

SUCCESSFUL RETURN FOR IESSA CONFERENCE



Members from the IESSA council at the recent conference; Steffen Schroder, Development (from Reclite), Henk Rotman, Gauteng Branch Chair (Tridonic), Daniel Kasper, IESSA President (Beka Schreder), Alex Cremer, Past President (Nordland Lighting), and Pieter du Toit, CIE (NMISA).

CONTINUED ON PAGE 6

After a pandemic enforced hiatus of three years, the Illumination Engineering Society of South Africa (IESSA), was able once again to host its popular annual conference which brings together members from across the country for two days of learning, knowledge sharing and networking. Hosted at the lavish Blueberry Hill Hotel in Randburg, the conference saw approximately 40 members joining in person to listen to a range of lighting-related presentations, while a number of members from outside of the province joined in online.

IESSA President, Daniel Kasper was happy with both the turnout and the course which the event took. "You only notice when you don't have it how much face-to-face interactions impact the industry," he said. "The feedback I received from the members was very good, with many complementing the quality and the diversity of the papers." Kasper admits that for the 2022 conference the association wanted a smaller scale relaunch to test the waters, but the response was positive and IESSA will aim for bigger attendance next year.

Day 1

After a cup of coffee and a muffin, Kasper welcomed all in attendance and those attending virtually on the first day of the conference. "I am looking forward to the invaluable interactions over the next two days, something which we have missed over the past few years," he noted. Kasper then introduced the keynote speaker for the day Letitia Van der Merwe, Managing Director of Inavit iQ Learning, an industrial psychologist by profession, noting that IESSA wanted someone from outside of the industry to give the attendees something to think about.

Her discussion, entitled, 'Boost Your Psychological Immune System' aimed to help attendees become fitter from a mental perspective. She discussed psychological immunity and emo-

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Is your genset primed to switch on when the lights go off?

A back-up power supply such as a genset is critical to reduce overall electricity demand during loadshedding. However, it is vital that such important equipment is maintained properly and serviced regularly to be able to cope with such outages.

Genset failure due to a lack of proper maintenance poses a significant business risk, especially due to increased loadshedding. On 25 July, President Cyril Ramaphosa revealed in a national address that the country faced a 6 000 MW shortfall in electricity generation by Eskom until sufficient renewable energy in the form of solar and wind power came online.

When loadshedding escalated to Stage 6 for the first time since December 2019, businesses and homeowners were left scrambling to ensure they had back-up power solutions in place. "Here you are not only looking at protecting the value of your assets, but what the genset itself actually supports and pro-

jects, says ASP Fire CEO Michael van Niekerk.

"The probability of something going wrong may be slim in the mind of the end user, but in the likelihood that it does, the consequences can be potentially disastrous and even fatal," warns van Niekerk.

The first issue is fuel supply. This can range from an integral tank at the base of the genset to a 2 200 litre Bulk to Farm (BTF) tank or a 210-litre drum. The presence of flammable liquids is an associated danger, especially in terms of refuelling and any spillages, so it is important to ensure that the storage of fuel is to code so that it does not pose a risk to the home or business' generator.

Another issue is vegetation or combustible material encroaching on a genset, which can often be hidden away. The genset itself is a potential source of fire ignition due to the high temperatures of the manifold. If the genset is indoors, these temperatures can be considerable, especially if ventilation is inadequate.

Keeping the generator free of any combustible elements such as grass, weeds or litter is essential to reduce the risk of a genset fire. Proper maintenance is therefore essential. If an oil filter has not been screwed on tightly enough, for example, it can result in an oil leak. If oil sprays onto a hot manifold as a result, the oil will ignite, resulting in a fire.

Companies and individuals often lack the correct fire-fighting equipment to deal with genset fires. For example, a dry-chemical fire extinguisher will douse the flames, but not cool down any hot surfaces. A carbon-dioxide fire extinguisher, on the other hand, might cool down the overheated genset itself, but this can damage any equipment due to thermal shock. Foam based fire extinguishers are able to cool hot spots that may re-ignite fuel and the foam blanket will smother the fire, rapidly extinguishing it.

Gensets do not only supply standby power but are essential to the day-to-day operations of institutions such as financial services and medical care. Hospitals, for example, will often have back-up gensets, all in the same room. If a fire breaks out in one genset, the rest of the equipment is immediately at risk.

In terms of fixed fire-suppression systems, a range of options is available. Sprinklers are an obvious choice, but this depends on whether or not such a system has been installed already. If not, the cost can be prohibitive, as sufficient hydraulic capacity has to be guaranteed, which means that cheaper and more effective alternatives are more suited.

The next best option is a clean-gas fire-suppression system. However, gensets in such a scenario are located in ventilated rooms, which compromises the integrity of the enclosure. If a gas system is discharged in such an environment, it is therefore not possible to maintain the concentration of that gas for a sufficient period to suppress the fire. Hence clean-gas systems are not ideal in these scenarios.

The third option is a water or foam mist fire-suppression system that only uses a minimal quantity of water. It is also far more cost-effective than the clean gases themselves used to recharge the system. This suppresses a fire rapidly, cooling any remaining hot spots down to below the automatic ignition temperature.

All fire-suppression systems with mechanical activation should be inspected monthly. Gensets should by rights be started up at least once a week to ensure the batteries are charged adequately. A cursory visual inspection will also reveal any potential problems or issues.

In terms of regulations and specifications related to gensets, such enclosures are classified as D4 for certain minimum fire-proof requirements, including a specific fire rating for the walls. If the gensets in a building are not located in a purpose-built room and are hidden away in a basement next to parked cars, for example, it is a clear violation of the regulations.

"It is all about risk mitigation, based on how integral the genset is to the business in question. While it is essential for financial service providers and hospitals to invest in the best systems possible, smaller end users also need to look at the impact of genset failure or fire on their businesses," concludes van Niekerk.

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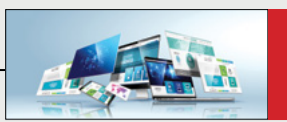
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New technologies and innovations in the electrical field

Technology is making a huge impact on the construction industry as well as its trade industries like electrical contracting. In this field, numerous innovative tech tools have been introduced but there are also new discoveries that are worth mentioning. All these modifications are changing the way electrical construction works, as well as how electricity is created. Overall, they promote higher efficiency both during the construction process and the turnover of buildings.

In this issue we are going to look into how technology is improving an electrical contractor's construction crew management, project handling, submittals, and safety strategies. We'll also discuss some new amazing discoveries in energy generation that can be used by electrical system designers in building new sustainable construction projects.

New discoveries in the electrical field

Smart grid: The smart grid is simply a revolution to the traditional grid. Basically, it has made communication between the electric provider and the customer smarter by using sensors and smart meters connected to smart appliances at home and the offices. It has made readings digital, making it easier and faster for the power company to provide the right power flow needed.

So, to make living in a building more convenient, electrical contractors can consider using this new grid in their electrical system design.

Na-TECC: The Georgia Tech's George W. Woodruff School of Mechanical Engineering is experimenting on a conversion energy engine using sodium's isothermal and solar heat for generating electricity. This new engine was called Na-TECC (Na-sodium and Thermo-Electro-Chemical Converter).

Basically, this machine improves energy efficiency so that lesser heat will leak. That means more savings on electricity. The experiments involved using solar power to run the machine and power a whole house. Soon, when it's fully developed, it can already be recommended by electrical contractors for new building construction. The experiment is still ongoing and is funded by the Department of Energy's (DOE) SunShot Program.

The revolution of betavoltaics: The same school in Georgia is recycling nuclear waste to produce electricity. Only this time, the engine isn't using reactors and sans moving parts. Experiments are being made on this new breed of betavoltaics, which is funded by the Defense Advanced Research Projects Agency (DARPA). The agency is collaborating with Stanford University's team of researchers.

Overall, this betavoltaics can achieve conversion efficiencies of between 4 and 18 percent. That means high savings in electricity generation. They even revealed that this technology can generate about one watt of power continuously for as long as 30 years. Although this low power can't be used in buildings, researchers believe that they can soon perfect the new betavoltaics so they can produce more power that's needed in bigger structures.

Technology trends in the electrical construction trades

After those savvy discoveries that can still be improved in the coming years, let's now look into the current technologies that are shaping a stronger electrical trades industry. From AI to robotics to wearables and software, electrical contractors certainly have a lot of innovative tools they can use to minimize human error, make electrical work safer, and enhance electrical construction crew management.

Robotics and drones: Robots are being used these days to replace human labour to make work faster and more accurate. But in the electrical trades, robots are being deployed in places with high electrical hazards so as to prevent accidents and deaths.

Drones are also starting to be a huge part of the monitoring process of electrical contractors. These UAVs (Unmanned Aerial Vehicle) are used to take photos and videos of the site to give the project manager a clearer overview of the project even without visiting the site. This goes the same with electrical contractors who may need to handle one or two projects at the same time. Instead of using traditional mobile cameras or DSLRs to capture progress, crew members can use drones instead to capture images from hard-to-reach spots in the construction site.

IoT and Cloud Computing: Data is also important for electrical contractors. The plan, schedule, drawing, budget, and other files they send to the site are vital to making the work of crew members efficient. Meanwhile, the reports that crew members write are a way for the electrical contractor to stay updated on what's happening at the site. So should there be any issues, electrical workers can simply send the report via the cloud and the contractor receives it right away, enabling him to act on the issue immediately.

Smartwatch: While it seems like smartwatches are just luxuries for construction workers, but in the electrical trades, these gadgets are actually used for saving lives. The Proxi Smartwatch, for instance, is a wearable that helps ensure the safety of electrical workers at the site by reducing risks of injuries and electrocution. The watch is equipped with sensors that notify the user of any high-voltage electricity sensed nearby. It also has GPS sensors that send out location stamps so that



electrical contractors are sure that their workers are at the site where they are assigned.

Smart Helmet and AR: Augmented Reality is quickly finding its rightful spot in the construction and electrical trades industries. DAQRI is one of the makers of smart helmets equipped with augmented reality glasses to assist electrical professionals in an optimised way. Like other industrial-grade AR glasses, DAQRI is equipped with cameras, sensors, and smart features that allow electrical workers to determine the exact location of ductwork and electrical cabling required in the building without having to look at the drawing repeatedly. Ultimately, it provides a hands-free means of reviewing documents while working at the site.

BIM: BIM is a new way of creating models in the construction industry. It acts more than just a CAD where only the specs and dimensions are defined around the 2D sketch of the project. BIM, on the other hand, generates an intelligent 3D model that contains all the specs, standards, and physical functions of the parts of the project. This makes it easier for project teams to determine possible flaws in the original plan. This is also where other systems of the building are laid out like HVAC, ductworks, pipings, and electrical cables. This makes it easier for contractors to collaborate with each other as some systems are dependent on others like electrical cables and ductworks.

Electrical contractor scheduling software: To keep sure your electrical workers stay on top of their goals, you need to equip them with a digital tool that will serve as their reference for their tasks and deadlines. Paper documents are already obsolete, and they were proven inefficient when it comes to relaying information. First, entries can be old and inaccurate on paper documents compared to the data used at the office. Changes can happen any time so it would be convenient to have a software where new files can be updated instantly. Second, a cloud-based electrical contractor scheduling software helps the contractor find out about issues in real-time and track progress regularly even without visiting the site. As you know, it can take over an hour or two to walk through buildings, making it time-consuming to check accomplishments every day. Accuracy, efficiency, and real-time collaboration and communication are the main offerings of electrical contractor scheduling software like Pro Crew Schedule.

Prefabrication: The use of modular construction is becoming the new standard in the construction industry in many parts of the world. This pre-engineered solution makes it faster to complete a project, but more than that, the established prefab manufacturers guarantee higher-quality construction components that comply with or even surpass the project's specifications.

Some electrical systems can also be prefabricated in a manufacturing site where fittings are already attached to the pre-engineered components. Apart from prewired walls making work faster, prefabrication also makes the electrical workers safer.

Energy-efficient lighting: LED is still among the greatest innovations in the electrical field. The use of LEDs in buildings has greatly reduced energy consumption and they even produce better light quality than the traditional fluorescent bulbs. Furthermore, LEDs are longer-lasting and safer to use.

In the future, electrical experts believe that LEDs will become more prominent and they will be used in smart systems that are remote, heat, or voice-controlled. In fact, there are now houses and vehicles using LEDs that are connected with Alexa for more convenient control. Wireless LEDs are also expected to be developed in the coming years, making installation in buildings faster by up to 70 percent.

Conclusion

Technology will never cease to evolve so expect to see new tools in the electrical construction trades industry. Be sure to employ these technologies in your electrical contracting company as they will be useful in boosting the efficiency of your workers at the site as well as ensuring their safety.

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Central Support Systems: 28 years and growing

Central Support Systems has been operating for 28 years. It has steadily progressed to become one of the major players in the electrical strut industry. With its group of companies, Central Support Systems is able to manufacture and supply top quality cable management systems for both the commercial and industrial, as well as the solar markets.

The company strives to supply a quality product at the right price to all its customers. To this end all horizontal mounted applications are tested to the Nema VE1 (2017) standard. All vertical applications are tested, but there is no published standard to be measured against. The tests are conducted and certified by an external engineer, and are available on request.

As part of the mission to provide excellent service, Central Support Systems is in the process of adopting the ISO 9001: 2015 quality standard. The company expects to be certified within the next 12 months. Central Support Systems always strives to do its best, and with the added assistance of the standard, it will be able to measure itself in a manner that will lead to constant improvement and service excellence.

Faruk Cassim, Sales Director, when asked about the company's mission, stated: "The company prides itself on always putting the customer first. We strive for this from the bottom right to the top. We find transactions with satisfied Customers naturally falls in place beginning to end." Emergency deliveries at unusual hours, or with extremely short lead-times, are not uncommon, as many of the operational staff can testify to.

In line with its focus on constant improvement, Central Support Systems have added a manufacturing arm to the company, allowing better control of the entire supply chain. The company has purchased a new purpose-built premises which allows for improved stock holding, faster dispatch and pick-up of goods and an all-round improved customer experience. Central's strengths lie in its people; from the top down, the company has entrenched a superior work ethic, coupled with customer focus and professionalism. Knowledge and ethics is disseminated throughout the company, thus creating room for independence and growth of each staff member. Central Support Systems ultimate goal is to have customers satisfied by all dealings with any staff member.

Central Support Systems services all of South Africa as well as exports

markets in Africa and globally as well. The company branches based in Johannesburg, Pretoria, Kwadukuza and Namibia.

Products available through Central Support Systems:

- Caddy clips and clamps.
- Cantilever arms and Aircon installation sets.
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- Galvanized steel cable ladder.
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- Wire mesh cable tray.
- Wire channels, accessories and trunking.

Commercial cable support systems

Commercial support system for cabling and equipment are a vital component of a well-designed data, communication, electrical or light industrial system. There are five major types of cable supports, cable ladder, perforated cable tray, wire baskets, channel support systems and cable trunking.

Central Support Systems offers a complete range of cable support products that cater for horizontally mounted applications and many of these can easily be adapted for vertical installations as well.

Commercial cable support systems entail light to medium and light heavy duty commercial products with accessories for easy, flexible, and user-friendly installation. Central Support Systems provide economical solutions to a to cater for all your support system requirements.

As well as a complete range of cable support systems, the company carries a



Back: Avinash Boodram, Internal Sales; Dianna Scheepers, Internal Sales Manager; and Suliman Choonara, Internal Sales. Front: Faruk Cassim, Sales Director.

wide range of cantilevers, angular and flat fittings, k-clamps, two-piece pipe clamps, connectors and fasteners which are available for versatile, multi-functional and easy assembly on site.

With almost three decades experience, you can trust the companies in-depth knowledge of cable management to support you reliably in every way.

Colin Hinton, the company CEO would like to thank all of Centrals' customers for their support over the past 28 years. He invites all potential new customers to contact the company via its website at www.css.za.com or its landline +27 (0)11 492 2314. All at Central will strive to offer improved service over the next 28 years.

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Essential health and safety tips for installers working on site

Sometimes it can be easy to forget that working onsite comes with hazards that can put your health and safety at risk. While it is inevitable that accidents do happen, everything that can be done should be done to mitigate and minimise the risks you might face as an installer on the job. Installers that need to be onsite should follow strict safety measures to ensure that their work environment is as safe as possible – and this requires a no-cutting-corners approach.

Here are a few simple tips for when you have to go onsite, to ensure that your actions keep yourself and others safe and out of harm's way.

1. Make sure you have all necessary PPE

From the moment you enter a site, you need to ensure that you're wearing all the appropriate Personal Protective Equipment (PPE). Remember, it can't protect you if you don't always wear it. Your hard hat and safety boots will go a long way in ensuring that if accidents do occur, you have a line of defence – and, in case of an emergency, they might even save your life. Don't underestimate the protection you get from using PPE which you are expected to use on the job.

2. Follow safety instructions/protocol onsite

It's easy to take for granted how imperative it is to be aware of the relevant safety procedures and follow all instructions. If you're working on a construction site, you will be given an induction by the site manager whereby the work procedures and safety hazards of the site will be shown and explained to you. However, when you're working from premises like a home or office building that isn't necessarily a construction site with the relevant protocol, it can be helpful to ask questions about the protocol you aren't familiar with or when it isn't formally set out to you. No two sites are the same, and that goes for their procedures as well. Following incorrect procedures could lead to you putting yourself and others at risk.

3. Be prepared in case anything goes wrong

Ask yourself, if something happens are you aware of the evacuation procedures/routes for this site? You need to familiarise yourself around the site you're working on and know your way around in case of an emergency. It is your responsibility to ensure that you have access to appropriate crisis and first aid equipment. Your employer should provide this for you if you work for a company; however, if you are an independent contractor, you still need to ensure that you have your own and take it along with you onsite.

4. Report faulty equipment

If you notice a problem, ignoring it could lead to someone getting injured or a vital problem coming up in future. Whether it's wiring that's faulty or equipment you suspect has been tampered with, you need to bring this up with the relevant persons. If something isn't working or doesn't look right, it's best to report it and seek further instructions. Don't attempt to tamper with equipment unless you are competent to do so and don't feel afraid to ask for a second opinion.

5. Use the right equipment for the job

This goes back to the no-cutting-corners approach. Sometimes it might be easier to use a specific tool even though another tool is best for the job – this could be because of financial reasons or entirely out of convenience (I left the correct tool at home but if I apply extra pressure using this one it might work). It's best to stick to what you know does the job most effectively, and safely, then trying to 'make do' and potentially putting yourself at risk. On the same note, ensure that your equipment is in good condition and safe to operate before you use it.

6. Don't put yourself at risk

If you can't reach something, use a ladder. You shouldn't be expected to work at a height without suitable guard rails. Don't attempt to tamper with

exposed wiring. It's up to you to ensure that you don't put yourself in dangerous situations at the end of the day. If you feel like you're being pressured, either by your employer or by a client, you need to stand up for yourself. Your health and safety are a priority – you should not be putting your life on the line to do your job successfully.

We hope these tips have been helpful to you. Remember, that working as an installer can sometimes be risky, so it's crucial that health and safety are always top of mind.

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SUCCESSFUL RETURN FOR IESSA CONFERENCE

CONTINUED FROM PAGE 1



IESSA President, Daniel Kasper.

tional resilience, the ability to bounce back from difficult situations. She noted that she has not seen workplace and personal life stressors this high in twenty years. Of interest, was the fact that all of us suffer from a negative bias, where we tend to register negative stimuli more readily than positive ones, and dwell on those negative events.

Next, Henk Rotman, Business Development Manager at Tridonic and the IESSA Gauteng chairman, delivered his paper: 'From ballast to brain, The LED driver as key component for realising smart street lighting'. He noted that smart lighting is the backbone for smart cities and can be considered an anchor application for a smart city. His presentation focused on recent developments at the lowest level (intelligent components) which greatly facilitate the implementation of smart street lighting. He looked at the relevance of temperature management; with the changeover to LED technology, 'day burning', where street lights are left to run during the day, might become a problem as LEDs and the drivers are sensitive to heat, shortening their lifetime and risking early failure. Full feature LED outdoor drivers can help in addressing this challenge, he said.

After a tea break, Lasse Ehmsen, Signify Product Manager for 3D Printed Luminaires, presented virtually from Eindhoven, the Netherlands, on 'The Power of Innovation, Growth through Open Standards'. He started off with a self-explanatory slide – innovate or die. "80% of



Simon Poo from Signify.

business executives think their current business models are at risk, while 84% say that innovation is important in their growth strategy," he explained. Innovation strength is not only about success, and is not about technical products, it is about the problems they solve and the value they create. He suggested that people should get inspired by different industries and different business models.

Later in the day, Greg Olivier, design engineer from GT Developments, an electronics engineer with over 20 years' experience, presented on 'Bluetooth Mesh Lighting Networks as an IoT backbone'. He stated that, "The lighting industry is uniquely positioned to be the backbone for network infrastructure as generally the lighting network is already there, and covers the entire site." He noted that while Bluetooth wasn't intended to be a short distance protocol, its biggest uptake was for audio/mobile.

After a delicious rooftop lunch at the hotel's restaurant, attendees settled down again to listen to Simon Poo from Signify talking on how the company's Interact IoT has had a big impact on reducing energy consumptions in the hospitality industry. Poo is a lighting designer and lighting specification specialist with over 16 years' experience.

He noted that hotels are a big player in terms of energy consumption; hotel rooms consume double the energy per floor unit compared to a similar sized office. However, the IoT has the solutions to deal with this. Interact is a portfolio of tailor-made software applications specifically designed to bring together connected lighting systems and the data these systems collect.

Next up was a presentation by Technical Lighting Engineer for CLASP, Bjorn Smidt-Hart, who spoke on how to do a lighting design for street and area lighting. He explained that the purpose behind street and area lighting includes visibility, safety, security, community and well-being and that lighting standards promote good practice. However, he did ask attendees to consider SANS 10098 A Class roadways. "What should the luminance values be to the side of you or behind you? It is best to comply to the standards, but use good lighting practice and lighting designs that are fit for purpose," he said.

After a short caffeine break, Smidt-Hart returned to explore Minimum Energy Performance Standards (MEPS) for street lighting luminaires. A collaboration between SANEDI and CLASP is aiming for an energy efficient standard for street light luminaires. "As 82% of roads in SA are state-owned, within the DMREs Energy Efficiency Demand Side Management (EEDSM) Programme, participating municipalities are able to optimise their use of energy, with expected electricity saving potential for street lighting of at least 40%," he explained. He pointed out successful examples such as the Cape Agulhas Municipality which is lit 100% by LED street light luminaires.

Closing the day out, Mark D. Williams-Wynn, R&D manager at eWaste Africa presented on 'The 21st century challenge: design for reuse, remanufacture and recycling.' He discussed



Patricia Schröder from Light Cycle SA.

the circular economy in terms of lighting, imploring companies to be restorative and regenerative by design, and new ideas and practices, as well as exploring life cycle analysis (LCA). This is a method used to evaluate the environmental impact of a product from cradle to grave – the impact of every part of the production and use of a particular product – and takes into consideration aspects such as the impacts of sourcing raw materials, inputs used in manufacturing process, number of times the product is used, and the final waste disposal method.

After a final Q&A session, the formalities of the day were wrapped up and the delegates congregated at the rooftop bar for cocktails and a networking event.

Day 2

A cold Johannesburg morning greeted the attendees on the second day which kicked off with a presentation by Patricia Schröder from Light Cycle SA. Light Cycle's mandate is to ensure that suppliers are compliant – new leadership has been effected from 1 August 2022, and the NPC has been assisted by experts to set up governance structures and systems to ensure a balance of power and independent thinking.

This was followed by an impassioned Q&A session where Schröder allayed fears about the role of Light Cycle SA going forward, wanting to work together with producers and recyclers for the betterment of the industry. "Be part of the solution," she said, "Help us build the system going forward, come and engage and work with the PRO." Numerous manufacturers joined in on the discussions.

Next, Pieter du Toit from NMISA presented a paper titled 'Measurement of efficacy and safety of UVGI devices available on the market'. "Covid raised the awareness of UV for disinfection," he noted, "So much so that you can even buy devices on Takealot. With all these products on the market, people may be unaware of the dangers, and the products could be ineffective and unsafe." NMISA purchased three readily available devices online to test their efficacy. "There is no international consensus for a standard UV germicidal action spectrum, as every micro-organism may have its own. It also depends on the medium, and the radiant exposure does differ between micro-organism," he explained.

Peter Blattner, President of International Commission on Illumination (CIE), then joined the conference online from Switzerland where he presented the highlights of the current activities of the CIE. Activities the commission are involved in currently include LED photometry, Temporal Light Modulation, Appearance and 3D printing, Glare and Dynamic Lighting, amongst others.


For the last presentation of the conference, Jo Anderson and Michelle Ludwig from the GBCSA joined virtually from Cape Town and discussed GBCSA's green building certification scheme, providing an overview of GBCSA's approach to lighting in Green Star rated buildings.

Conclusion of the conference


At the conclusion of the presentations, IESSA president Kasper hosted a final Q&A session to wrap up the conference. "Thank you to all of the presenters and those who put the whole event together. It was good to have these engagements again, some of which have been quite in-depth and passionate." He noted that one of the biggest pillars for IESSA is education, and he wants to interact with other associations and share knowledge. "As the only independent body representing lighting in South Africa, we are the right organisation to work with public entities," he explained. "Furthermore, when government wants to implement legislation, we are the people they come to. We can take the proposals to our members and report back to government, thereby playing a vital role in implementing change." He notes that it is essential for the industry not to sit back and wait, but to actively manage changes.

While the pandemic was not easy for the council, the response to the conference has been overwhelmingly positive, and Kasper wants to seize the initiative and attract more attendees next year.


Enquiries: www.iessa.org.za



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Zest WEG develops a significant manufacturing capability

Over the past 12 years Zest WEG, the South African subsidiary of Brazilian motor and controls manufacturer WEG, has evolved from being primarily a sales and distribution company to a fully-fledged manufacturer working to the best global standards.

"In 2010 WEG acquired a majority shareholding in Zest, which was the WEG distributor in South Africa," explains Eduardo Werninghaus, newly appointed Group CEO of Zest WEG. "While Zest had some manufacturing capability, its focus was on distributing WEG's range in the sub-Saharan market. Once WEG assumed control, the decision was taken to progressively expand the company's local manufacturing capability."

As Werninghaus points out, WEG, founded in 1961, is a truly global manufacturer with factories on all five continents. "In all, WEG manufactures in 12 countries outside of Brazil and the plants in these countries account for almost 50% of WEG's production. Manufacturing is in WEG's DNA and is now part of the DNA of the South African operation. Currently our manufacturing sites in South Africa are able to produce a wide range of equipment with varying levels of local content – more than 90% in the case of transformers and close to 70% for panels and E-Houses."

In Gauteng Zest WEG has two transformer manufacturing facilities. One is in Wadeville and the other in Heidelberg. "These facilities were acquired when we bought out two local manufacturers in 2013 and in 2015," says Werninghaus. "As a result, we now have the capability to locally manufacture transformers up to 45 MVA capacity."

Zest WEG has upgraded and extended the facilities, which are now equipped with state-of-the-art equipment including an impulse voltage generator at the Heidelberg factory which allows the in-house testing of transformers.

Also in Gauteng, Zest WEG – through its automation division – produces a wide range of electrical panels in Robertsham and E-Houses and electrical enclosures in Heidelberg.

In Cape Town, the company has a genset factory and a panel manufacturing facility. The genset site is dedicated to producing custom-engineered gensets and is complemented by an assembly line at Zest WEG's headquarters in Longlake, Johannesburg, which assembles boxed gensets and gear motors.

Werninghaus emphasises that Zest WEG has put a huge effort into building up a network of local suppliers, who contribute to the manufacturing process.

"We don't do this merely to meet government-mandated targets on local procurement but because it is something that WEG has always done," notes Werninghaus. "The company started up in the early 60s in the southern Brazilian state of Santa Catarina which was then very undeveloped so it really had no choice but to develop local suppliers. The process worked extremely well and is now standard throughout our global operations."

While Zest WEG's manufacturing drive has been highly successful, it has not been without its challenges, says Werninghaus. "WEG is a very aggressive company when it comes to manufacturing and is very focused on efficiency and productivity and it was by no means easy to translate this WEG culture to the South African manufacturing operations," he remarks. "Nevertheless, our efforts have been rewarded and our South African plants now perform as well as those anywhere else in the global WEG group and work to the exact same quality standards."

On the benefits of local manufacture, Werninghaus says that it helps control costs, allows the customisation of products and also gives Zest WEG the ability to adapt much faster to changing specifications and regulations. "Most of all, however, it gives us a significant advantage in supplying the key African market. South Africa is the gateway to much of the continent and it's a strategic imperative for WEG to have a strong manufacturing and supply hub serving the African region."



The Zest WEG manufacturing facility for large transformers in Heidelberg.



Generators at the Zest WEG manufacturing facility in Cape Town.



Eduardo Werninghaus, CEO at Zest WEG.

Motors | Automation | Transmission & Distribution | Energy Systems | Electrical Construction

SWITCHGEAR

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WEG is the only brand with a 3 year warranty, and offers a complete range of Switchgear intended for the most demanding market use in the world. Zest WEG gives extensive support, has a wide distribution network, and stock is readily available. We have trained technical staff waiting for your call at our dedicated Switchgear Call Centre.

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SWITCHGEAR CALL CENTRE

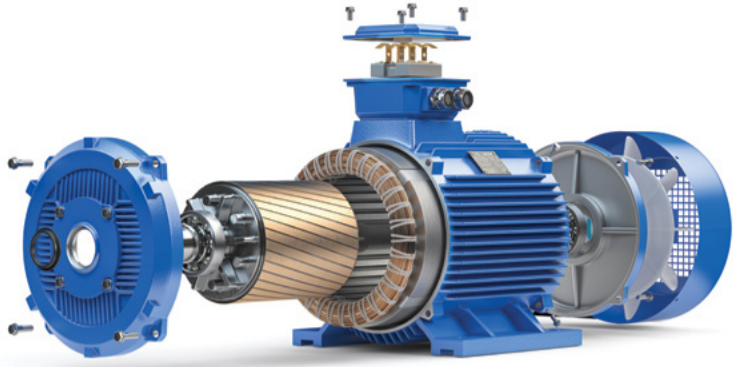
0861 934 794 | 0861 (WEG SWG)

0861 009378 | www.zestweg.com | info@zestweg.com

Enquiries: www.zestweg.com



Higher efficiency electric motors will drive down energy consumption



The adoption of new Minimum Energy Performance Standards (MEPS) for electric motors in South Africa will provide significant energy savings and in so doing alleviate pressure on the country's electricity supply crisis, whilst improving operational competitiveness.

The Department of Mineral Resources and Energy (DMRE), SANEDI, together with CLASP have recently completed a second cost benefit analysis (CBA) to determine the economic and environmental benefits of introducing MEPS for electric motors in South Africa. South Africa's industrial sector is dominated by motors that fall under the lowest class of international

efficiency standards (IE1).

Entitled "Cost-benefit analysis to introduce Minimum Energy Performance Standards (MEPS) for Electric Motors in South Africa", the report found that national electricity demand could potentially be reduced by as much as 0.25% in 2023 should the inefficient IE1 motors be replaced with more efficiently rated IE3 ones. IE3 electric motor units have a premium efficiency rating of 94.2% with potential energy savings of between 15% and 16%.

South Africa's economy depends on energy-intensive industries such as mining, chemicals, agriculture, iron, and cement making. These industries all run electric motors for extended periods, even up to 17 hours a day. The CBA study revealed that about 32 companies in these sectors consume about 40% of the country's electrical energy.

It is therefore imperative that the country adopts MEPS and energy labels that are supported by government best practice awareness programmes. Collectively, these actions will accelerate the transition to more efficient motor system applications. "Electric motors are not only used in heavy industry, they are ubiquitous and we use them constantly without realising. Implementing the CBA recommendations should be treated as a priority, and aligns with President Ramaphosa's recently announced energy crisis plan which seeks to conserve energy usage" said Dr Theo Covary who led the CBA research.

Some South African distributors are already making the shift towards IE3 electric motor units, and support the government's intention to forge ahead with the new efficiency standards programme which is now long overdue, in the Covary's view.

In line with international standards, the report recommends that the DMRE should proceed in implementing MEPS for level IE3 electric motors in the 0.75 to 375 kilo-watt range for 2, 4, 6, and 8 pole motors. In its research, it considered the Urban-Econ Feasibility Study of 2019 to help reach its conclusions. This study suggested that 200 000 electric motor units are sold each year in South Africa, with at least 69% of them between the 0.75 and 11 kilo-watt size range. Of these, between 40% and 50% have no stated energy rating, with the implication that they are the most inefficient motors available on the market. The report also assumes that the new performance standards will be formally introduced in 2023, to allow affected stakeholders a transition period to adjust to costs and move to IE3 electric motors.

The CBA report concludes that if the electric motor MEPS programme is effective, it should offer meaningful electricity savings which will directly benefit Eskom. Not only will it assist Eskom with its current supply challenge, but it will improve the competitiveness of South Africa's industrial base, by reducing load shedding risks and operational costs.

About SANEDI:

The South African National Energy Development Institute (SANEDI), established by the Government, directs, monitors, and conducts applied energy research to develop innovative, integrated solutions to catalyse growth and prosperity in the green economy. It drives scientific evidence-driven ventures that contribute to youth empowerment, gender equity, environmental sustainability, and the 4th Industrial Revolution, within the National Development Plan (NDP), through consultative, sustainable energy projects.

Enquiries: www.sanedi.org.za



DEHN PROTECTS.

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AND LIGHTNING PROTECTION**

RS Components to exhibit at Africa's largest industrial expo

The country's largest trade show is set to make its return after a four-year hiatus due to the global pandemic.

Electra Mining Africa will call NASREC home from 5-9 September 2022 and is expected to host over 650 exhibitors who are ready to showcase their latest innovations, technology, products, and services at the event. RS Components South Africa will be among the exhibitors and is expected to showcase the company's latest additions in industrial products, electronic components, and value-added solutions.

Mellisa Govender, Marketing Director for RS said that the company was excited to be back after four years to re-engage with customers and suppliers. "So much has happened over the past 24 months and businesses have had to evolve and innovate to keep up with changes in their sectors. Electra Mining provides a unique platform for suppliers and customers to reconnect and collaborate about how to solve current and future challenges. At this year's event, we will be showcasing a number of products from trusted global brands including our very own private label, RS PRO. The range includes NSF approved food-grade cleaners, sensors, automation and control equipment and hand tools for everyday tasks, she said."

Charlene Hefer, Portfolio Director at Specialised Exhibitions, has confirmed that the Southern African Institute of Mining and Metallurgy (SAIMM), Society for Automation Instrumentation Mechatronics and Control (SAIMC), South African Capital Equipment Export Council (SACEEC), Mining Equipment Manufacturers of South Africa (MEMSA), South African Mineral Processing Equipment Cluster (SAMPEC), the SA Institution of Mechanical Engineering (SAIMechE), Women in Mining South Africa (WIMSA) and LEEASA are on board as partners. "There's a lot that visitors can expect at this year's Electra Mining Africa. As a 5-in-1 trade show, it covers everything from mining, electrical and automation to manufacturing, power, and transport. So, there's a lot to see for everyone in those fields.

The Halls are broadly categorised across these sectors whilst the vast outdoor exhibit area generally lends itself to pump and valve exhibits and water activations and those activations with moving parts, like materials handling.



We have colour coded the outside areas to enable easier navigation for visitors," said Hefer.

Electra Mining Africa and co-located shows Elenex Africa, Powerex, Transport Expo and Automation Expo will be supported by a programme of content-rich conferences including SAIMC, WiMSA Women in Mining Workshop and LEEASA Lifting Equipment Conference and SAIMechE free-to-attend seminars. Industry experts will be speaking on a range of topical and important issues. The seminars will be live streamed to enable a wider audience to participate in the learning experience. The 'every day a theme day' experience will again be part of this year's event with Automation Day, Innovation Day, Safety Day, Future Skills Day, and South African Day confirmed.

Electra Mining Africa is a much-needed platform for buyers and sellers to connect face-to-face again. It presents an opportunity for industry networking to take place, to build business partnerships and new connections, and for new products and services to be launched.

Enquiries: www.rsgroup.com

IP67 power supplies with IO-Link for field installation

Turck Banner is adding compact power supply units with protection to IP67 to its portfolio of flexible power supply units for 1- and 3-phase applications in modular machine building.

The robust PSU67 power supply units operate in temperatures from -25°C to +70°C and can be installed directly at the machine without any protective measures required. This makes it possible to dispense with switch cabinets or switch boxes completely. The power supplies are available in 15 A, 20 A or 25 A variants and can be supplied with M12, 7/8" or HAN-Q4 terminals.

The decentralised units supply 24 to 28 V dc directly in the field without any loss and offer high fail-safety thanks to their electronic no-load, overload and short circuit protection. Efficiency of over 95% ensures an optimum energy balance. The output voltage can be configured directly on the device via an LED interface or remotely via IO-Link.

The smart IO-Link interface makes it possible to communicate with the power supply units and provides the data transparency needed for Industry 4.0 applications such as predictive maintenance or condition monitoring. The end-to-end transmission of process, consumption, event and diagnostic data right through to the cloud enables continuous monitoring and optimisation to take place in the background. The captured data ensures increased system availability and helps to improve the energy efficiency of the application.

Enquiries: sales@turckbanner.co.za

A new look for popular switches and sockets range

In keeping in line with the growth of Consolidated Electrical Distributor (CED) – as detailed in the Sparks Electrical News cover story in our August 2022 issue – the company, which has been known for successfully distributing low-voltage switchgear and motor control for over a decade, has diversified its portfolio and now offers clients a basket of goods in the LV sector.

Its popular switches and socket brand, Horizon, has been a favourite in the South African market for over 12 years, and is recognised for its economic pricing and consistent quality. "Traditionally, the Horizon brand has been known for its logo which features the sun rising from behind the earth," explains CED general manager, Richard Egenrieder. "What we are now aiming to do at CED is bring Horizon up-to-date and

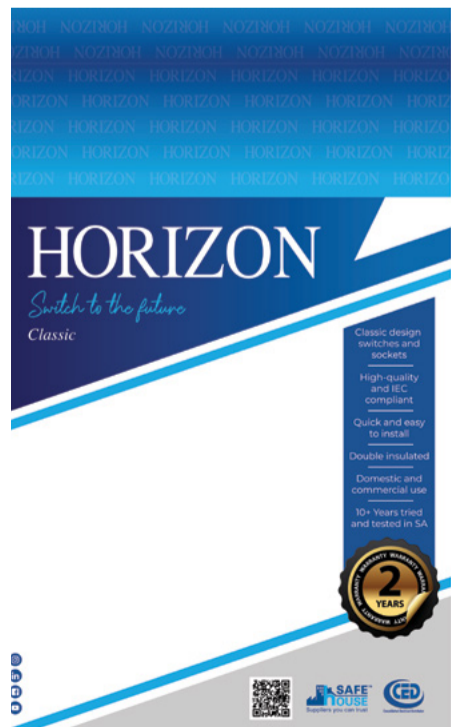
modernise both the brand and the range." As such, a more easily identifiable logo for the company's distributors, wholesalers and retailers – as well as end-users – has been created. Part of this process, which now incorporates the word Horizon in white lettering on a blue background, is the launch of new product packaging. "Again, the packaging features an updated look and feel which will rank better with the end-user," he says.

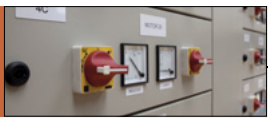
An exciting aspect is that with the revamp of the brand, the company is also extending the Horizon range to appeal to more modern households, yet still at the economic pricing which CED clients have come to expect. "More will be revealed in the first few weeks of September; however, we are quite sure that the new range will create a stir in the market in terms of the quality, look and feel of the product. Keep an eye out on social media to find out more," says Egenrieder.

What we can reveal, however, is that there are going to be two variations of the Horizon sockets and switches; Classic, which is the range everyone is already accustomed to; and the new range, Modern, which is more upmarket, for instance, for the high-end residential market, commercial, hospitality and the like, but still with the same simple look and feel and reliable components. Both ranges will be available in white, silver and black. "During the process of conceiving the new range, we had many discussions with clients and electrical contractors, so the brand has been designed and manufactured with their requirements and suggestions in mind," Egenrieder notes.

CED would like to emphasise that it is heavily invested in the Horizon brand; it has seen fantastic growth over the last few years, and the company has ensured that the stock holding complements the demand it foresees for the brand. As with all the products which CED distributes, the range has been certified and conforms to all local standards and requirements.

Enquiries: +27 (0)11 314 8869





MANUFACTURERS

ABB South Africa
 Brother International SA
 C3 Technologies
 Circuit Breaker Industries: Low voltage
 Crabtree South Africa
 DEHN Africa
 Denver Technical Products
 Distribution Boards SA
 EuroLux
 Hamar Controls
 HellermannTyton
 JB Switchgear Solutions
 Legrand SA
 Magnitech
 Marechal Electric Africa
 NewElec
 NewElec Pretoria
 O-Line
 Phoenix Contact
 Power Panels and Electrical
 Radiant Lighting
 Sabelco
 Shuttle Lighting Control Systems
 Siemens
 Superlume
 Surge Technology
 Switchboard Manufacturers
 Switch Boards Unlimited
 The Switch Shop
 Telbit
 WEG
 World Power Products

DISTRIBUTORS

ACDC Dynamics
 ACTOM Electrical Products
 ARB Electrical Wholesalers
 Altron Arrow
 Atlas Group
 C3 Technologies
 CED – Consolidated Electrical Distributor
 Comtest
 Denver Technical Products
 DEHN Africa
 Elen Electrical Enclosures
 ExSolar Solutions
 EuroLux
 Fusecomp
 HellermannTyton
 Inher SA
 Khanyisa Electrical Supplies
 Magnet Electrical Suppliers
 Magnitech
 Major Tech
 MCE Electric
 NewElec Pretoria
 Nordland Lighting
 Phambili
 R&C Instrumentation
 Riken Electric
 Rubicon
 SIBA Fuses
 Stone Stamcor
 Superlume
 Surge Technology
 Swan Electric
 Switchboard Manufacturers
 The Switch Shop
 Voltex
 Voltex LSis
 Voltex MVLV
 Vossloh-Schwabe
 Waco Industrial Electrical Distributor
 Webb Industries
 Zest WEG

CONTACTS

ABB South Africa
 Customer contact centre
 ACDC Dynamics
 Elmani Erasmus/Dirk Klynsmith
 ACTOM Electrical Products
 Russel Ramsden
 Altron Arrow
 Jeva Narian
 ARB Electrical Wholesalers
 Sales
 Atlas Group
 Annie Storar
 Brother International SA
 Munna Desai
 C3 Technologies
 Charles du Plessis
 CED – Consolidated Electrical Distributor
 Richard Egenieder
 Circuit Breaker Industries: Low voltage
 Aletta Olivier
 Comtest
 Leanne Cole
 Crabtree South Africa
 Sales
 Denver Technical Products
 Mervyn Stocks
 DEHN Africa
 Florian Voegerl
 Elen Electrical Enclosures
 Andy Kapral
 EuroLux
 Patrick Stuckie
 ExSolar Solutions
 Natasha van der Merwe
 Fusecomp
 Charmaine
 Hamar Controls
 Corné de Villiers
 HellermannTyton
 Ingrid Nicolaus
 Inher SA
 Johan van Staden
 JB Switchgear Solutions
 Johan Basson
 Khanyisa Electrical Supplies
 Dominic Kalil
 Legrand SA
 Johan Bosch
 Magnet Electrical Suppliers
 Kevin Govender
 Magnitech
 Mark Vigus-Brown
 Major Tech
 Werner Grobbelaar
 Marechal Electric Africa
 Sales
 MCE Electric
 Sales
 NewElec
 Nicolene Turnbull
 NewElec Pretoria
 Stuart Loudon
 Nordland Lighting
 Johann Lamprecht
 O-line
 Sales
 Phambili
 Steve Lea
 Phoenix Contact
 Carl Coetzer
 Power Panels and Electrical
 Andy van der Merwe
 R&C Instrumentation
 Gerhard Otto

CONTACTS

Radiant Lighting
 Alfred Weldon
 Riken Electric
 Franza
 Rubicon
 Joel Pretorius
 Sabelco
 Marc Moreau
 Shuttle Lighting Control Systems
 Tracey Steyn
 SIBA Fuses
 H.I. Hassen
 Siemens
 Yullen Govender
 Stone Stamcor
 Louis Pelsler
 Superlume
 Willie Garbers
 Surge Technology
 Paul van As
 Swan Electric
 Franza van den Heever
 Switchboard Manufacturers
 Josh Berman
 Switch Boards Unlimited
 Zienet Mahomed
 The Switch Shop
 Michael or Brandon
 Telbit
 Martin Hogan
 Voltex
 Hugh Ward
 Voltex LSis
 Rose Schulz
 Voltex MVLV
 Sales
 Waco Industrial Electrical Distributor
 Ravinash Naidoo
 Webb Industries
 Jacqui Brookes
 World Power Products
 Chris du Preez/Jan Gortzen
 Zest WEG
 Switchgear call centre
 Vossloh-Schwabe
 Barry Harrison

CIRCUIT BREAKERS / EARTH LEAKAGE BREAKERS

ABB South Africa
 Full range of circuit breakers, earth leakage breakers
 ACDC Dynamics
 Full range of switchgear from 13 mm MCBs to MCCBs and ACBs; MCCBs rated from 20 A to 1 600 A; complementary isolator and earth leakage ranges also available
 ACTOM Electrical Products
 Full range of circuit breakers/earth leakage breakers
 ARB Electrical Wholesalers
 Full range of circuit breakers/earth leakage breakers
 Atlas Group
 Full range of circuit breakers/earth leakage breakers
 CED – Consolidated Electrical Distributor
 TosunLux, ABB and Chint
 Circuit Breaker Industries: Low voltage
 Full range of commercial/industrial, miniature circuit breakers; moulded case circuit breakers; earth leakage protection devices
 Distribution Boards SA
 We offer a full range of Circuit Breakers and Earth Leakage units
 EuroLux
 Full range of circuit breakers and earth leakage devices, single and three phase
 Fusecomp
 Full range of circuit breakers and earth leakage breakers
 Inher SA
 P&B Protection Relays
 Khanyisa Electrical Supplies
 Full range of circuit breakers and earth leakage breakers
 Legrand SA
 Complete range of circuit breakers up to 6 300 A, MCB, MCCB and ACB
 Magnet Electrical Suppliers
 Schneider and Eaton circuit breaks and earth leakage breakers
 Major Tech
 Full range of miniature circuit breakers, isolator switches, earth leakage breakers and populated boards
 MCE Electric
 Onesto DIN rail circuit breakers and earth leakage devices; Schenker mini rail circuit breakers and earth leakage devices; Schenker 13 mm mini rail circuit breakers and earth leakage devices; Onesto dc circuit breakers
 O-Line
 Full range of circuit breakers and earth leakage breakers
 Phoenix Contact
 Range of circuit breakers
 Riken Electric
 Full range of circuit breakers/earth leakage breakers
 Rubicon
 Schneider Electric and Siemens Switchgear
 Siemens
 Full range of circuit breakers
 Swan Electric
 Full range of circuit breakers
 Switchboard Manufacturers
 Full range of circuit breakers/earth leakage breakers
 Voltex
 Full range of circuit breakers, earth leakage breakers
 Voltex LSis
 Full range of circuit breakers, earth leakage breakers
 Waco Industrial Electrical Distributor
 Full range of circuit breakers, earth leakage breakers
 Zest WEG
 Comprehensive range of miniature circuit breakers, moulded case circuit breakers, air circuit breakers and earth leakage devices

PROTECTION

ABB South Africa
 Full range of protection devices
 ACDC Dynamics
 Full range of motor protection circuit breakers (MPCBs) from 32 A to 110 A frame high break capacity; all accessories and auxiliary contacts available including the Gewiss IEC309 HP range of connectors
 ACTOM Electrical Products
 Full range of protection devices
 ARB Electrical Wholesalers
 Full range of protection devices
 Atlas Group
 Full range of protection devices
 CED – Consolidated Electrical Distributor
 TosunLux, ABB and Chint
 DEHN Africa
 Full range of protection devices
 ExSolar Solutions
 Victron BatteryProtect
 Fusecomp
 Range of protection devices
 HellermannTyton
 Spiral binding; Protective sleeves; PVC Tubing; Convoluted Tubing
 Khanyisa Electrical Supplies
 Complete range of protection devices
 Legrand SA
 Full range of protection devices
 Magnet Electrical Suppliers
 Schneider and Eaton protection devices
 NewElec
 Motor Protection and Control relays, designed and Built in South Africa, for 3 Phase Induction Motors; LV feeder Protection control and power Quality monitor/protection; 3 phase Voltage and harmonic monitoring relay
 NewElec Pretoria
 Motor Protection and Control relays for 3 Phase Induction Motors O-Line
 Full range of protection devices
 Riken Electric
 Full range of protection devices
 Rubicon
 Citel

PROTECTION

Siemens
 Full range of protection devices
 Swan Electric
 Full range of protection devices
 Voltex
 Full range of protection devices
 Waco Industrial Electrical Distributor
 Full range of protection devices
 Zest WEG
 Full range of thermal and thermal/magnetic overload devices; electronic overload protection

DISTRIBUTION BOARDS

ABB South Africa
 Full range of DBs
 ACDC Dynamics
 Wide range of DBs in various materials; economy plastic to steel; pre-wired and open boxes; surface and flush mount boxes available in most ranges; watertight enclosures
 ACTOM Electrical Products
 Full range of DBs
 ARB Electrical Wholesalers
 Full range of DBs
 Atlas Group
 Full range of DBs
 C3 Technologies
 Manufacturers of LV distribution boards and all associated products; Circuit Breaker Industries: Low voltage 12- and 20-way distribution boards
 CED – Consolidated Electrical Distributor
 TosunLux, ABB and Chint
 Distribution Boards SA
 We design, manufacture and supply a full range of Distribution Boards and Motor Control Panels
 Elen Electrical Enclosures
 Surface-mount distribution boards
 EuroLux
 Full range of distribution boards
 ExSolar Solutions
 Victron Energy's DC distribution systems
 Hamar Controls
 Manufacturers of Low Voltage Distribution Boards and Motor Control Centres to Customer Specifications and Requirements
 HellermannTyton
 Din rail, Pre-insulated terminals; HTB lugs and HTB Pin terminal
 JB Switchgear Solutions
 Full range of distribution boards and distribution board enclosures
 Khanyisa Electrical Supplies
 Full range of DBs
 Legrand SA
 Full range of flush- and surface-mount, waterproof, DIN rail boards
 Magnet Electrical Suppliers
 Schneider DBs
 Major Tech
 Full range of distribution boards
 MCE Electric
 Onesto ready boards with or without bulkhead; Schenker ready boards with or without bulkhead; Onesto swimming pool distribution board; Onesto caravan distribution board; MCE multi-purpose distribution board
 Power Panels and Electrical
 Wide range of distribution boards
 Riken Electric
 Full range of distribution boards
 Rubicon
 IDE and Rittal
 Sabelco
 Sabelco wall enclosures and floor enclosures; Sabelco-Cubic modular assemblies fully in compliance with SABS 1973-1, SABS 1973-3 and IEC 61439 standards, fixed and withdrawable from 630 to 8000 amps in MS, 3Cr12 and SS
 Siemens
 Full range of distribution boards
 Swan Electric
 Full range of distribution boards
 Switchboard Manufacturers
 Full range of DBs and weather proof kiosks
 Switch Boards Unlimited
 Full range of distribution boards
 The Switch Shop
 Full range of distribution boards
 Voltex
 Full range of DBs
 Voltex LSis
 Full range of DBs
 Voltex MVLV
 Full range of DBs
 Waco Industrial Electrical Distributor
 Full range of DBs
 World Power Products
 Full range of distribution boards; enclosures and floor standing cabinets (TTA/MCC)
 Zest WEG
 Full range of indoor and outdoor distribution boards, custom made to client specification

LABELLING

ARB Electrical Wholesalers
 Full range of labelling products
 Atlas Group
 Full range of labelling products
 Brother International SA
 Full range of labelling products
 CED – Consolidated Electrical Distributor
 TosunLux
 HellermannTyton
 Printer as well recommended tape; HTZ, tape- black, black/white, black/yellow; Panel Plate labels – Thermal transfer (Helatag 1221 – Silver and Helatag 1220 – White)
 Khanyisa Electrical Supplies
 Full range of labelling products
 Legrand SA
 CAB3 and Memocab cable markers
 Magnet Electrical Suppliers
 Brady labelling products
 Phambili
 Full range of labelling products
 Phoenix Contact
 Range of marking materials and printers
 Rubicon
 Weidmuller
 Swan Electric
 Full range of labelling products
 Voltex
 Full range of labelling products

FUSES

ABB South Africa
 Full range of fuses
 ACDC Dynamics
 BS and DIN type fuses for fused isolators
 ACTOM Electrical Products
 Full range of fuses
 ARB Electrical Wholesalers
 Full range of fuses
 CED – Consolidated Electrical Distributor
 TosunLux, and ABB
 ExSolar Solutions
 Victron fuses Midi and Mega including holders
 Fusecomp
 Full range of fuses
 Khanyisa Electrical Supplies
 Full range of fuses
 Legrand SA
 HRC, domestic and industrial fuses
 Magnet Electrical Suppliers
 Full range of fuses
 MCE Electric
 MCE fuses and fuse holders; Onesto fuses and fuse holders; Onesto dc fuses and fuse holders
 Phoenix Contact
 Full range of fuses
 SIBA Fuses
 Complete range of fuses for all applications

FUSES

Riken Electric
 Full range of fuses
 Rubicon
 Bussman Fuses
 Siemens
 Full range of fuses
 Swan Electric
 Full range of fuses
 Voltex
 Full range of fuses
 Zest WEG
 High speed fuses ranging from 20-1000 A; fuse holders

SWITCHES/ISOLATORS

ABB South Africa
 Full range of switches and isolators
 ACDC Dynamics
 Wide variety of switches and isolators
 ACTOM Electrical Products
 Full range of switches/isolators
 ARB Electrical Wholesalers
 Full range of switches/isolators
 Atlas Group
 Full range of switches/isolators
 Circuit Breaker Industries: Low voltage
 Full range of commercial and industrial switch disconnectors
 CED – Consolidated Electrical Distributor
 TosunLux, ABB and Chint
 Crabtree South Africa
 Full range of switches/isolators
 Distribution Boards SA
 We offer a full range of switches and Isolators
 EuroLux
 Limited range of switches/isolators
 ExSolar Solutions
 Victron Battery Switch & Transfer Switches; Victron Battery Isolators & Combiners
 Fusecomp
 Full range of switches/isolators
 Khanyisa Electrical Supplies
 Range of switches/isolators
 Legrand SA
 Domestic, commercial and industrial switches and isolators
 Magnet Electrical Suppliers
 Full range of Schneider and Eaton switches and isolators
 Major Tech
 VETI complete switches in modular and assembled; VETI complete isolator range; VETI IS isolator series (one-pole to four-pole)
 Marechal Electric Africa
 5A-700A 1000V (Decontactor, Industrial plugs and socket outlets, multi contact connectors)
 MCE Electric
 Onesto din rail isolators; Schenker mini rail isolators; Onesto dc isolators; MCE surface mount (IP66 and IP65) and base mount isolators
 Phoenix Contact
 Full range of switches and isolators
 Riken Electric
 Full range of switches and isolators
 Rubicon
 Teleron isolators and switches
 Shuttle Lighting
 LED dimmers
 Siemens
 Full range of switches and isolators
 Stone Stamcor
 Chilly toggle switches; Triton float switches
 Superlume
 New range of Smart Home WiFi switches
 Swan Electric
 Range of switches and isolators
 Switchboard Manufacturers
 Full range of switches/isolators
 The Switch Shop
 Full range of switches/isolators
 Voltex
 Full range of switches and isolators
 Waco Industrial Electrical Distributor
 Full range of switches and isolators
 Zest WEG
 Comprehensive range of miniature and moulded case isolators ranging from 40-1600 A

CONTACTORS

ABB South Africa
 Full range of contactors
 ACDC Dynamics
 Wide variety of contactors
 ACTOM Electrical Products
 Full range of contactors
 ARB Electrical Wholesalers
 Full range of contactors
 Atlas Group
 Full range of contactors
 CED – Consolidated Electrical Distributor
 TosunLux, ABB and Chint
 Circuit Breaker Industries: Low voltage
 Full range of magnetic contactors and thermal overload relays
 Denver Technical Products
 GIGAVAC dc contactors up to 1 000 A 1 000 V
 Distribution Boards SA
 We offer a full range of Contactors
 Fusecomp
 Full range of contactors
 Khanyisa Electrical Supplies
 Full range of contactors
 Legrand SA
 Contactors up to 800 A
 Magnet Electrical Suppliers
 Schneider and Eaton contactors
 MCE Electric
 MCE ac magnetic contactors in 3- and 4-pole; MCE contactor accessories; S&C ac magnetic contactors in 3- and 4-pole; S&C contactor accessories
 Phoenix Contact
 Solid state contactors
 Riken Electric
 Full range of contactors
 Rubicon
 Schneider Electric
 Siemens
 Full range of contactors
 Swan Electric
 Full range of contactors
 Switchboard Manufacturers
 Full range of contactors
 Voltex
 Full range of contactors
 Voltex LSis
 Full range of contactors
 Zest WEG
 Complete range of contactors from 7-800 A, suitable for AC1 or AC3 use

SURGE PROTECTION DEVICES

ABB South Africa
 Full range of surge protection devices
 ACDC Dynamics
 Wide variety of surge protection devices
 ACTOM Electrical Products
 Full range of surge protection devices
 Altron Arrow
 Full range of surge protection devices
 ARB Electrical Wholesalers
 Full range of surge protection devices
 Atlas Group
 Full range of surge protection devices
 CED – Consolidated Electrical Distributor
 TosunLux, ABB and Chint
 Circuit Breaker Industries: Low voltage
 Clip-in dual mount surge protection devices
 DEHN Africa
 DEHNGuard ACI Technology series; DEHNGuard 952 310; DEHNGuard 952 110; DEHNGuard 952 070; DEHNGuard 952 030; DEHNventil 951 310;



SURGE PROTECTION DEVICES

DEHNventil 951 110; DEHNshield 941 310; DENHshield 941 310; DEHNguard CI 952 322; DEHNguard CI 952 327; DEHNven CI 961 200; DEHNgap Maxi 961 180; DEHNcord 900 430

Distribution Boards SA
We offer a full range of Surge protection devices

Fusecomp
Full range of protection devices

HellermannTyton
Surge plugs: TSPIA and TSPIAF - High surge handling capabilities

Khanyisa Electrical Supplies
Full range of protection devices

Legrand SA
Full range of surge protection devices

Magnet Electrical Suppliers
Schneider and Phoenix Contact surge protection devices

Magnitech
Full range of surge protection devices

Major Tech
MTD6 - appliance surge protector

MCE Electric
Onesto surge arresters; Schenker surge arresters; Onesto dc surge arresters

O-Line
Full range of surge protection devices

Phoenix Contact
Broad range of surge protection devices

Riken Electric
Full range of surge protection devices

Rubicon
Citel

Siemens
Full range of LED surge protection units

Surge Technology
DEHN, Saltek, Copa, Tridelta

Swan Electric
Range of surge protection devices

Switchboard Manufacturers
Range of protection devices

Telbit
Full range of surge protection devices

Voltex
Full range of surge protection devices

Voltex LSis
Full range of surge protection devices

Vossloh-Schwabe
Full range of surge protection devices

Waco Industrial Electrical Distributor
Full range of surge protection devices

Webb Industries
Universal surge and lightning protection solutions

Zest WEG
Fanox surge arrester Class C Type II

TIMERS

ACDC Dynamics
Wide variety of timers including the Rhomberg range of timers

ACTOM Electrical Products
Full range of timers

ARB Electrical Wholesalers
Full range of timers

Atlas Group
Range of timers

CED - Consolidated Electrical Distributor
TosunLux and ABB

Circuit Breaker Industries: Low voltage
Standard electronic time switch with 24-hour reserve

EuroLux
Limited range of timers

HellermannTyton
TWST2 - WIFI timer (lightening); TWST2 - WIFI and Energy meter (monitoring); TDDGT - 7-Day geyser Timer; TDDT7 - 7 Day digital timer; TDT7 - Digital 3-Pin socket; TMT2 - 24-Hour mechanical 3-pin socket; TEMS100 - Energy meter

Khanyisa Electrical Supplies
Range of timers

Legrand SA
Complete range of analogue and digital timers

Magnet Electrical Suppliers
Schneider and Eaton timers

Major Tech
Complete range of analogue and digital timers

MCE Electric
MCE analogue and digital time switches; MCE seven day digital geyser time switch; Schenker mini rail seven day digital time switch

O-Line
Full range of timers

Phoenix Contact
Din rail mounted timers

Radiant Lighting
Broad range of timers

Riken Electric
Full range of timers

Rubicon
GIC

Siemens
Full range of timers

Stone-Stamcor
SAIA-Burgess timers

Superlume
Smart switches with built in timer settings

Swan Electric
Range of timers

Switchboard Manufacturers
Range of timers

Voltex
Full range of timers

Waco Industrial Electrical Distributor
Complete range of timers

Zest WEG
Electronic relays; RTW range timing; RPW range monitoring; RNW range level control

METERS

ACDC Dynamics
Digital panel meters and digital process meters

ACTOM Electrical Products
Wide range of meters

ARB Electrical Wholesalers
Wide range of meters

Atlas Group
Range of meters

CED - Consolidated Electrical Distributor
ABB

Circuit Breaker Industries: Low voltage
Rail mount meters

Comtest
The full range of Fluke, Multimeters, Clamp Meters, Thermal Cameras, Installation testers and Insulation testers

Distribution Boards SA
We offer a full range of Metering Devices

ExSolar Solutions
Victron Energy Meters ET112, ET340 & EM24 The ET112 (for single phase max. 100A) and the ET340 (for three phase max. 65A)

HellermannTyton
TBM Series of multimeters and clamp meters to suit every application

Khanyisa Electrical Supplies
Wide range of meters

Legrand SA
Electrical energy and multifunction metering

Magnet Electrical Suppliers
Schneider and Power Star meters

Major Tech
Full range of professional test instruments and DIY meters

MCE Electric
MCE ammeters and voltmeters

Phoenix Contact
Energy meters

Riken Electric
Full range of meters

Rubicon
GIC

Siemens
Full range of meters

METERS

Swan Electric
Range of meters

Switchboard Manufacturers
Full range of meters

Voltex
Voltex range of LSis panel meters

Waco Industrial Electrical Distributor
Full range of meters

Zest WEG
Electronic range of power factor meters and power meters

DB BOARD ENCLOSURES

ABB South Africa
Full range of DB enclosures

ACDC Dynamics
Wide range of DB enclosures in all colours, materials and sizes

ACTOM Electrical Products
Full range of DB enclosures

ARB Electrical Wholesalers
Full range of DB enclosures

Atlas Group
Full range of DB enclosures

C3 Technologies
Manufacturers of LV distribution boards and all associated products

CED - Consolidated Electrical Distributor
TosunLux and ABB

Circuit Breaker Industries: Low voltage
Flush mounted distribution boards

Distribution Boards SA
We supply empty enclosures as well as populated Distribution Panels

Elen Electrical Enclosures
Surface-mount distribution boards

EuroLux
Limited range of distribution boards enclosures

Hamar Controls
Manufacturers of Low Voltage Distribution Boards and Motor Control Centres to Customer Specifications and Requirements

JB Switchgear Solutions
Full range of distribution board enclosures

Khanyisa Electrical Supplies
Full range of distribution board enclosures

Legrand SA
Full range of flush- and surface-mount, IP rated and waterproof, DIN rail boards

Magnet Electrical Suppliers
Rittal and Allbro DB enclosures

Major Tech
Full range of IP65 and IP55 enclosures

Marechal Electric Africa
GRP surface mounted distribution boxes, portable power distribution

MCE Electric
Onesto - full range of mild steel enclosures; MCE - full range of plastic and mild steel enclosures

Power Panels and Electrical
Broad range of distribution board enclosures

R&C Instrumentation
Infrared inspection windows

Riken Electric
Full range of DB enclosures

Rubicon
IDE and Rittal

Sabelco
Sabelco wall enclosures and floor enclosures in MS, 3Cr12 and SS; Sabelco-Cubic modular assemblies fully in compliance with SABS 1973-1, SABS 1973-3 and IEC 61439 standards, fixed and withdrawable from 630 to 8000 amps in MS, 3Cr12 and SS

Siemens
Full range of distribution board enclosures

Swan Electric
Full range of distribution board enclosures

Switchboard Manufacturers
Full range of DB enclosures

Switch Boards Unlimited
Full range of DB enclosures

The Switch Shop
Full range of DB enclosures

Voltex
Full range of DB enclosures

Voltex LSis
Full range of DB enclosures and custom panels

Waco
Full range of DB enclosures

World Power Products
MCC: floor standing, 19" racks; kiosks

Zest WEG
Full range of indoor and outdoor distribution boards and DB enclosures, custom built to client specification

HAZARDOUS AREAS

ACDC Dynamics
Full range of products for hazardous areas

ARB Electrical Wholesalers
Full range of products for hazardous areas

Atlas Group
Full range of products for hazardous areas

Comtest
Full range of Fluke IS Digital Meters

Elen Electrical Enclosures
Junction boxes Eex'e zone 1, 2, 21, 22

EuroLux
Limited range of products for hazardous areas

HellermannTyton
Multimeter - TBM812XEX and TBM811XEX, intrinsically safe

Khanyisa Electrical Supplies
Full range of products for hazardous areas

Legrand SA
Full range of flush and surface mount, waterproof DIN rail boards

Magnet Electrical Suppliers
ATX products for hazardous areas

Magnitech
Full range of products for hazardous areas

Marechal Electric Africa
EX industrial plugs & socket outlets, fluorescent and LED lighting, control station boxes, junction boxes, flameproof enclosures

NewElec
Pilot wire ground loop detection, Smart pilot

Nordland Lighting
Lighting for hazardous areas

R&C Instrumentation
IS Rated IR Thermometers, IS Rated Vibration Sensors, IS Rated Laser Distance Meter

Siemens
Full range of products for hazardous areas

Superlume
A range of hazardous area lighting

Voltex
Complete range of products for hazardous areas

Voltex LSis
Full range of products for hazardous areas

Zest WEG
Variable speed drives and motor combination certification for hazardous areas



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A century of circuit breakers – where to now?

By Kevin Flack

It is around 100 years since the first patents were filed for the humble circuit breaker concept by Westinghouse in the USA. This was followed soon after by Heinemann Electric – both companies were sited in the USA at the time. Westinghouse filed for the TM, thermal magnetic principle, and Heinemann somewhat later for the HM, hydraulic magnetic principle.

These companies, and others after the patents lapsed, produced valuable protection equipment from the early days of electrification. The circuit breaker held some advantages over the only other technology of the time, the mighty fuse.

They addressed this need for decades with the only really changes being the modernisation of their ranges as the industrial landscape changed as machinery and, especially, as plastic development occurred.

In South Africa these devices were eventually made locally by Fuchs Electrical Industries and Murray Manufacturing, later to become Heinemann Electric. Both product lines featured a front sizing of 57 mm long and 25.4 mm wide, the sizing based on the US non-metric system. In fact, the mounting of the Fuchs product used the exact US system and the Heinemann a virtual copy although substantially bigger in line with their longer products.

The standardised European DIN rail, smaller profile (metricated) arrived on the market around the mid-1960s. These are readily identified by the light grey colour versus the older black standard.

The major difference between these two local players would again be the technology employed, although the bimetal principles did have some problems at low amp levels so many TM manufacturers did dabble in HM technology from time to time.

The main challenges over time were the development of distribution products to cope with the dramatic increase society placed during worldwide growth. Special types were developed for use in equipment when needed, and some of the manufacturers specialised in these products exclusively.

This existed for a long time before there was some development into electronic technology. In fact, when the tube was invented, this was not applied as costing and sizes were not supported. The earth leakage breaker was also introduced once electronics became available; this being one of the circuit breaker milestones to date.

The rapid growth in the electronic circuit breaker has been most dominant in the MCCB front as the cost impact was more easily absorbed. There are many options offered with electronic designs – much the same as with cell phones – with a host of additional features far beyond the original scope of design.

The electronic design can offer an accuracy never imagined in these early patents. They are able to add to the basic curves options such as, phase fail, phase loss, over/under voltage/current, communication outputs, remote controls, and maybe many more. Limitations are defined only by market demand and size of your purse!

The future?

I am sure there are many meetings held in boardrooms around the planet where the dusty old crystal ball is consulted in the way forward for circuit breaker manufacturers. As surely as technology has impacted all our lives, it must eventually reach the electrical industry too?

There have been patents already filed that make use of semiconductor materials to switch current ON/OFF. This is so close to the electronics and controls of today as to drive a shiver through many a board member.

The major current problem with this new technology are the rather large short circuit currents that require controlling. The energy levels are massive by comparison with the power consumed. All three of the older technologies employ rather similar and quite simple mechanical ways to do this. This is somewhat independent to the inverse tripping techniques in any event. Whether this new-fangled system will simply follow on remains to be seen.

Voltages are also an issue to some extent, but are probably far easier to overcome. Of note here is that quite a large portion of the electrical load actually occurs at some low level, e.g., 12 V and, more lately, 5 V. Major electronic use demands dc as well! One can already see that the humble wall socket is already able to provide the 5 V dc for local connection as an inbuilt USB socket.

Just as there was confusion in the early years which



would survive – ac or dc – and the famous Beta/VHS saga, society stands again at the electrical crossroads.

There is no doubt that there are going to be major changes in the coming years, especially on the domestic side where smarter controls can be easier deployed. Maybe these domestic panel boards will be multi-voltage controlled with smart-type control, all-in-an-instant comms with the all powerful cell phone of the future? There are Wi-Fi/cell phone controlled MCBs entering the domestic market, and even on the local front there is much activity in this direction.

I certainly do not have a full insight into what the humble circuit breaker will evolve into in the next 50-100 years, but they will be significantly different to the units of today, which means interesting times for our grandchildren!

Higher performance with new SACE Tmax XT

Higher performances, protection, metering, and connectivity features up to 1600A are features of the newly launched SACE Tmax XT, which extends ABB's range of moulded case circuit breakers (MCCBs). The MCCB range has been designed for maximum ease of use, integration, and connectivity, and is built to deliver safety, reliability, and quality. The range offers thermomagnetic, electronic, and Display/Touch trip unit technology.

Installation has been simplified to increase user-friendliness, frames have been streamlined to save space, and improved connectivity such as Bluetooth and Ekip Connect all save considerable time. Another additional benefit is the reliable cloud connectivity and overall increase in information available, meaning diagnostics and maintenance are vastly improved to reduce downtime.

"Our entire selection and ordering process has been overhauled to make it far easier for customers to procure the parts they need, speeding things up by about 30%," says Veron Maharaj, Product Marketing Specialist, Low Voltage Circuit Breakers at ABB.

Tmax XT replaces ABB's current range of MCCBs (Tmax T). This product line provides electrical protection capabilities for currents up to 1600 A, 690 VAC. It complements the complete Low Voltage (LV) circuit breaker range from ABB, namely its Air Circuit Breakers (ACBs), which covers current rating from 6300 A down to 1600 A, 690 V AC, thereafter supported by the Tmax XT MCCB range.

Industry-leading electrical and mechanical characteristics were incorporated into the design of the new Tmax XT range. The shift to digitisation and IoT has also influenced major changes in terms of connectivity. The ABB MCCB range now supports main industrial communications protocols such as Modbus, Profibus, and DeviceNet™, as well as Modbus TCP, Profinet, EtherNet/IP and IEC61850.

Combined with the world's most precise electronic trip units in the smallest frames, the new range protects plant investments and ensures continuity of service. With the new Tmax XT series, ABB continues to evolve its offering, building on the success of the innovative Emax 2, the industry's first smart air circuit breaker. SACE Tmax XT sets new standards for plant and energy management. The XT family's built-in connectivity links smartphones, tablets, and PCs to data analysis tools on the ABB Ability™ cloud platform in real-time.

ABB is a leading global technology company that energizes the transformation of society and industry to achieve a more productive, sustainable future. By connecting software to its electrification, robotics, automation and motion portfolio, ABB pushes the boundaries of technology to drive performance to new levels. With a history of excellence stretching back more than 130 years, ABB's success is driven by about 105 000 talented employees in over 100 countries.

Enquiries: www.abb.com



The benefits of investing in whole house surge protection

By George Senzere, Solutions Architect: Secure Power at Schneider Electric



George Senzere, Solutions Architect: Secure Power at Schneider Electric

When comparing whole house surge protectors to traditional surge protectors, many people think of massive lightning strikes. However, this is an extreme example and our homes, particularly with a volatile grid, experience many smaller surges throughout the year.

The problem is over time – these mini surges can damage or destroy expensive electronics and appliances. For example, one day, your two-year-old refrigerator may just stop working. A costly replacement exercise and maybe the first of many appliances teetering on failure due to surge damage.

Fortunately, there are two time-tested options that provide a safe solution:

Power strip surge protector: This device resembles a power strip and protects all the electronics plugged into it. You often find surge protectors in home offices or rooms with critical electronics. Individually, they're cheaper than the alternative and easier to install – but the economics change if you end up buying a handful of them.

Whole house surge protector: This device is installed in a home's electric panel by an electrician and offers downstream protection of all electronics in a home. It costs more and requires professional labour, but over time, may offer more resilient, cost-effective protection.

What is whole house protection?

Visually, it's not that exciting – it looks like a grey box on the wall next to your home's electrical panel. However, it's features definitely make up for its lack of aesthetic value.

When it senses a voltage irregularity – anything from a lightning strike to a minor flutter of extra voltage – this device kicks into action. It diverts the excess voltage into the ground before it reaches your home's electronics, keeping it safe from damaging spikes. Unlike power strip surge protectors, it works straight out of the box.

Whole home surge protection offers a high level of surge protection

It is estimated that up to 80 percent of all surges originate from inside a building. These are generally quite small and

happen as a result of loose wires, malfunctioning appliances, static electricity, load switching, or even when turning on a hair dryer or AC unit. Over time, these seemingly minor surges can damage and thereby shorten the life of electronics.

Although relatively rare, high-surge events like lightning strikes or power surges from the utility also occur, and cause immediate, large-scale damage to electronics and your home. A high-surge event can also spark a fire, putting everyone inside a home at risk.

It is worth it?

Most power strip surge protectors only offer low-level surge protection, meaning they can help during frequent small surges but aren't effective during a high-surge situation. Whole house surge protectors, on the other hand, effectively reduce both kinds of surges.

When you consider the potential for equipment damage can run well into the hundreds of thousands of rand, it justifies the average cost ranging from \$200 to \$700 for the whole house surge product and installation.

In a time when our homes are equipped with increasingly smart yet sensitive electronics that cannot be protected by simple power strip surge protectors, the need for whole house surge protectors becomes more compelling.

Enquiries: +27 (0)11 230 5700

Supplements for splice boxes with patented pigtail tray

Phoenix Contact is supplementing the compact splice/distributor boxes in the FDX 20 series for DIN-rail mounting with additional types of fibres and couplings.

The splice boxes ensure continuously reliable, real-time data transmission even in harsh environments. With their compact and uniform design, they provide ample interior space for the secure connection of fibre-optics. The splice boxes are available in connection versions with 6 x LC duplex, 6 x SC duplex or 6 x ST duplex connections.

The patented pigtail tray in the device's interior enables the convenient splicing of the fibres and enables minimal, yet safe, bending radii. This pre-assembled, ready-to-splice design significantly reduces installation time. With their intuitive front-panel operation and a consistent product design, the splice boxes also improve clarity in the control cabinet. Various mounting options for the DIN-rail adaptor allow for mounting in three positioning directions.

Enquiries: www.phoenixcontact.co.za

If you need a miniature IP68 sealed enclosure, Hammond has the answer

Hammond Manufacturing has introduced the 1551W Series, IP68 sealed versions of its popular 1551 miniature enclosure family. Launched in an initial five sizes, all available with a plain or flanged lid, the UL94-V0 polycarbonate enclosures are suitable for use inside or outside. They are available in black and grey with a soft texture finish, all are fitted with PCB stand-offs in the base and the preformed silicone sealing gasket provides excellent protection against the ingress of dust or water, protecting the housed electronics. The initial five sizes range from 60 x 35 x 22 to 100 x 59 x 25. The flanged lid versions make mounting to any surface a simple and easy process and provide a degree of tamper resistance by preventing access to the lid and base securing screws.

The 1551W is the latest extension to the extensive 1551 family. The general-purpose IP54 ABS 1551 family is available in 18 sizes with plain or flanged lids. Plain lid versions are available in black, grey or translucent blue, flanged list version in black or grey. Three sizes are available fitted with key rings.

The rectangular and round vented 1551V versions are designed to house sensors and small sub-systems installed in the manufacturing environment. One of their key features is the snap-fit closure that allows repeated opening and closing without tools and also maximises the internal space for PCBs by eliminating screw fixings to secure the cover to the base. They feature ventilation slots on all four vertical faces of the cover and wall mounting slots and a 15mm cable knock out in the base. All rectangular and round versions are also available in an unvented style in all sizes.

Key features of the 1551 series include:

- Ideally suited for mounting small printed circuit boards or used as potting boxes.
- Moulded in a choice of black, grey, or translucent blue general purpose ABS plastic.
- Satin texture finish.
- Complete with lid and two self tapping screws.
- This series is also available with flanged lids.
- Screws are colour matched to enclosure (nickel plated screws with grey enclosures and black plated with black enclosures).
- Lap joint construction provides protection against access of dust and splashing water.
- Some sizes are available with a key ring kit.

Enquiries: www.hammfmg.com



Local distribution of high quality enclosures

Eldon Hoffman enclosures are distributed in southern Africa by ATI Systems. The product range consists of a complete range of high-quality enclosures in mild steel and stainless steel, with all the important certifications for territories worldwide.

The stainless steel range consists of a full lineup of wall-mounted and floor-standing enclosures. A wide range of enclosures for any application is stocked in both 304 and 316 grades. The range is further complemented with a variety of panel air conditioners and filter fans.

ATI Systems carries a complete range of panels in its warehouse in Wadeville, Germiston, from where all areas of southern Africa are serviced. An additional warehouse with a good range of functional stock is situated at Stikland, Belville in the Western Cape.

The Eldon range of panels carries all the important certifications from certification authorities worldwide. Eldon is a favourite with machine builders, who see the product as an excellent complement to their own build, and the brand is accepted globally.

Eldon Hoffman is part of the nVent Group, a diversified company in the electrical industry.

Enquiries: sales@atisystems.co.za



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Busting the five most common smart home misconceptions



By 2026, 573.7 million households worldwide will have smart home devices, however, only three million will be South African. Dr Andrew Dickson, Executive: Engineering at CBI-electric: low voltage, says that while the Covid-19 crisis triggered widespread adoption of smart products with consumers transforming their living spaces into places of work, learning, and leisure, South Africans lagged behind the trend due in part to common misconceptions in the market.

"These need to be addressed or else South Africans will continue to miss out on the benefits of the Fourth Industrial Revolution technologies like the Internet of Things, Artificial Intelligence and others," he says.

Below, Dickson busts five of the most common misconceptions keeping South Africans from enjoying smarter homes:

Misconception 1: Smart homes aren't compatible with load shedding

While users might not be able to operate their smart devices during load shedding, they can protect appliances from voltage fluctuations as a result of load shedding which can damage electrical appliances. To prevent this, users can set a minimum and maximum 'safe operating voltage range' on their smart devices via the app. If the voltage is unstable, the smart device will monitor the voltage levels and only allow power to the appliance once it is within the safe operating voltage range.

Misconception 2: Users need to be tech-savvy to use smart devices

To use a smart device, all that homeowners need is a smartphone or tablet and Wi-Fi with an internet connection. So, if they can operate a smartphone, they'll be able to operate a smart home. Smart home apps are typically designed with the user in mind so are very simple to operate. Users can also always override the devices by manually switching them on or off.

Misconception 3: Smart homes consume a lot of energy

Smart home devices actually help homeowners to monitor their energy usage so they can control consumption. Not only can users keep an eye on which items are consuming the most electricity but also turn them off when not in use and schedule when they are turned back on. For instance, users can pre-determine which days their irrigation system goes on and for how long. They can even prevent it from switching on if it's raining through an automation, since weather apps can be integrated into smart home apps.

Misconception 4: Smart homes are unsafe

Security is an understandable concern, especially when it comes to one's home. Most companies take extra precautions to ensure that smart devices are tamper-proof. But there are also a few precautions customers can take such as using a router with a strong firewall and selecting a unique and strong password to use on the app.

Smart devices can help make homes safer as homeowners can schedule their lights to be switched on at night, so they won't have to come back to a dark house.

Misconception 5: Smart homes are expensive to deploy

Contrary to popular belief, homeowners won't need to rewire their homes. Smart home devices like smart plugs, isolators and controllers can easily be installed by an electrician and devices like the Astute Range don't require any additional wiring or hubs. Once these are fitted, users can control, monitor and schedule their lights, geyser, pool pump, and appliances remotely via an app on their smartphone and/or tablet. They also don't need to do this all at once – they can start with one component and build up over time.

"Smart homes are the way of the future, don't get left behind!" concludes Dr Dickson.

About CBI-electric: low voltage

Established in 1949, CBI-electric: low voltage is a manufacturer and supplier of quality low voltage electrical distribution, protection, and control equipment. Previously known as Circuit Breaker Industries or CBI, the company specialises in the design, development, and manufacturing of circuit breakers, residential current devices, surge protection, wiring accessories, and metering products.

Headquartered in Johannesburg, South Africa, the company is a subsidiary of renowned JSE listed industrial group Reunert, with international operations across Africa, Asia, Australia, Europe, and USA.

CBI-electric: low voltage can be found in almost every home and has firmly become a market leader over the last 72 years while supplying products to authorities, utilities, manufacturers, commercial property developers, industrial, mining, telecommunications, and general power distribution applications.

In 2021, the brand launched its smart IoT (internet-of-things) home automation range, called the Astute Range.

Enquiries: www.cbi-lowvoltage.co.za

Booyco Electronics builds capability, skills in SA economy

Driven by stringent mine safety requirements underpinned by legislation, South Africa is a global front-runner in proximity detection systems (PDS) with Booyco Electronics as a recognised local trailblazer with growing production and engineering capability.

The company's Jet Park facilities have for years been a hive of activity, increasing output even through the Covid-19 pandemic. Quentin Kruger, chief financial officer at Booyco Electronics, highlights the company's constant investment in its technology and its people.

"One indication of our commitment to serving our markets sustainably is the steady growth in our staff complement, which increased by about 30% in the past financial year," says Kruger. "This has gone hand-in-hand with strengthening our engineering team and our capacity to produce quality equipment."

With a home-grown suite of technology solutions for PDS and collision prevention systems (CPS), Booyco Electronics' local production facility is rooted in its engineering competence. The facility's engineering team has recently expanded to over 30 skilled engineers, artisans and technicians. These experts design and develop the necessary products in line with industry and client requirements.

"No two mines, whether underground or surface operations, have exactly the same needs in terms of PDS and traffic management systems," he says. "Sales engineers work with the customer to generate specifications, or a scope of work, and the engineering team then designs a fit-for-purpose solution based on our technology."

Applying stringent quality standards and detailed works instructions, the production team takes the process through manufacture and assembly to generate the finished product. Extensive testing is conducted in the facility to ensure all products are fully functional before dispatch to customers.

"Quality checks begin with incoming items from suppliers, and specialised personnel keep a close eye on the process in the production area," he says. "This ensures that any issues can be identified even before the product is completed."

Final quality checks are also conducted, both on the hardware and software aspects of the finished product. Kruger notes the highly specialised nature of the technical tasks at Booyco Electronics, requiring ongoing investment in local skills development.

"Being a local, home-grown company which is constantly developing and upgrading innovative

technology, we need to always be nurturing expertise," he says. "For instance, our registered in-house trainers take our production staff through technical courses accredited by the Manufacturing, Engineering and Related Services Sector Education and Training Authority (Merseta)."

Working to ensure that even new entrants are upskilled, the company also puts its technicians through selected third-party courses which are relevant to the needs of the operation. A separate mentoring programme focuses on career development, supporting people as they earn promotion through the company's levels of management.

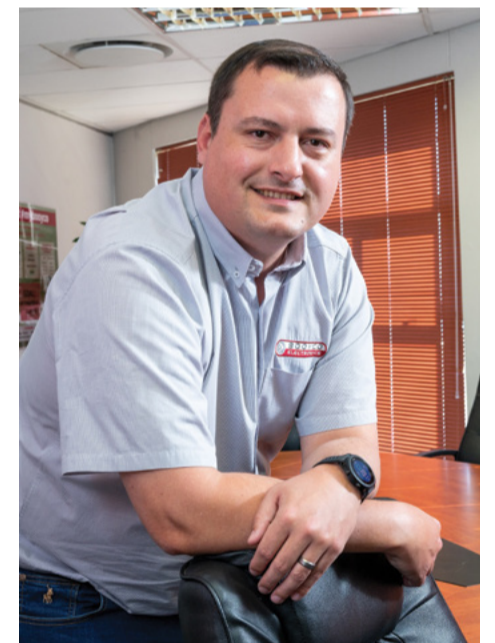
Creating opportunities for South Africa's youth, Booyco Electronics takes on learnerships through the Youth Employment Service (YES) programme. With over 20 learners currently employed, it is hoped that many of these young people stay on after their learnerships – and grow with the company.

"We also provide bursaries for school leavers and even for our people who want to study in fields that would add value to the business," he says. "While we target technology-related fields, this tertiary education may relate to skills as varied as supply chain management."

He highlights that the company's investment and training efforts align well with the Mining Charter's emphasis on local procurement and skills development in South Africa. As a key local player in PDS and CPS – with a growing global market – Booyco Electronics is fully committed to these imperatives, says Kruger.

Enquiries: www.booyco-electronics.com

Quentin Kruger, chief financial officer at Booyco Electronics.



South Africa is a global front-runner in proximity detection systems (PDS) with Booyco Electronics recognised for its growing production and engineering capability.



Polytech Africa Mechatronics Academy nurtures tomorrow's 4-IR engineers

Polytech Africa is a specialist in engineering consulting services, as well as industrial automation training and education for the petrochemical, mining and metalworking industries. The Level 4 B-BBEE accredited company launched its Mechatronics Academy in 2019, under the auspices of the company's Education division, to offer specialised training and courses at its state-of-the-art training facility in Johannesburg.

As the marriage of mechanics and electronics, mechatronics is a multidisciplinary field of engineering that combines robotics, electronics, different engineering disciplines, and telecommunications. It's been recognised as a key discipline in the Fourth Industrial Revolution and practitioners are increasingly in demand, explains Astrid Straussner, the Founding Director of Polytech Africa "Our Academy graduates leave our programmes with both practical skills as well as theoretical knowledge, which puts them at the cutting edge of their field," she adds.

From an initial intake of just 8 students in 2020, the Academy now boasts 7 lecturers and 20 students, most of whom hold full bursaries and were previously unemployed. Polytech Africa's mechatronics learnership programme starts on an NQF2 and progresses to an NQF5 QCTO qualification, however Straussner is pursuing QCTO opportunities for NQF8 accreditation for the Academy.

At NQF2 level, learners gain knowledge and practical skill in the essential aspects of precision mechanical engineering, electronics and computer design systems which are used to control and automate mechanical products with electrical signals. Learners are required to work part-time at an employer in a related field, to build their practical capabilities and experience. "All our lectures

have a blended learning approach: theory, workshops/simulation and Work Integrated Learning (WIL). Our students must complete a six-month internship in their final year," concludes Straussner.

The Academy invites engineering and automation companies to sponsor the learnerships, enabling Polytech Africa to educate learners who might otherwise not have access to a programme of this nature. In turn, this model gives sponsoring automation or engineering brands and companies the opportunity to partner with Polytech Africa and to present learners with practical product training during the programme.

Enquiries: www.polytechafrica.co.za



Polytech Africa's mechatronics learnership programme starts on an NQF2 and progresses to an NQF5 QCTO qualification.



Mechatronics is a multidisciplinary field of engineering, combining robotics, electronics, telecommunications and various engineering disciplines. Polytech Africa's Mechatronics Academy graduates gain both practical skills and theoretical knowledge of this field.



Polytech Africa's mechatronics learners are required to work part-time at an employer in a related field, to build their practical capabilities and experience.



Polytech Africa's Mechatronics Academy offers specialised training and courses at its state-of-the-art training facility in Johannesburg.

How AI can shape a sustainable future

Climate change is a reality that is already impacting the world and its populace; the time to act is now and technology can play a fundamental role tackling the challenges we and future generations face.

For one, companies must start combining AI, human skills, and trusted partnerships. The clock is ticking. Clean energy and efficient energy management are vital cogs in mitigating the impact of climate change. And this is where the true value of Artificial Intelligence (AI) comes into play.

If you equip energy market experts with data-based insights and digital technologies, you get better-informed corporate strategies, quicker decision making, and greater operational efficiency.

And whilst AI might still be new the kid on the block with many seeing it as the stuff of Sci-Fi that can only be delivered theoretically, the truth is, it's already being used in various industries to optimise analytics, operational efficiencies, and maintenance.

AI enables us to simulate, test, use logic, learn, predict, and adjust over time. This all can help companies and societies advance toward greater energy efficiency and decarbonisation.

Three ways AI can shape energy management

1: More efficient use of energy

Companies collect large amounts of data that they can use to maximise efficiency. Turning that data into insights can be a challenge – but one that AI can help with. It can accurately track and anticipate consumption trends, notice where changes need to be made, and automatically fine-tune systems to ensure optimum efficiency. And

it can help companies react instantly to demand response opportunities and to the increasingly frequent disruptions caused by extreme weather.

2: Diversification of energy sources

AI can support companies in introducing renewable energy sources and controlling their carbon footprint – giving clean energy a better chance in the market. Companies producing their own renewable energy can apply AI and predictive analytics to weather data to help determine peak times for generation and optimise the use of distributed-energy storage systems or batteries.

3: Smarter energy buying

AI can examine complex market trends and dissect data to devise plans to better manage energy spend and reduce risk in a volatile market. It can also observe how and when companies consume energy and support their trading decisions. For example, companies who both consume and produce energy – known as prosumers – can receive guidance to make optimal decisions on when to sell excess energy from their renewable sources.

Whilst AI cannot single-handedly create a greener business overnight it is already opinion up many possibilities for organisations. When implemented in tandem with – and in support of – a company's overall sustainability goals, it can help accelerate the journey to a more climate-friendly future.

By George Senzere, solution architect: Secure Power at Schneider Electric
Enquiries: www.se.com

Top 5 technology predictions for the coming year

1: With the emergence of modern Enterprise Applications Platforms (EAPs), composability will extend to the business process level.

As ERP systems evolve to modern Enterprise Application Platforms (EAPs), look for expanded platform definitions to provide not only for composability in cloud environments, but also across hybrid cloud/on-premise environments. Composability will be broken down further to the business process level, and not just at the application level. This means that enterprises will need a standard operating model and platform for consistent integration, workflow, data analysis, and extensibility. Users will want to build their own processes and experiences to match their exact needs, not simply take what's out of the box.

2: Business process definition, AI and intelligence will start to take hold in purchasing decisions.

No two businesses are the same. Users will demand easy and simple ways to define their business interactions in a flexible system. Therefore, expect the microservices discussion to accelerate, as companies strive to build and assemble their software systems, as if designing a floor plan for a new home. Businesses will start deploying

modern Enterprise Application Platforms (EAPs), through which business processes not only will be assembled to match needs, but also will be self-sustaining and corrective, based on AI and intelligence that is baked into the framework.

3: The (actual) convergence of analytics, intelligence, and user experience will enable successful, real-time decision making.

Delivering information just in time, instead of in traditional dashboard forms, which look in the rear-view mirror, will be critical in 2022. Historical data and representations aren't enough for successful decision making. Predictive intelligence needs to be blended into the process. Ultimately, these insights are needed at the point of decision and action, instead of in a separate operational location. Data fabric, business intelligence, AI/machine learning, and user experience all must come together in a single solution to be meaningful.

4: 'Edge' solutions will be defined and applied differently.

'Core' and 'edge' solutions already are connected, for the most part, and edge solutions don't just refer to devices anymore. This view acknowledges that some busi-

ness operations still want to maintain local control on premise. Being able to navigate a true hybrid cloud/on-premise business, while not impacting productivity, will be key. Customers will need cloud innovations in the form of machine learning, for example. At the same time, they need the ability to apply such technologies to their on-premise systems – not just to stereotypical "edge" devices.

5: Voice-enabled devices and digital assistants will be critical business tools in remote-work environments.

As the business world continues to transition to remote-work environments, the definition of user experience continues to change. While voice access/capabilities have been heavily hyped for some time in the enterprise arena, security controls will continue to tighten, and employees will need new ways of executing work away from traditional web screens. In 2022, we expect that users will demand nearly full operational functionality through voice-enabled devices – with digital assistants that augment and automate tasks.

By Phil Lewis, Infor's VP of Solution Consulting EMEA.
Enquiries: www.infor.com

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Max Drilling Capacity: TCT Bit: 40mm (in masonry) Core Bit: 105 mm
No Load Speed: 250 - 500 r/min

HR006GZ

80V (40V x 2) Brushless 52mm SDS Max Rotary Hammer



SPECIFICATIONS:

Chuck: SDS Max
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Impact Rate: 1,100 - 2,250 impacts/min
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Lighting solution for TASEZ

BEKA Schröder have supplied the LED lighting solution for various sections of the Tshwane Automotive Special Economic Zone (TASEZ) in Gauteng, South Africa. TASEZ is Africa's First Automotive City taking the lead in growing Africa's industrial revolution and providing meaningful employment and business opportunities for communities and SMME's in the City of Tshwane.

This first-class development required a first-class lighting solution. BEKA Schröder has supplied LED luminaires for various sections of TASEZ. They have been chosen as they have been designed and manufactured in South Africa, are robust, cost effective and provide an efficient lighting solution to maximise energy and maintenance cost savings.

Automould and Aeroklasduys buildings

Various LED luminaires have been installed in and around the Automould and Aeroklasduys buildings. The ECOBAY and LEDBAY (with emergency version) highbays have been installed inside the buildings, and the DUISA emergency lighting range has been installed at Emergency exit doors.

The LEDTEC S lowbay provides general area lighting in the loading bay areas. The ZELA decorative post top illuminates the parking areas, and the OMNISTAR-MIDI floodlight provides general area lighting around the buildings. The SERIES 300 decorative bulkhead has been installed on the outside of the security guard buildings, with the BEKANOVA bulkhead being installed around the main buildings.

Tai Summit Warehouse

The ECOBAY LED highbay illuminates this all-in-one warehouse. The signage of the warehouse has been

illuminated with the LEDBEAM and LEDSTREAM floodlights. Here too, the ZELA has been installed in the parking area.

Sodecia Cluster

In this section, automatic parts for the vehicles are manufactured. Various LED luminaires have been installed in and around the Sodecia Cluster. In the manufacturing plant and warehouse, OMNISTAR-MAXI LED highbays, LEDNOVA-MIDI (emergency version) bulkheads, and BEKA VAPOURLINE industrial luminaires were installed. The tunnel area that is used to remove scrap metal is illuminated with the ROUGHGUARD LED vandal-resistant linear LED luminaire.

In the PAO Building, LED PANELS (standard and emergency versions) have been installed in the ceilings, together with the BEKARONDO LED downlights. The SERIES 30 decorative bulkheads provide general area lighting along the building.

The entrance area is illuminated with ECOBAY LED highbays, whilst security lighting is provided with the LEDFLOOD-MIDI floodlights, which have been installed along the outside of the building.

Roads

The roads within TASEZ are illuminated with BEKA Schröder's LEDLUME XP 3 streetlight. The LEDLUME XP offers optimised photometrical performance with a minimum total cost of ownership. It provides customers with the ideal tool to generate energy savings, improve lighting levels and reduce maintenance costs. The great variety of high-performance optics optimises the photometric distribution for each specific application to achieve minimum



The OMNISTAR-MIDI floodlight provides general area lighting around the Automould and Aeroklasduys buildings.



OMNISTAR-MAXI highbays illuminate the manufacturing plant and warehouse in the Sodecia Cluster.



The ECOBAY illuminates the Automould building.

energy consumption.

BEKA Schröder locally develops and manufactures sustainable LED lighting products, designed and suitable for local conditions. The company is proud to be associated with the following partners:

- Automould and Aeroklasduys buildings: Plant-tech Consulting Engineers, Our Electrical and Big

O Engineering

- Tai Summit Warehouse & Roads: iX Engineers & Nkwazi Contractors
- Sodecia Cluster: MMT Consulting Engineers, Basemajor Construction and Onza Construction

Enquiries: +27 (0)11 238 0000

LED emergency lighting solutions



Having a reliable source of illumination is handy in any environment, whether the power is out due to load shedding or you're in an area where electricity isn't available. The Eurolux range of LED rechargeable emergency lights is a convenient lighting solution that won't leave you in the dark. These are the top three reasons to invest in them.

They are cost-effective

Battery-operated devices require new batteries often which can become costly over time, especially when it comes to light fixtures. A fixture that can be powered up by battery during periods of load shedding is convenient, but leaving the light to burn for an hour or two at a time will have you repurchasing batteries every week. Rechargeable LED lights are a more cost-effective option. The upfront investment is worth it in the long run because you won't have the hassle and expense of constantly replacing the batteries. Our range of LED emergency lights can be charged up when the power is on and are ready to use when it's not. Once the battery is drained, simply plug it into a wall socket to charge and use again when needed.

They are better for the environment

Light fixtures that require disposable batteries are not an environmentally-friendly option. Empty

batteries contain harmful substances such as mercury. When tossed in the trash, these batteries often end up in landfills where they corrode over time. As they corrode, the harmful substances can soak into the soil and contaminate ecosystems. If an eco-friendly approach to lighting is important to you, then opt for rechargeable LED lights that are charged up using electricity.

They are portable and are available in a variety of designs

One of the most important benefits of our LED rechargeable emergency lights is their portability and versatility. Available in a variety of sizes, shapes and designs, there is a fixture for every need. Place one on your bedside table, in the kitchen drawer, in the garage, or in the boot of your car. Include one in your camping kit. Take one along to evening sports events or sunset picnics. Gift one to new homeowners. Our range also includes LED rechargeable bulbs. They can be used like ordinary bulbs in fixtures around the home, but when the power goes off they'll still offer a few hours of illumination. This is because they charge up when power is available and can be manually switched on to operate when it's cut.

Enquiries: www.eurolux.co.za

Six reasons to invest in LED floodlights

Floodlights have become an integral part of many a home and business outdoor security lighting setup. They produce a generous wash of light which can be key in deterring criminals who often prefer to operate under the cover of darkness. But while they play an important role in keeping intruders at bay, they're also an essential fixture in outdoor spaces where people are active after the sun goes down. From parking lots to sports grounds, these robust fixtures allow people to safely navigate large areas in the dark. LED floodlights are a popular choice among savvy home and business owners who want to get the most out of their investment. Here are six reasons from Radiant Lighting to buy an LED floodlight of your own



They offer better visual presentation

LED floodlights offer better visual representation because they produce a white light comparable to that of daylight. Because it shows an environment in its truest colour after dark, this fixture is ideal for public spaces such as parking lots, streets and sidewalks, where people need to move about safely. LED floodlights with a cool white colour temperature are best for areas of work or sporting events while those with a warmer colour temperature are better suited for recreation or relaxation facilities.

They are energy-efficient

These energy-efficient fixtures use less electricity than those with fluorescent or halogen bulbs. Additionally, LED floodlights that are motion-sensored will only be switched on when movement is detected, lowering your electricity usage even further.

They have a longer lifespan

LED floodlights have a longer lifespan than some of their other outdoor fixture counterparts. This is thanks to the robust, durable nature of the materials used to create them and because of the long lifespan of LED

bulbs - an LED floodlight will provide up to ten times more hours of illumination in comparison to halogen, incandescent or fluorescent fixtures. An added bonus is that they do not automatically die when they are close to the end of their lifespan. They dim gradually signalling to you that it's time to change the bulb soon.

They are healthier for humans and the environment

A healthier lighting option for both humans and the environment, LED floodlights don't contain mercury or other harmful substances. They don't emit carbon either and won't flicker which can cause eye strain and headaches

They produce little heat

LED floodlights generate little heat, reducing the risk of electrical and fire accidents. This benefit gives many property owners peace of mind, especially if the light is going to be on while they are away from their premises.

They operate in extreme temperatures

One of the most important requirements of an outdoor security light is that it needs to be dependable. The robust nature of LED floodlights means that they won't cease to operate in extreme temperatures. In places where the temperature can plummet to -5° C, the efficacy of an LED floodlight only changes by 5%.

Enquiries: www.radiant.co.za



Far-red: The light which plays an important role in plant growth

In the last issue of *Sparks Electrical News*, InDorSun and Giantlight introduced us to the fascinating world of lighting for cannabis growth. We would suggest you read the article, but here is a quick summary:

Light spectrum is the range of wavelengths produced by a light source. When discussing light spectrum, the term 'light' refers to the visible wavelengths of the electromagnetic spectrum that humans can see from 380-740 nanometers (nm). Ultraviolet (100-400 nm), far-red (700-850 nm), and infra-red (700-106 nm) wavelengths are referred to as radiation.

Growers are most interested in the wavelengths that are relevant to plants. Plants detect wavelengths that include ultraviolet radiation (260-380 nm) and the visible portion of the spectrum (380-740 nm) which includes PAR (400-700 nm), and far-red radiation (700-850 nm).

Here are a few of the abbreviations we learned:

- Photosynthetically active radiation (PAR) is represented as 400-700 nanometers (nm)
- Photosynthetic photon flux (PPF) is measured in micromoles per second ($\mu\text{mol}\cdot\text{s}^{-1}$)
- Photosynthetic photon flux density (PPFD) is measured in micromoles per square meter per second ($\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$)
- Daily light integral (DLI) is measured in moles per square meter per day ($\text{mol}\cdot\text{m}^{-2}\cdot\text{d}^{-1}$)
- Photosynthetic photon efficacy (PPE) is measured in micromoles per joule ($\mu\text{mol}\cdot\text{J}^{-1}$)

Far-red light and photosynthesis

Far-red (FR) light is a waveband at the extreme end of the visible light spectrum. It is regarded as wavelengths between 700 and 780 nanometers (nm). To human eyes, FR is only dimly visible, but it plays a very important biological role for plant growth and yield.

FR has long been considered to have a minimal input in photosynthesis and is excluded from the definition of Photosynthetically Active Radiation (PAR; 400 to 700 nm). It is because the photosynthetic efficiency of monochromatic FR light sharply declines with the wavelength. FR is largely reflected and transmitted by plant leaves, and only about 30% is absorbed.

Several recent studies have shown that far-red photons interact with shorter wavelength photons to increase efficiency of photosynthesis. Zhen and Bugbee (2020) have studied the effect of FR on whole plant photosynthesis for 14 different crop species. They concluded that adding far-red photons to a spectrum of shorter wavelengths (e.g., broad white spectrum) caused an increase in canopy photosynthesis equal to adding additional light from PAR range (400-700 nm) of the same intensity. The effect was wavelength dependent. The authors postulated that radiation between 700 and 750 nm should be included in the definition of Photosynthetically Active Radiation (PAR).

InDorSun offers the majority of its fixtures with separate control of the FR circuit. This enables the grower to use FR as a tool, either on its own or with broad spectrum white light.

How does it work

The phenomenon is not new and is known as the Emerson effect. Robert Emerson (1957) found out that plants exposed simultaneously to light of shorter and longer wavelengths than 680 nm, have much more efficient photosynthesis than if they are exposed to only shorter or longer wavelengths separately. It happens because photosynthesis is driven by two photosystems which work in synergy. It can be compared to two pump mechanisms used to transport energy. The first pump or photosystem uses red photons to pump up electrons on a higher level. The second pump or photosystem uses far-red photons to pump up electrons even further. High energy photons are used to synthesize basic building biochemicals which can be used to make different substances e.g. sugars. The efficiency of the system is highest when both pumps work together in a balanced way. Using laser diodes to obtain extremely narrow wavebands, Zhen et al. (2018) found that photons from 703 to 731 nm tended to be more efficient at


increasing photochemical efficiency than photons below 703 nm or above 731 nm FR. Photons of wavelength above 752 nm are not effective in enhancing photochemical efficiency as they are no longer used by the first photosystem due to low photon energy and absorption.

Far-red light increases the ability of plants to capture light

Plants use light not only as a source of energy (i.e., in the process of photosynthesis), but also for information about the surrounding environment.

CONTINUED ON PAGE 18





InDorSun

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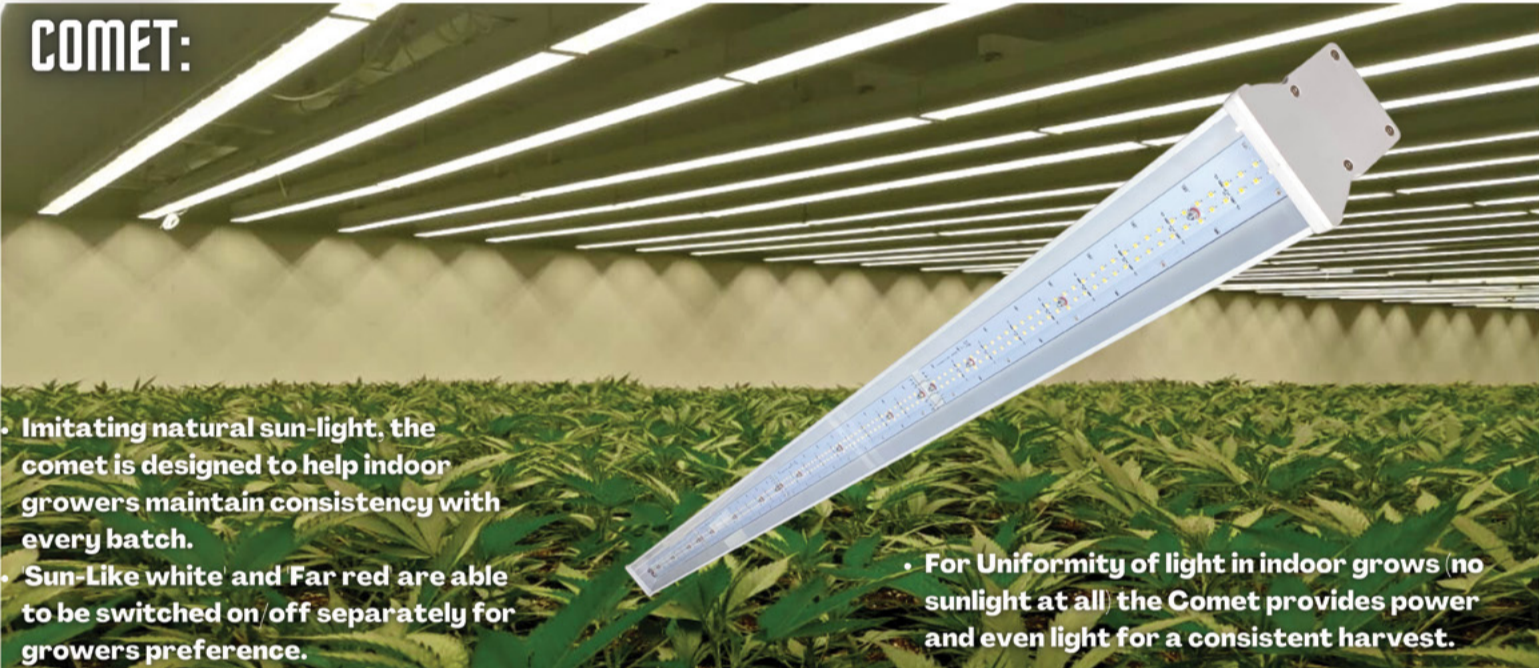
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MADE IN SOUTH AFRICA



Midrand office boasts Blu2Light-based Building Management System

In Vossloh-Schwabe's Midrand, Johannesburg premises (offices, showrooms and warehouse), a Building Management System was specified and installed by partner companies RDL and Wardew. This BMS has been developed with the background of the Blu2Light technology and has been enhanced to control and record diverse applications. The installation has been designed, installed and monitored for more than a year to gain experience, especially in the challenging African environment.

Blu2Light can be operated as a modular base for complete Building Management Systems (BMS) to control an entire building complex using a Bluetooth Mesh or wired installation networks. This Blu2Light installation in the VS Africa building in Midrand was a first of its kind for Vossloh-Schwabe in South Africa. RDL Consulting was hired by VS Africa to ensure that every Blu2Light installation is functioning according to the required specifications.

The BMS access and communication is realised with the license free VS-Gateway, connected to a PLC (programmable logic controller), a combination which makes basically everything possible. System functions include power monitoring, live camera footage, air quality, UV-C air purifier units, water monitoring, occupancy sensors, lighting status, generator and air conditioning.

More than 30 installations in South Africa
Blu2Light currently has more than 30 installations in various buildings in South Africa, installed in diverse locations, for example offices, restaurants, museums, warehouses and even façade lighting. The VS-RDL-Service, in assistance from design and specification process as well as the commissioning of the lighting system, has proven to be the key for success and customer satisfaction.

Enquiries: www.vossloh-schwabe.com



Far-red: The light which plays an important role in plant growth

CONTINUED FROM PAGE 17

Because plant leaves absorb blue and red light efficiently while FR light is mostly reflected or filtered, the light under a plant's leaves contains proportionally more far-red and less blue and red light than direct sunlight. An increase in the proportion of FR photons in the growth spectrum is therefore perceived by plants as information that they are shaded and at risk of being overgrown by other plants. In response they will try to get taller, i.e., extend their stem and leaf petioles, to overgrow the competition. Some plants can also try to increase their light capture by increasing leaf area and reducing production of sunscreen type pigments (anthocyanins).

Plants with a taller, looser canopy will also capture more light when compared with those having more compact form. Because they dedicate most of the available resources to extension growth, shaded plants reduce branching and decrease production of some biochemical compounds. Some species may also react to shade by flowering as soon as possible to produce seeds before the competitors take available resources. On the other hand, plants grown in the spectra without FR light are usually more compact, branched, and have smaller, thicker, and darker leaves.

The choice of strategy and magnitude of reaction depends on plant species, but responses to FR ratios in grow light spectrum are common to all plants. In plant production, the natural responses can be used to regulate plant appearance, shape and height as well as maximize yield by increasing light capture or enhancing flowering with adjustments to the red to far-red ratio in the grow light spectrum.

How it works

Plants have several receptors which sense different wavelengths and react accordingly. These receptors are activated by one set of wavebands and deactivated by another. The group of receptors sensitive to far-red light are called phytochromes. Absorption of FR light converts a phytochrome to the red-absorbing form (Pr). Absorption of red light converts it back to a form which can absorb FR (Pfr). It is a dynamic process and a plant grown in a balanced light has both forms in based on the proportion of red to far-red in the grow light spectrum. Pfr form also converts back to Pr form in darkness. It happens slowly, so the plants can use the same system to determine the duration of the darkness. The phytochromes works as a switch to turn on and off many biological processes in a plant's body.

Far-red light plays an important role in regulation of flowering

In nature, reproduction of plants must follow seasons. The exception are species growing at the equator. Many (but not all) plant species regulate their flowering time according to the length of the night. The species and varieties which flower at late spring and summer, when the nights are short, are called long-day plants. Species and varieties which flower with longer nights are called short day-plants. Because plants use the same system to sense the length of the night as they use to sense the presence of far-red light, flowering of photoperiod sensitive plants can be regulated by using LED lights with different red to FR ratios. For example, flowering of short-day plants can be inhibited by day extension with light having high red to FR ratio.

In many long-day plants, the presence of FR in a grow light spectrum substantially shortens the time needed for flowers to initiate and set in comparison to plants grown under lights without FR. It happens because a mixture of FR radiation increases plant size and photosynthesis, and thus allows plants to gather more energy for reproduction (Park and Runkle, 2017). There are plant species and varieties which do not flower at all if grown under a grow light without FR in the spectrum.

Far-red in grow light spectrum affects fruit yield

Researchers at Wageningen University conducted a series of experiments showing that the additional FR in a grow light spectrum can increase yield of tomato plants by increasing plant investment in fruits production. Tomatoes grown with additional FR had higher total fruit biomass, fruit number per plant and average fruit fresh weight (Kalaitzoglou *et al.* 2019). More detailed studies by Ji *et al.* (2019) showed that tomatoes grown under FR enriched spectrum of a supplemental lighting in a greenhouse (i.e. with the presence of sunlight) allocated 15–35% more biomass to fruits at the costs of leaf production, when compared to plants grown under lights without FR in the spectrum. Tomatoes grown under FR enriched lighting had also higher rate of truss appearance. However, researchers also observed that FR induced increase in fruit yield can have a penalty of lower resistance to pathogens.

Far-red in a spectrum of grow lights for indoor environment

InDorSun

InDorSun is a proudly South African LED manufacturer whose founders originated from the solar and PV industry developing energy efficient solutions for a wide variety of industries. With manufacturing partner Giantlight, InDorSun has shone the light on cannabis horticultural lighting. Together the companies manufacture LED grow lights which produce full-spectrum light that replicates the colour of the sun.

Giantlight

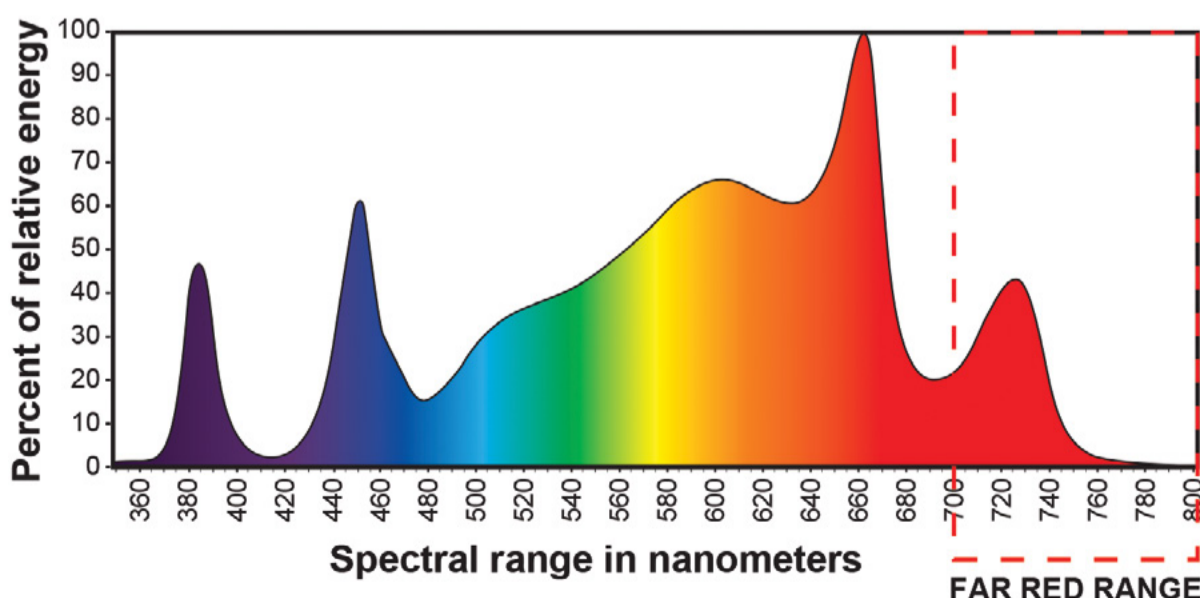
Giantlight is at the forefront of lighting technology – specifically solid state lighting and everything relating to LEDs and special effects. The company strives to remain the market leader in new and innovative lighting applications and continually brings new products to the market first. From design through manufacture and installation, Giantlight projects make a visual statement. Giantlight offers a comprehensive effect lighting solution.

The proportion of FR in a grow light spectrum affects all three major factors which determine crop yield, which are efficiency at which the absorbed photons are converted into biomass, effectiveness of radiation capture and dry matter partitioning to the harvested portion of the crop (Zhen and Bugbee, 2020). Therefore, choosing the lights with the appropriate proportion of red to FR ratio is one of the key factors for successful indoor plant production.

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- <https://www.heliospectra.com/growers-center/far-red-light-which-makes-a-difference>

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First electronic lighting component Cradle to Cradle Certified® in Bronze

For the first time anywhere in the world, a company in the electronics sector has been awarded the Cradle to Cradle Certified® in Bronze Sustainability Certificate for a lighting component. With its LED modules in the LLE, QLE and CLE product groups Tridonic has met the strict requirements of the standard and is now supplying these recyclable and responsibly manufactured LED light sources to its customers in the lighting industry.

LED modules in the LLE, QLE and CLE product groups have been designed in all respects so they comply with the sustainability criteria of the Cradle to Cradle® (C2C) concept. The purpose of this concept is to encourage the development of products that can be responsibly manufactured and recycled. Potential negative impacts should be minimised from the outset and the products should leave a positive ecological footprint.

The concept of C2C is based on the role model of nature which, as is well known, does not produce any waste. Resources are to be used to promote this circularity – from the birth of a product to its re-use at the end of its first intended purpose, hence cradle to cradle. Waste should not simply be reduced, it should be completely avoided to preserve materials in the material cycle. The choice of initial materials is therefore a key feature of this approach. The materials must neither be toxic nor have a negative impact on people or nature. In addition to ecological aspects (material selection, renewable energies and water use), this sustainability concept also takes social challenges into account.

Tridonic's first C2C Certified® project started with a feasibility study by C2C consultants EPEA Switzerland (Environmental Protection Encouragement Agency). The results led to a pilot project in which the material health of an LED module and a number of LED drivers was investigated with the cooperation of two Tridonic customers. Within eight months Tridonic was then able to take the first C2C Certified® project to successful realisation. The first C2C Certified® LED modules are now about to be launched. Later Tridonic will also market the first C2C Certified® drivers.

"Cradle to Cradle certification gives companies a means of providing credible and traceable evidence of their success and progress in designing ideal ecological products. On the other hand, certification helps customers to request and acquire products that meet an exceptional, broad-based quality standard," says Christina Krebs, EPEA Switzerland. The certificate therefore serves as a useful guide for the various players on the market.



The road to sustainable lighting

C2C certification is a complex project in every case. There are major technical challenges especially for the electronics industry – for example in the selection of materials. The use of C2C Certified® components, such as LED modules, make the sustainable production of luminaires much easier and shortens the implementation time for C2C certification projects on the customer's side.

"C2C is a comprehensive concept and therefore very challenging, but it is also an expedient way to implement sustainability in the company. At Tridonic, we believe that C2C will take the lighting industry further down the road to sustainability," says Hugo Rohner, Tridonic CEO. By introducing C2C, the company aims to support its customers in making their products sustainable as well.

Sustainable Tridonic

The company has therefore set up the "Sustainable Tridonic" programme which focuses on the development of components that can be recycled and re-used. The programme is part of the company's target of achieving climate neutrality by 2025. Other aspects of the programme include the introduction of fully recyclable packaging materials by 2024 and certification according to the C2C Certified® Product Standard for all premium products by 2030 at the latest.

About Tridonic

Tridonic is a world-leading supplier of lighting technology, supporting its customers with intelligent hardware and software and offering the highest level of quality, reliability and energy savings. As a global driver of innovation in the field of lighting-based network technology, Tridonic develops scalable, future-oriented solutions that enable new business models for lighting manufacturers, building managers, systems integrators, planners and many other types of customer.

To promote the vision of the "Internet of Light", Tridonic relies on partnerships with other specialists. The goal is the joint development of innovative technological solutions that convert lighting systems into intelligent networks and thereby enable associated services. Tridonic's in-depth industry expertise makes it an ideal driver for partnerships with other visionaries.

Tridonic is the technology company of the Zumtobel Group and is headquartered in Dornbirn, Austria. In the 2021/22 fiscal year, Tridonic achieved sales of 363 million euros. 1,869 highly skilled employees and a worldwide sales presence in over 70 countries provide the basis for developing and launching new, smart and connected lighting systems.

Enquiries: www.tridonic.com

Smart lighting system based on quantum dots more accurately reproduces daylight

Researchers have designed smart, colour-controllable white light devices from quantum dots – tiny semiconductors just a few billionths of a meter in size – which are more efficient and have better colour saturation than standard LEDs, and can dynamically reproduce daylight conditions in a single light.

The researchers, from the University of Cambridge, designed the next-generation smart lighting system using a combination of nanotechnology, colour science, advanced computational methods, electronics and a unique fabrication process.

The team found that by using more than the three primary lighting colours used in typical LEDs, they were able to reproduce daylight more accurately. Early tests of the new design showed excellent colour rendering, a wider operating range than current smart lighting technology, and wider spectrum of white light customisation. The results are reported in the journal Nature Communications.

As the availability and characteristics of ambient light are connected with well-being, the widespread availability of smart lighting systems can have a positive effect on human health since these systems can respond to individual mood. Smart lighting can also respond to circadian rhythms, which regulate the daily sleep-wake cycle, so that light is reddish-white in the morning and evening, and bluish-white during the day.

When a room has sufficient natural or artificial light, good glare control, and views of the outdoors, it is said to have good levels of visual comfort. In indoor environments under artificial light, visual comfort depends on how accurately colours are rendered. Since the colour of objects is determined by illumination, smart white lighting needs to be able to accurately express the colour of surrounding objects. Current technology achieves this by using three different colours of light simultaneously.

Quantum dots have been studied and developed as light sources since the 1990s, due to their high colour tunability and colour purity. Due their unique optoelec-

tronic properties, they show excellent colour performance in both wide colour controllability and high colour rendering capability.

The researchers developed an architecture for quantum-dot light-emitting diodes (QD-LED) based next-generation smart white lighting. They combined system-level colour optimisation, device-level optoelectronic simulation, and material-level parameter extraction.

The Cambridge-developed QD-LED system showed a correlated colour temperature (CCT) range from 2243K (reddish) to 9207K (bright midday sun), compared with current LED-based smart lights which have a CCT between 2200K and 6500K. The colour rendering index (CRI) – a measure of colours illuminated by the light in comparison to daylight (CRI=100) – of the QD-LED system was 97, compared to current smart bulb ranges, which are between 80 and 91.

The design could pave the way to more efficient, more accurate smart lighting. In an LED smart bulb, the three LEDs must be controlled individually to achieve a given colour. In the QD-LED system, all the quantum dots are driven by a single common control voltage to achieve the full colour temperature range.

"This is a world-first: a fully optimized, high-performance quantum-dot-based smart white lighting system," said Professor Jong Min Kim from Cambridge's Department of Engineering, who co-led the research. "This is the first milestone toward the full exploitation of quantum-dot-based smart white lighting for daily applications."

The structure of the QD-LED white lighting developed by the Cambridge team is scalable to large area lighting surfaces, as it is made with a printing process and its control and drive is similar to that in a display. With standard point source LEDs requiring individual control this is a more complex task.

Source: <https://phys.org/news/2022-08-smart-based-quantum-dots-accurately.html>

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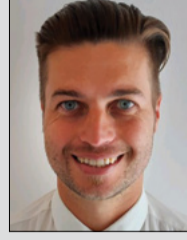
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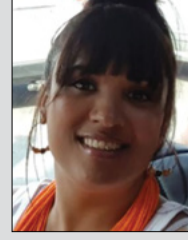


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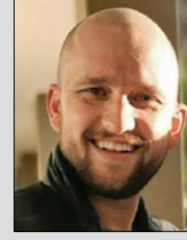
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BRIGHT SPARK

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A man is driving on a sunny day. He makes a turn and water suddenly starts to pelt his car very hard for about five minutes. Then the car is buffeted by extremely hard blowing. The car even begins to shake. The blowing stops, and the man makes another turn onto the main road and heads home safely. What is happening?

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