible. In contrast to the 30-metre free-standing mast, DEHN's HVI lightning protection system is compact and neat, and is installed onto the top of the roof itself.

Advantages for the homeowner include:

- HVI technology is thinner and shorter than the old technology, with average lengths of between two and half and three metres. This makes it far less visible to the naked eye than a 30-metre free-standing mast, and more visually pleasing.
- At the same time, the HVI system provides arguably even better protection from a lightning strike than a 30-metre mast.
- The HVI system has also been proven to be very cost-effective both from an installation and maintenance point of view.

Given the technical expertise offered by the HVI technology, and the company's confidence in its product, DEHN Africa is now prepared to offer insurance guarantees linked to its HVI system through the launch of DEHNsure for thatched roofs, powered by HVI. Whether your thatched roof is in a residential area, a commercial site or a game lodge, the combination of DEHN's HVI technology and this new insurance offering from DEHN Africa will have something to interest all thatched roof lovers, owners and insurers.

Enquiries: +27 (0)11 704 1487

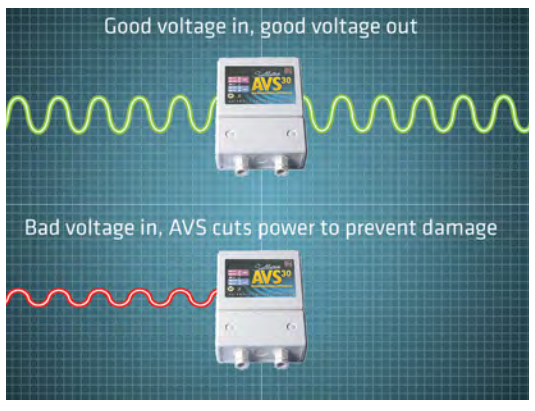
Protect against all-known power problems with the AVS30

Did you know power surges and spikes account for 63% of all power disturbances? Bad voltage can damage your electrical equipment; according to *Business Week,* spikes and power surges cause over $26 billion in losses every year. Power problems are the leading cause in business downtime.

Sollatek has the solution to protect valuable electrical equipment. The company has a range of products that protects against under voltage, over voltage, spikes/surges, and power-back surges.

The AVS30 provides the best solution to counter these power problems. The AVS is an Automatic Voltage Switcher rated at 30 Amps (AVS30). It will switch off the equipment connected if the mains power goes outside pre-set acceptable limits. Once re-connected, the mains power returns to normal. Additionally, there's a delay when power returns to normal. This will ensure that the appliance is not switched on-off repeatedly during fluctuations, nor will it be subjected to a massive surge when power returns after power cuts. Re-connection takes place after a delay ('the start-up delay') to ensure stability of the mains. The start-up delay provides protection against power-back surges.

Spikes and surges are only some of the power conditions damaging or even destroying electrical equipment. The AVS will prevent any damage to electrical equipment caused by unstable voltage.



Main features:

- Up to 30 Amps.
- Installation via direct wiring.
- Can protect against serious voltage conditions including loss of neutral.
- Protects against substantial surge and spike events.
- User-friendly with adjustable settings.
- Can withstand large inrush current.
- Multiple applications from air conditioners to refrigeration equipment to homes/offices and generators.
- Suitable for all domestic and industrial appliances.

Furthermore, the Sollatek AVS30 Micro version has enhanced features allowing the user to set the delay time and monitor the state of the voltage.

Enquiries, sales@sollatek.co.za/www.sollatek.com

ELPA at the SAIEE conference

The recent SAIEE national conference was held at the Sandton Conference Centre under the theme 'Engineering an Africa for the Future'. Let's face facts; there is no point in engineering anything that is not safe and which does not provide a minimum acceptable level of safety. At the same time, if we are looking at the long-term, durability and sustainability are critical success factors for any construction or building project, and incorporating the safety and certainty provided by certifiable lightning protection systems must be non-negotiable for any developer, whether financier, project manager, or building contractor.

The Earthing and Lightning Protection Association (ELPA) stand featured some interesting discussions and chats about this widely varied subject matter and resolved several topical items brought up during the conference regarding responsibility of persons involved in the construction process, the importance of planned maintenance of LP systems, as well as the legal implications of the supplier (Eskom or municipalities) failing to provide a safe supply where the substation earthing and reticulation are correctly installed and maintained.

In general, it was great to see that, among the delegates, there was a noticeable awareness of the importance of correct earthing and lightning protection installations and that maintenance pays dividends in the short and the long term through provision of safe work environments for staff and equipment. Those ELPA members working at raising the bar for earthing and lightning protection in South Africa are showing significant benefits in the engineering fraternity as the engineers too are starting to specify at the tender level that work be undertaken by ELPA certified members only.

ELPA members have been working long and hard to develop the SAQA and QCTO curriculum for installers, designers, and inspectors of lightning protection systems to provide certainty that the system you are purchasing from your ELPA certified supplier will offer decades of protection so you won't even know your system took a direct strike. This is the certainty offered when working with ELPA certified specialists who are committed to doing the right job, using the right materials, in the right time, for the right (competitive) price.

For more information, contact the Earthing and Lightning Protection Associations National Director Richard Evert (+27 (0)82 372 3886) to get help resolving any lightning related incident using scientific, code of practice compliant methods.

Enquiries: info@powerquality.co.za

Mike Visser, founding chairman of ELPA, at the ELPA stand donated by Power Quality.

The cost of lightning damage

Lightning damage accounts for about 65% of all over-voltage damage to Electrical Distribution networks in South Africa. Distant strikes and even indirect strikes within 40 m of a line can induce over-voltages around 250 kV that can cause flashovers and over-voltage damage to distribution lines.

Lightning contains billions of volts and tens of thousands of amps. The temperature of a lightning strike is three times the heat of the sun's surface (250 000 degrees C) and consists of a core that is the about 15 mm-20 mm in diameter (the width of your thumb) whilst the sheath can vary anything from 5 m to 15 m in diameter.

When a lightning bolt terminates on any distribution line, the lightning energy is powerful enough to penetrate the insulation of any hardware (e.g. a transformer) and allow the system frequency (50/60 hz) to follow through and cause damage.

The average lightning bolt could light up a 100 W bulb for three months if the energy could be contained. It is this type of energy that can cause extreme damage and result in degradation of a distribution line's performance.

Hardware losses, outages and excessive downtimes are the main contributors to the loss of revenue where lightning activity is prevalent. South Africa's distribution networks are no different to other utilities around the world and are extremely vulnerable to lightning damage. Eskom's distribution networks operate mainly on 11 kV and 22 kV but range from as little as 3 kV up to 33 kV.

Surge arrestors are (ZnO) MOV-Oxide-based devices designed to protect electrical equipment from the damaging effects of spikes and transients caused by lightning, utility switching, isolation arcing, electrical motor cycling, or any other sudden change in electrical power flow on incoming ac power.

EARTHING, LIGHTNING AND SURGE PROTECTION BUYER'S GUIDE

MANUFACTURERS

ABB South Africa
Aberdare Cables
Banding and Identification Solutions SA
Bellco
Brady SA
CBI-electric: low voltage
CJM Choke and Ballast Manufacturing
Clearline Protection Systems
Crabtree South Africa
Eaton Electric SA
Eurolux
HellermannTyton
Legrand
Low Voltage Switchboards
Newelec
Phambili
Phoenix Contact
Power Quality
Schneider Electric South Africa
Sollatek Electronics
South Ocean Electric Wire Company
Spazio Lighting
Stone-Stamcor
Strutfast
Surge Technology
Three-D Agencies
Versalec
Voltex
Voltex MV/LV Solutions
Voltex LSis
Waco

DISTRIBUTORS

ACDC Dynamics
ACTOM Electrical Products
ARB Electrical Wholesalers
Atlas Group
Banding and Identification Solutions SA
Bellco
Brady SA
Cable Croc
Citilec
Clearline Protection Systems
Crabtree South Africa
Eaton Electric SA
Electrahertz
Electro-Test Instrumentation
Innopro
Lightning Protection Concepts
Magnet Electrical Supplies
Major Tech
MCE Electric
Mimic Components
Newelec
Phambili
Pretoria Motor Control Gear Products (PMCG)
Radiant Group
Schneider Electric South Africa
Stone-Stamcor
Surge Technology
Three-D Agencies
Versalec
Voltex
Voltex LSis
Waco

CONTACTS

ABB South Africa
Customer contact centre
Aberdare Cables
Jyoshtie Dhunes

CONTACTS

ACDC Dynamics
Elmari Erasmus/Dirk Klynsmith
ACTOM Electrical Products
Russel Ramsden
ARB Electrical Wholesalers
Sales
Atlas Group
Annie Storar/Imran Gaffoor
Banding and Identification Solutions SA
Rosa Dos Remendos
Bellco
Shiraj Wentzel
Brady SA
Morné Louw
Cable Croc
Lex Harvey
CBI-electric: low voltage
Jaco Viljoen
Citilec
Jeff Forman
CJM Choke and Ballast Manufacturing
Chris Bornman
Clearline Protection Systems
Tanya or Rakesh
Crabtree South Africa
Sales
Eaton Electric SA
Marlene Coetzee
Electrahertz
Frank Proude (Pta) Peet Lourens (Jhb)
Electro-Test Instrumentation
Winston Browning
Eurolux
Sales
HellermannTyton
Ingrid Nicolaus
Innopro
Ian McKechnie
Legrand
Johan Bosch
Lightning Protection Concepts
Trevor Manas
Low Voltage Switchboards
Rudi Barker
Magnet Electrical Supplies
Kevin Govender
Major Tech
Werner Grobbelaar
MCE Electric
Sales
Mimic Components
Christo Vosloo
Newelec
Luc Dutrieux
Phambili
Steve Lea
Phoenix Contact
Carl Coetzer
Power Quality
Mike Visser
Pretoria Motor Control Gear Products (PMCG)
Hannes Swartz/John Vorster
Radiant Group
Alfred Weldon
Schneider Electric South Africa
Sales
Sollatek Electronics
Nick Allen
South Ocean Electric Wire Company
Yasmin Mahomed
Spazio Lighting
Sales
Stone-Stamcor
Mark Talbot
Strutfast
Tony Kinsella
Surge Technology
Paul van As
Three-D Agencies
Mark Jenkins

CONTACTS

Versalec
Roland Fry
Voltex
Hugh Ward
Voltex LSis
Rose Schulz
Waco
Jaco Coetzee

AIR TERMINATION SYSTEMS /DOWN CONDUCTOR SYSTEMS

ARB Electrical Wholesalers
Full range of air termination systems/down conductor systems
Atlas Group
Available on request
Bellco
Full range of air termination systems/down conductor systems
Electrahertz
Full range of air termination systems/down conductor systems
Innopro
Full range of air termination and down conductor systems
Lightning Protection Concepts
Full range of air termination systems/down conductor systems
Voltex
Full range of air termination systems/down conductor systems
Waco
Full range of air termination systems/down conductor systems

CLAMPS AND SADDLES

ARB Electrical Wholesalers
Full range of clamps and saddles
Atlas Group
PVC, steel and copper in various sizes
Banding and Identification Solutions SA
Stainless steel buckles, strapping and clamps
Bellco
Full range of clamps and saddles
Cabstrut
Full range of clamps and saddles
Citilec
Full range of clamps and saddles
Electrahertz
Full range of clamps and saddles
Electro-Test Instrumentation
Full range of clamps and saddles
Eurolux
Wide range available
Lightning Protection Concepts
Full range of clamps and saddles
Magnet Electrical Supplies
Full range of clamps and saddles
Radiant Group
Full range of clamps and saddles
Specialised Electrical Accessories
Full range of clamps and saddles
Stone-Stamcor
Full range of Burndy Grounding Products Hyground
Strutfast
Ellis patents cable cleats and clamps
Voltex
Full range of clamps and saddles
Waco
Full range of clamps and saddles

CONDUCTORS (ALUMINIUM AND/OR COPPER)

Aberdare Cables
Bare earth copper conductors
ACDC Dynamics
Full range of conductors
ACTOM Electrical Products
Bare copper earth wires
ARB Electrical Wholesalers
Full range of conductors
Atlas Group
Full range available on request

CONDUCTORS (ALUMINIUM AND/OR COPPER)

Bellco
Full range of conductors
Electrahertz
Full range of conductors
Lightning Protection Concepts
Full range of conductors
Low Voltage Switchboards
Copper conduct
Magnet Electrical Supplies
Full range of conductors
South Ocean Electric Wire Company
Full range of conductors
Stone-Stamcor
Lugs and ferrules suitable for aluminium and copper conductors
Versalec
Full range of conductors
Voltex
Full range of conductors
Waco
Full range of conductors

EXOTHERMIC WELDING

ACTOM Electrical Products
Full range of equipment for exothermic welding
ARB Electrical Wholesalers
Full range of exothermic welding equipment
Atlas Group
Full range available on request
Bellco
Full range of exothermic welding equipment
Electrahertz
Full range of exothermic welding equipment
Lightning Protection Concepts
Full range of exothermic welding equipment
Voltex
Full range of exothermic welding equipment

EARTH ELECTRODE/EARTH RODS

ACDC Dynamics
Earth rods and accessories
ACTOM Electrical Products
Full range of earth electrode, earth rods
ARB Electrical Wholesalers
Full range of earth electrodes, earth rods
Atlas Group
Full range available on request
Bellco
Full range of earth electrodes, earth rods
Citilec
Full range of earth electrodes, earth rods
Electrahertz
Full range of earth electrodes, earth rods
Eurolux
Earth rods available
Innopro
Full range of earth electrodes
Lightning Protection Concepts
Full range of electrodes and earth rods
Voltex
Full range of earth electrodes and earth rods
Waco
Full range of earth electrodes, earth rods

MASTS/POWER SUPPLY FILTERING

ACDC Dynamics
Mains filter, single-phase 250V up to 30A, three-phase 400V up to 30A
ARB Electrical Wholesalers
Full range of masts/power supply filtering
Atlas Group
Available on request
Bellco
Range of power supply filtering
Electrahertz
Full range of power supply filtering
Innopro
Full range of masts and power supply filtering

MASTS/POWER SUPPLY FILTERING

Lightning Protection Concepts
Full range of masts and power supply filtering
Voltex LSis
Range of power supply filtering

MAINS PROTECTION

ABB South Africa
Full range of mains protection devices
ACDC Dynamics
Mains Protection
ACTOM Electrical Products
Full range of surge protection products
ARB Electrical Wholesalers
Full range of mains protection products
Atlas Group
Full range available on reqest
Bellco
Full range of mains protection devices
CBI-electric : low voltage
Full range of mains protection devices
Clearline Protection Systems
Full range of mains protection devices
Electrahertz
Full range of mains protection devices
Innopro
Full range of mains protection units
Legrand
Full range of mains protection units
Lightning Protection Concepts
Full range of mains protection units
Low Voltage Switchboards
Full range of mains protection units
Magnet Electrical Supplies
Full range of mains protection units
Major Tech
Full range of mains protection devices including MCB and isolators
MCE Electric
Onesto dedicated socket mains protection; Onesto circuit breakers and isolators; Schenker circuit breakers, 12 mm circuit breakers; Schenker isolators; Hyundai MCCBs and ACBs
Mimic Components
LED surge protection
Phoenix Contact
Full range of mains protection units
Schneider Electric South Africa
Full range of mains protection devices
Sollatek Electronics
Automatic voltage protection; spike, surge, over and under voltage protection and Voltage stabilisers; regulators & voltage optimisation
Surge Technology
Dehn, Saltek and Copa
Voltex
Full range of mains protection
Voltex LSis
Full range of mains protection devices
Waco
Full range of mains protection devices

TELECOMS/DATA PROTECTION

ACDC Dynamics
Telecoms/data protection
Clearline Protection Systems
Full range of telecom and data protection units
Eaton Electric SA
Full range of protection devices for telecoms and data protection
Electrahertz
Full range of protection devices for telecoms and data protection
Innopro
Full range of telecom and data protection units
Legrand
Full range of telecom and data protection units
Lightning Protection Concepts
Full range of telecom and data protection units
MCE Electric
Onesto dedicated socket data protection; Onesto circuit breakers and isolators; Schenker circuit breakers and isolators; Hyundai MCCBs and ACBs
Phoenix Contact
Full range of telecom and data protection units

TELECOMS/DATA PROTECTION

Surge Technology
Dehn, Saltek and Copa

EARTH LEAKAGE

ABB South Africa
Full range of domestic and industrial earth leakage protection devices
ACDC Dynamics
Earth leakage
ACTOM Electrical Products
Full range of earth leakage protection devices
ARB Electrical Wholesalers
Full range of earth leakage protection products
Atlas Group
Various brands available on request
Bellco
Full range of earth leakage devices
Crabtree South Africa
Crabtree RCCB
Eaton Electric SA
Full range of earth leakage devices
Electrahertz
Full range of earth leakage devices
Electro-Test Instrumentation
Full range of earth leakage devices
Eurolux
Wide range available
HellermannTyton
Instruments for testing earth leakage such as TELE10L, T4137, TEL11, TEL110LED, TEL1TLB
Innopro
Full range of earth leakage protection
Legrand
Lexic DPX; Lexic 4ELCB
Lightning Protection Concepts
Full range of earth leakage protection
Magnet Electrical Supplies
Full range of earth leakage protection
Major Tech
The VE2P63, a 63A Double Pole Earth Leakage; the VE4P63, a Four Pole Earth Leakage
MCE Electric
Onesto earth leakages; Schenker earth leakages
Pretoria Motor Control Gear Products (PMCG)
Full range of earth leakage devices
Schneider Electric South Africa
Full range of earth leakage devices
Voltex
Full range of earth leakage products
Voltex LSis
Full range of earth leakage devices
Waco
Full range of earth leakage devices

POWER SUPPLY FILTERING

ACDC Dynamics
Power supply filtering
ARB Electrical Wholesalers
Full range of power supply filtering
Bellco
Power supply filtering
Clearline Protection Systems
Full range of power supply filtering
Electrahertz
Full range of power supply filtering
Impact Power Innovations
Power supply filtering
Low Voltage Switchboards
Full range of power supply filtering
Phoenix Contact
Full range of power supply filtering
Sollatek Electronics
Automatic voltage protection; spike, surge, over and under voltage protection and Voltage stabilisers; regulators & voltage optimisation
Voltex
Power supply filtering
Voltex LSis
Power supply filtering

POWER SUPPLY FILTERING

Waco
Power supply filtering

ISOLATION TRANSFORMERS

ACDC Dynamics
Full range of isolation transformers
ARB Electrical Wholesalers
Full range of isolation transformers
Atlas Group
Full range available on request
Bellco
Full range of isolation transformers
Electrahertz
Full range of isolation transformers
Low Voltage Switchboards
Full range of isolation transformers
Magnet Electrical Supplies
Full range of isolation transformers
Voltex
Full range of isolation transformers
Voltex LSis
Full range of isolation transformers
Waco
Full range of isolation transformers

MV SURGE PROTECTION

ACDC Dynamics
Plug-in types for homes and small businesses; plug-in tops with surge protection; Soule lightning and surge protection
ACTOM Electrical Products
Full range of surge protection devices
ARB Electrical Wholesalers
Full range of surge protection devices
Atlas Group
Full range available on request
Bellco
Full range of surge protection devices
Clearline Protection Systems
Full range of surge protection devices
Eaton Electric SA
Full range of surge protection devices
Electrahertz
Full range of surge protection devices
Legrand
Lexic surge protection devices
Magnet Electrical Supplies
Full range of MV surge protection devices
MCE Electric
Onesto surge arresters; Schenker surge arresters
Phambili
Full range of surge protection devices
Sollatek Electronics
Voltage stabilisers; regulators and voltage optimisation
Surge Technology
Tridelta
Voltex
Full range of surge protection devices
Voltex LSis
Full range of surge protection devices
Waco
Full range of surge protection devices

CONSTANT V TRANSFORMERS

Atlas Group
Full range available on request
Bellco
Full range of constant V transformers
Electrahertz
Full range of constant V transformers
Eurolux
Wide range available
Low Voltage Switchboards
Full range of constant V transformers
Magnet Electrical Supplies
Full range of constant V transformers

CONSTANT V TRANSFORMERS

Radiant Group
Constant V transformers
Spazio Lighting
Full range of constant V transformers
Voltex
Full range of constant V transformers
Voltex LSis
Full range of constant V transformers
Waco
Full range of constant V transformers

OTHER

Banding and Identification Solutions SA
Stainless steel cable ties and identification systems
Brady SA
Cable and wire marking solutions, labels, printers
Cable Croc
Anti-cable theft systems
Citilec
Vision lighting – energy saving and LED
Electro-Test Instrumentation
4-Terminal earth resistance tester
Genlux Lighting
Manufactureres of LED and HID lighting solutions
HellermannTyton
Various tools such as 1000 V insulated tools with VDE approval
Lightning Protection Concepts
Various tools such as 1000 V insulated tools with VDE approval
Low Voltage Switchboards
Electrical switchboards
Major Tech
Earth resistance testers; earth resistivity meter; earth leakage testers up to 550 V; Earth clamp meters; earth leakage data loggers; leakage clamp meter
Power Quality
Earthing and Lightning Protection Seminars; Planned maintenance; Earthing and Lightning Protection Audits
South Ocean Electric Wire Company
Low voltage cable and wire
Sollatek Electronics
Range of inverters and UPS; voltage protection, conditioning and optimisation
Stone Stamcor
Connectors for earthing
Strutfast
Cable ladders, cable trays, cable trunking, wire mesh, cable support systems, cable clips and unistrut
Three-D Agencies
Cable accessories, lugs, glands and cable ties

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How to tell category data cables apart

Customers often ask about data cable categories and what they mean. For many end-users, engineers and purchasing agents who do not work with these types of cables on a daily basis, the different categories can seem complicated and overwhelming. However, what appears to be complex at first glance, can be simple to understand with a couple of tips. The category positively correlates with the data speed. i.e. the higher the category, the higher the possible frequency and the higher the frequency, the higher the possible data rate.

Data cable basics

One can compare category cables to a multi-lane road; the more lanes a road has, the more vehicles that are able to travel on this road concurrently. The standards are generally based on a maximum cable length of 100 m. This cable length consists of 90 m of installation cable and 10 m of patch cable. After the initial 100 m a repeater/extender is added to the cable system, which strengthens the signal and prepares it to be transmitted an additional 100 m as needed to connect the machine or its apparatus, and the control unit. Additionally, category data cables have to fulfil decoupling values of the pairs, e.g. near end cross talk (NEXT).

For Cat 5 cables, the decoupling of the pairs is realised in the cable construction with different twisting lengths of each pair. That means for four pairs, one has four individual twisting lengths during production.

Cat 6 cables allow users to choose between two technical designs. The relevant decoupling values of Cat 6 can be achieved with a plastic cross that creates distance between the pairs. Another way is to use a pair in metal foil (PIMF) construction. The thickness of the aluminium foil influences the effectiveness of the screen. Many people think that a screen in the construction protects the cable from environmental influences. However, it also has the opposite effect – the screen keeps the electrical signal in the cable and avoids negatively influencing other equipment in the vicinity.

For even higher categories, such as Cat 7, 7e, and 7A, a copper braid is mandatory to fulfil the standardised electrical values because an aluminium foil alone is not enough. Furthermore, each screening material has advantages and disadvantages.

Aluminium foil is inexpensive, but by itself this material does not perform well in applications that require flexible, track or torsion cables. If one moves a metal foil again and again one starts to see cracks, which decreases the effectiveness of the screening in the cable. This is the reason why some manufacturers construct cables that move frequently or are located in electromagnetic vulnerable (EMV) areas, using both an aluminium foil screen and a copper braid. This applies even to cables that are 'only' Cat 5 classification.

For cables with high amounts of bending cycles and small bending radii, some manufacturers use an additional metalised tape to fulfil effective screening. This is similar to a woven tape with integrated metalised parts, which offers longer lifespan without cracking compared to a standard aluminium foil.

Core material options

Let us now turn to a variety of possible core options, from both a material and stranding perspective. In most applications, bare copper is the preferred core material to use. However, in specific applications, such as the railway industry, a tinned copper core is preferred for its higher corrosion resistance.

In terms of core stranding, solid cores are typically used in fixed installations, while flexible applications require a nimbler core which typically consists of seven strands. Flexible cores are used for drag chains and robotic applications with short lay length in order to achieve a more flexible cable and smaller bending radius. For the smallest bend radii and maximum cycle quantity/service life, customers can request to have data cables constructed with 19-strand cores. Having more strands in a core increases its flexibility; however, the best solution for a customer specific application should be discussed in consultation with the cable manufacturer.

Sheath material options

Cable sheath types are plentiful and can be narrowed down according to the application.

For cable installations in buildings, polyvinyl chloride (PVC) or flame-retardant non-corrosive (FRNC) compounds are the typical choice of sheath material. PVC is not halogen free, but it is flexible and inexpensive. FRNC compounds meet the requirements of halogen-free and flame retardant, and emit a less optically dense smoke, which makes exiting a building easier and allows for improved firefighting operations in the event of a fire emergency.

Polyethylene (PE) sheaths are mainly used for outdoor cable applications or in cases where a cable needs to be buried into the ground. These cable sheaths are good at resisting moisture and exposure to the sun.

Due to the increase of data cables being used in industrial automation, it is common to use oil-resistant PVC blends, polyurethane (PUR) or thermoplastic elastomer (TPE) sheath compounds. These cable sheath types are preferred for their increased oil resistance, and ability to withstand the mechanical stresses often associated with the use of drag chains, and robotics. The choice of a particular compound or blend is based on the application and operating conditions.

Cable quality

Finally, it is highly recommended to use data cables that have had their mechanical capabilities extensively tested to withstand the rigors of operating in continuous-flex (drag chains) and torsion (robotics) applications. Data transmission rates can lessen, or signal quality could erode, due to cables that are unable to withstand strenuous operating conditions. Manufacturers should use a combination of test equipment, such as drag chains, torsion apparatuses, ovens and freezers, and, in some cases, specific application testing rigs, such as towers that mimic the strain and load on cables found inside wind turbines.

Enquiries: sales@helukabel.co.za

Easy identification in complex electrical panels

BRADY SOUTH AFRICA offers a range of reliable, industrial grade labels that provide clear and immediate visibility in complex electrical panels for cable, product and safety identification. With professional labels and label printers from Brady, users can easily and quickly meet any customer's identification requirements.

Brady's in-house research and development teams design the labels to remain legible and stay attached when exposed to a combination of elements, including ultraviolet light, humidity, moisture, gas and others. Brady also offers labels that comply with marine, aviation and defence requirements. Technical data sheets are available to provide insight into label test results.

The range of more than 5 000 attractive labels enables panel builders to provide immediate insight in the most complex panels. With crisp print, extensive colour and size variation, with or without raised profile, Brady labels can be used to identify safety risks, cables or components in electrical panels. Such components may range from controllers, I/O modules, power supplies, circuit breakers, terminal and distribution blocks, to relay modules, starters, heavy-duty connectors and more.

The electrical panel labels can be printed quickly, on site, using one of the Brady range of label printers. All the user needs is a few label rolls and a suitable label printer to have a vast variety of panel labels available. For additional flexibility, most labels are available both on benchtop and portable print systems. Brady Workstation apps make it easy for the user to design, serialise and print the labels needed.

Enquiries: +27 (0)11 704 3295

How to perform the perfect cable crimp

There is more to crimping a cable than simply affixing a lug to the conductor. The following steps provide simple instructions on how to crimp a cable lug:

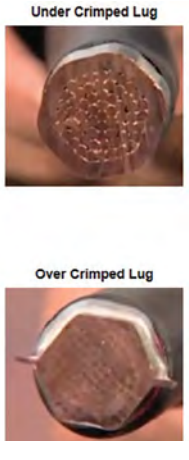
1. Choose a supplier that provides crimp tooling, die sets and cable lugs that are compatible and designed to work together to give the optimum crimping performance.
2. Each lug/terminal should have a reference clearly marked on the palm or barrel which enables the user to verify that it is the correct size and type for the conductor it is to be used on. The crimp lug should also feature the manufacturer's name or logo to enable the use of the correct tooling and die set, which can be selected from its published die set selector charts.
3. Prepare the aluminium or copper conductor for crimping by stripping back the insulation to a length equal to that of the lug barrel. This ensures that no insulation is trapped in the barrel of the lug when assembled.
4. Insert the conductor into the terminal barrel. If applicable, use the inspection hole to check the conductor is fully inserted.
5. Perform the crimp paying careful attention to the positioning of the die on the barrel and, if multiple compression actions are required, the sequence in which they should be performed. If using an hydraulic crimping tool, it is vital to make sure the correct tool is used with a compatible die set. Care should also be taken to keep the tool well maintained, working properly and with an up to date calibration certificate.
6. Once the crimps have been performed, check the completed termination to ensure:

- No insulation is trapped in the barrel.
- The conductor has been fully inserted (check the inspection hole to confirm this).
- There is no over-crimping. If the barrel is over-crimped it will cause excessive stress on the conductor and flash or burrs on the lug.
- There is no under-crimping. There should be no air voids between the strands of the conductor. They should be tightly compacted to ensure maximum performance.

Over-crimped and under-crimped lugs

The image shows an under-crimped lug (top) and an over-crimped lug (bottom). Both these incorrectly crimped terminals can cause overheating and ultimately lead to termination failure or fire. The over-crimped lug is easily identifiable by the 'ears' or 'wings' created on the barrel of the terminal. The under-crimped lug is identifiable by inspection of the lug and conductors.

Enquiries: www.etscablecomponents.com



Cable cleats: yes, they matter – here's why

The importance of cable cleats is often underestimated, yet they're a vital part of electrical cable management installation. Companies looking to cut costs sometimes lump cable cleats into a category of products deemed unnecessary – and that's a mistake.

Cable cleats reduce cable strain by reducing the load of the cables' weight. They're designed to restrain and support cables, while ensuring their retention. Put another way – cables must be able to withstand the force they generate, including the force that occurs during a short circuit.

Without cable cleats, you are looking at the risk of damage to cables and cable management systems. It's not just the cost of new cables you have to worry about, but downtime and labour to replace the cables and repair the damage.

That's just the economics of the problem. More importantly, if you forego cable cleats, you're exposing people to real dangers. Poorly restrained cables pose a threat to human life. To operate responsibly, you must use cable cleats.

Which cable cleats?

Cable cleats should be specified for your project and cable management system, so you can't use just any product. Different cable cleats are designed to withstand different forces. Use an underspecified cleat, and you're not only wasting your money, you're creating a potentially deadly situation if a short circuit occurs. You've got to consider the cable construction and type, ratings, diameter, system design, environment and support structure.

What buyers should know

Buyers are naturally focused on price. But if you specify a cable cleat that's particular to your project in terms of strength and spacing along the cable, your buyer needs to know that. It's easy to go looking for less expensive cable cleats, but a different strength and type of cable cleat could alter the amount you need. That in turn, affects your price. Let your buyer know to look at overall costs, not price per unit.

www.essentracomponents.com

The future of cable management: it's modular

Modular construction has seen a dramatic increase over the past five years due to its positive impact on cost, time, quality and safety. What does this mean for cable management?

Cable management will become modular, too, or rather, more so – this is not a new concept. Before the boom in modular construction, the type of cable management was already making inroads in the construction industry, replacing traditional hard-wired systems. Indeed, it's been around in some form for the past 25 years.

Modular systems typically reduce on-site installation times by up to 70%, reports Modern Building Services, while Electrical Review puts the figure at around 60%. Either way, it's impressive. The need for on-site electrical connections are eliminated. Advanced manufacturing techniques and materials result in a more cost-effective electrical installation, assembled in a factory and fully tested to site. This ensures that testing and fault finding on site are minimised, thanks to factory testing.

Most large-scale capital projects already involve modular cable management solutions. Pre-assembled and tested cabling systems replace the traditional wiring of electrical sub-circuits. Fewer electricians are needed, not to mention the advantages to site safety.

Cable management solutions are integrated in a multi-services module mounted in the ceiling, under the floor or in-service risers. Modular means flexibility and versatility for the designer and installer. Cable snagging and site waste produced by drilling is also minimised – which in turn can shorted construction schedules. Another advantage belongs to quality levels, as assembly takes place in a controlled manufacturing environment.

A typical system

Consider a large industrial site or a multi-storey office complex. A typical system might involve pre-wired, factory-tested plug-in distribution boards for providing lighting and power. Prefabricated connectors and pre-assembled cables can mean a reliable and flexible wiring solution that performs significantly better than alternative systems – in less time to install. This is happening now. We'll see more of this with the growth of modulated construction.

Before, cable solutions were hard wired into a junction box, which was, and is, a rather time- and labour-intensive process. Costs have to reflect this. Businesses today need plug-and-play solutions. Modular wiring with 'plug and play' connections can deliver savings of as much as 40% on the final installed costs of lighting and small power, according to *Electrical Review.* With modular construction, lighting controls can be installed with minimal labour. Cable management systems minimise these costs. Core drilling, trenching, power poles, cable trays, additional hardware – none of it is necessary.

The future

The push towards sustainability and energy efficiency in all new buildings is also relevant. Modular building manufacturers are increasingly looking to lighting control systems to address these concerns and comply with relevant legislation. Again, this is easy to do in a factory setting.

Electrical contractors can complete complex installations far more quickly and efficiently than before. Those complex installations are now simpler. The impact of the skilled-labour shortage will hurt less. Low-skilled workers with minimal training can take on the installation process in a supervised environment.

Modular cable management systems aren't limited to modular construction. It can be retro-fitted to provide, safe and reliable power and lighting services.

Enquiries: www.essentracomponents.com

Drought exacerbates cable theft in Namibia

The effects of the prevailing drought have seen a rise in cases of copper cable theft by people illegally crossing into Namibia along the Orange River from neighbouring South Africa, according to an environment official.

Ministry of Environment and Tourism chief warden, Wayne Handley, responsible for the Tsau Khaeb National Park, revealed this in an in interview with *New Era.* He said they have challenges in terms of lack of manpower, transport and general resourcing. He said that although poaching of wildlife is not a big challenge, he has been informed by Namdeb security of intrusions into the diamond protected areas of the park by alleged South Africans who target copper cables.

"We are not aware of poaching specific in the Orange River. The main cause of these illegal activities is the prevailing drought both in Namibia and South Africa. The Orange River is extremely low at the moment. It's almost dry in many places, so crossing is not a problem. So, the South African communities are also going through a tough time and they will do anything to survive," Handley said.

According to him, the solution to the illegal crossings is to increase ministry staff to supplement Namdeb's high-tech security technologies. Currently, only two staff members patrol the huge 22 000-square km Tsau Khaeb National Park. Further, he said that currently no formal joint crime prevention action between Namibia and South Africa regarding illegal activities around the Orange River takes place.

Africa Wire Cable & Tube Conference

The CBI-electric: African Cables stand at the conference.

Janine Fredericks from the dti addressing the press.

CRU and the Southern Africa-German Chamber of Commerce and Industry (AHK), along with leading global trade shows, wire & Tube as lead sponsor, held the inaugural Africa Wire, Cable & Tube Conference, in November in Johannesburg.

Africa boasts enormous potential for increased trade in wire and cable, tube and pipe related industries. Market observers have noted that in many African markets the business environment is improving and the implementation of structural reforms is leading to increased business confidence.

This important event was an opportunity for the local industry and stakeholders to meet with the international supply chain, and discuss the main trends impacting the global market and how they can be applied to the opportunities and challenges being faced across the continent.

Speakers at the event included:

- Rashmee Ragaven, Director of Advanced Manufacturing, Investment SA, Department of Trade and Investment, Government of South Africa
- Michael Finch, Head of Wire and Cable, CRU
- Shankhadeep Mukherjee, Senior Analyst, CRU
- Marc Zander, CEO and Partner, africon GmbH
- Mohammed El Sewedy, Board Member, El Sewedy Electric
- Jan Kotze, Marketing Manager, ArcelorMittal South Africa
- Ime Ekrikpo, Director, Steel & Non-Ferrous Metals Department, Ministry of Mines & Steel Development, Government of Nigeria
- Mishack Matla, Executive Director, Marketing, Sales and Distribution, Aberdare (Hengtong)
- Pravesh Hariprersad, General Manager, Power Installation, African Cables
- Paul Van Zyl, Technical Manager, Cbi Telecoms
- Miekie Dames, Director, Association of Electric Cable Manufacturers of South Africa (AECMSA)
- Cyril Prinsloo, Researcher, South African Institute of International Affairs (SAIIA)
- Edwin Phala, CEO, Alcon Marepha
- Keitumetse Moumakoe, CEO, Steel Tube Export Association of South Africa (STEASA)
- Robert Grunwaldt, Area Sales Manager, Aurubis
- Gerhard Hauptfleisch, CEO, Honingcraft
- Andy Smith, Managing Director, Barnes Tubing Industries
- Kenny van Rooyen, Managing Director, Hall Longmore
- Franco Mordini, Business Development Specialist, Macsteel Tube & Pipe
- Pieter Bezuidenhout, Managing Director, SMS group Technical Services
- Christian Linke, Area Sales Manager, SIKORA AG
- Samuel Gounden, Key Accounts Manager, SMS group Technical Services
- Jean-Luc Alleman, Vice President, AESA Cortaillod
- Luis A. Corte, Managing Director, Optimum Manufacturing Solutions (Pty) Ltd.
- mitry Shapovalov, CEO, Clobbi
- Judy Zhong, Senior Sales Executive, Foshan Maysky Stainless Steel Co., Ltd
- Livio Martella, Key Account Manager, Zumbach AG
- Judy Zhong, Senior Sales Executive, Foshan Maysky Stainless Steel Co., Ltd

Key topics which were addressed included, understanding Africa's wire & cable, tube & pipe production, trade and supply chain; The importance of the industry's reliance on wire, cable, tube and pipe for African development; Update on the expected consumption trends in Africa, of high wire and tube consuming industries: Mining; Utilities; Oil & Gas; Construction & Infrastructure; Latest global technological advances in wire, cable, tube and pipe manufacturing, and how they can be applied in African operations; Key considerations for the global wire, cable, tube and pipe supply chain when considering investing in African operations/distribution; and Technical agenda dedicated to technical showcases that highlight wire & cable or tube & pipe technology advances relevant to African operations.

Exhibitors included CBI-electric: African Cables, the International Wire and Machinery Association, Macsteel Trading Pipes, Fittings and Flanges, Makarenge Electrical Industries and Sikora AG. It is hoped that this will become an annual event.

Enquiries: www.events.crugroup.com

Smart cities embrace 4IR

Smart cities rely on smart grid technology that includes traditional and renewable energy sources in its mix of power supply. Driven by the advanced technology of the fourth industrial revolution (4IR), smart grid technology is able to include coal-based energy and renewable energy sources to create a seamless analysis of power usage and problems.

"In the new dynamic of an integrated energy mix, the renewable wind and solar systems have different distribution areas and this results in a much more complex grid. To mitigate this we need smart grids to direct the distribution systems on the network. Smart grids allow power flows to go in different directions to avoid breakdown of the network, explains Taru Madangombe, Vice President of Power Systems, Anglophone Cluster for Schneider Electric.

"We need to widen our vision and see the potential of smart cities, built on smart grid technologies. Smart cities are where people have access to public services such as hospitals and transportation services, and governmental departments, all optimised through digital tools for efficiency and efficacy.

"The concept embodies and integrates current information and communications technology (ICT) systems to create safer and more reliable cities. Such technologies include artificial intelligence (AI), mixed reality (AR & VR), and the internet of things (IoT).

"These key technologies powering 4IR are reshaping business processes, unlocking opportunities and encouraging new business partnerships. As urbanisation increases, cities and suburbs will undergo significant transformation to create sustainable living conditions for their residents.

"Energy and mobility are the twin pillars of these transformations and both require radical adaptation to meet demographic and economic growth, without increasing congestion and pollution. Infrastructure is key to making sure that everyone has access to the smart cities concept and government can help bridge this gap by making basic services and products such as data and smartphones more affordable."

Taru Madangombe, Vice President of Power Systems, Anglophone Cluster for Schneider Electric.

Smart can go rural

"The idea of creating 'smart cities' does not have to take place only in traditional urban areas but can also be in rural and remote areas, where people do not have access to basic electricity or water.

"There is a need for off grid and mini-grid systems so the basic needs of electricity, running water and other services can be provided to areas that lack those services. Providing power is more than just 'lights on', it is a means towards economic development.

"It is vital that those supplying technologies such as solar and wind power to provide off grid systems also ensure that those technologies make it easier for people especially in rural areas, to work and learn skills that would contribute to the digital economy.

"South Africa has a need to provide low cost or even free energy to millions of people who cannot access hot water, mobile chargers, television or home lighting and the concept of microgrids, smart grids and smart cities will bring this aspiration closer to the populations of rural areas and densely populated cities," concludes Madangombe.

Enquiries: www.se.com/za

A new era awaits – How 5G will change industry

Designing production plants and intralogistics to be more flexible, autonomous, and efficient requires the right communications framework and comprehensive connectivity. The new 5G communication standard opens up important new perspectives.

A brief glance at the development of cell phone networks over the past 40 years shows that this has generated added value for users and industry. Even the first commercial cell phone network (in retrospect, this was the first generation network) allowed us to communicate with each other while on the move, in other words mobile telecommunication. 2G networks presented the opportunity to send text messages, 3G brought the Internet into people's hands, and 4G did the same for music and video streaming.

However, for industry, 1G applications were as good as non-existent owing to the high costs, the restriction to analogue speech transmission, and the limited network coverage. The 2G generation brought text messages and later even simple data transmission for industrial telecontrol applications. 3G allowed near-real-time long-distance effects and remote access, for example, in teleservice where users could interact with remotely installed applications. 4G finally provided complete, real-time access.

But this is not the end of it, says Eckard Eberle, CEO of Siemens Business Unit Process Automation.

"The 5th generation of cell phones has enormous potential for industry. Unprecedented reliability and very low latencies together with Industrial 5G's comprehensive connectivity to the IIoT (Industrial Internet of Things) are paving the way for groundbreaking industrial applications. These include mobile robots in production as well as autonomous vehicles in the transportation and logistics sector, IIoT, augmented reality applications for service and maintenance technicians, and virtual reality applications for users.

"As leading company in automation and digitalization, Siemens has already taken the opportunity and is now developing solutions which will allow industrial companies to increase their efficiency, flexibility, and productivity while making their production facilities future-safe with new 5G technology," he concludes.

Enquiries: www.siemens.com

New form factors for energy storage batteries

Flexible, thin and/or printed batteries (or batteries with novel form factors) are back on the agenda thanks to the rise of Internet of Things (IoT), wearables, and environmental sensors. These applications require new features and battery designs that traditional battery technologies simply cannot provide. Companies are moving towards new form factors for energy storage batteries: becoming ultra-thin, flexible, printable, stretchable, etc. This is a fast-changing industry, with its technologies in a state of rapid progress as new designs, methods and modified chemistries are frequently announced. The business landscape is also being dramatically altered as many companies are now gearing up to progress their lab-scale technologies into mass production. These are exciting years for this emerging technology.

The market and technology landscape are complex. There are no black-and-white and clear technology winners and the definition of market requirements is in a constant state of flux. Indeed, on the technology side, there are many solutions that fall within the broad category of thin film, flexible or printed batteries. These include printed batteries, thin-film batteries, advanced lithium-ion batteries, solid-state batteries, micro-batteries, stretchable batteries, thin flexible supercapacitors and a few more. It is therefore a confusing technology landscape to navigate and betting on the right technology is not straightforward. On the market side, many applications are still emerging, and the requirements are fast evolving. The target markets are also diverse and not overlapping, each with different requirements for power, lifetime, thinness, cost, charging cycles, reliability, flexibility, etc. This diversity of requirements means that no thin film battery offers a one-size-fits-all solution.

The composition of the target market is undergoing drastic change, driven by the emergence of new addressable market categories. Traditionally, the micro-power thin and printed batteries were used in skin patches, RFID tags and smart cards. Today, however, many new applications have appeared, enticing many large players to enter the fray, thus transforming a business landscape that was once populated predominantly by small firms. Wearable technology and electronic textiles have been a major growth area for thin film and flexible batteries in recent years. Conventional secondary batteries may meet the energy requirements of wearable devices, but they struggle to achieve flexibility, thinness, and light weight. The new market requirements open up the space for energy storage solutions with novel form factors. The healthcare sector is also a promising target market. Skin patches using printed batteries are already a commercial reality, while IDTechEx anticipates that the market for disposable medical devices requiring micro-power batteries will also expand. This is a hot space as the number of skin patch companies is rapidly rising.

Enquiries: www.IDTechEx.com

Soft robots of the future may depend on new materials that conduct electricity and self-heal

Robots used to be restricted to heavy lifting or fine detail work in factories. Now Boston Dynamics' nimble four-legged robot, Spot, is available for companies to lease to carry out various real-world jobs, a sign of just how common interactions between humans and machines have become in recent years.

And while Spot is versatile and robust, it is what society thinks of as a traditional robot, a mix of metal and hard plastic. Many researchers are convinced that soft robots capable of safe physical interaction with people – for example, providing in-home assistance by gripping and moving objects – will join hard robots to populate the future.

Soft robotics and wearable computers, both technologies that are safe for human interaction, will demand new types of materials that are soft and stretchable and perform a wide variety of functions. My colleagues and I at the Soft Machines Lab at Carnegie Mellon University develop these multifunctional materials. Along with collaborators, we've recently developed one such material that uniquely combines the properties of metals, soft rubbers and shape memory materials.

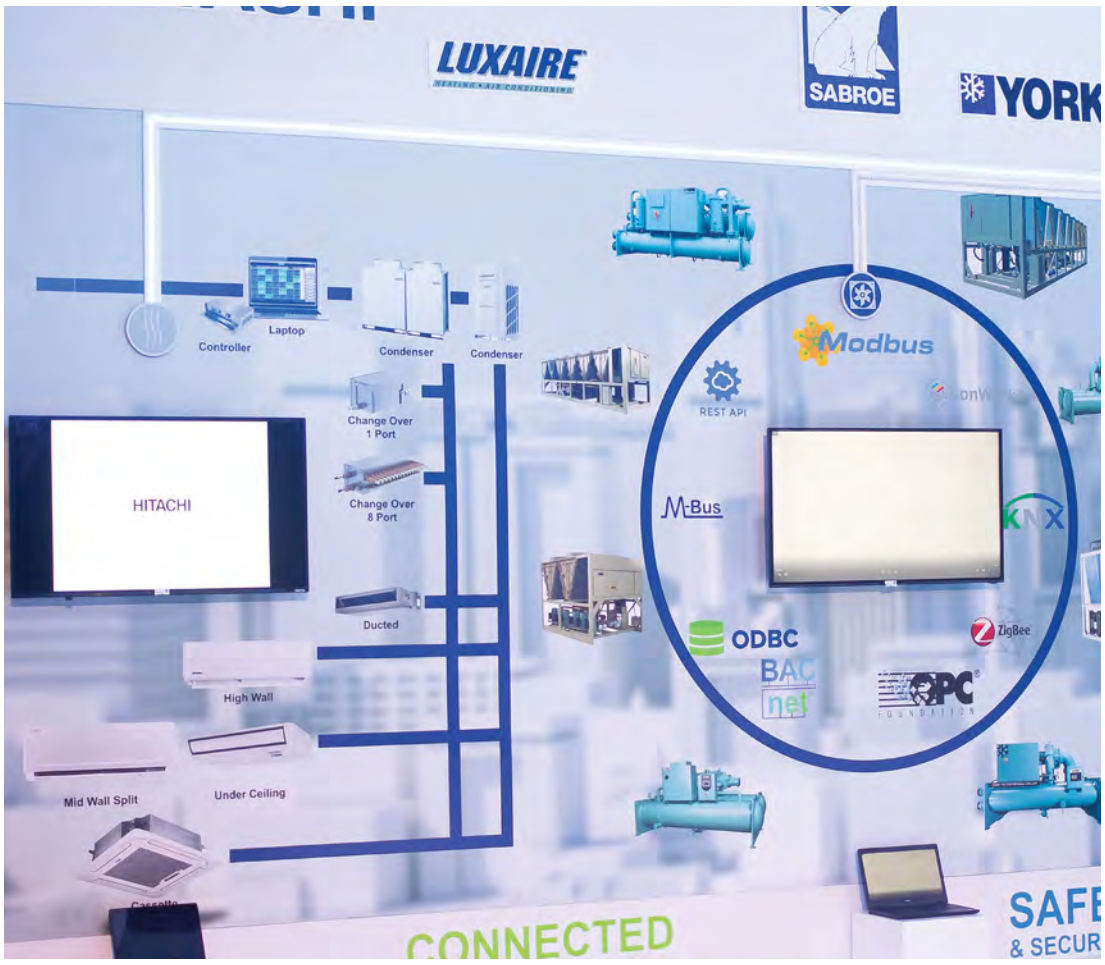
These soft multifunctional materials, as we call them, conduct electricity, detect damage and heal themselves. They also can sense touch and change their shape and stiffness in response to electrical stimulation, like an artificial muscle. In many ways, it's what the pioneering researchers Kaushik Bhattacharya and Richard James described: "the material is the machine." This idea that the material is the machine can be captured in the concept of embodied intelligence. This term is usually used to describe a system of materials that are interconnected, like tendons in the knee. When running, tendons can stretch and relax to adapt each time the foot strikes the ground, without the need for any neural control.

It's also possible to think of embodied intelligence in a single material – one that can sense, process and respond to its environment without embedded electronic devices like sensors and processing units.

In the movie Terminator 2, the shape-shifting android T-1000 can liquify; can change shape, colour, and texture; is immune to mechanical damage; and displays superhuman strength. Such a complex robot requires complex multifunctional materials. Now, materials that can sense, process and respond to their environment like these shape-morphing composites are starting to become a reality. But unlike T-1000 these new materials aren't a force for evil – they're paving the way for soft assistive devices like prosthetics, companion robots, remote exploration technologies, antennas that can change shape and plenty more applications that engineers haven't even dreamed up yet.

By Michael Ford, Postdoctoral Research Associate in Materials Engineering

Putting the smarts into infrastructure delivery



The role of 'smart' buildings in accelerating infrastructure delivery in South Africa was placed under the spotlight at an Innovation Day hosted by Johnson Controls. Held under the theme: 'Talking Tomorrow, Today', the event engaged a range of stakeholders, not only to make them aware of the solutions available from Johnson Controls, but also to stimulate an important debate about the increasingly critical role played by technology.

Designed as a showcase of innovation, the event gave a comprehensive overview of smart city technology, green building solutions and energy efficiency, and infrastructure and human capital investment. Here the focus was buildings across the board, from hospitals to universities. "Our aim was to engage with important stakeholders in order to understand what is on their wish list in terms of benefiting their end users," Archibald F. Makatini, GM for Sub-Saharan Africa at the Johnson Control MEA headquarters in Isando, Johannesburg, says.

Smart cities are not only about "bright shiny new buildings," but must focus on developing infrastructure that caters to the overall needs of society, according to Makatini. Born in South Africa, Makatini's 23-year career with Johnson Controls has taken him from New York City to New Jersey, Hawaii, California, and now back to South Africa. "What brought me full circle was opportunity. Africa is primed for infrastructure growth across the board."

Johnson Controls is ideally positioned to assist cities like Johannesburg revive their dilapidated building stock, as it grapples with a growing deficit of affordable housing. "A lot of these buildings do not even have simple functionality such as air-con. As a company we can assist in turning Johannesburg around. We have the knowhow to turn those buildings into liveable environments," Makatini explained.

A major issue faced at national and local government level is capacity for proactive maintenance, which is increasingly constrained by a lack of funding and the necessary technical skills. "We have engaged with our partners to demonstrate our capabilities in terms of maintaining infrastructure and systems," he points out.

Johnson Controls, known traditionally as an HVAC company, has subsequently moved away from its exclusive focus on chillers and air-con equipment to completely integrated smart building solutions. "In addition to our technology and long-term R&D commitment, we are also an OEM. This means we can offer a turnkey design-and-manufacture capability, guaranteeing both performance and quality."

This places Johnson Controls in a unique position to respond to President Cyril Ramaphosa's call for smart cities in his State of the Nation Address on 20 June. Makatini comments that the President's comments were an acknowledgement of the enabling role that technology can play. "Technology is here to stay, and nothing can stop its progression. What is key is having the vision as to how it can enhance the lives of ordinary citizens."

Johnson Controls has an impeccable track record in this regard, counting the US government among its many global customers. Some of its flagship international projects include its work at the Hartsfield-Jackson Atlanta International Airport, the busiest in the world and the company's own One Albert Quay headquarters in Cork, described as Ireland's smartest building.

"These are not only examples of what can be achieved with technology, but of our approach to innovation and out-of-the-box thinking," Makatini argues. He also highlights Johnson Controls' work in Hawaii, where it has guaranteed a 25% to 30% saving in utility costs over the next 25 years.

Makatini plans to bring this thinking to Africa by focusing on Public Private Partnerships (PPPs) as the best vehicle to leverage technology in infrastructure delivery. "What I am pushing for in South Africa is to move away from tenders. As a solutions-driven company, we are able to generate our own opportunities by listening to, and understanding, our customers' requirements. Our team is committed to delivering on that promise. We are also a strongly ethical company, and always strive to conduct our business in the best manner possible."

While Makatini acknowledges the many challenges facing local municipalities in particular, he is confident that the PPP approach is ideal in unlocking value. "The problem with delivery vehicles such as the tender process is that they do not allow companies to take the initiative. We need a path of least resistance to get our solutions out there, and to be able to collaborate with government at all levels," he stresses.

With its strong focus on design and manufacture, Makatini reveals that local manufacture is definitely on the cards. "We ensure that the best technology solutions are affordable in Africa. We realise that governments are struggling right now, and that funding is a major issue. Therefore, instead of waiting for tenders to be issued, we can bring in external investors so some of these critical projects can reach fruition."

Ethiopia, where the government has introduced a dedicated PPP ministry to drive investment, is an ideal example. "Our performance contracting not only means we deliver on our commitments, but it enhances our credibility as well," Makatini notes.

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Electric cars might not yet be green, but they could be the answer

Transforming the way we travel is an essential part of tackling the climate crisis. The transport sector contributes about 20% of global carbon emissions. In the UK the figure is 33%, and the country has made virtually no progress in reducing emissions from transport. In many countries, they're actually increasing.

Electric vehicles are often hailed as the solution to this quandary, but some question their environmental credentials. With much of the world's electricity still produced from fossil fuels, the criticism goes that EVs may actually be responsible for more carbon emissions over their lifetime than combustion engine vehicles.

As German economics professor Hans-Werner Sinn put it in a recent controversial article, all we are doing is transferring carbon emissions "from the exhaust pipe to the power plant". The assumptions underlying these claims are questionable. But even if true, this line of argument misses a key point. The car we choose to buy today directly influences the future of our energy system. Choose a combustion-powered vehicle and we lock in ongoing fossil fuel use. Choose an electric vehicle and we support the switch to a zero carbon society.

Due in large part to the high carbon-cost of EV batteries, the manufacturing process for an electric vehicle causes more carbon emissions than for a combustion engine vehicle. This means that the source of electricity used during the life of an EV is critical in determining how eco-friendly they are.

While two thirds of the world's electricity is generated from fossil fuels, this proportion is decreasing rapidly. At least four countries are already at or close to being powered entirely by renewable electricity: Iceland, Paraguay, Costa Rica and Norway. Brazil is one of the ten largest economies in the world and they are at 75% renewable electricity. In the UK, the proportion of electricity provided by fossil fuels has halved over the last decade and is currently about 40%.

As the transition towards renewable electricity progresses, so too will the carbon footprint of EVs keep decreasing in step. This means that the superiority in carbon cost that electric vehicles already have over combustion vehicles, even if narrow now, will widen in the years to come.

Influencing the future

The electricity transition is only half the story. The production and purchase of new combustion vehicles locks in dependence on fossil fuel use for the life of that vehicle – just short of 14 years on average in the UK.

Retrofitting combustion engines to use hydrogen or biofuel is an option in theory, but its an expensive one which is probably more applicable to heavy vehicles than cars. Mass use of hydrogen would also require an entirely new and complex distribution system for a gas that is hard to make and store efficiently. Biofuel could use existing infrastructure, but would require vast swathes of agricultural land to satisfy demand.

If the number of fossil-fuel powered cars on the road stays high, it will be difficult to make serious headway in reducing transport emissions. In contrast, switching to EVs transfers energy demand from the transport sector to the electricity sector, allowing countries to more readily tackle the carbon cost of travel.

Progress in doing so is of course dependent on the speed at which industry and government decarbonise their energy supply. But the technology already exists to shed the grid's reliance on fossil fuels, and many countries have committed to do so by 2050 or sooner. The distribution grid also already exists – we just need to install charging stations.

And in choosing where they source their electricity from, consumers are able to exert much greater influence on the energy transition than the present transport system that locks them into high-carbon lifestyles. Given that renewable electricity tariffs are already among the cheapest available, this could be a particularly potent force for decarbonisation.

Grid burden

The scale of the transition from combustion to electricity-powered transport is huge. Average household electricity demand could double once EV charging is included, and this will place extra strain on both the grid and energy bills.

But this burden can be cushioned by careful use of technology. For example, cars can be charged overnight when there is surplus capacity, and there are already special energy tariffs to encourage this. Spare electricity from car batteries could also be redirected to the grid when demand is at its peak, making EVs "virtual power plants" that can offset increases in household energy bills.

Of course, producing any large industrial product results in some negative environmental impacts. The mining of lithium for EV batteries is polluting and depletes water supplies, in turn harming wildlife and compromising local livelihoods. Ultimately, the best way to reduce the carbon and pollution costs of transport is to make and use less cars, which means that expanding car sharing and improving public transport are essential.

But for those cars that we do use, EVs are the least bad option. The switch to electric vehicles needs to be seen as part of a broader shift in the way society is organised to tackle the climate crisis. That requires consumers, industry, and government to all play their part in creating a carbon-free future.

By Ranald Boydell, Lecturer in Sustainable Development, Heriot-Watt University

Top lighting trends for 2020

Frosted glass
Not that long ago, frosted glass shades were a sure way of telling that a lighting fixture had not been replaced in years. Now, the milky-hued glass is making a comeback and is one of the biggest lighting trends to look out for next year. Frosted glass shades are designed to diffuse the light coming from the bulb, offering a lovely soft glow. During the day when the fixture is not switched on, a frosted glass shade brightens up a space and creates a fresh feel. We love the look of white frosted glass luminaires paired with sleek brass and black metal frames.

Geometric shapes
Lighting design inspired by angles and shapes has been popular for a while now and will continue to into next year. Geometric fixtures with bold lines and repeated patterns make for eye-catching additions to contemporary spaces. The circle is going to be a key shape in 2020. With no beginning and no end, this infinite shape brings a sense of completeness to a room. The strong, fluid, form pairs particularly well with minimalistic and industrial contemporary interiors. Look out for designs that offer a mixed composition of curves.

Black
Black finishes in hardware, plumbing and lighting are a hot trend right now and will remain so for seasons to come. Inky black luminaires provide depth and understated drama to a room and have been called 'the new neutral' because they pair well with a variety of colour palettes and interior styles. Black metal fixtures are a versatile option if you're considering mixing finishes in a space and don't want to commit to just one.

The 3 Cs – clear, cognac, and champagne
Simple, clean, and minimalist – clear glass shades are one of our favourite trends going into 2020. From table lamps to pendants, this lighting trend is a harmonious blend of rustic and industrial design. See-through shades are the perfect fixture to showcase a vintage-look Edison bulb, especially when it comes to pendant lighting. A cluster of clear glass pendants suspended at varying heights adds a playful touch to a room while still being practical – they provide plenty of light and don't disrupt the line of sight. If completely clear glass shades are not your style then consider fixtures with glass shades in hues of cognac and champagne. The subtle colours lend themselves to a warm, sophisticated look and feel.

Wicker and rattan
Using natural materials has been an interior design trend for a while now and we love how this is expressed in lighting design, more specifically in fixtures crafted from wicker and rattan. This style of fixture is often associated with boho or coastal interiors but works in a wide array of interior spaces from Scandinavian to modern farmhouse.

Enquiries: www.eurolux.co.za

Red LED streetlights make UK road bat-friendly

Worcestershire County Council has used red LED streetlights to install what it claims is the UK's first bat-friendly highway – a 60 m stretch of road near to Warndon Wood nature reserve.

"Research shows some species of bat are light shy and will not cross roads lit by white lights, which can stop them accessing food supplies and water," according to the council. "Bright streetlights also attract the flies and insects the bats feed on, and so reduce the food available for bats and

The latest developments in LED

OPPLE is a leading integrated lighting manufacturer headquartered in Shanghai, China, with two manufacturing centres in Wujiang, Jiangsu Province and Zhongshan, Guangdong Province. Opple has significantly expanded its portfolio to include a vast array of products and services – ranging from LED and traditional lighting, lamps, and ceiling fixtures to electrical appliances. Popular LED fixtures available in South Africa include:

LED Performer1 High Power Bulb

Benefits:

- Easily replaces 100 W-300 W HID.
- 2.5 times lifetime longer than HID.
- Up to 50% energy savings compared to HID.

Features:

- High lumen output up to 126 lm/W.
- Long lifetime.

Energy efficient.

LED Highbay EcoMax

Benefits:

- More durable and robust with integrated design.
- Excellent structure for best thermal control.
- Flexible installation, accommodating various application.
- Fashionable and modern appearance.

Features:

- IP65 dust and waterproof.
- 4 kV surge protection.
- Beam angle options: 30°, 60°, 100°.
- Multiple installation options: hook, pole or bracket.

LED Lowbay Ecomax

Benefits:

- Lasts four times longer than conventional low bay.
- Easily replaces conventional low bay, more than 50% energy savings.
- Applicable in multiple ceiling heights and environment.
- Flexible installation.

Features:

- Optimal heat management, 30 khrs.
- Up to 100 lm/W.
- Two beam angle options.
- Multiple installation options: hook, pole or wall mounting.

LED Flood Light EcoMax

Benefits:

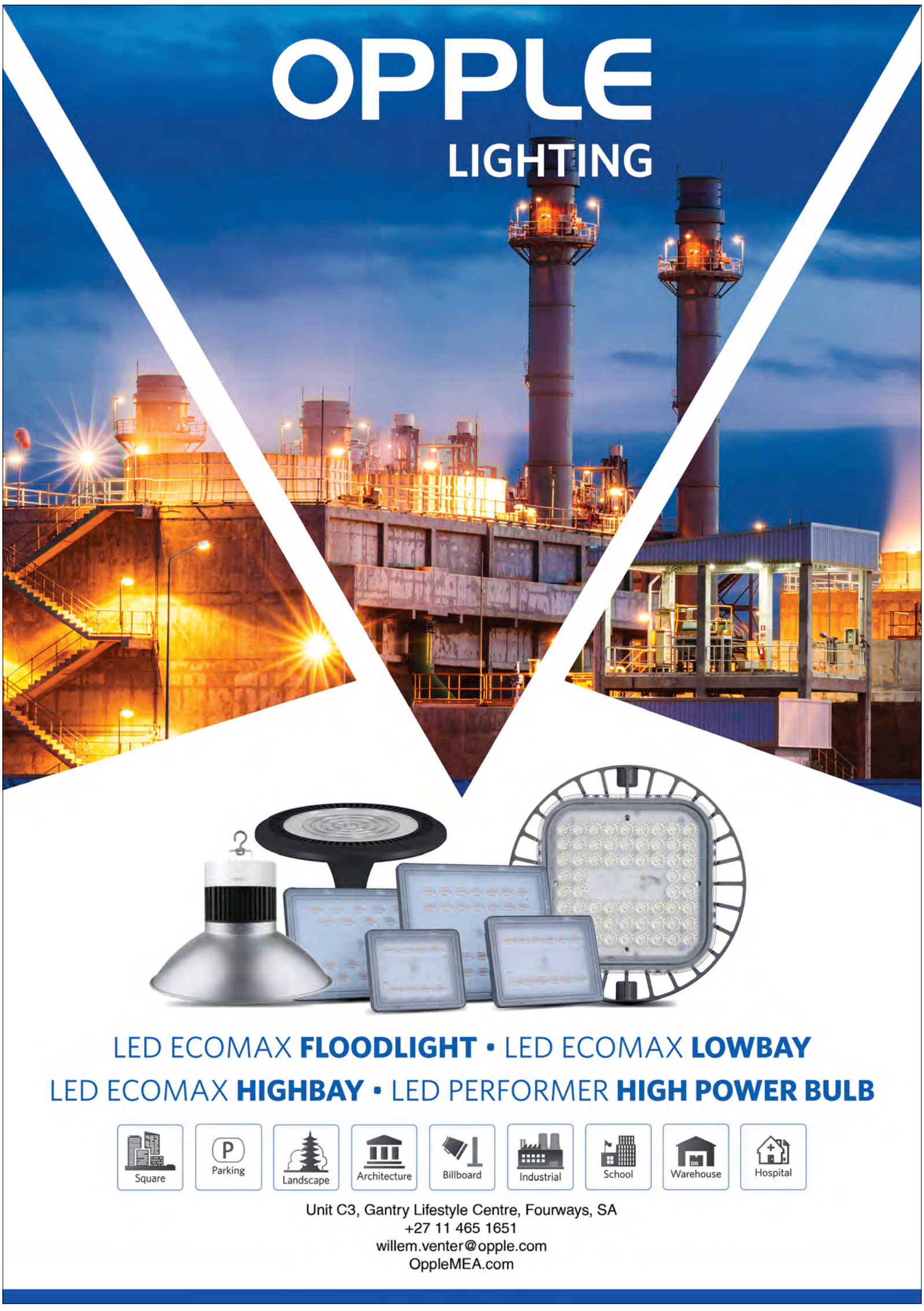
- Vibration-proof, wind-proof and rust-proof.
- Excellent thermal management for stable performance.
- Long life, low maintenance cost.
- Adaptable installation.

Features:

- Slim and compact design.
- Robust housing and refined finish coating.
- 50 % lower energy consumption and longer lifespan (30 Khrs).
- IP65, IK08, up to 80 lm/W.

Opple has set up world-leading EMC and light distribution labs, and with over 800 patent applications. Its R&D team of hundreds of experts and senior engineers and a workforce of over 6000 employees are behind the company's strong commitment to research and development.

Enquiries: www.opple.co.za



other mammals in their typical feeding areas." The Council's information refers to a "unique recipe of light", without offering details, and also refers to a similar lighting project in the Netherlands.

One recent Netherland's project is at Nieuwkoop and was developed with Philips Lighting (now renamed Signify) and uses Philips' ClearField spectrum. However, the installation at Nieuwkoop was based on bat research by the University of Wageningen and Philips (Response of bats to light with different spectra: light-shy and agile bat presence is affected by white and green, but not red light) which compared the response of the animals to white, green and red street lighting – the latter using 630 nm ('high-efficiency red' or orange-red) LEDs. The Nieuwkoop lights designed to "ensure bats can enjoy the night-time as if there was no artificial lighting in place, while ensuring good visibility for residents living in the area. Therefore, no compromise was made on safety," according to Philips.

This Worcestershire bat-safe light project, a collaboration the Council and Jacobs, was initiated after a pedestrian road crossing needed to be installed near Warndon Villages on an otherwise un-lit stretch of road. "The lighting scheme is being installed in two phases of work, to ensure the safety of road users," said the Council. "Phase one is now live at the exit from Plantation Drive Roundabout. Phase two [expected late September] will see the full switch on of the controlled crossing and the new, extended carriageway lighting." It describes the resulting installation as "fully compliant with the required standards".

'Batlamp' is another bat-friendly lighting product from the Netherlands, first used at the end of 2011 on the A74 motorway at Tegelen, and subsequently used on multiple Netherlands projects. Illumus' version operates at 592-594 nm – at least one other of its incarnations is a monochromatic 610 nm streetlamp.

Portable LED lighting units: placing mines in a favourable light

With the enormous investment placed in large open-pit mines, the pressure is on these operations to produce. Inevitably, this dictates that they work around the clock. However, working at night does present some very real potential safety hazards which are not present during the hours of daylight. This is according to Craig Swart, Fleet Manager at Rand-Air, the leading local provider of compressed air and power to the mines, as well as to many other industry sectors.

"The most serious potential hazards in an open-pit mine - even during daylight hours – are the very large load-hall-dumpers, excavators and rope shovels used to excavate and transport broken ore. Apart from vehicle headlights, better all-round area lighting is an absolute necessity to ensure safe operations," says Swart, adding that having clear, strong area lighting means that drivers of off-the-road mining equipment will be able to pick up the reflective strips on a pedestrian's safety vest with much greater ease.

Rand-Air has the solution in its portable LED lighting units. "As these units are fitted with LED bulbs, they are remarkably economical and will run for days without requiring refuelling or any other attention. In addition, modern LED bulbs last longer and fail less often than their earlier filament counterparts and can handle harsh mining conditions without burning out prematurely," Swart explains.

As the diesel engine, generator and lighting tower are all contained on a single trailer, there are no trailing cables to either get cut, damaged or trip over. Furthermore, as they are mounted on a robust trailer, moving them to new positions as mining shifts in the pit, takes a matter of minutes. What makes Rand-Air portable lighting units an even more attractive rental proposition is that the company regularly upgrades its equipment fleet with new machines. In addition, Rand-Air lighting units are all manufactured by world leader Atlas Copco and, as such, these units deliver the most cost-effective, lowest maintenance service.

Rand-Air portable lighting units are also backed by the company's unmatched service ethic. In the unlikely event of an issue with one of these machines, Rand-Air's qualified technicians are on standby 24/7 to ensure that full lighting is restored without delay. Speaking to the all-important requirement for safety at all times – particularly within the mining environment – where occupational health and safety challenges are amongst the biggest causes of injuries and fatalities, Swart makes the following recommendation: "Outdated lighting units in any industry that are not operating at a satisfactory level pose a serious threat to the working environment and its people. A preventative maintenance strategy is therefore critical, to guarantee safe operation of the equipment - and is key to minimising the risk of injuries or accidents."

Rand-Air lighting units are available for short-term hire, as well as via the company's long-term rental scheme which allows customers to take advantage of considerable cost savings. "In the past couple of years, our portable lighting units have been a boon to the surface mining industry. With proper lighting, workers can concentrate on getting the job done and being more productive, but in a well-lit and therefore far safer environment. In a nutshell – and true to our Rand-Air business ethos - we always place our customers in a 'favourable light'," he concludes.

Enquiries: www.randair.co.za

Rope-access keeps lights on at major warehouse

Rope-access specialist Skyriders has helped keep the lights on at a 75 000 m^2 warehouse in Midrand for a major retailer. The company was called on to provide a maintenance service for the lighting, replacing globes that had failed, and highlighting any faults to be attended to by a third-party electrician, Marketing Manager Mike Zinn explains.

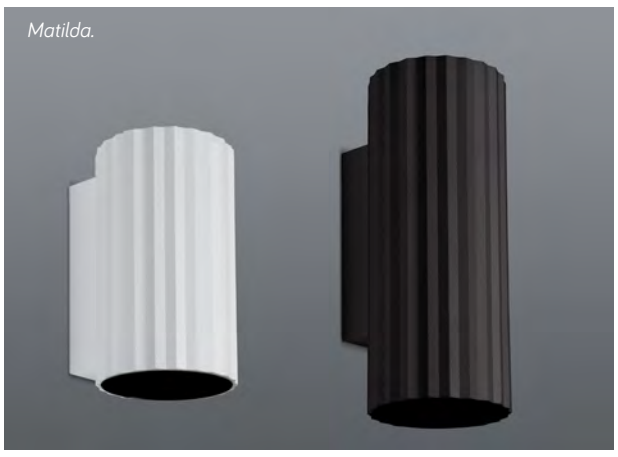
The fast-track maintenance project became critical as it was affecting operations in the vast warehouse. Skyriders deployed rope access and basic fall-arrest principles to reach roof height, and then to move along to the various lights requiring attention.

Here the faulty light would be disconnected and lowered safely to the ground for the attention of the electrician. Once any necessary repairs had been affected, the 10 kg light would be hoisted back up and plugged in again. Traditional warehouses can be accessed easily by means of scissor lifts or even cherry pickers, but a major warehouse like the Midrand facility posed a particular challenge.

The fact that it was a fully working warehouse meant that Skyriders had to structure its rope access in terms of specific areas and times so as to facilitate operations. Another challenge was the presence of conveyor systems on the ground, which meant that scaffolding was not ideal to provide access to the lighting. "Given the constraints, and the fact that essential lighting maintenance was required while the warehouse was 'live', meant that rope access was the safest and quickest solution. Our highly-experienced team was able to carry out the work as cost-effectively as possible," Zinn concludes.

Enquiries: +27 (0)11 312 1418

Spazio 2020 catalogue launch


Matilda.


Pearl, Bubble, Ice and Moore.


"Only" with emergency backup.

SPAZIO announced the launch of its brand-new lighting catalogue in January 2020. The catalogue sees approximately 150 products added to the company's ever-expanding range. It consists of 320 full colour pages with a number of full-page shots showcasing applications of some of the new and existing popular Spazio products.

Spazio's Interior Wall section has seen the introduction of some noteworthy wall fittings, including the Matilda down and up and down versions, available in black and white; the Pearl, Bubble, Ice and Moore LED wall fittings, with an IP44 rating, thus making them perfect for bathroom installations; the Giada and Cosmic wall fittings designed to be mounted next to a mirror and the Avico Wall, which looks stunning on top of a headboard.

The 'Only' colour temperature changing interior and exterior ceiling fittings promise to be a very popular addition, especially as they come with a three-hour emergency backup system as an optional extra. Then there is also the new CTC version of the Saturn Recessed (6 W, 12 W, 18 W and 24 W) and the Saturn Slim (18 W and 30 W) – the 18 W version of the Saturn Slim is available with a microwave sensor.

Track mounted spots to take note of are: Trouble with a 10 mm or 20 mm stem and Double Trouble with a 10 mm stem and the new Quartz and Heritage GU10 spots, all to be mounted on Spazio's economical three wire track. The company is also introducing a cost-effective four wire square track for use with bigger spots, for example, the Lone PAR30, This spot, and Dolce, to name a few.

Spazio has noted a recent demand in the market for suspended linear profiles with slim and compact designs, whilst not compromising on the light output, for corporate and retail use. The Alvia and Blade are two linear profiles that fit this description very well. The Alvia is linkable and the Blade is an up and down lighter with a CRI rating of 90.

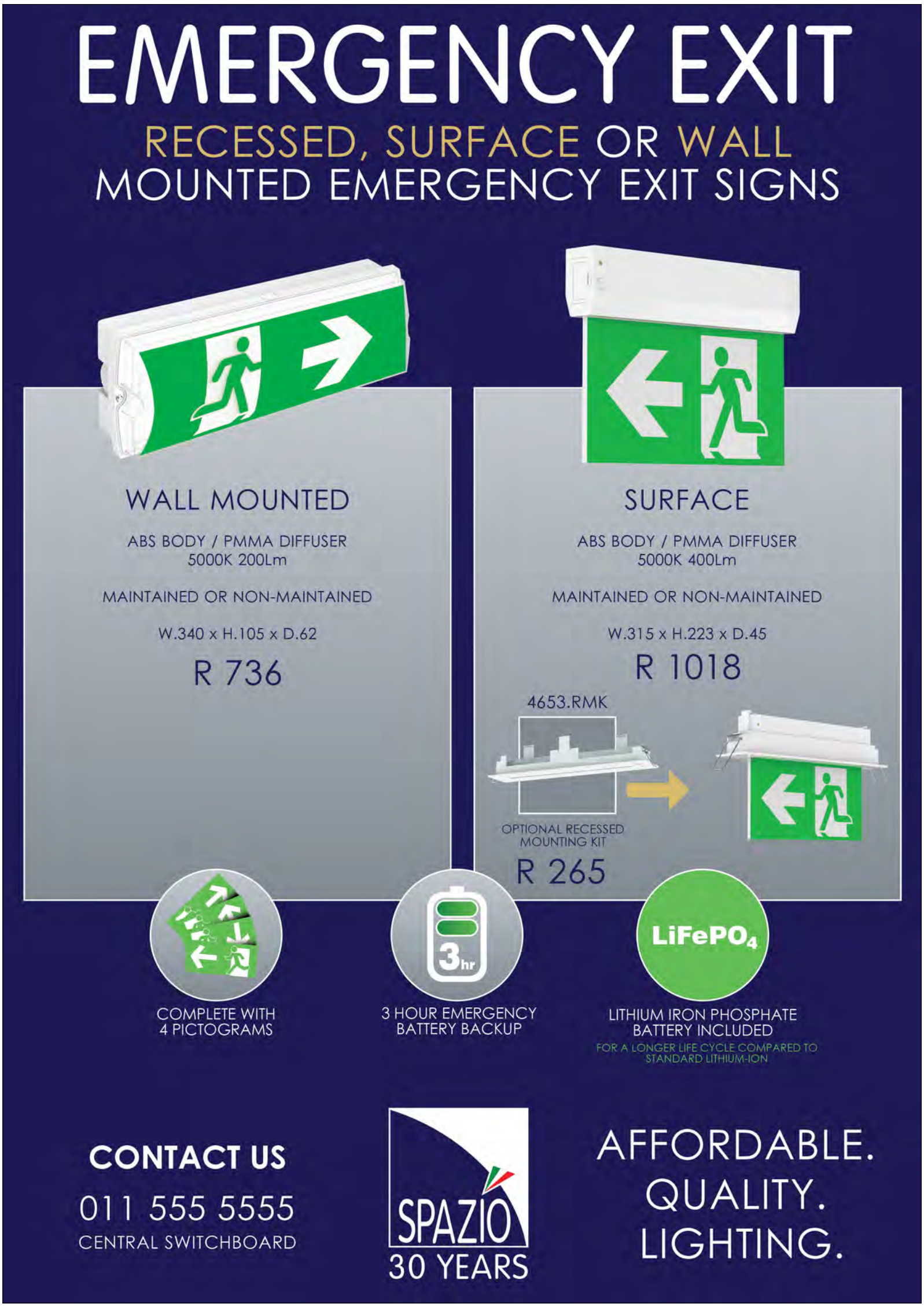
In the newly launched catalogue, Spazio Lighting has also introduced a new section dedicated to solar fittings, from bollards to spots and wall mounted fittings.

The company's popular range of KTM floods now includes a 200 W and 400 W version with a lumen output of up to 10120 lumen available in 4000 K.

You will already have read about the dimmers Spazio has added to the range in a previous issue of Sparks Electrical News, but they are worth another mention. The Preset and Adjustable dimmers are very well priced and streaks ahead in terms of dimming technology and compatibility with almost every GU10 lamp on the market. The new range of GU10 lamps, including the Dim to Warm lamp, change colour temperature as they dim, all the way down to 2200 K. The Premium lamp is the best lamp on the South African market, with a CRI rating of 98 and the ability to dim down to as little as 3 %.

Most of these items have already been introduced into the market and have been very well received. Spazio Lighting expects the new catalogue to be a very handy source tool for all electrical contractors, electrical consulting engineers and architects in the construction and developmental industry.

To get your free copy of the catalogue, email info@spazio.co.za or find a digital copy at www.spazio.co.za/Downloads



Energy-efficient LED light panels

VETI has released a range of energy-efficient LED light panels. The panels are EMC approved, which means they do not emit electromagnetic energy that interferes with other devices in the vicinity. The anodised Aluminium frame ensures excellent heat dissipation and therefore longer life for the LEDs. The series can deliver energy savings of up to 50% compared to similar fluorescent lamps and come with a 5-year warranty.

The first set of LED panels from Veti consumes 60 W of power and produces 100 Lumens/Watt, producing 6000 Lumens with a lifetime of more than 30 000 hours. The panels measure 1200 mm x 600 mm with a low-glare diffuser.

The LPL12060C and LPL12060CP models offer a colour temperature of 6000 K, while the LPL12060N and LPL12060NP models offer a colour temperature of 4000 K. The constant current, flicker-free drivers available in the LPL12060C and LPL12060N models save even more energy and provide for a long lighting life span.

The second set of LEDs consumes 40 W of power and produces 80 Lumens/Watt, producing 3200 Lumens and can run for more than 30 000 hours. The panels measure 600 mm x 600 mm with a low-glare diffuser.

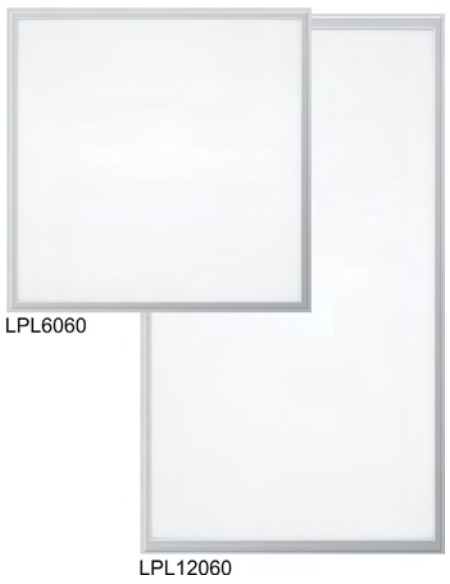
The LPL6060C and LPL6060CP models offer a colour temperature of 6000 K, while the LPL6060N and LPL6060NP models offer a colour temperature of 4000 K. The constant current, flicker-free drivers available in the LPL6060C and LPL6060N models save energy and extend the life span of the product.

Veti is known for its quality electrical products and the LPL12060NP, LPL12060CP, LPL6060CP and LPL6060NP models are compatible with Veti's lighting automation products, allowing for an integrated solution. This means the lights can be dimmed to suit the customer's exact requirements.

In the non-dimmable range, the LPL6060C and LPL6060N models are 595 mm x 595 mm in size, consume 40 W of power and produce 3200 Lumens with a life span of over 30 000 hours. The colour temperature of the LPL6060C measures 6000 K, while the LPL6060N model produces 4000 K. These models are suitable for recessed ceiling systems with a grid size of 600 mm x 600 mm.

The LPL12060C and LPL12060N models are 1195 mm x 595 mm in size and deliver 6000 Lumens for more than 30 000 hours. These models include a flicker-free external driver and are suitable for recessed ceiling systems with a grid size of 1200 mm x 600 mm.

Enquiries: sales@veti.co.za



Celebrating 10 years of LED luminaire manufacture

In the early days of professional LED lighting, BEKA Schréder recognised and predicted the success of LED as the light source of the future, and has since lead the way in product innovation and local manufacture.

The technical and commercial benefits of LED lighting were presented in numerous LED workshops run by the company – across all major cities in Southern Africa – to alert professional users and engineers of the imminent 'revolution', which would change the technology of lighting forever.

In its predictions, the company foresaw the increase of the LED's efficacy, which would result in its triumphant path in all lighting segments, in the domestic and professional sphere.

In order to keep pace with this technology, BEKA Schréder had the vision to be the first to locally design and manufacture a wide range of technical luminaires, ranging from streetlights, through urban decorative, to commercial, industrial and floodlights.

In keeping with the company's philosophy, it developed LED luminaires suitable to Africa's climatic and operational conditions, which made them globally unique and accepted by many international markets.

Says General Manager, Wimpie Ludwick, "We have been a pioneer and part of this journey since the first solid state light sources were available. As we reflect over the past ten years, we can pride ourselves in five key areas." These are:

Quality

BEKA Schréder has a high level of global standards, service and innovation. Being based in South Africa with a comprehensive African footprint, the company understands the continent's harsh thermal environments and designs for local conditions to ensure a high-quality, high-performing product.

Its success can be attributed to local research and development of its luminaire ranges; sourcing of high-quality components that match its standards; and ensuring appropriate mechanical and thermal product integrity for various environmental conditions.

The company stands by the product warranties of its LED luminaires, providing peace-of-mind for customers over many years of operation. BEKA Schréder was the first South African lighting company to be awarded ISO9001 certification. This commitment to quality has become its hallmark, enabling it to become Africa's largest lighting manufacturer and market leader in exterior lighting.

Efficacy

Over the years, LED chip and luminaire manufacturers, such as BEKA Schréder, have pushed the boundaries to give end-users the most efficient, high-performing technology. A lot of R&D is invested into the right combinations of components and consideration of all external factors to achieve optimal LED luminaire efficacy. Although often referred to as the "race to the highest efficacy"; current trends are leaning towards quality of light with higher colour rendering alongside high performing LED chip and luminaire efficacy, adding yet another facet to this ever-evolving technology.

Products

Continuously adapting to available technology, product improvements over the past ten years have led to several generations of luminaires. BEKA Schréder's current street light luminaire, Generation 4, has just been launched and will provide all the advantages, cost savings and features a LED street light luminaire can offer. Local production drives high quality products across all outdoor and indoor segments and its LED luminaires set themselves apart with the following features:

Specialised optics: Schréder has developed several photometric engines to provide the best solution for every application and project in terms of performance, comfort and ROI. These concepts have been designed to build a versatile state-of-the-art LED product portfolio. The company's large range of photometric engines mixes the number of LEDs, driving currents and light distributions to satisfy the needs of each environment to be lit.

Luminaire design: Since LED technology is significantly different from traditional light source technology, continuous design changes are necessary to optimise performance. Specific heatsink designs are now an integral part of any high-quality LED luminaire.

All BEKA Schréder outdoor luminaire housings consist of marine grade high-pressure die-cast aluminium (EN 1706 AC-44300), ensuring corrosion resistance even if exposed to the harshest environments.

Products are supplied with an inline 10 kA surge protection to withstand the high lightning strike rates in parts of the country.

Electronic temperature monitoring prevents overheating of the LEDs and power supply, prolonging the lifetime of the LEDs (ThermiX®), even in cases where the luminaires operate during the day.

Part of the company's product range incorporates an integrated pressure equalisation valve to maintain the ingress protection rating (IP) over the lifetime of the product.

The FutureProof concept allows for simple technology upgrades by being able to access electronic components easily and upgrade/replace where required.

By combining the best of LED technology with a wide range of control systems, solutions can offer huge energy savings of up to 85% and radically reduce the payback time of a new installation. The past ten years have seen a significant shift to LED technology, with more than 80% of the company's product mix being manufactured with LED.

Projects

The company's sales team, in conjunction with the in-house lighting design team, provides the correct LED lighting solution for each project, ensuring lowest power-consumption, least amount of luminaires and best use of photometry to give the most affordable and standard-compliant installation possible. BEKA Schréder is one of few lighting manufacturers globally that can supply LED lighting technology solutions across all indoor and outdoor segments.

Innovation

Whether a manager in charge of a city, transport infrastructure, private venue or industrial facility, optimising workflow and budget are top priorities. The company is at the forefront of being able to incorporate Smart City enablers into its luminaires. Schréder's Owlet IoT, the ultimate city management system, remotely controls luminaires in a lighting network, creating opportunities for improved efficiency, accurate real-time data and energy savings of up to 85%.

"BEKA Schréder has been the leader in various lighting and other technologies since it started over 40 years ago. We believe in innovation, local manufacturing, in-house design, our people, our country, sustainability and, most of all, our customers. We continually change and innovate to ensure we stay true to our ethos and give our customers the highest quality and value in everything we do. We look forward to continuing our partnerships with our customers in innovation and state-of-the-art lighting technology," says Ludwick.

Enquiries: +27 (0)11 238 0000

BEKA Schréder supports the Y.E.S. Programme

BEKA SCHRÉDER is a participant in the Youth Employment Services (Y.E.S.) Programme, which strives to give work experience to previously disadvantaged youth to equip them for employment at the end of the programme.

Y.E.S. is a non-for-profit organisation and a business-driven initiative – in partnership with Government and Labour – that aims to create a national plan to build economic pathways for previously disadvantaged youth. A 'first chance' is often all it takes to unleash the potential of a young person. Y.E.S. focuses on previously disadvantaged youth between the ages 18 and 35 by providing work experience for one year and giving young people a chance to demonstrate their abilities, establish their work ethic and prove their worth.

BEKA Schréder is delighted to have created work positions for 15 youth. They will fill positions in its Operations, Health & Safety, Dispatch, R&D, Finance and HR Departments, as administrators, operators, mechanical draughtsmen, freight controllers and health & safety officers.

During the 12-month contract, BEKA Schréder and the Y.E.S. Foundation will monitor the progress of the young employees. A smart phone will be issued to each youth member, who will need to complete 24 work-readiness modules and assessments throughout the contract period. At the end of the programme, BEKA Schréder will absorb at least one of the youth members into a permanent employment position.

A Y.E.S. exit pack will be provided to each youth member, including a CV, a creditable reference and access to a digital network of employers and opportunities. Y.E.S. aims to create one million jobs for young people. BEKA Schréder, a leading local manufacturer of LED lighting products, is proud to be part of this initiative.

Enquiries: www.beka-schreder.co.za

The Y.E.S. youth team with BEKA Schréder management.

UPCOMING INDUSTRY EVENTS

IESSA IN 2020

IESSA has as a tenet in the advancement of lighting knowledge. To this end we offer a number of lighting courses from basics to intermediate as well as with those handling specific areas of lighting have been developed.

The Basic lighting Concepts, Vision, Lamps and Colour course is designed to provide persons associated with, or entering into the lighting industry with an understanding of basic lighting terminology and techniques.

The specialised courses are dedicated to various specific aspects of light and covers aspects such as road lighting and maintenance, shop and retail lighting, emergency lighting, and industrial lighting as well as the use of lighting tools such as the 'Relux computer design program'. These courses range from 1 day to 2 days. The candidates to the courses are recognised with either certificates of attendance or certificates of accomplishment as appropriate.

2020 Course Calendar

3-4 February: Lighting Concepts, Vision, Lamps and Colour (Johannesburg)
27-28 February: Quality Assurance – Public Framework (KZN)
16-17 March: Interior Lighting Course (Johannesburg)
2-3 April: Photometry (KZN)
20-21 April: Exterior Lighting Course (Johannesburg)
7-8 May: Lighting Concepts, Vision, Lamps & Colour (Cape Town)
18-19 May: Lighting for Energy Efficiency in Industry (KZN)
21-22 May: Quality Assurance - Public Framework (Johannesburg)
9-10 July: Interior Lighting Course (Cape Town)
13-14 July: Lighting for Roads & Precincts (KZN)
30-31 July: Photometry
3-4 August: RELUX Lighting Design (KZN)
27-28 August: Lighting for Energy Efficiency in Industry (Johannesburg)
10-11 September: Exterior Lighting Course (Cape Town)
29-30 September: Lighting for Roads & Precincts (Johannesburg)
8-9 October: Retail & Shop Lighting (KZN)
15-16 October: Quality Assurance – Public Framework (Cape Town)
19-20 October: RELUX Lighting Design (Johannesburg)
16-17 November: Retail & Shop Lighting (Johannesburg)
12-13 November: Lighting for Energy Efficiency in Industry (Cape Town)

Interior Lighting Course

- Lighting terms (Refresh)
- Lighting for interior spacing (application concept)
- Lamps (brief) pros and cons
- Glare
- Lighting levels for Interior Code SANS 10114-1 and 2
- Lighting Direction
- Lumen method calculations/Photometric data sheet

Exterior Lighting course

- Lighting terminology
- Lighting for exterior spaces (types of exterior lighting applications)
- Lamps/Luminaires for exterior applications.
- Lighting levels for exterior code SANS 10389-1, 2 and 3
- Sports Lighting
- Road Lighting SANS 10098-1 and 2
- IP/IK rating
- Introduction to 'Point to point'/'Inverse Square law' calculations

Roads and Precincts

- Lighting for Roads and Precincts
- Basic Lighting terminology
- Road types
- Lighting calculations/Point-by-point
- Road classification
- ARP 035 guidelines
- SANS 10098 Parts 1/2
- Photometric data/luminaire distributions
- Glare
- LED modules/light engines
- Ballasts
- Luminaires and controls
- Safety measures
- Exam & Task

Photometry course

- Terms and Definitions
- Luminous Intensity Measurements and Calibrations
- Luminous Flux Measurements and Calibrations
- Luminous Intensity Distribution Measurements (including spectral mismatch)
- Laboratory Requirements for Tests
- Selection and Control of Reference Lamps and Working Standard Lamps
- Photometric Methods and Practical Test Procedures
- Goniophotometer measurements
- Integrating Sphere Measurements and Calculations (practical)
- Photometry of Luminaires (General discussions on Annexes A, B, and C)
- Photometry of an Interior Luminaire (practical)
- Photometry of an Interior Luminaire: Calculations and Data

IESSA courses in 2020

RELUX course

- Introduction to lighting software
- Manual interior lighting calculations (lumen method)
- Basic Interior design procedures
- Furniture, partitions, cube etc.
- Basic exterior design procedures
- Sports lighting design procedures
- Basic street lighting design procedures
- Exercise to do interior and exterior Model Project
- Exam and task to do at home for a combined mark for the certificate

Shop & Retail lighting

- Terms and terminology
- Lighting requirements for General, Accent and Emergency
- Lamps and luminaires
- Calculations and design considerations
- Illustrated discussion
- Principles and techniques of lighting for merchandising
- Future trends

Dates to diarise in 2020

Gauteng Homemakers Expo

27 February-1 March

The Johannesburg Home Makers Expo celebrates the authenticity behind real homes and their beauty. Home is the very place where we laugh, we cry, we grow up and raise our children so it's no wonder that we all want to tell our stories through our decor and designs, mimicking the past, present and future between our four walls. The show will present the very latest in home renovation, interiors, soft furnishings, lighting, kitchens, furniture, and more. Meet leaders in the home lifestyle industry with exclusive insider tips and professional advice. The Expo features a significant amount of attractions to keep you informed and entertained including demonstrations by DIY celebs.

Internet of Things Forum Africa Exhibition

25-26 March

Internet of Things Forum Africa Exhibition is a highly anticipated conference, targeted at thought leaders, IoT ecosystem participants and experts in Africa, and will create a platform for all players to share their knowledge of real-world IoT trends, challenges, and solutions. IoT Forum Africa will gather thought-leaders, solution providers and decision-makers from diverse industries. Past sponsors of IOTFA include BCX, MTN, Huawei, Schneider Electric, Software AG, Altech, Dimension Data, Grant Thornton, Dark Fibre Africa amongst many others.

The Solar Show Africa

31 March-1 April 2020

The Solar Show Africa brings together thousands of industry professionals who want to share their ideas on the newest innovations on solar power generation and the entire solar value chain. The show maximises the learning through:

- Keynote speakers
- Regional project case studies
- Roundtable discussions
- On-floor seminars

Discover what are the top trends in the solar energy sector and what are the biggest opportunities thanks to a superior content on smart electricity: solar, nuclear, maintenance and asset management, coal, power distribution, energy storage, gas power, finance, investment and billing.And if you are going to exhibit, explore exciting technologies by networking and participating in live demos taking place on all the exhibition floors.

Power & Electricity World Africa

31 March-1 April

Power & Electricity World Africa bring innovators, disrupters and change agents together to talk and engage in healthy business pertaining to power and electricity. This serves as a platform for thought leaders and disruptors to showcase their solutions to Africa power and energy buyer community. This event focusses largely on creative, organic and customer-focused approach to bring new innovations in power industry.

Securex

2-4 June

Securex South Africa is one of the most important trade fairs for commercial security and fire protection, which takes place once a year in Johannesburg. The exhibition sets new standards for the future and is therefore a must for many decision makers from the industry. The event attracts visitors and exhibitors from all over the country as well as top experts from around the world that are represented with pavilions at the fair. The visitors are able to inform themselves in detail and comprehensively on security, fire protection, energy and environment and on the latest developments, trends, services and products in the fields. Other topics include access control, biometrics, video surveillance, IP security and intelligent buildings. The goal is to merge the systems and strategies of all firms, so that the industry becomes more profitable, more efficient and a lot more effective.

A-OSH Expo

2-4 June

Occupational health and safety are important issues when it comes to the workplace. To address these questions and themes, the A-OSH Expo South Africa was created. She is a national trade fair for occupational safety and health at work and takes place annually in the Gallagher Convention Center in Johannesburg. The fair offers the perfect opportunity to talk with industry experts to gather information, share knowledge and provide critical questions about OSH. It is a platform for anyone who has to do with health and safety, even when it comes to the points of commitment, training and equipment. Visitors can discover and test the latest innovations, products and services from many leading companies. In addition, the fair is an important meeting place, to provide themselves with valuable contacts, to network with colleagues in the industry and to share ideas, opinions and best practices. The exhibition is accompanied by a conference, by first aid demonstrations and demonstrations of working at heights.

SAITEX

21-23 June

One of Africa's largest and most well-established trade exhibitions, SAITEX is an annual product sourcing opportunity for the entire continent's retail and trade industry. Africa featuring electronics and home appliances, homeware and household products as well as building materials and tools.

Interbuild Africa

29 July-1 August

Interbuild Africa in Johannesburg is a trade fair for construction and an excellent platform for exhibitors to meet with new and existing customers, introduce new products, sign sales contracts, to strengthen their own brand, to interact with suppliers and to get information on events in the market. Visitors can find in depth and comprehensive information here about the latest developments, trends, products and services in various fields.

Electra Mining

7-11 September

Electra Mining Africa is the ultimate meeting and market place for all stakeholders involved in the mining, construction, industrial and power generation industries. It offers both exhibitors and visitors the opportunity to make valuable business connections, discuss the latest developments, technologies, trends, products and services in these sectors. Many new innovations are showcased including energy efficiencies and environmentally friendly products, as well as products in line with the mining industry's goals on health and safety. Electra Mining Africa is co-located with Elenex Africa (power generation, electrical engineering and lighting) and Transport Expo (construction and mining transport).

AFRIBUILD

13-15 October

AfriBuild is aimed at equipping the local building sector with the practical examples, demonstrations, skills, and advice needed for successful future development. The new expo will take place over three days, bringing together hundreds of local and global exhibitors – ranging from mechanical, electrical and plumbing (MEP) providers and tools, equipment and materials experts, to structure, occupational health and safety (OHS), and technology and innovation specialists – to showcase their expertise, products and services.

Planning any training courses or events for 2020? Publicise them in the monthly *Sparks Electrical News* Industry Events page. Email the event details to sparks@crown.co.za

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BRIGHT SPARK

TAKE A GUESS

How much dirt is there in a hole that is 3 feet deep, and 6 inches in diameter?

DECEMBER SOLUTION

He let the air out of the tires.

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- DBs, switches, sockets and protection
- Energy efficiency
- Lighting

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- Distribution boards, switches, sockets and protection

MARCH FEATURES

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

Buyers' guide

- Tools and instruments

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