

ASSEMBLY LINE FOR EFFICIENT LV MOTORS COULD EASE STRESS ON POWER UTILITIES



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1: Eduardo Werninghaus, CEO at Zest WEG.
 2: WEG motors in different phases of the process.
 3: Test panel utilised to test all assembly motors.
 4: Bearing heater used to prepare bearings for the assembly process.
 5: Motors ready for the paint booth.
 6: The very first rotor being positioned.
 7: Sindi Mbhalati, Operations Executive at Zest WEG (right) and a colleague at the assembly line, during the process of the first motor being produced.

CONTINUED ON PAGE 4

Did you know that 65% of all energy generated by our utilities is used to run electric motors? Fanie Steyn, Manager, Electric Motor Division at Zest WEG, explains that if every motor in South Africa were a premium efficiency IE3 motor, it would save the national grid the output of a whole power station.

South Africa could go a long way to cut the risk of future load-shedding by adopting a minimum efficiency performance standard (MEPS) for electric motors. "Two extensive studies have been undertaken by the DTI and third party consultants; in 2018 and again in 2021," explains Steyn, "and it has been established that it is time to look at MEPS for the country, similar to the rest of the world which started many years ago." Brazil, China, America and Europe are already all on IE3, which is a premium efficiency standard, whereas in Africa, there is no standard, opening the floodgates for lower efficiency motors to be imported. According to Steyn, the new regulations should come into effect towards the end of 2023, meaning that with the company's new motor assembly line, Zest WEG is well placed to lead the way in reducing national energy consumption.

Zest WEG CEO Eduardo Werninghaus says the addition of the new facility is also an important contribution to local manufacturing capacity in South Africa. It improves flexibility in the company's electric motor supply chain, and ensures prompt delivery times for customers. The line produces WEG W22 IE3 LV motors in various sizes, offering high reliability in all applications.

"As a Level 1 B-BBEE company, our commitment to transformation includes continuous promotion of local manufacture," said Werninghaus.

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The press gathered at the Zest WEG stand for a media briefing.



SEW-EURODRIVE South Africa: Greg Perry, National Operations Manager; Raymond Obermeyer, Managing Director; Nici Smith, National Finance Manager; Jonathan McKey, National Sales and Marketing Manager.



A press tour of the SEW Eurodrive stand.

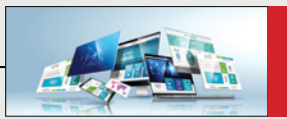
Over five days, more than 30 000 visitors experienced new innovations and new product launches across the five halls and outside exhibit areas at Electra Mining 2022.

Ranked as one of the world's largest mining shows and the biggest mining, manufacturing, automation, electrical and power trade show in southern Africa, Electra Mining Africa has a proven track record for driving sales, sales leads and building brand awareness.

BBF Safety Group Regional Sales Manager, Desmond Tilly noted that, "We have had a favourable response from visitors. You can see that people are hungry for an expo of this size. We are very happy with the results and had some great interactions with key decision makers and end users coming onto the stand. Electra Mining is a highlight for us in terms of the exhibitions that we do, and our ROI is always good. This year we saw a lot of interest in our new product launches. The sales team will be very busy following up on all the leads after the show. Namibia and Botswana also garnered some leads and then also local leads."

"It's been a good show. This is probably our fourth or fifth appearance at the show, and this year we have found there has been a lot more foot traffic and a lot more interest. People are happy to be back and to have personal interactions," said Lyndall Farrer, Marketing Manager at Dromex. "The main goal for us at the show is multifaceted but always brand awareness first and our presence in the category. We also use the platform to launch new products and highlight specialised ranges. The show not only allows people to talk to our experts but to also touch and feel our products. Given the gap in the shows due to Covid, it's not only one or two new products that we are showing but quite a vast range. A lot has changed in the last couple of years, and this has been a big drawcard for people."

Enquiries: www.electramining.co.za



How to start a YouTube channel for your trade business



YouTube was created in February 2005 by three ex-PayPal employees and sold to Google in 2006. Now, more video content is uploaded to YouTube every 60 days than the three major television networks have created in the last 60 years.

In the USA, YouTube reaches over 70% of internet users. In the UK, YouTube is the most popular social media platform, reaching 80% of internet users. In Australia, YouTube is tied with Facebook for popularity, both reaching close to 80% of internet users. In New Zealand, YouTube is the most popular social media platform, reaching almost 90% of internet users.

Nick Bundy (Nick Bundy Electrical)

Even though YouTube is arguably more popular than Facebook, it's often not the first social media channel that tradespeople choose for marketing their business. But why not? One night Bundy stumbled across an electrician making videos on YouTube. Before he knew it, he'd watched almost every video. What he saw rekindled his passion for his work, and he found himself looking forward to trying new things he'd learnt online. A short while later, he started making videos of his own. Bundy admits the success of his channel was entirely accidental but believes any tradesperson can benefit from creating videos of their work. Setting goals is the key. "If you can get 15-20 videos out for a portfolio, you attach that to your website. When a customer then clicks on it, it helps so much more than just a picture of a light that's on," he says.

Dan Seaber-Shinn and Jordan Farley also found that their YouTube channels quickly became one of their most profitable marketing strategies. The platform allowed them to showcase their projects more effectively and ultimately, win more work.

Dan Seaber-Shinn (DSS Electrical)

A desire to showcase his work differently and his natural competitive streak are what drove Dan to grab a camera and have a go. "When everyone was throwing money at the phone book, I thought, 'What can I do differently?'"

Since uploading his first video two years ago, Dan now has over 25,000 subscribers. Dan and his wife edit all of their videos and focus on publishing content that shows the reality of work as an electrician. "The mistakes, blowing up stuff, and the imperfections – that's what resonates with people."

Jordan Farley (Artisan Electrics)

When he first started his YouTube account in 2016, Farley set it up alongside his other social media accounts. "More so that I could use my username over there before someone else," he says.

Farley has always been interested in video editing, often tinkering on iMovie to create videos of his holidays. Initially, he decided to film and upload a couple of videos to YouTube to showcase some of his smaller jobs. "I viewed it as a platform to showcase my work to potential customers – but nothing too serious at the start."

Then out of nowhere, one of his videos got loads of views – and things began to snowball. He now posts three videos a week to over 62 000 subscribers. He aims to share content that is both entertaining and educational. "It's more like a vlog of my day-to-day working

life as well as talking about some of the issues of the trade or how I've fixed problems I've come across on the job."

How to get new work with YouTube

Seaber-Shinn has earned the equivalent of R350 000 worth of work in a year from customers who have found him on YouTube. Farley also gets a lot of his jobs through his YouTube channel. As Farley explains, YouTube is the perfect opportunity to show potential customers your personality and standard of work before they hire you. Then when they contact you for a quote, they're much more likely to become paying clients.

"It 100% wins me business," Seaber-Shinn says. "People tell me they've found me on YouTube – I don't have to chase them."

"I now have lots of learner electricians watching my channel, especially now lots are having to learn online, so it's not the main reason I'm doing it but YouTube has definitely helped my business," Farley says.

Pros and cons of running a YouTube channel

While both Seaber-Shinn and Farley agree that YouTube is a fantastic way to market your trades business, there are some things you need to be prepared for.

Farley tells us there's a lot involved in planning, filming and editing footage that can become all-consuming. On top of that, there's replying to all of the comments and messages, Seaber-Shinn adds.

Then there's the keyboard warriors and negative people who like to pick apart your work. Farley says it's something he had to get used to. But, once you get the hang of things and find a workflow that suits you best, the possibilities are endless. "I didn't expect so many people to be interested in watching another electrician working, but that's what I love about YouTube. You can put anything on it and there will be someone interested in it," Farley says.

YouTube tips from the experts

If you're considering using YouTube to market your trades business, take note of these tips:

- **Keep things simple:** Attach a goal to each video so you know exactly why you're making it. Think about the intended audience. Is it to help other electricians, or to attract new work. Tailor the video length and content to match. Don't get too involved with fancy transitions or motion graphics.
- **Use Google-friendly video descriptions:** Because YouTube is now owned by Google, it uses a similar search algorithm. Use that to your advantage by learning how to get found on Google.
- **Confidence will come with practice:** "I really struggled to start with – I wouldn't film in front of anyone. Now my wife and I walk around filming a giant selfie," Seaber-Shinn says.
- Have a plan: The easiest way to avoid wasting time is to have a plan, film as much as you can – then edit later.
- **Respond to comments at set times:** "We'll put a video up, give it a couple of hours, then have a look at the comments. The first night we'll read through and comment, then a couple of days after that as well," Seaber-Shinn explains.
- **Watch when and what other people are posting:** Then find your own unique way of doing things.
- **Turn off email and phone notifications:** They'll consume a lot of your

time otherwise.

- **You don't need fancy equipment:** "I use a late-model iPhone. As phones have improved, so has the camera quality. I do also have a professional DSLR but it's not necessary," Farley says.
- **Use nice thumbnails:** Find a design theme you like and stick with it.
- **Include an intro video:** Make a short intro and add it to the beginning of every video. It's an easy way to professionalise your content.

Video – the new portfolio

YouTube is the top video network worldwide and when used effectively, it can be a powerful tool to add to your marketing kit. For Bundy, Seaber-Shinn and Farley, it has presented more than just an opportunity to build a following and make money. "It's created a community of electricians who talk about their jobs and learn from each other – that's been an amazing experience," Farley says.

Unless you're one of the lucky few to go viral, YouTube is like any other form of marketing – success takes time and consistency. Find a way to demonstrate your work and experience that's engaging. If in doubt, here's Farley's last pearl of wisdom. "Just start. Don't overthink things. Put up a few videos and see what happens. Don't worry if you don't get many views at the start – they'll come."

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Luxury is found in the finest details

Now that Covid-19 is best forgotten and the world is focusing on making life better again, the leisure industry is seen to be upping its game to ensure the little details in hospitality are as they should be.

Legrand has made a substantial investment to ensure its range of hospitality solutions meets the highest standards globally, for quality, design, convenience and safety.

Take a hotel guest room for example. It's the no-fuss touches like temperature control, convenient bedside panels and efficient charging facilities for electronic devices, that count. According to specialists, Legrand gives immaculate attention to the needs of the leisure or business traveler, emulating that comfortable, familiar feeling for each guest, of being at home.

Legrand's range of stylish Arteor wiring devices, includes technologically advanced systems designed to enhance the comfort and convenience for guests – in communal areas of the establishment and in each hotel room.

Arteor cover plates have an innovative bevelled profile, which gives the illusion that the extra-flat and slim lined product is floating, rather than being attached to the wall. Arteor wiring devices meet global standards and are available in formats accommodating up to eight modules, with the possibility of creating between six and eight lever switches. These cover plates can be customised to specific requirements, including a hotel's corporate identity.

To reinforce the high-end character of these devices, sophisticated materials have been selected, giving Arteor a multi-cultural identity, in line with its international positioning.

An important feature is that decorators are able to 'mix and match' the design option and a choice of 17 different finishes – neutral, mirror, brushed and reflective metal or wood – for any control function. These combinations can be changed at any time to suit exact requirements.

Legrand's wireless chargers for mobile devices have been designed to make life easier for travellers.

These wireless chargers, with advanced technology, are ergonomic and functional, with versatility for use without cables. All a user with an induction-compatible smart phone has to do, is place the mobile device on the wireless stand and it will automatically start charging. With this convenient charging system, it is not necessary to search for the right cable or an available socket and there is no longer the concern about a flat battery and being out of reach.

Arteor USB chargers have a Type-C connector that is reversible for simplified connection and is used for fast charging of devices and high-speed data, audio and video transfers. New Arteor monoblocs are equipped with two different USB charging ports, A-Type and C-Type 3 A – 5 V = – 15 W.

Legrand solutions for common areas of an establishment include floor boxes, pop up boxes and emergency lighting

– all designed to enhance comfort, convenience and safety.

Floor boxes integrate seamlessly into any type of concrete screed or raised floor and can be neatly installed under any type of floor covering. These versatile floor boxes have been designed to accommodate various configurations, depending on connection requirements and the number of sockets to be equipped.

Legrand pop-up floor boxes are integrated unobtrusively into raised flooring or table tops, ensuring flexibility, safety and enhanced aesthetics – whether it is an original installation, extension or reconfiguration. Pop up boxes are available in five different sizes, with 3, 4, 6 and 8 modules.

Emergency lighting units are essential products in an establishment that must be fully operational to ensure safety in the event of an emergency evacuation.

The technical room is the heart of a hospitality building. This critical facility needs to distribute and protect the entire electrical infrastructure of the building, taking into account energy quality and reduced energy consumption. Legrand's power solutions, which operate efficiently 24 hours a day, ensure continuity of service and protection of electrical equipment, even during planned and unexpected power outages.

These modular systems include cast resin transformers, with low electromagnetic emission, busbar trunking systems, enclosures for power switchgear and control gear assemblies, as well as uninterruptible power supply (UPS) units.

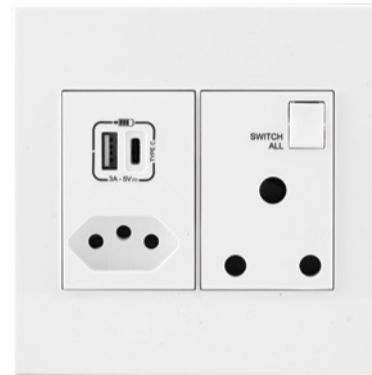
According to Legrand, the key advantage in selecting these components for efficient, safe and flexible power distribution, is the immediate integration between Legrand's busbar trunking systems, cast resin transformers and XL³ cabinets. All Legrand power solutions systems encompass the latest technology for energy efficiency, quality power supply, optimum safety and enhanced aesthetics.

Legrand's Guest Room Management System (GRMS) is a complete and integrated solution with IP backbone and supervision, designed for hotel owners seeking room equipment that is easy to install and intuitive for guests.

Legrand's user-friendly customisable controllers, in conjunction with advanced touch technology, provide an efficient solution for hotel room management. These controls include thermostats, bedside panels and keycard holders and readers.

The local Legrand team is committed to extending its operations further and will continue to provide products that meet the specific requirements of the South African market. This expansion programme forms part of the company's strategy to working closely with specifiers of electrical equipment in industrial, commercial and domestic sectors, to keep the local market abreast with the latest global trends.

Enquiries: www.legrand.co.za



ASSEMBLY LINE FOR EFFICIENT LV MOTORS COULD EASE STRESS ON POWER UTILITIES

CONTINUED FROM PAGE 1

"Our focus on premium efficiency IE3 motors is also significant as it helps drive energy efficiency – a key sustainability goal for mines and other industries."

According to Sindi Mbhalati, Operations Executive at Zest WEG, the assembly line required considerable investment in equipment. This included jib cranes for easier materials handling, an air reticulation system to feed compressed air to the pneumatic tools on the line as well as to the spray booth and packaging equipment – enhancing the efficiency of the production processes – and a state-of-the-art test panel.

As with any world class manufacturing and assembly operation, record keeping is an important cornerstone. The panel is therefore synchronised with the advanced WEG manufacturing facilities in Brazil, for complete and accurate record tracking and evaluation. Each motor undergoes routine testing which includes winding resistance tests, accessories tests, insulation resistance tests and no-load tests.

Elaborating on this, Mbhalati says that the panel tests winding resistance per phase with an imbalance test to compare the imbalances between the resistance results, while the accessories resistance test confirms that the accessories installed in the motor are in working order. The panel also tests for insulation resistance which provides the team with data on the motor winding health. A No-Load test is conducted to determine the current that the motor draws at no-load and determines the imbalance of the current drawn between the phases.

"Further ensuring operational efficiency, the line was capacitated with state-of-the-art equipment including a heating and greasing facility as well as rotor assembly C-hooks," says Mbhalati. "In addition, and most importantly, the assembly line has been engineered to allow multiple shifts

to be worked should it become necessary to increase capacity and output. This type of futureproofing to accommodate market demands is in line with Zest WEG's commitment to its customers."

The facility has created several new jobs within the business. Most of the new employees are dedicated to the W22 motor assembly line, while some others are shared with the company's various production lines.

"To ensure the highest quality standards in the assembly process, Zest WEG put our new staff through extensive technical and process training relevant to the new line," she says. "This included in-depth product and component training, as well as the operation of the specialised test panel."

Among the components Zest WEG procures for assembly are rotors, stators and bearings. These are produced mainly at WEG's extensive manufacturing facilities in Brazil, under stringent quality conditions. These are thoroughly tested before shipment to Zest WEG. Smaller components are sourced from local suppliers wherever possible, in line with the company's supply chain development policy.

"Governed by our ISO 9001 quality certification, the new assembly line is closely monitored by our dedicated quality department," says Mbhalati. "All motors are tested and quality inspected prior to dispatch to customers."

She emphasises that Zest WEG's quality control personnel are rigorously trained to assess motors during the build process as well as final quality inspection and testing. All aspects are aligned with WEG quality procedures, ensuring world class standards are maintained across all operating parameters.

Werninghaus highlights that mines are always looking for opportunities to promote local supply chains in line with the Mining Charter, and

also to reduce their energy consumption and carbon footprint. With some 65% of industrial energy worldwide consumed by motors, WEG's global corporate strategy aims to use resources responsibly and to create fewer emissions.

Werninghaus recently assumed the role of CEO at Zest WEG, bringing 15 years of experience in the WEG group in Brazil and the US. This includes five years as part of establishing WEG's wind turbine capability. His two years in the US included an important role as vice-chair of the National Electrical Manufacturers Association (NEMA), which develops standards for electric motor designs, frame sizes, enclosures and configurations.

As part of the Brazil-based WEG group, a leading global player in electric motors, Zest WEG is one of a wide network of the group's manufacturing facilities. He emphasises that this ensures the highest level of quality and engineering locally.

"We apply WEG's stringent quality control protocols to the new LV motor assembly line here in South Africa," he says. "All the motors produced from our local facility undergo the same standard of testing and analysis as any of our factories across the world."

Zest WEG's extensive manufacturing base in South Africa means that it achieves almost 90% local content capability for its transformers and more than 70% local content capability for other products such as E-houses and panels. These products form part of the company's wide range of solutions, including energy generation, electrical infrastructure, automation and generator sets.

Enquiries: www.zestweg.com



The difference between round and flat cables

When designing an electronic system, cables are oftentimes the last component specified by engineers. However, when the cable system is expected to last the life of the equipment, it is important to develop a system of cables that are reliable in terms of their durability and ability to maintain proper signal integrity.

Unplanned downtime is unacceptable in any industry or application. Therefore, cable systems represent the 'lifeline' of modern machinery. In today's heavily automated technology, moving applications pose many challenges to design engineers, who have to decide what form of a cable is the best fit – round or flat.

Application

Depending on the market and application, round and flat cables each excel in particular settings. Round cables have long been the industry standard, and are used in most applications from automated and general types of manufacturing to renewable energy.

Flat cables, while currently a niche solution, can offer a great method for supplying power and data to machines within the medical, semiconductor, and civil-aircraft markets, among others. Flat or festoon cables are also highly sought after in the overhead crane market for companies that do not want to wind cables around spools.

Performance criteria

Electrical performance: Electromagnetic interference (EMI): this includes both internal and external sources. Internal EMI protection varies and depends heavily

on the cable's construction. Standard (unpaired) flat cables do not perform well as data cables. If designers run individual screened pairs in a flat cable, it will provide crosstalk and coupling protection pair to pair.

It is very difficult to place an overall screen on a flat cable as the screening material tends to become round i.e., it will not hold a flat form. This makes external EMI protection of flat cables very difficult and not readily available, because this natural shielding tendency provides better protection against external EMI for round cables.

Crosstalk: This is the uncontrolled coupling of signals between two transmission circuits. Similar to EMI protection, using varied pair lay lengths within either a flat or round cable enhances protection against crosstalk.

Attenuation: this ultimately determines the maximum length of a signal cable and core resistance, which impacts voltage drop on a power component. In most cases, attenuation tends to be worse when using a flat cable. Higher-quality insulation and proper placement of the ground can improve attenuation, resulting in flat construction.

Mechanical stress: The four main types of mechanical stress placed on cables are rolling flex, torsion, tic-toc, and S-bend. Round cables can withstand all of them due to their natural ability to move in multiple axes at once. In certain applications, round cables are able to withstand 30 million flexing cycles before they need to be replaced. Flat cables are best suited for rolling flex, because this movement is in one linear axis.

Movements that require multiple axes such as torsion can cause the flat cable to bind or only twist to

a certain point. Under torsional loads, the cable gets twisted and spooled over a certain length. Thus, every component must be integrated at the right twist and position, and be wrapped or embedded with a PTFE-tape (Teflon), to minimise the friction forces during torsion.

Environmental stress: Cables are exposed to many environmental stressors that can cause them to degrade over time if the proper materials are not used during manufacture. Some of these stressors include UV, oil, radiation, abrasion, high or low temperature, and friction. Knowing these factors in advance will influence the selection of material properties (polyimide/foamed polyethylene, etc.) for core isolation and cable sheath materials (polyurethane).

PVCs or PTFEs used in round cables can be created to withstand many of these stressors while maintaining their flexibility. Flat cables that are extruded with silicone will be able to withstand high temperatures.

Cable design and production

Round cables are designed to maximise space within the smallest cross-sectional area required. This allows round cables to fit in most panel or machine openings that might be a problem for flat cables with an elongated cross section.

Furthermore, flat cables need to be weighed and balanced precisely to make sure movement is uniform. This is only required for round cables when they are installed in a cable track. Round cables only require fillers and tapes to ensure concentricity.

Finally, special tooling is required to encapsulate all

flat-cable components into a single cable.

Application-specific stress

Abrasion and cut resistance: because the cable system is spooled on reels and pulled over concrete and sharp edges, the outer sheath material needs the right shore-hardness for these parameters (polyurethanes have a good track record).

Low elongation at high tensile load: This is achieved by a double-wall extrusion process, in combination with an aramid-braid (Kevlar/Vectran) in between to take mechanical stress off of the inner components. This construction type minimises the tensile load placed on the inner cores, which reduces fatigue and early cable failure.

Using a strength member in cable constructions reduces the reliance on the copper, thereby reducing the total amount of copper used and ultimately cutting down on cable size, weight, and cost.

Conclusion

In summary, many options are available when it comes time to design a cable system. Engineers should use a design funnel or checklist to narrow down the options in order to develop the solution that best meets an application's electrical and mechanical requirements. Using this approach will ensure the cable design – round or flat – is optimal and gives all parties confidence that the cable system is durable and reliable.

Enquiries: sales@helukabel.co.za

How best to apply Ex classifications to mining plants

Many mining plant operators are unsure of how their plants should be classified in terms of the Ex classifications. "Pratley has developed extensive expertise in the demands placed on electrical termination equipment used in hazardous areas," comments Marketing Director Eldon Kruger.

Pratley is a long-established manufacturer of electrical apparatus for use in hazardous and non-hazardous industrial applications such as the mining industry. It shares its expertise with the industry through regular seminars and through ongoing product developments.

According to the South African National Standards (SANS) and the International Electrotechnical Commission (IEC), a hazardous area is where there is a risk of explosion due to the presence of flammable dust or explosive gases or vapours. To ensure the health and safety of employees working in such hazardous areas, it is critical that all electrical equipment used does not pose a risk of ignition in operation or in the event of any failure.

Hazardous areas are defined by three main criteria:

- The type of hazard.
- The likelihood of the hazard being present in flammable concentrations.
- The (auto) ignition temperature of the hazardous material.

Different zones are classified according to the potential source of ignition and the likelihood of the hazard being present in flammable concentrations. Zones 0, 1, and 2 refer to the presence of explosive gases or vapours, while Zones 20, 21, and 22 refer to zones where explosive dust is present.

Zone 0 denotes a constant hazard; Zone 1 an ongoing risk of an explosion occurring during normal operations; and Zone 2 a risk arising only in the event of abnormal operational situations. The same applies with respect to dust Zones 20, 21, and 22.

T-ratings present a further qualifying classification relating to the auto-ignition temperature of the hazardous material. T-ratings indicate the temperature class of a hazardous area and the electrical apparatus to be used in the area. A junction box, for example, needs to be of a design and material so it does not heat up and presents an ignition risk.

Temperature ratings range from T1 (< 450°C) to T6 (< 85°C). T6 is stipulated for use in the most dangerous areas, for example in zones coded Gas Group IIC gas – Carbon Disulphide, which has an auto-ignition temperature of 90°C.

In specifying electrical equipment with respect to temperature ratings, consideration needs to be given to the heat generated by the electrical equipment itself during normal operation and the ambient temperature. In addition, safety-critical electrical termination equipment like flameproof Ex d junction boxes must be designed to contain the pressure of any explosion.

The junction box must incorporate a specific flame path, bearing in mind that all the cable gland entries serve as flame paths. Ex d flame-proof junction boxes need to be able to withstand a pressure up to 30

bar or higher to contain the force of an explosion.

There are further qualifying codes for electrical apparatus indicating different protection concepts or methods of protection: 'Ex i' indicates intrinsic safety; 'Ex d' indicates flameproof equipment; 'Ex e' indicates increased safety. SANS 10108 sets out the definitions for electrical apparatus for use in hazardous areas.

Marking electrical equipment for hazardous areas is fundamental to identifying what can be used where. All Ex equipment has to be marked with the particular information supporting its safe use. ATEX, SANS, and IEC classifications, codes, and markings all vary slightly. Unless the plant operator knows what he or she is looking for, equipment markings can cause a lot of confusion. Therefore, it is essential that plant operators understand the markings on electrical apparatus.

There are a number of different inspection authorities and test houses that deal with Ex equipment in South Africa and are authorised to issue IA certificates confirming the use of Ex equipment. Each certificate carries a unique number and includes particular prefixes and suffixes denoting

specific qualifying factors.

The code of practice for Ex equipment inspection processes stipulates that inspection should be conducted within a period not exceeding two years, or as otherwise indicated by the risk assessment applicable to any given installation. Inspections range through different levels:

- Visual inspection confirms that the correct equipment is being used in the correct zone, with the correct markings applicable to that zone.
- Close inspection involves taking a closer hands-on look at equipment, checking connections, and ensuring all is in good working order.
- Detailed inspection entails taking the equipment apart to inspect it thoroughly and decide on repair or replacement as necessary.

Maintenance inspections are mostly carried out in-house. However, certification testing should be carried out on all new equipment, replacement equipment, or where changes are made, or equipment is repaired.

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Cables for repetitive movement and robotics

One of the world's leading manufacturers of flexible cables and energy chains that protect moving cables, igus®, is extending its product range in South Africa to cater for increasing demand.

The local company has also increased its stockholding of all its fast-moving products in order to shorten the lead time for customers with regular requirements for its cables and accessories. Iigus energy chains are used in a wide variety of applications in the country, especially where cables are required to flex and follow a linear path such as in cranes, heavy equipment, robotics and other applications.

Even despite the protection offered by the company's specially designed all-polymer construction, traditional types of cables are less suited to the stresses and strains of repetitive movement and provide considerably shorter lifespans than igus' Chainflex® offering.

According to igus South Africa managing director, Ian Hewat, the German company is best known for its development of special polymers for its revolutionary range of energy chains, as well as long-lasting polymer bearings and bushes that can extend the lifespan of machines and equipment up to 10 times.

The introduction of its specially designed cables has proved to be ground-



breaking with Chainflex cables dramatically outlasting alternatives in the laboratory and proven in the fields. As a result, many of the country's ports and other equipment intensive industries have specified igus' cable and energy chain solutions.

Chainflex® cables are unharnessed cables for moving applications in energy chains or for robot applications and come with a fail-safe 36-month guarantee. The cables meet the requirements for EMC safety as well as the standards and guidelines such as UL, CSA, EAC, Interbus and Profibus.

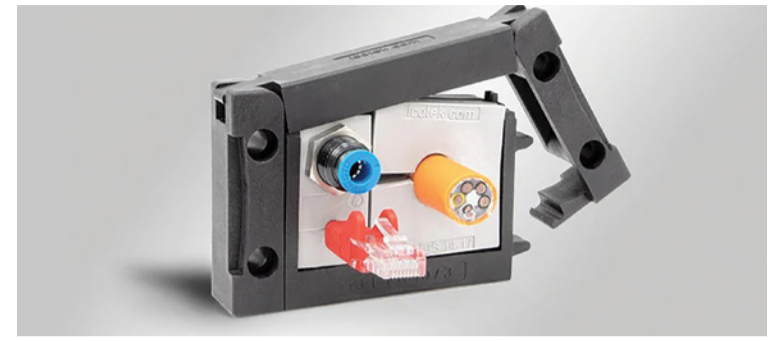
The product range includes everything from control cables, servo cables, motor cables and robot cables to bus cables, data cables, encoder cables and fibre optic cables and are available with a selection of various jacket materials.

"The reason for its growing popularity in South Africa is as a result of well documented successes. Our customers are confident that our cables for energy chains work flawlessly over long periods even with many cycles, high speeds and accelerations as well as very extreme ambient conditions.

"In addition, our specially developed polymers also enable us to develop strong and durable solutions to provide flexible control for robotics and automation through the development of our specially produced chain flex energy chains (e-chains). These can be developed for cables from 3 mm to massive 300 mm hoses in applications that replace festoons, busbars and cable reel drums and enhance machine operations," concludes Ian.

Enquiries: www.igus.co.za

New generation of tool-free cable entry system



A new generation of split cable entry frames for the KT grommet system from icotek has been released. The KEL-FA cable entry system has a tool-free assembly, high cable density and easy routing of pre-terminated cables. The system may be used for routing and sealing cables with and without connectors, as well as hydraulic and pneumatic hoses.

Use of the system is easy due to its tool-free design. Once the entry frame has been populated with grommets and cables, the cover is pressed down until the two clamping levers are locked into place. The frame design ensures a twist-proof assembly which can be either screw-mounted or simply snapped into the larger KEL-SNAP frame.

The KEL-FA frames match the cut-out dimensions for 10-, 16- and 24-pin standard industrial connectors and the system can route and seal cables with diameters from 1 to 35 mm. The frame has an integrated gasket on the rear side, which ensures a clean sealing between the frame and the wall. With the use of multi-hole grommets, a very high cable density of up to 40 lines through one frame can be achieved.

The KEL-FA system consists of polyamide and is free of silicone and halogen. The cable entry frame achieves ingress protection IP54, and has an operating temperature range of -40°C to 140°C.

Enquiries: info@radel.co.za

Print pre-sized labels from your phone

Brady Corporation's new M211 Label Printer is a lightweight, sturdy and wearable device that prints both pre-sized and continuous labels to identify cables and components. It can create even complex labels that can all be designed, printed and previewed from your phone.

Label with your phone

The new M211 Label Printer can easily be clipped to any belt. It connects seamlessly to smartphones via Bluetooth and is driven by Brady's Express Labels App. The app allows the user to quickly design, preview and print labels and to integrate data from spreadsheets. No other phone driven label printer today matches the label design possibilities of the M211. In addition, designs can be saved and shared between colleagues, either in the field or at the office."

Tested, quality labels

Quite unique for an entry-level portable label printer, is the M211's ability to print on both continuous and pre-sized labels. Brady offers M211 users 90+ different label cartridges to choose from. These include general purpose and dedicated labels, designed for reliability in specific applications. Brady has technical data sheets with label test results that evaluate adhesion to various types of flat and curved surfaces, and label print resistance to humidity, abrasion, heat, cold, weathering and other influences.

Resilient and easy to use

The new M211 Label Printer prints up to 300 labels on a single battery charge. Yet the system weighs only 0.5 kg, and has a compact design to make it extremely wearable. At the same time, the M211 is a tough device. Tests indicate the tiny printer survives 1.8 m falls, 110 kg crushes and military specification shocks. Next to its ability to survive

almost any job site, the M211 features 'drop-lock-print' label cartridges designed for swift 'on-the-job' consumable switching.

Enquiries: info_africa@bradycorp.com



Design. Preview. Print.
All from your phone.

Simple, intuitive, built for the job site,
resisting drops, shocks and crushes.

► Discover M211 Label Printer

BRADY in South Africa
T: +27 11 704 3295
info_africa@bradycorp.com
www.brady.eu



Compact dc charging cable awarded Good Design Award 2021

Following the success of its multiple award-winning ac charging cables, Phoenix Contact's product family for dc charging cables for the lower-power range, the CCS C-Line, has now also received the Good Design Award 2021 for practical and stylish design from the Chicago Athenaeum Museum.

The award was given for the DC charging cables in accordance with CCS Type 1 and CCS Type 2 standards for electric vehicles in the Transportation category. The jury of experts from various design fields emphasised the convenient handling and modern appearance for private as well as public and commercial use.

Together with designer Stephan Gahlow from Hamburg, Phoenix Contact focused on an ergonomic and stylish design with simple operation when developing the CCS C-Line product family. The shape of the gripping zone ensures easy handling and a comfortable feel.

Its functionality was also convincing: the dc charging cables enable fast charging with direct current in the lower-power range for the first time. With charging powers up to 80 kW, they are designed for modern dc home charging stations in garages and carports as well as small dc charging stations in the public and commercial sector. Highly sensitive temperature sensors in the plug ensure safety during charging, while high-quality and robust materials make the product durable.

The Good Design Award from the Chicago Athenaeum Museum of Architecture and Design has been presented for outstanding industrial and product design annually since 1950. This makes Good Design one of the oldest and most prestigious design award programmes in the world. An international jury of designers awards products in over 30 disciplines based on criteria such as innovation, form, functional properties and aesthetics.



Enquiries:
www.phoenixcontact.co.za



A discussion of ac versus dc

Very early in the discovery of electricity there was a major competition between the protagonists of ac and dc formats. Thomas Edison favoured dc and Nikola Tesla the ac systems. By all accounts, it was quite a tussle at the time.

Any format was good as long as the generation and use were all nearby. But as the grid became larger the network losses on the distribution network would have grown to have an impact overall. Dc would have been found to be rather unmanageable.

Ac, on the other hand, can very simply be voltage increased and also decreased; the transformer making this all simple and possible. Transformers are passive in what they do and, as such, have unsurpassed reliability. Westinghouse, who were amongst the leaders to get electricity up and going, relied on the ac system as well.

All this sounds awfully similar to the VHS/BETA saga of the 1990s, VHS became the victor despite BETA being superior and, of course, both were overtaken by CD/DVD disc type (and now those are also dying out).

Over time all became ac-based except for where motors and speed controls were used. Dc had the edge here for quite a while, but eventually this too was taken over by the ac-based technology, so much so that dc has really become somewhat of a lost art. That was until renewables popped up and now batteries are the 'thing' again. However, rather unrelated to their older battery cousins, they are dc-based in their approach.

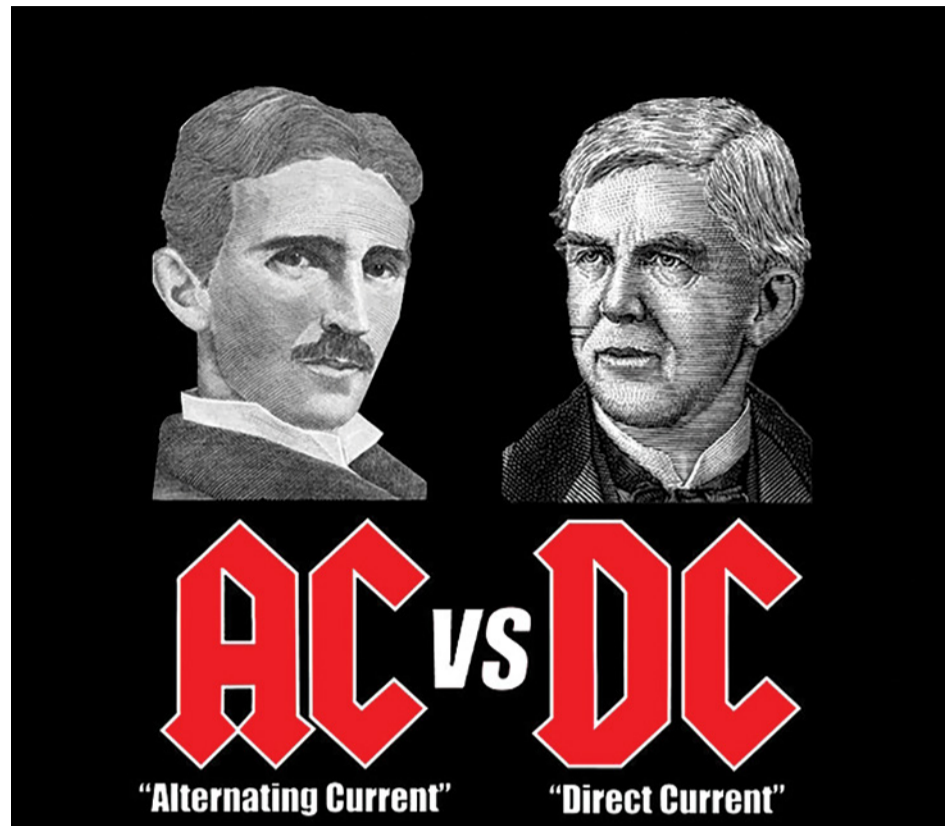
Of course, much of what we use in the modern

house these days may be plugged into the ac mains but converts that power to dc at low voltage for electronic use. One could also look at the cell phone industry which started with everyone having a device-specific charger then, which almost overnight went for a common approach and even not supplying a charger at all. One can only imagine the effect on the cell charger factories pumping out a charger per phone to not supplying a major portion of the market.

Simultaneously, dc charger connections are now readily available in the actual ac socket systems as well as your vehicle. With such a rapid change over such a short time, manufacturers are really worried that investment costs may never be recovered or that the market takes sudden direction changes. The USB cell conversion is successful as the power used is quite low, and the whole electrical system is being challenged by these sudden and urgent market directions.

The internal switch mode power supply in many of the electronic devices on the market could suddenly be removed from the device and placed outside, meaning an immediate price drop. Industry confirms that these universal voltage (110-250V) power supplies are rather easily damaged by voltage surges and spikes, so such a move may be quite good. Replacement rather than device repair would be the outcome.

Maybe it is time for the dc option to be explored in the common ac socket or alongside if we are seriously viewing the market direction? E.g., one rather larger power supply close and next to the main DB and wired out may be all it takes.



Almost every socket manufacturer has the 5 V dc USB option on offer. A 12 V 2-5 A power system is, after all, a very safe situation to deal with from supply and safety.

By Kevin Flack

Of course, any sudden market sway will result in available dc product/s being in short supply, forcing manufacturers to play catchup. Legislation would also require a revision. Legislation was seen to lag the alternative energy introduction and we wonder if it will ever fully catch up.

Flack has recently retired from industry and believes he still has valuable in-depth knowledge of the South African electrical landscape due to wide experiences gained in his 45+ years working career. In these trying COVID-19 times, Flack can provide online training to keep your staff up to date on all aspects of circuit breaker deployment.

So, maybe the dc beast will start to raise its head going forward. Challenging times for sure!

Email kevin.flack@outlook.com

Automated diagnostic static motor tester



The ADX series of models is designed to perform tests at up to 15 000 V and can be coupled with power packs to increase test voltages to 30 kV or 40 kV. This flexibility allows you to conduct ac and dc motor partial discharge and low impedance testing on all motors, generators, coils, and other devices.

The ADX is designed to increase your productivity through simplified workflows with combined manual and automatic testing, sequence-based test procedures, route-based testing, instant test-related help and customisable folder structures. The ADX is the smartest way to save you time and money.

The Megger ADX is an innovative and transformational leap forward for motor testing in today's demanding workplaces. Developed using Linux on an Android operating system, the ADX software is easily updated via a Lan or Wi-Fi connection. The large 10.4-inch touchscreen is tough and daylight viewable.

A fundamental requirement of hard-working test equipment is having the optimal test lead set. The ADX has IEC61010 safety compliant, combined high voltage/low voltage detachable Kelvin test leads, rated at 16 kV with a large jaw opening. The leads are available individually or in sets, so damaged leads can be replaced in the field without sending the equipment away – saving time and money.

An internal battery backup allows the ADX to be moved between assets without having to shut down and reboot for each new location.

The ADX family includes models designed to perform tests at voltages up to 15 kV. The five main options include 4 kV, 6 kV, 12 kV, 15 kV, and 15 kV-A (Armature). Couple the ADX with a PPX to increase test voltages up to 40 kV for testing high voltage assets.

Available ADX tests include:

- Winding Resistance.
- Inductance.
- Capacitance.
- Insulation Resistance (IR).
- Dielectric Absorption (DA).
- Polarization Index (PI).
- DC HiPot (standard).
- DC HiPot (step-voltage).
- DC HiPot (continuous ramped).
- Surge analysis with EAR+™
- Partial Discharge on Surge.

Overview:

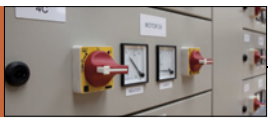
- Asset-centric approach promotes turnkey testing for operators.
- Separating Asset from Installation provides greater insight into asset service needs and issues.
- PowerDB Dashboard secure cloud-based analysis software.
- Choice of Manual, Automatic, or Sequence testing.
- Screen-level context sensitive help.
- Adaptable search capability.
- Asset management tools.

Enquiries: <https://adx.megger.com>

Static Motor Tester

- Detachable test leads
- Surge Test
- Manual and automatic test sequences
- 10.4 inch screen
- Internal battery back up
- Cloud based software

www.megger.com/baker



MANUFACTURERS

ABB South Africa
Aberdare Cables
ACTOM Protection and Control
Alvern Cables
CCG Cable Terminations
Circuit Breaker Industries: Low Voltage
Clearline Protection Systems
Crabtree South Africa
Danfoss
Dehn + Söhne
Dry Ice International
Hamar Controls
HellermannTyton
Helukabel
Lapp Group
Legrand
Matelec
O-Line
Phoenix Contact
Power Process Systems
Ptytrade 228
Radiant Lighting
Sabelco Electrical Industries
Schneider Electric South Africa
Stone Stamcor
Superlume
Switchboard Manufacturers
Switching Systems
Three-D Agencies
Voltex
Waco
WearCheck
WEG

DISTRIBUTORS

ACDC Dynamics
ACTOM Electrical Products
ARB Electrical Wholesalers
Atlas Group
Belco
Brother International South Africa
Cabstrut
Central Support Systems
Clearline Protection Systems
Comtest Distribution
Consolidated Electrical Distributor (CED)
Crabtree South Africa
Dehn Africa
DRH Components
Dry Ice International
Electrahertz
Khanyisa Electrical Suppliers
Lapp Group
Magnet
Major Tech
Matelec
MCE Electric
Phambili Interface
Phoenix Contact
Power Process Systems
Ptytrade 228
Radiant Lighting
R&C Instrumentation
RTC Control Systems
Sabelco Electrical Industries
Siba Fuses
Springs BeeGee Electrical
Superlume
Three-D Agencies
Versalec
Voltex
Waco
Zap Electrical Wholesalers
Zest WEG

ONLINE DISTRIBUTORS

Comtest Distribution
HellermannTyton
Siba Fuses
Voltex online shop

CONTACTS

ABB South Africa
Customer contact centre
Aberdare Cables
Jyoshitie Dhunes
ACDC Dynamics
Elmari Erasmus/Dirk Klynsmith
ACTOM Electrical Products
Warren Filippa
ACTOM Protection & Control
Faisal Hoosen
Alvern Cables
Stephen Liasides
ARB Electrical Wholesalers
Sales
Atlas Group
Annie Storar
Belco
Shiraj Wentzel
Brother International South Africa
Munna Desai
Cabstrut
Theon Steyn
Circuit Breaker Industries: Low Voltage
Aletta Olivier
CCG Cable Terminations
Arthur Cameron
Central Support Systems
Faruk Cassim
Clearline Protection Systems
Tanya/Rakesh
Comtest Distribution
Leanne Cole
Consolidated Electrical Distributor (CED)
Richard Egenieder
Crabtree South Africa
Sales
Danfoss
Lynne McCarthy
Dehn Africa
Kirk Risch
DRH Components
Rob Hare
Dry Ice International
Johan van den Bergh
Electrahertz
Frank Proude (Pta) Peet Lourens (Jhb)
Hamar Controls
Corne de Villiers
HellermannTyton
Ingrid Nicolaus
Helukabel
Doug Gunnewegh
Khanyisa Electrical Suppliers
Dominic Kalil
Lapp Group
Sales
Legrand
Johan Bosch
Magnet
Jenine Pillay
Major Tech
Werner Grobbelaar
Matelec
Yann Leclézio
MCE Electric
Sales

CONTACTS

O-Line
Sales
Phambili Interface
Steve Lea
Phoenix Contact
Carl Coetzer
Power Process Systems
Sales
Ptytrade 228
Brendon Chalmers
Radiant Lighting
Alfred Weldon
R&C Instrumentation
Gerhard Otto
RTC Control Systems
Leon Barkhuizen
Sabelco Electrical Industries
Marc Moreau
Schneider Electric South Africa
Sales
Siba Fuses
Hi Hassen
Springs BeeGee Electrical
Ewen Sim
Stone Stamcor
Sales
Superlume
Willie Garbers
Switchboard Manufacturers
Josh Berman
Switching Systems
Bryan Sequeira
Three-D Agencies
Mark Jenkins
Versalec
Roland Fry
Voltex
Lizel de Jager
Voltex LSis
Rose Schulz
Waco
Jaco Coetzee
WearCheck
Kay Meyrick
Zap Electrical Wholesalers
Sales
Zest WEG
Sales

DRIVES AND SOFT STARTERS

ABB South Africa
Full range of drives and soft starters
ACDC Dynamics
Full range of Vacon VSDs and Aucorn soft starters
ACTOM Protection & Control
VSD panels; soft-starters
ARB Electrical Wholesalers
Full range of drives/soft starters
Belco
Full range of drives/soft starters
Consolidated Electrical Distributor (CED)
Tosunlux and ABB
Danfoss
Soft starters – <https://www.danfoss.com/en/products/soft-starters/>. Drives – <https://www.danfoss.com/en/products/ac-drives/>
Electrahertz
Full range of drives and soft starters
Hamar Controls
Manufacturers of Low Voltage Distribution Boards and Motor Control Centres to Customer Specifications and Requirements. Siemens Partner & licensed SIVACON S8 Manufacturer
Khanyisa Electrical Suppliers
Full range of drives and soft starters
Magnet
Range of drives and soft starters
MCE Electric
Full range of Hyundai VSDs
Power Process Systems
Full range of drives/soft starters
Ptytrade 228
Full range of drives/soft starters
RTC Control Systems
ABB; Eaton; Delta
Springs BeeGee Electrical
Full range available
Voltex
Full range of drives/soft starters
Zap Electrical Wholesalers
Full range of drives/soft starters
Zest WEG
Full range of low voltage and medium voltage drives and soft starters

ARMoured/SHIELDED CABLES

Aberdare Cables
Bells & Mains
ACTOM Electrical Products
Armoured and shielded cables
ARB Electrical Wholesalers
Full range of armoured/shielded cables
Atlas Group
Full range of armoured/shielded cables
Belco
Full range of armoured/shielded cables
Electrahertz
Full range of armoured/shielded cables
HellermannTyton
Range of tools – Hydraulic armoured cable cutters (HYCC85, HH700HP)
Helukabel
Full range of armoured and shielded cables
Khanyisa Electrical Suppliers
Full range of armoured/shielded cables
Lapp Group
Unitronic data communication cables; Olifex power and control cables
Magnet
Range of armoured and shielded cables
Phoenix Contact
Range of armoured and shielded cables
Power Process Systems
Full range of armoured and shielded cables
Ptytrade 228
Full range of armoured/shielded cables
RTC Control Systems
Aberdare
Springs BeeGee Electrical
Full range available
Voltex
Full range of armoured and shielded cables
Zap Electrical Wholesalers
Full range of armoured and shielded cables

CABLE SUPPORT SYSTEMS

ABB South Africa
Full range of cable support systems
ACDC Dynamics
Wide range of Gewiss and Ardic cable support systems
ACTOM Electrical Products
Cable support systems to suit all installations
ARB Electrical Wholesalers
Full range of cable support systems
Atlas Group
Full range of cable support systems
Belco
Full range of cable support systems
Cabstrut
Full range of cable support systems
Central Support Systems
Full range of cable support systems
Consolidated Electrical Distributor (CED)
Tosunlux
Electrahertz
Full range of cable support systems

CABLE SUPPORT SYSTEMS

HellermannTyton
Complete cable management solutions including Ratchet P-clamps and trunking- slotted/solid
Khanyisa Electrical Suppliers
Full range of cable support systems
Magnet
Range of cable support systems
Matelec
Half-moon trunking
O-Line
Full range of cable support systems
Power Process Systems
Full range of cable support systems
Ptytrade 228
Full range of cable support systems
RTC Control Systems
CCS
Sabelco Electrical Industries
Full range of cable support systems
Springs BeeGee Electrical
Full range available
Three-D Agencies
Full range of cable support systems
Voltex
Cabstrut range of cable support systems
Zap Electrical Wholesalers
Full range of cable support systems

GEARBOXES FOR MOTOR APPLICATIONS

ARB Electrical Wholesalers
Full range of gearboxes for motor applications
Belco
Full range of gearboxes for motor applications
Dry Ice International
Cleaning of motors and gearboxes with dry ice blasting
Electrahertz
Full range of gearboxes for motor applications
Magnet
Range of gearboxes for motor applications
Stone Stamcor
Hydro-Mec European quality gearboxes
Ptytrade 228
Full range of gearboxes for motor applications
R&C Instrumentation
Vibration switches and transmitters
RTC Control Systems
Range of gearboxes for motor applications

CONTACTORS, BREAKERS, RELAYS

ABB South Africa
Full range of contactors, breakers, relays
ACDC Dynamics
Covering all low to medium voltage needs from brands including TC, C&S, Gewiss and Teraskai
ACTOM Electrical Products
Complete range of low voltage circuit breakers, isolators, earth leakage devices and wiring accessories
ACTOM Protection & Control
TAIAN contactors/relays
ARB Electrical Wholesalers
Full range of low voltage circuit breakers, isolators, earth leakage devices and wiring accessories
Circuit Breaker Industries: Low Voltage
Full range of Magnetic Contactors, Thermal Overload Relays and Circuit Breakers
Consolidated Electrical Distributor (CED)
Tosunlux and ABB
DRH Components
Earth leakage relays
Dry Ice International
Cleaning of electrical apparatus with dry ice blasting
Electrahertz
Full range of contactors, breakers, relays
Hamar Controls
Manufacturers of Low Voltage Distribution Boards and Motor Control Centres to Customer Specifications and Requirements. Siemens Partner & licensed SIVACON S8 Manufacturer
Khanyisa Electrical Suppliers
Full range of contactors, breakers, relays
Legrand
Full range of MCBs, MCCBs, ACBs and contactors
Magnet
Range of contactors, breakers, relays
Major Tech
Comprehensive range of miniature circuit breakers 3 kA MCB series; 6 kA MCB series; 6 kA MCB series, earth leakage and isolator series
MCE Electric
MCE Contactors – Full Range, MCE Relays – Full Range, Onesto Circuit Breakers – Full Range, Schenker Circuit Breakers – Full Range
Phoenix Contact
Relays, solid state motor starter
Power Process Systems
Full range of contactors, breakers and relays
Ptytrade 228
Full range of contactors, breakers and relays
R&C Instrumentation
Full system power management local and via Internet
RTC Control Systems
ABB; Eaton
Schneider Electric South Africa
Full range of contactors, breakers and relays
Springs BeeGee Electrical
Full range available
Switchboard Manufacturers
LV distribution boards that contain contactors, breakers, relays, changeovers and can be used to supply power to motors and motor controllers
Voltex
Full range of contactors, breakers, relays
Voltex LSis
Full range of contactors, breakers, relays
Zap Electrical Wholesalers
Full range of contactors, breakers, relays
Zest WEG
Full range of contactors; breakers; relays

MOTOR PROTECTION AND SURGE PROTECTION

ABB South Africa
Full range of motor and surge protection
ACDC Dynamics
Extensive range of motor and surge protection products
ACTOM Protection & Control
Motor protection relays
ARB Electrical Wholesalers
Full range of motor protection/surge protection
Atlas Group
Full range of motor and surge protection
Belco
Full range of motor and surge protection
Circuit Breaker Industries: Low Voltage
Clip-In Dual Mount Surge Protection Devices
Clearline Protection Systems
Full range of motor and surge protection
Consolidated Electrical Distributor (CED)
Tosunlux and ABB
Dehn Africa
Surge and lightning protection
DRH Components
Motor protection relays
Electrahertz
Full range of motor and surge protection
HellermannTyton
Surge protection plugs (TSPIA/TSPIAF)
Khanyisa Electrical Suppliers
Full range of motor and surge protection
Legrand
Full range of MCBs, MCCBs, ACBs and Surge Arrestors
Magnet
Motor and surge protection

MOTOR PROTECTION AND SURGE PROTECTION

MCE Electric
Onesto and Schenker Surge Arrestors – Full Range
Phambili Interface
Full range of motor and surge protection
Phoenix Contact
Surge protection
Power Process Systems
Full range of motor and surge protection
Ptytrade 228
Full range of motor and surge protection
RTC Control Systems
ABB; Eaton
Schneider Electric South Africa
Acti9 DIN-mounted iPF Type 2 or 3 LV surge arresters; Acti9 DIN-mounted iPRD Type 2 or 3 LV withdrawable surge arresters; Tesys power control
Siba Fuses
Full range of fuses up to 12 kV for motor protection
Springs BeeGee Electrical
Full range available
Switchboard Manufacturers
Power factor correction boards to reduce electricity bills as a result of high reactive charges
Voltex
Full range of motor and surge protection
Voltex LSis
Full range of motor and surge protection
Waco
Range of motor and surge protection
WearCheck
Condition monitoring specialists
Zest WEG
Full range of motor protection and surge protection

CABLE MANAGEMENT ACCESSORIES

ABB South Africa
Full range of cable management accessories
ACDC Dynamics
Full range of wiring accessories
ACTOM Electrical Products
Full range of accessories for all types of installations
ARB Electrical Wholesalers
Full range of cable management accessories
Atlas Group
Full range of cable management accessories
Belco
Full range of cable management accessories
Brother International South Africa
Full range of cable management accessories
Cabstrut
Full range of cable management accessories
Central Support Systems
Full range of cable management accessories
Circuit Breaker Industries: Low Voltage
Rail Mount Meters
Consolidated Electrical Distributor (CED)
Tosunlux, Stone Stamcor and HellermannTyton
Crabtree South Africa
Full range of cable management accessories
Electrahertz
Full range of cable management accessories
HellermannTyton
Full range of cable ties (T-series) including stainless steel. Full range of cable identification labels including printers
Helukabel
Helukabel glands, connectors, cable protection
Khanyisa Electrical Suppliers
Full range of cable management accessories
Lapp Group
Cable accessories including UV resistant cable ties, steel cable ties and twist tail cable ties; Fleximark cable marking products
Legrand
Full range of cable management systems
Magnet
Cable management accessories
Matelec
Cable glands; cable clips; conduit clips
MCE Electric
MCE – Slotted, Solid Wall and Floor Trunking, Canal Plast – Slotted Trunking and Flexible Wiring Ducts; MCE – Cable Joint Kits
O-Line
Full range of cable management systems
Phambili Interface
Full range of cable management accessories
Phoenix Contact
Labels, marking systems
Power Process Systems
Full range of cable management accessories
Ptytrade 228
Full range of cable management accessories
Radiant Lighting
Full range of cable management accessories
RTC Control Systems
Range of cable management accessories
Springs BeeGee Electrical
Full range available
Three-D Agencies
Full range of cable management accessories
Voltex
Full range of cable management accessories
Zap Electrical Wholesalers
Full range of cable management accessories

DISPLAYS

ACDC Dynamics
Comprehensive range of displays, energy meters, digital multimeters, network analysers and panel meters – digital and analogue
ARB Electrical Wholesalers
Full range of displays
Comtest Distribution
Full range of Fluke and Amprobe meters
Consolidated Electrical Distributor (CED)
Tosunlux and ABB
Electrahertz
Full range of displays
HellermannTyton
Automotive tester (TBM319)
Khanyisa Electrical Suppliers
Full range of displays
Legrand
Full range of metering equipment
Magnet
Range of displays
Matelec
Kwh meters
Power Process Systems
Full range of displays
Phoenix Contact
Energy meters
Ptytrade 228
Full range of displays
Radiant Lighting
Full range of displays (meter reading, etc)
RTC Control Systems
Landis; Gyr
Springs BeeGee Electrical
Full range available
Voltex
Full range of displays
Zest WEG
Electronic PF01 range of power factor meters; MMW range of power meters

FANS FOR MOTOR APPLICATIONS

ACDC Dynamics
Extensive range of fans – O.Ere and others
ARB Electrical Wholesalers
Full range of fans for motor applications
Belco
Full range of fans for motor applications
Consolidated Electrical Distributor (CED)
Tosunlux

FANS FOR MOTOR APPLICATIONS

Electrahertz
Full range of fans for motor applications

Khanyisa Electrical Suppliers
Full range of fans for motor applications

Magnet
Fans for motor applications

Power Process Systems
Fans for motor applications

Ptytrade 228
Full range of fans for motor applications

WIRING AND WIRING ACCESSORIES FOR MOTOR APPLICATIONS

ABB South Africa
Full range of wiring and wiring accessories for motor applications

Aberdare Cables
Housewire/Panel flex (wiring inside the terminal box)

ACTOM Protection & Control
Range of wiring and wiring accessories for motor applications

Alvern Cables
Permotrail; Permo power; ALVK R-VK trailing cable; H07; Singleflex

ARB Electrical Wholesalers
Full range of wiring and wiring accessories for motor applications

Bellco
Full range of wiring and wiring accessories for motor applications

Consolidated Electrical Distributor (CED)
Tosunlux, HellermannTyton and Uniclamp

Electrahertz
Full range of wiring and wiring accessories for motor applications

Hamar Controls
Manufacturers of Low Voltage Distribution Boards and Motor Control Centres to Customer Specifications and Requirements. Siemens Partner & licensed SIVACON SB Manufacturer

HellermannTyton
Edge clips, convoluted tubing, braided sleeving (Helagaine)

Helukabel
Full range of wiring and wiring accessories for motor applications

Khanyisa Electrical Suppliers
Full range of wiring accessories for motor applications

Legrand
Full range of wiring accessories for motor applications

Magnet
Range of wiring accessories for motor applications

MCE Electric
Full range of MCE and Onesto Industrial Plugs and Sockets

Phambili Interface
Full range of wiring accessories for motor applications

Phoenix Contact
Marking systems

Power Process Systems
Full range of wiring and wiring accessories

Ptytrade 228
Full range of wiring and wiring accessories for motor applications

R&C Instrumentation
Infrared inspection windows

RTC Control Systems
Range of wiring accessories for motor applications

Springs BeeGee Electrical
Full range available

Stone Stamcor
Cutters, strippers and crimping tools

Three-D Agencies
Full range of wiring accessories for motor applications

Voltex
Full range of wiring and wiring accessories

Voltex LSis
Full range of wiring and wiring accessories

Waco
Full range of wiring and wiring accessories

CABLE GLANDS, LUGS, AND FERRULES

ACDC Dynamics
Full range of cable glands, lugs, ferrules

ACTOM Electrical Products
Full range of termination and jointing requirements

ARB Electrical Wholesalers
Full range of cable glands, lugs ferrules

Atlas Group
Full range of cable glands, lugs, ferrules

Bellco
Full range of cable glands, lugs, ferrules

CCG Cable Terminations
Range of cable glands, lugs, ferrules

Consolidated Electrical Distributor (CED)
Stone Stamcor

Electrahertz
Full range of cable glands, lugs, ferrules

HellermannTyton
Full range of lugs, glands and ferrules (with SANS approvals) and pre-insulated terminals

Helukabel
Full range of cable glands, lugs, ferrules

Khanyisa Electrical Suppliers
Full range of cable glands, lugs, ferrules

Lapp Group
Skintop cable glands

Legrand
IP68 cable glands; Cabstop cable glands

Magnet
Range of cable glands, lugs, ferrules

Matelec
Cable glands; conduit glands

O-Line
Full range of cable glands, lugs, ferrules

Phoenix Contact
Full range of cable glands, lugs, ferrules

Power Process Systems
Full range of cable glands

Ptytrade 228
Full range of cable glands, lugs, ferrules

Springs BeeGee Electrical
Full range available

Stone Stamcor
Full range of copper, aluminium, bi-metallic compression lugs and ferrules; 11 kV and 36 kV mechanical lugs and ferrules

RTC Control Systems
Range of cable glands, lugs, ferrules

Superlume
A wide range of IP65 rated connection cable glands

Three-D Agencies
Full range of cable glands, lugs & ferrules

Voltex
Full range of cable glands, lugs & ferrules

Waco
Full range of cable glands, lugs & ferrules

Zap Electrical Wholesalers
Full range of cable glands, lugs ferrules

FLAMEPROOF

Aberdare Cables
Flamosafe

ACDC Dynamics
Full range of flameproof products; lighting enclosures, limit switches, plugs, sockets, pushbuttons, fans, sirens, sirens, sirens and accessories

ARB Electrical Wholesalers
Full range of flameproof products

Atlas Group
Full range of flameproof products

Bellco
Full range of flameproof products

Electrahertz
Full range of flameproof products

Helukabel
Full range of flameproof products

Khanyisa Electrical Suppliers
Full range of flameproof products

Magnet
Range of flameproof products

Phambili Interface
Full range of flameproof products

FLAMEPROOF

Ptytrade 228
Full range of flameproof products

R&C Instrumentation
Ex-certified infrared thermometers

Springs BeeGee Electrical
Full range available

Superlume
A wide range of zone rated light fixtures

Voltex
Full range of flameproof products

Waco
Full range of flameproof products

Zest WEG
Full range of flameproof products

CONTROLS FOR MOTOR APPLICATIONS

ABB South Africa
Full range of controls for motor applications

ACDC Dynamics
Full range of controls for motor applications

ACTOM Protection & Control
Control desks; control panels; selector switches

ARB Electrical Wholesalers
Full range of controls for motor applications

Bellco
Full range of controls for motor applications

CBI-electric: low voltage
RMQ pilot devices (16 - 22.5 mm); emergency stop push buttons illuminated and non-illuminated; FAK foot and palm switches; signal towers; full range of push buttons including key operated, illuminated, LED, activators and accessories

Consolidated Electrical Distributor (CED)
Tosunlux and ABB

Electrahertz
Full range of controls for motor applications

Khanyisa Electrical Suppliers
Full range of controls for motor applications

Legrand
Complete range of control and signaling units; industrial sockets and plugs

Magnet
Range of controls for motor applications

MCE Electric
Full range of MCE Pushbuttons, Control Station and Pendant Controls

Phambili Interface
Full range of controls for motor applications

Power Process Systems
Full range of controls for motor applications

Ptytrade 228
Full range of controls for motor applications

RTC Control Systems
Range of controls for motor applications

Springs BeeGee Electrical
Full range available

Voltex
Full range of controls for motor applications

Voltex LSis
Full range of controls for motor applications

Zest WEG
Full range of controls for motor applications including pushbuttons, selector switches and isolators

CABINETS FOR MOTOR APPLICATIONS

ACDC Dynamics
Full range of cabinets and enclosures for all purposes

ACTOM Protection & Control
MCCs; special and standard starters

ARB Electrical Wholesalers
Full range of cabinets for motor applications

Consolidated Electrical Distributor (CED)
Tosunlux and ABB

Dry Ice International
Cleaning of cabinets with dry ice blasting

Electrahertz
Full range of cabinets for motor applications

Hamar Controls
Manufacturers of Low Voltage Distribution Boards and Motor Control Centres to Customer Specifications and Requirements. Siemens Partner & licensed SIVACON SB Manufacturer

Khanyisa Electrical Suppliers
Full range of cabinets for motor applications

Legrand
Full range of type-tested LV cabinets

Magnet
Cabinets for motor applications

MCE Electric
Full range of Onesto mild steel and stainless steel enclosures

Phambili Interface
Full range of cabinets for motor applications

Phoenix Contact
Full range of cabinets for motor applications

Power Process Systems
Full range of cabinets for motor applications

Ptytrade 228
Full range of cabinets for motor applications

R&C Instrumentation
Infrared inspection windows

RTC Control Systems
Range of cabinets for motor applications

Sabelco Electrical Industries
Full range of cabinets for motor applications

Springs BeeGee Electrical
Full range available

Voltex
Full range of cabinets for motor applications

Voltex LSis
Full range of cabinets for motor applications

Waco
Full range of cabinets for motor applications

OTHER

Switching Systems
Dip proofing inverters for MCCs



+27 (0)11 874 7600



+27 (0)11 723 6001



+27 (0)10 202 6995



+27 (0)11 386 0000



+27 (0)11 864 5255



measure with confidence

+27 (0)10 595 1821



+27 (0)11 704 1487



+27 (0)11 683 0641



+27 (0)11 879 6600



+27 (0)11 452 1415



+27 (0)11 396 8000



CABLE TERMINATIONS PTY LTD

+27 (0)11 394 2021

Re-alignment positions SWAN Electric for growth

SWAN Electric, and its subsidiary company Switch Technique, part of the internationally respected and multi-nationally present Mobicon Group, is pleased to confirm it has completed its first phase of a significant re-shuffle and re-alignment programme following the departure of some of its management team earlier this year. This shuffle places SWAN Electric in a powerful position with capable, experienced and proven management taking the company to ever higher levels of operations across Southern Africa, and beyond. Mobicon Group, represented by highly revered CEO Manny Moutinho, is now pleased to make a statement of market intent with absolute confidence.

Steve Schwartz has been appointed as SWAN Electric General Manager, and while having a background in Electrical Engineering, he also comes with extensive local and international commercial experience in managing, leading, training and growing companies in several industrial/commercial/media industries. With a career history of turning businesses around via innovative means, Schwartz makes a return to the electrical industry in SA and, together with newly appointed National Sales Manager, Stephen Cook, is re-aligning the company's commercial footprint to the market's requirements and serviceable needs. Cook is both technical and commercially skilled, comes with a successful career having worked locally and internationally in the electrical industry, and has led divisions, campaigns, teams and brands to commercial success. He is well placed to take SWAN Electric to new places.

An almost entirely new management team is in place right across SWAN Electric, which, with integrity, is ensuring that the company lives up to expectations of its clients. This is welcome news for a wide range of electrical companies, traders, wholesalers, panel builders, OEM's, specifiers, and buyers in all electrical market sectors. An interesting operational strategy for wholesalers is currently being rolled out by SWAN Electric, making a difference for all its clients, and ensuring long-term relations are honoured. Sustainable business is paramount, and in a short time the new management team has already made significant progress in this regard, with its closest clients, new and old.

Having re-established strong alliances with key-suppliers of established and respected brands alongside its own well-established brands, SWAN Electric is also finding itself attracting new brands and new global players to its fold.

Subsidiary company Switch Technique, based in KwaZulu-Natal, remains largely unchanged with Managing Director Stevan Elion in attendance. That company's brands and products are well known and distributed via SWAN Electric via branches and distributors across Southern Africa. Known for relentless pursuit of customer service, Elion remains a pillar of integrity and reliability for the entire group.

SWAN Electric has recently and rapidly addressed matters around its core operations, its reach, its product basket and its footprint in Southern Africa. Embarking upon Community Outreach Programmes,



SWAN Electric sales representatives at the company's stand during the recent Electra Mining exhibition.

Student Development Programmes, internal and external training programmes as well as creating collaboration-partnerships via innovative and interesting ways which are somewhat novel in the industry, SWAN Electric is definitely a company currently on the move. It is destined to prosper and grow with

great momentum and high integrity levels. With its new management team, SWAN Electric will be a part of Southern Africa's LV electrical industry landscape for many interesting years to come.

Enquiries: www.swan-electric.co.za

3-Phase Motor Soft Starter

The RVS-DN is a highly sophisticated and reliable three-phase motor soft starter designed for use with standard three-phase, three-wire and six-wire, squirrel cage induction motors. It provides the best method of reducing current and torque during low voltage motor starting

This heavy-duty three-phase starter starts the motor by supplying a slowly increasing voltage to the system. This provides a soft start and smooth, stepless acceleration while drawing the minimum current necessary to start the motor.

The third generation, microprocessor based digital control provides unique features like pump control, slow speed, electronic reversing and accurate motor protection.

RVS-DN models can be supplied with options for insulation protection, thermistor input in addition to analogue output, and more.

The RVS-DN is a heavy duty, advanced, reliable three-phase starter designed to start the most demanding applications and operate under severe conditions, such as those in Marine and Mining installations. Advanced features such as pump control, slow speed, and electronic reverse and enhanced motor protection make it one of the best and most popular soft starters in the industry.

Rugged design and functionality:

- Soft start and soft stop.
- Soft, stepless acceleration and deceleration.
- Current limiting.
- Torque and current control – for optimised acceleration and deceleration.
- Pump control program.
- Dual adjustment – two start/stop characteristics.
- Slow speed with electronic reverse.
- Pulse start.

The comprehensive protection package includes:

- Too many starts & stops inhibit time.
- Long start time (Stall protection).
- Shear pin (jam) with adjustable delay.
- Electronic overload with selectable curves.
- Under current.
- Phase loss.
- Phase sequence and Under/Over frequency.
- Under/Over voltage.
- Load loss (motor not connected).
- External fault.
- Shorted SCR.
- Starter over temperature protection.
- Motor insulation test (option).
- Motor thermistor (option).
- When using "Preparation for Bypass" all protection remains active.

Features:

- Robust construction.
- Highly advanced starting and stopping characteristics.
- User friendly set up and operation.
- Line or Inside delta connection models up to 690 V.
- Ambient operating temperature: up to 60°C.
- Motor insulation tester.
- Communication: Modbus, Profibus, DeviceNet.
- Thermistor input.
- Analog output 45-65 Hz.
- Auto-tracking frequency range.
- Can be operated without bypass contactor at 50°C up to 820 A.
- Designed to meet Marine Industry standards up to 3000 A.

Options:

- DeviceNet.
- Modbus.
- Profibus.
- Insulation test.
- Analog output.
- Conformal coating.
- Preparation for bypass contactor.
- Remote display.
- Marine approval (A-C).
- UL standard (A-C).

Enquiries: www.varispeed.ca.za



Next generation low voltage switchboard enhances safety, reliability, and connectivity

Schneider Electric, the leader of digital transformation of energy management and automation, today announced the launch of its next generation BlokSeT low voltage switchboard – a state-of-the-art design that answers the need for superior operational safety in the world of high-performance LV power applications.

BlokSeT's iPMCC (intelligent Power and Motor Control Center) is a highly capable and advanced smart solution for fault prevention, protection, and automatic restart. Safety and reliability have been significantly improved with the iPMCC's new temperature and humidity monitoring thermal sensors. This permanent thermal monitoring system utilises small plastic non-contact and non-powered IR sensors that extend the maintenance lifecycle and mitigate safety risks such as electrical fires.

Another major design improvement is the new fresh look and feel, giving the BlokSeT a stylistic ergonomic finish. This smart innovation makes it easier and safer to operate and maintain the LV switchboard.

With EcoStruxure IoT-enabled solutions, switchboard data can be collected and analysed in real-time via wireless connectivity giving operators predictive – rather than preventive – maintenance analysis.

With the next generation BlokSeT LV switchboards, Schneider Electric further establishes its dedication to maximising uptime and enhancing safety, reliability, and connectivity for industry professionals.

About Schneider Electric

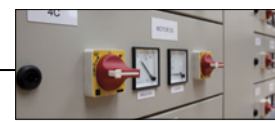
Schneider's purpose is to empower all to make the most of our energy and resources, bridging progress and sustainability for all. The company calls this 'Life Is On.' Its mission is to be your digital partner for sustainability and efficiency.

Schneider Electric drives digital transformation by integrating world-leading process and energy technologies, end-point to cloud connecting products, controls, software and services, across the entire lifecycle, enabling integrated company management, for homes, buildings, data centres, infrastructure and industries.

Schneider Electric is the most local of global companies. It is an advocate of open standards and partnership ecosystems that are passionate about ITS shared meaningful purpose, inclusive and empowered values.

Enquiries: www.se.com





Turnkey solution provided for an outdoor MCC

Hamar Controls (Pty) Ltd was established in 1981, with the purpose of supplying high quality motor control centres and distribution boards to industry in South Africa.

The company amalgamated with BAEC in 2001, with the view to expanding services to industrial electrical and instrumentation offerings. Presently Hamar Controls supplies turnkey electrical and instrumentation projects to clients in the industrial and mining arena and has an extensive industrial client base and project reference base with more than 2000 projects completed since inception.

A recent project the company undertook clearly highlights Hamar Controls' flexibility in providing unique, turnkey solutions where required.

Part of a recent order was a skid mounted MCC with 2 x 200 kW VSD outputs, for a pit dewatering pumpstation for a mine in the Democratic Republic of Congo. "This was the first tender we did for METC Engineering, and the unit is due to go into production use on site, any day now" noted Hamar's project manager on this specific job, Herman van der Merwe, during an interview in September. Whilst the order also included seven smaller (3 x 30 kW VSD output MCCs, plus a containerised control room), it was this unit that was the focal point.

The bread-and-butter work for Hamar usually focuses on much bigger MCCs and containerised substations, but what set this project apart were the specific requirements. Firstly, it is not a stock standard MCC, as it is designed for outdoor use and thus required an IP65 protection rated enclosure. Secondly, the unit was required to be skid mounted so that it can be repositioned on site when necessary. Hamar had the skid fabricated by a subcontractor; however, sand blasted and finished it themselves inhouse with a special three-layer paint system

for high corrosion and UV resistance.

"MCCs are typically bottom fed, yet to make onsite connection for this unit easier, we installed a junction box on one side of the skid, and inter-connected the MCC and junction box with suitably rated power cables. A deflector plate beneath the skid protects the cables when the 500 mm high skid is moved," explains van der Merwe.

He notes that lead time was an issue for this project and Hamar had to go back to its suppliers, such as Schneider Electric, to try and shorten the lead times. Interestingly, not only did the company complete the project within the turnaround time, the team was able to bring the lead time down and change the technical solution to better suit the requirements of the customer. "For instance, the client required a 200 kW variable speed drive for the project, but we could not find any stock that would fit in with our timescale. Schneider suggested a solution of two modular 160 kW VSDs, and while this necessitated a redesign of the panels to accommodate them, this was quickly done and the project moved forward," he says.

Despite clocking in overtime, the MCC was packaged and loaded onto a truck headed for the DRC ahead of schedule. The completed unit was tested and signed off at the factory, and the VSDs were set up. "We ensured that once it arrived on site, it would essentially be as simple as connecting the site cables to the junction box on the skid, and turning it on," says van der Merwe.

In conclusion, he notes that Hamar Controls has the technical capabilities to come up with a solution for clients, making them a one-stop, proven, and dependable supplier.

Enquiries: www.hamar.co.za



World's first eco-efficient 420 kV circuit-breaker

Hitachi Energy has unveiled the world's first eco-efficient 420-kilovolt (kV) circuit-breaker in conjunction with CIGRE Session 2022. This breakthrough technology marks a significant milestone in its accelerated EconIQ™ high-voltage portfolio roadmap that was announced at CIGRE Session 2021.

For over two decades, the company has been investing in eco-efficient alternative solutions to sulphur hexafluoride (SF6) including the world's first 170 kV eco-efficient gas-insulated switchgear (GIS). The EconIQ high-voltage portfolio uses a game-changing technology that eliminates sulfur hexafluoride (SF6), a greenhouse gas. Over time, it has been successful in continuously increasing the voltage levels of its EconIQ high-voltage portfolio.

The EconIQ 420 kV circuit-breaker marks a key milestone in the industry to transmit large amounts of electricity over long distances while eliminating significant volumes of SF6.

This innovation is the key enabler to achieving a wide range of EconIQ switchgear applications, and will be used in both dead tank breaker (DTB) and gas-insulated switchgear (GIS). The EconIQ DTB and GIS are expected to be released at the end of 2022, on track with the company's roadmap.

"This 420 kV breakthrough is a demonstration of our technology that is reliable and scalable to reach ultra-high-voltage levels with the lowest carbon footprint," says Markus Heimbach, Managing Director, High Voltage Products within Hitachi Energy. "We are enabling our customers and the industry as a whole to rapidly transition to eco-efficient solutions to advance a sustainable energy future for all," he added.

EconIQ is Hitachi Energy's eco-efficient portfolio for sustainability, where products, services and solutions are proven to deliver exceptional environmental performance. Hitachi Energy has placed sustainability at the heart of its



Purpose and is advancing a sustainable energy future for all. Its high-voltage portfolio also includes EconIQ Retrofill, another world's first in replacing SF6 in existing high-voltage equipment and EconIQ gas-insulated current transformers. The EconIQ high-voltage technologies are widely adopted by key customers in Europe.

About Hitachi Energy Ltd.

Hitachi Energy is a global technology leader that is advancing a sustainable energy future for all. The company serves customers in the utility, industry and infrastructure sectors with innovative solutions and services across the value chain. Together with customers and partners, it pioneers technologies and enable the digital transformation required to accelerate the energy transition towards a carbon-neutral future. Hitachi Energy are advancing the world's energy system to become more sustainable, flexible and secure whilst balancing social, environmental and economic value. Hitachi Energy has a proven track record and unparalleled installed base in more than 140 countries. Headquartered in Switzerland, the company employs around 38,000 people in 90 countries and generate business volumes of approximately \$10 billion USD.

Enquiries: www.hitachi.com

IEC air insulated switchgear

UniGear ZS1 is the ABB mainline switchgear for primary distribution up to 24 kV, 4 000 A, 63 kA.

The switchgear is manufactured worldwide and there are more than 500 000 panels currently installed.

UniGear ZS1 is used to distribute electric power in a variety of demanding applications such as on off-shore platforms, in container or cruise ships, in mines as well as in utility substations, power plants or chemical plants. Panels are available as a single busbar, double busbar, back-to-back or double level solution.

Product range:

- Up to 12/17.5 kV, 4 000 A, 63 kA.
- Up to 24 kV, 3 150 A, 31.5 kA.

Key benefits:

- ABB mainline switchgear for primary distribution up to 24 kV, 4 000 A, 63 kA.
- Manufactured and supported on six continents.
- Approved for use in special applications such as marine, seismic and nuclear.
- Variety of demanding applications.

Key features:

- Standards: IEC, CSA, GOST, GB/DL.

- Design: LSC-2B, PM.
 - Internal arc class: A FLR.
 - Highly customised versions available.
 - Switchgear can be back to wall installed.
- ABB is a leading global technology company that energises the transformation of society and industry to achieve a more productive, sustainable future. By connecting software to its electrification, robotics, automation and motion portfolios, 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: newabb.com



New compact imager with auto hotspot finder, ethernet and auto-operation

Instron has announced the arrival of the new compact infrared Optris Xi 410 camera that combines the benefits of infrared cameras as well as infrared thermometers. "Alongside the usual use of an IR camera with a PC and software, this camera also works fully autonomously as a smart, target-seeking pyrometer with analogue/alarm output," says Torsten Czech, Head of Marketing at Optris.

The Xi 410 has a fast ethernet interface and can conveniently be powered via PoE. This allows simple installation – even if the distance from the PC is large. The integrated auto hotspot finder function can be used to reliably measure moving objects without having to readjust the camera. If the network connection

is disrupted or there is a problem in the connected PC, the camera takes on the job fully autonomously and ensures a thorough, reliable alarm if a problem is detected. This feature makes the Xi 410 ideal for all safety-relevant applications in the fields of preventive fire safety and the condition monitoring of machines and equipment.

As well as the ethernet interface, the Xi 410 also has a USB 2.0 interface for the rapid configuration of important parameters as well as direct 0/4-20 mA analogue output. An external process interface can be used to forward up to 9 freely definable measurement fields as analogue outputs (choice of 0/4-20 mA or 0-10 V) or emit these as an alarm via a relay, which is

ideal for use in the OEM sector.

Like the other two models in the Xi Series, the Xi 410 is also equipped with a motor focus that allows convenient distance focusing via the free software program PIX Connect. The camera's resolution is 382 x 240 pixels with an image frequency of 25 Hz. The Xi 410 is calibrated for temperature measurements from -20 to 900 °C. Customers receive a ready-to-use package, including mounting nuts, mounting brackets, software, ethernet and USB connection cable, at a reasonable price.

Enquiries: sales@instron.co.za. For product information, visit <https://bit.ly/3PY4lkPe>





Walk-in pantry and closet lighting



Walk-in storage spaces such as pantries and closets certainly don't come standard in every house. But if you are lucky enough to have one (or both), there's a good chance that you haven't really given its lighting much thought. Well-considered pantry and closet lighting not only elevates their appearance, but also provides essential task lighting to get the most out of these spaces.

How to illuminate a walk-in pantry

- Calculate the dimensions of your pantry.
- Decide if you want to hardwire fixtures or go wireless.
- Determine if you have an available wall outlet.
- Decide on a fixture style – ceiling light, LED strip light, track lighting etc.
- Calculate the right quantity of fixtures needed to adequately illuminate the pantry.

Recessed ceiling lights: Recessed lighting in a walk-in pantry creates a streamlined, contemporary look. Be sure to space them out correctly to create an even spread of overhead illumination.

Surface-mounted ceiling lights: Surface-mounted ceiling lights are available in a variety of different styles. Even though this fixture will be in the pantry and likely hidden behind doors, select a style that compliments the rest of your kitchen decor.

Under-shelf lights: Overhead light fixtures can cast shadows. Pair a ceiling light with undershelf fixtures such as LED strip lights, tape lights or puck lights.

Track lights: Track lights can also be used as a supplementary light form. Position them to highlight open shelves.

How to illuminate a walk-in closet

Choose high-CRI light sources: You may not think so at first, but a walk-in closet is a task-oriented space in the home. It's where you select your clothing and get dressed for the day. With this in mind, you will want its lighting to display your items in their truest colour forms, so that you can put outfits together that don't clash. Always choose high-CRI light sources that will

render colours in their truest form. A higher CRI (colour rendering index) of 80-85 is best, whilst a natural white LED (4000 K – 5500 K) light source will assist with highlighting the true colours of your clothing.

Install strip lights: Install strip lights inside your hanging closet space. By positioning fixtures above your clothes rods, you'll be able to see colours more clearly and won't mistake your navy items for black ones and vice versa. If you have dedicated shelves for your shoes, strip lighting positioned horizontally along the tops of the shelves, will illuminate each pair, making them a focal point.

Use track lights to brighten dark corners: Track lights consist of individual light sources mounted to a metal rail. These light sources are often rotatable, allowing you to position each beam of light in any direction you like. Aim a beam towards trouble spots inside your closet, perhaps a dark corner where it's challenging to determine the exact colour of your clothing items. Blacks, dark browns and navies are often tricky to differentiate in a dimly lit space.

Go glam with chandeliers and pendant lights: Make your walk-in closet feel luxurious with the addition of a chandelier or pendant. These decorative fixtures add a whimsical yet sophisticated touch to the space, whilst offering essential overhead lighting. If your closet is on the smaller side, opt for a flush-mount chandelier or linear pendant.

Showcase your collections with cabinet lights: If your walk-in closet has display cabinets with glass doors, then utilise cabinet lights to showcase the items inside. Sunglasses, jewellery and handbags become focal points in the space when illuminated by the glow of cabinet lights.

Install a dimmer switch: Consider how and when you use your closet. A bright flood of light at 6am, while you're getting ready for the day, can be overwhelming and uncomfortable. Lighting set to a dimmer switch allows you to control the level of light, enabling you to create a softer glow for the morning and a brighter, cheerier light in the evening.

Enquiries: www.radiant.co.za

LED downlights – integrated vs replaceable

No contemporary home is complete without downlights. These subtle fixtures sit inside the ceiling, giving an interior a streamlined look. Choose between integrated LED downlights or GU10 LED downlights. Select the style most suitable for the project by establishing the requirements and preferences.

Integrated LED downlights

Integrated LED downlights are sold as a complete unit with the light source built-in. This light source is the centre of the fixture's design, with other elements built around it and has a longer lifespan in comparison to GU10 LED bulbs. The major benefits of opting for integrated LED downlights are their widespread illumination and even light distribution. They also boast a lengthier lifespan than their GU10 counterparts, have fewer hot spots, and typically offer brighter illumination. These benefits coupled with the fact that they usually come with generous warranties, make them the go-to choice for people who don't want to change burnt-out light bulbs too often. With that being said, it is important to keep in mind that once the integrated light source does eventually reach the end of its lifespan, the entire unit will need to be replaced.



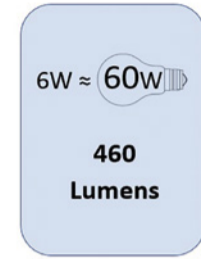
GU10 LED downlights

If replacing an entire integrated LED downlight unit is not appealing to you, then opt for GU10 LED downlights. This type of fixture can be fitted with any GU10 LED bulb and is simple to replace when the lamp has burnt out. There is no need to replace the entire light fixture – simply swap out the old bulb for a new one. This option is more affordable than its integrated LED counterpart, although the lifespan

of a GU10 bulb is comparatively shorter. There are a multitude of GU10 LED downlights on the market, with the anti-glare design growing in popularity. These fixtures reduce the discomfort that can be caused by the glare of downlights because they are designed for the light source to be positioned further back inside the fixture.

Enquiries: www.eurolux.co.za

Stopping misleading claims on LED lightbulb boxes



A 60W Incandescent ≈ 800 Lumens

Everyone knows energy efficient light-emitting diode (LED) light bulbs are the best lighting option today, lowering our energy bills and freeing up capacity on the grid. Plus, LED bulbs are more environmentally friendly because they last longer and don't contain any mercury like fluorescent and compact fluorescent bulbs. With so many positives to sell these new LED light bulbs to consumers, why would lighting companies in South Africa feel it's necessary to mislead consumers with exaggerated claims on the box? Surely, lower cost, longer life, zero mercury and better-quality light are enough on their own – but apparently not.

Testing shows the lighting industry isn't telling the truth

LED light bulbs were purchased from normal retail shops like MICA Hardware, Pick n' Pay and Makro and they were tested in a lighting laboratory to see if the claims on the box were accurate.

These boxes contain a lot of information, including terms and numbers that are not always familiar to us (the consumer) – like beam angle or colour temperature. But one thing that is clear to everyone is the light output equivalency. With this infographic, the company is telling us that this new LED light bulb will give you the same light output that you were used to from the old incandescent technology. For example, the LED box might show a picture of a 60 W incandescent bulb and say that it produces the same amount of light as that old, and very inefficient, light bulb.

The testing of such claims on LED lamps has found that manufacturers are claiming light output equivalency to incandescent bulbs that are more than 50% higher than they actually produce. These misleading claims can lead to very disappointed consumers – you get home thinking your new 7 W LED bulb will produce the same amount of light as a 60 W incandescent you had in the past, and yet your room isn't bright enough.

Take 'Brand A' for example, they have a bulb which is very popular. The 7 W model was tested and found that the packaging was exaggerating the brightness of this lamp by 53% through the claim that it was equivalent to a 60 W incandescent bulb. In Europe, the government requires suppliers to guarantee 806 lumens of light from the LED bulb before they can claim they are the same as a 60 W incandescent – but our testing found this lamp in South Africa was only producing 524 lumens.

And Brand A isn't the only problem here. Samples of lamps were also purchased and tested under the Brand B (7 W), Brand C (6 W) and Brand D (6W). The worst offender was Brand B, who overclaimed its light output equivalency by 68%. Brand C exaggerated its incandescent lamp equivalency by 43% and Brand D overclaimed by 42%. Why are manufacturers doing this? Don't consumers in South Africa deserve to have clear, accurate information on the boxes of light bulbs so we know what we're buying?

What is the government doing about it?

The South African government has been working on a national lighting regulation which would stop industry from misleading consumers like this. In March 2021, the Regulator published a draft lighting regulation (VC 9109) that would, among other things, require by law that all light bulb suppliers be honest on their packaging, and not make any false or misleading claims. These findings provide even more evidence that a mechanism is needed to hold industry to account and protect consumers. Needless to say, the electricity supply shortages of 15 years and counting in South Africa should be motivation enough.



Light spectrum and intensity

There was a time when choosing a grow light was simple, all you needed to know was what brand and wattage you wanted. Things have changed drastically. The market has been flooded with grow light options and it can be quite challenging to figure out which light is best for you.

When it comes to making the decision nowadays, it's important to understand what spectrum and intensity a light produces. In this article InDorSun and Giantlight will cover why these are important and how they relate to growing cannabis.

Light spectrum is the range of wavelengths produced by a light. When choosing a spectrum of light for growing plants, two main factors should be weighed:

Photosynthesis: You need to choose a light that caters to the energy production of your plants. The light that plants predominantly use for photosynthesis ranges from 400-700 nm. This range is referred to as Photosynthetically Active Radiation (PAR).

Photomorphogenesis: 'Photo' means 'light', 'morpho' means 'shape', 'genesis' can be translated as 'creation of.' So, it's using light to create a certain plant shape. Light can do a lot more than just change the growth pattern of a plant, though. It can trigger or delay flowering and fruiting, change chemical composition, among other diverse reactions.

In the InDorSun fixtures, the company uses full spectrum white diodes, which produce light within the 400-700 nm range, this is the range mentioned above known as PAR and is the range plants use for photosynthesis. It also uses far-red diodes, which produce light at 730 nm, which contributes toward how plants use light for photomorphogenesis but also regulate a secondary photosynthesis process known as 'The Emerson Effect'.

While there is no doubt that the light spectrum is important, some studies suggest that even more important than the spectrum is light intensity. There are two ways of measuring the intensity of a grow light:

PPF: PPF (Photosynthetic Photon Flux) measures the total amount of light produced by a grow light in terms of micromoles of photons produced per second (often written as $\mu\text{mol/s}$ or $\mu\text{mol/s}$). This is an important number because unlike PPF (which will be explained below) it can't be manipulated and tells you the full amount of light coming from the LED grow light.

PPFD: PPFD (Photosynthetic Photon Flux Density) measures the amount of micromoles of photons striking a square meter per second (often written as $\mu\text{mol/m}^2/\text{s}$, $\mu\text{mol/m}^2/\text{s}$, or $\mu\text{molm}^{-2}\text{s}^{-1}$).

Full daylight sun at noon in the summer is around $2000 \mu\text{mol/m}^2/\text{s}$. What your plants actually need, however, is likely to be much less than that. In fact, because the sun's intensity is only that bright for a small portion of the day and because the angle of that intensity changes throughout the day, providing that much light for an extended period of time would very likely be damaging to your plant. A 'light response curve' shows how effectively a plant utilises light at differing intensities. Depending on the plant, at levels greater than $800-1000 \mu\text{mol/m}^2/\text{s}$ the efficiency that a plant uses the light starts to slow. Meaning, you can provide your plant more light than this, but you might not see a huge change in outcome.

When setting up your indoor cannabis grow, it is recommended that you start by thinking about the yield that you would like to be able to harvest each cycle. Light levels or PPF and PPFD are very important to know because different stages of a plant's growth require different levels of light for plants to grow optimally.

When the light is insufficient for the space, it can result in lower quality cannabis and more work trimming. Large plants that receive inadequate light will produce a lot of low-quality buds that we call 'larf'. Many growers mistakenly think that larf is the result of budding sites not receiving light. In reality, larf is the result of a plant that, in total, has more budding sites than energy to develop them. If the plant is receiving less than

optimal light and has a large number of budding sites, it will produce larf.

It is even more important to avoid giving the plants too much light. There is a limit to the amount of light a plant can use, and excessive light will cause damage. If you have too much light, you could avoid damage by raising or dimming the light. Raising the light wastes energy and reduces efficiency. If you must dim the light, then you are not taking full advantage of your investment. In either case, you would save money and be more efficient if you had lights that were properly matched to the space.

The ideal PPFD levels during flowering are between $600-900 \mu\text{mol}$ (PPFD) for indoor cultivation spaces and there should not be any spots on the top of the canopy that are receiving less than

$500 \mu\text{mol}$ (PPFD). Plants that receive less than $500 \mu\text{mol}$ (PPFD), will produce smaller buds with more 'larf' or less-dense and leafy buds when compared to flowering cannabis plants that receive ideal PPFD levels. Many growers may try to add more light than necessary to an indoor grow space to provide as many photons of light to their plants, but there is also a limit to the density of photons that cannabis plants can use.

Larger cannabis plants can handle higher levels of PPFD, up to $1500 \mu\text{mol}$ (PPFD), if enough supplemental CO_2 is applied to the grow space on a consistent basis and additional environmental factors such as temperature and relative humidity are also optimal.

CONTINUED ON PAGE 14



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Light spectrum and intensity

Their light intake can be somewhat limited by the amount of ambient CO₂. If PPFD levels exceed 2000 µmol (PPFD) indoors, then it is possible that the quality and quantity in yields could be diminished in extreme cases. Excessive levels of PPFD can eventually lead to plant tissue damage.

Plants will try to protect themselves through photo protection responses as a result of excessive lighting. Photoinhibition decreases the rate of photosynthesis as a result of light stress. Chlorosis will eventually set in when photoinhibition no longer effectively protects a plant.

As mentioned before, Different stages of the plant's growth require different Levels of light. In order to control the PPFD that a plant receives, a grower can do one of two things: the first way to adjust the light a plant receives is by lowering or raising a light. By lowering a light toward the canopy – the light becomes more intense the closer it is to the canopy. The higher the light is raised the

less intense or powerful the light becomes, lowering the PPFD at canopy.

The second way of changing the PPFD of a light would be to have a light which has a dimming function which allows you to control the output of the light, this essentially controls the wattage that the light uses also.

As discussed before, each stage of growth requires different levels of PPFD

- 75-150 µmol/m²/s for the cutting stage which could last between 14-30 days.
- 100-300 µmol/m²/s for the seedlings stage which could last between 14-30 days.
- 300-600 µmol/m²/s for the vegetative stage which could last between 14-30 days
- 600+ µmol/m²/s for the flowering stage which could last between 60-90 days.

If we look at the PAR maps of InDorSun's 1 m comet fixture we can see at which heights to hang this light

for each stage of growth, The PAR map shows how much PAR the plant canopy will receive when the top of the plant canopy is positioned at the same height as the simulated canopy.

The first height at 1 m shows us that in the centre of the 1 m square at 1 m height we are receiving 135 µmol. On the outer edges of the square, we are receiving between 99-120 µmol. The second height at 0.5 m shows us that in the center of the 1 m square at 0.5 m height we are receiving 298 µmol. On the outer edges of the square, we are receiving between 101-135 µmol. These are good measurements to use for the seedling and clone stages.

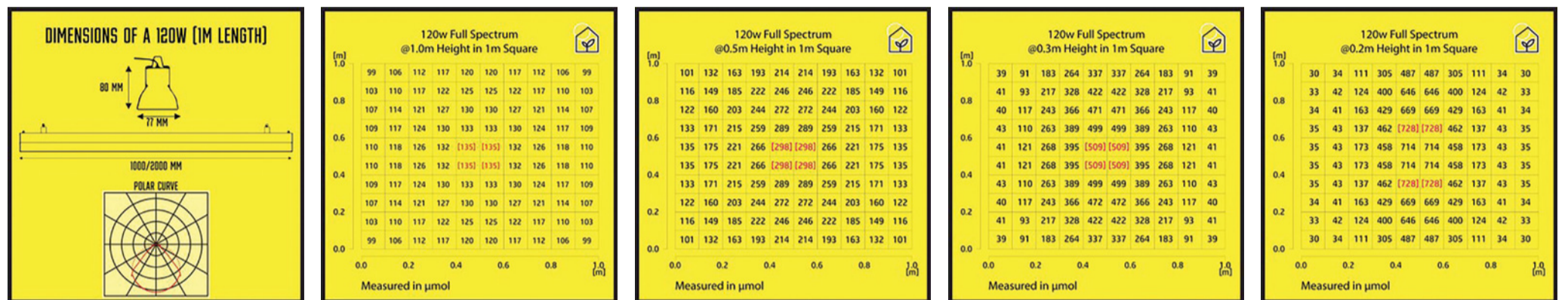
The next height at 0.3 m shows us that in the centre of the 1 m square at 0.3 m height we are receiving 509 µmol. Although this is within the ideal range for the vegetation phase of a plant's growth, on the outer edges of the square, we are receiving between 337-39 µmol, this is within the ideal range for vegetation;

however, on the lower sides at 39 µmol a grower will have to add additional comet lights to create uniformity across the canopy.

The reason the top and the bottom of the PAR map display higher ranges than the left and right is because of the shape of the light, the rectangular shape of the light carries through the simulation of the par map as the centre line from top to bottom show the higher values.

The next height is at 0.2 m and shows readings that are within the range for flowering cannabis plants where the centre shows us readings between 714-728 µmol and the outer edges show us readings between 487-30 µmol a grower will have to add additional comet lights to create uniformity across the canopy or the entire square metre.

Enquiries: Giantlight: www.giantlight.co.za
InDorSun: www.indorsun.co.za



Solar lighting - the new normal

In the past five years, the popularity of solar lights has surged due to emerging green technologies and rising energy costs. The demand for more affordable, greener electricity means that the energy landscape is shifting faster than at any other point in history.

Amid this shift in moving towards more renewable energy sources for

lighting, in addition to reducing the effects of energy use and meeting sustainability goals, organisations are being called on to create higher-impact products. This is especially true of solar-powered electricity and battery storage – with the cost of both having dropped at unprecedented rates over the past decade and energy-efficient technologies such as LED lighting have also expanded.

There is undeniable intersectionality between social and climate issues. At Signify, as a business we must understand that to develop clean energy sustainably, social boundaries must be slanted equally to environmental boundaries. Systematically marginalised communities, especially lower-income communities are disproportionately affected by load shedding. It is important to consider the impacts that affect historically excluded communities and understand the issues these communities face.

During load shedding, street lighting is scarce, dispersed and unreliable, not to mention that the costs for installing conventional grid-based lighting are high but serve a limiting purpose while we are experiencing this energy crisis.

Public lighting grids have an impact on communities that have little to no access to electricity and can help to strengthen their economies. It does so by facilitating passenger and goods transport, pedestrian traffic and night work. It can also drastically reduce road accident rates and security concerns.

Solar streetlights are an autonomous and resilient energy source that makes for an appropriate public lighting and connection service in off-grid areas. Access to energy is a key factor in economic development.

Researchers suggest that if solar-powered street lighting continues to be installed in sub-Saharan Africa, it could add tens of thousands of working hours daily by extending the workday past sunset while slashing electricity consumption from street lighting by 40%. Solar lighting could generate between 96 and 160 gigawatts of renewable en-

ergy across the subcontinent – more than doubling the current rate of energy generation.

A solar-powered community enables people to feel safer both inside their households and around their neighbourhoods because with solar-power street lighting you can rely on consistent and constant power. A solar-powered home means children can do their homework on time; families can enjoy more time together and feel safe inside their homes.

To a greater extent, municipalities and our greater customer base are becoming increasingly interested in the opportunity to invest in projects that contribute to a just transition and have a deeper impact which is a growing opportunity for lit and safer communities. With the rapid adoption of solar street lighting in communities poorly served by conventional power generation, this could become a positive example of the technological leapfrogging sub-Saharan Africa has always been known for.

About the author

Ashwin Murali, Product Marketing Manager for Sub Saharan Africa at Signify, is a seasoned lighting professional with experience in sales and product marketing. He has managed stints across Asia and Africa.

He has experience in business development, channel management, product life cycle management, key account sales, technical presentations, and trainings.

He has a bachelor's degree in Mechanical Engineering and an MBA in Marketing Management and currently manages the luminaire product portfolio for Signify Sub Saharan Africa including solar solutions, UVC solutions, public, commercial, and industrial lighting solutions.

He supports a team of sales representatives and distributors across East Africa, English West Africa, and Southern Africa. He loves interacting with customers and looks forward to opportunities where he can help solve problems that customers are faced with.

Enquiries: www.signify.com/en-za



Ashwin Murali, Product Marketing Manager for Sub Saharan Africa at Signify.

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Improved lighting solution for parking area

BEKA Schröder has supplied the parking area lighting at 3Ci Church in Pretoria East. This retrofit lighting solution replaces the previous installation which did not provide sufficient lighting.

After the new parking area lighting was installed at 3Ci Church in 2020, lighting at the church management was not satisfied as the area was not adequately illuminated. BEKA Schröder made contact with the client to provide a new lighting solution. The South-African designed and manufactured decorative LED post top, KAZELLE, was the luminaire of choice. This luminaire provides a much better light distribution compared to the previous installation.

The KAZELLE's minimalistic and modern look is designed around the compactness of the LED engine. At the same time, sustainable lighting solutions are provided that dramatically reduce energy consumption and improve visual comfort for the parking area at the church. The KAZELLE offers a cost-effective and efficient lighting solution for a quick return on investment. Furthermore, control solutions are optional by means of a photocell or Schröder EXEDRA control systems for autonomous and interoperable networks.

Reliable, efficient, discreet and vandal resistant, the KAZELLE luminaire emits a pleasant, glare-free light. It has been designed for easy installation. With virtually no maintenance required and a full 5-year warranty, the KAZELLE guarantees long-lasting performance and substantial savings.

BEKA Schröder develops and manufactures energy-efficient LED lighting products in South Africa, designed and suitable for local conditions. The company is proud to be associated with 3Ci Church in providing a successful LED lighting solution for this project.

Enquiries: +27 (0)11 238 0000



Study finds that nearly all mental health disorders correlate with circadian rhythm disruption

University of California, Irvine (UCI) researchers conducted a thorough examination of peer-reviewed literature on the most prevalent mental health disorders and found that circadian rhythm disruption (CRD) is present in nearly all of them. However, correlation is not causation, so it is not clear if the mental disorders cause circadian disruption, if circadian disruption causes mental disorders or both in a positive feedback loop.

The most common mental disorders were found to correlate with circadian disruption, including: anxiety, autism, schizophrenia, Tourette syndrome, ADHD, bipolar disorder, obsessive-compulsive disorder (OCD), anorexia nervosa, bulimia nervosa, food addiction, and Parkinson's disease.

Circadian rhythms are intrinsically sensitive to light/dark cues, so they can be easily disrupted by light exposure at night, and the level of disruption appears to be gender-dependent and changes with age. One example is a hormonal response to CRD felt by pregnant women; both the mother and the fetus can experience clinical effects from CRD and chronic stress.

The researchers explored the interplay of circadian rhythms and mental disorders with gender. For instance, Tourette syndrome is present primarily in males, and Alzheimer's disease is more common in females by a ratio of roughly two-to-one.

Age also is an important factor, according to scientists, as CRD can affect neurodevelopment in early life in addition to leading to the onset of aging-related mental disorders among the elderly.

To address causal attribution, the team suggests an examination of CRD at the molecular level using transcriptomic (gene expression) and metabolomic technologies in mouse models. The researchers believe that if the experiments were conducted in a systematic way with respect to age, gender, and brain areas to investigate circadian molecular rhythmicity before and during disease progression, it would help the mental health research community identify potential biomarkers, causal relationships, and novel therapeutic targets and avenues.

You can read the full article published in the Nature journal Translational Psychiatry here: <https://www.nature.com/articles/s41398-022-02028-3>

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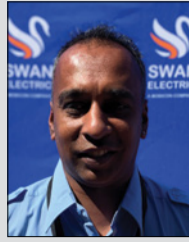
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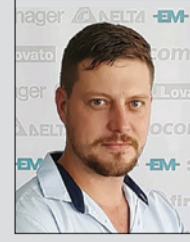
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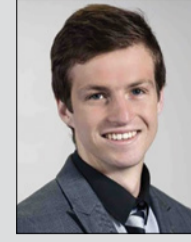
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BRIGHT SPARK

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