

“AMID ALL THE DOOM AND GLOOM, THERE IS HOPE” – JOHAN BASSON



Johan Basson is handing over the company keys to Sharad Hingorani.

After 45-plus years in the industry, engineering pioneer Johan Basson is ready to take a backseat and “let the younger generation of minds come through. They have so much potential and that is something I have championed since my days at RBF,” says the 74-year-old. Having founded leading local manufacturer JB Switchgear in 2011 following a short retirement, Basson says this time it is final. I have left my company in excellent hands. When I first decided on my retirement, which has taken some planning, I began putting into place mechanisms and a board that I believe will continue to work at the very highest standard.”

The man in the hotseat

Basson believes that having a team of talented people strengthen a business, which is why his “replacement” has been promoted from within. Sharad Hingorani took over as group MD in September this year, with an executive committee (EXCO) supporting him.

“Sharad has been here for about four years,” says Basson, smiling. “When I met him, he was a client. Originally from India, he had then been in South Africa for 10 years, so he clearly liked living in South Africa and doing business here. Something about him stood out, he was aspirational and driven, and I decided that I needed him to be part of my team, so I pestered him about joining JB Switchgear.” That did not mean it was straightforward, though. “Sharad came with the condition that he could become a stakeholder in the

business. He wanted to be part of the backbone, which is something I think is lacking in several businesses. Sharad brings with him excellent abilities; he is a highly intelligent and astute engineer and manager. I place my full trust in him.”

The weight on Hingorani’s shoulders is substantial and is something his predecessor believes he will be able to carry. “The success of this business has been impressive,” explains Basson. “We have had strong growth every year since JB Switchgear was founded. Even during Covid, our business thrived – our turnover increased almost 40% during that first year. I reconnected with a client from my time at RBF and we got busy with new contracts almost overnight. That success is down to our team and what we have built together,” adds the newly retired businessman.

Building blocks

Besides his business success, Basson says the standout achievement of his career – and especially at JB Switchgear – is the culture that he has helped create within his teams. “We strongly believe in a people-centric operation, in building opportunities for our own people and investing in training. Training helps companies achieve their goals, while also giving employees the learning opportunities they need to keep moving forward in their career. We have employees who started as interns and have gone to the testing department, progressed to the engineering department,

CONTINUED ON PAGE 8

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ACDC Dynamics' Power Partner giveaway lucky winner

Congratulations to electrical engineer Douglas Bray from Saint Electrical in Roodepoort, Johannesburg. He entered the Sparks giveaway competition online at www.sparkselectricalnewsmagazine.co.za and won an ACDC Dynamics portable power station.

"Thank you so much," says Bray. "We will use this wonderful prize to keep our battery-

powered tools fully charged. Battery tools are great, but on busy sites the batteries require frequent charges. With unpredictable loadshedding, you may not always be able to keep up with demand. Smaller tools that can be powered by the power station can also be used directly (from the power station), eliminating the need for a noisy and expensive generator. In confined spaces it

is not safe to use a generator, but the power station is just perfect for these situations."

Colette Harwood, Marketing Manager of ACDC Dynamics, says, "Loadshedding has had a profound impact on businesses, with many losing valuable time in productivity while struggling to keep their doors open." The company's Power Partner initiative was created because "ACDC Dynamics cares about the success of South African businesses, especially small to medium enterprises, and it cares about building the South African economy," she added.



Competition winner Douglas Bray.

The initiative is aimed at uplifting SMEs that are being severely impacted by power supply issues by providing them with solar and backup power solutions to ensure these businesses can go on to be successful, return to profitability and ultimately serve the communities in which they operate.

Enquiries: www.acdc.co.za

ACTOM celebrates a milestone business birthday

Electrical manufacturer and supplier ACTOM is turning 120 this year. The Germiston-based business has been operating for more than a century, manufacturing and developing equipment and machinery of the highest standards. It is an achievement not to be scoffed at, explains Mamiki Matlawa, Group Business Development Executive at ACTOM, especially given the company's growing ambitions and successes in Africa.

"To celebrate this milestone is an extraordinary achievement. Localisation of business has helped our brand to grow, going from strength to strength even during the Covid pandemic. We would like to thank everyone who has contributed to the success of ACTOM, and we are looking forward to continuing with our business success," says Matlawa, adding that the importance of the African business in global economics cannot be ignored. "Manufacturers on the continent, like ACTOM, have an important role to play in helping provide a solution to problems in Africa. We are creating the perfect environment to expand operations and pursue cross-border investment opportunities, while at the same time continuing to provide products and services of the highest standard."

The birthday celebration, set for 19 October 2023, takes place at ACTOM's Knights Factory in Germiston and there will be a special address by South Africa's Deputy President, Paul Mashatile. "The event will have several key speakers lined up. We will also explore some of ACTOM's achievements over the course of its history, as well as look forward to where we are heading," concludes the Group Business Development Executive.

Enquiries: www.actomswitchgear.co.za



Mamiki Matlawa, ACTOM's Group Business Development Executive.




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The power to protect





BMG and Liqui Moly partnership is a bonus for local generator market

High performance additives are vital for the operation, maintenance and protection of machinery. With loadshedding seemingly going nowhere – still – there has never been a more important time to protect your emergency power systems, starting from the bottom up with your generator. Local distribution giant BMG has signed a deal with global lubricant specialist Liqui Moly to make its range of additives, motor, transmissions and hydraulics oils available to the market.

“As South Africa continues to face the exasperating challenges of daily loadshedding and unplanned power outages, many companies are investing in alternative sources of power supply to maintain operations,” says Carlo Beukes, Business Development Manager, Agricultural, Automotive and Lubrication divisions at BMG. “Although emergency power generators are a popular choice to keep businesses running, the costs associated with running and maintaining these systems are frequently overlooked. Generators often operate at low efficiency rates, resulting in exorbitant diesel consumption and a significant erosion of company profitability.

Managing your generator is important, not least because it provides power during outages and loadshedding – it can also prove a costly exercise to repair a broken generator. “There can be a few reasons why generators have a high oil consumption at times, including the use of incorrect or poor quality oil that results in deposits forming on the piston and oil scraper rings that seize. The crankcase chamber can no longer be sealed against the combustion chamber, and this means that fuel contaminates the oil that enters the combustion chamber where it is also burnt,” says Beukes.

Liqui Moly's products have been designed to reduce wear and tear on the machinery and extend maintenance intervals. This ensures generators (and other equipment that the additives are used in) function perfectly and always remain operational. “The additional use of additives makes fuels more stable and more ignitable, achieving greater

efficiency, particularly with lower fuel quality,” adds Beukes. “Additives also improve the cetane number, clean the system and keep it clean. This means that less fuel is needed and there are fewer defective parts. As a result, the entire fuel system is protected from corrosion.”

The maths is quite scary, explains the business manager. “As an example, an average-sized generator can consume up to 60l of diesel per hour. Loadshedding cycles can last

for up to four hours and occur three times a day, so a single generator can easily consume 720l of diesel per day. With an average price of R22 per litre for diesel, that's almost R16 000 – per day!” In a three-month test period, BMG discovered that using additives like Liqui Moly's Super Diesel Additive can reduce diesel consumption anywhere from 11 to 18%. A simple additive being used in your generator – and other machinery with an engine – can save you and your business thousands of rands not only in running costs, but also when it comes to repairs and maintenance.

Enquiries: www.bmgworld.net



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Caterpillar's cordless impact drill hits hard

Iconic construction company Caterpillar has unleashed its Cat DX15 compact cordless impact drill onto the South African market.

The small-sized piece of machinery features a two-speed gearbox that allows for up to 5600 blows per minute on setting 1, and an impressive 22500 blows per minute on setting 2. There is a spindle lock to secure the bit during operation, an LED light that pinpoints the drill point, as well as 30Nm of torque to tackle the toughest of screwdriver applications. Despite its diminutive size, the DX15 has a drilling capacity of 10mm and offers 21 clutch settings.

The two-speed gearbox is the DX15's biggest feature, allowing for up to 400rpm on setting 1, and up to 1500rpm on setting 2, and very little will stop the drill action. The DX15 also has an LED battery capacity indicator that shows you when you need to recharge, and weighing just 1.07kg, the unit is lightweight enough to use at any angle and in the most cramped of spaces.

Enquiries: www.cattools.com



50 hours and it is time to service your generator

Did you know that the recommended service interval for generators is every 50 operational hours? That means in the current loadshedding rate, you should be servicing your generator once a week. That is not viable for most people, but there is one quick and easy "service" routine that you can follow: Correct lubrication.

Hippocrates Bogiages, Technical Manager at French lubricant manufacturer Motul, who has been in business for over 170 years, says that "while this 50-hour guideline is only an estimate and may vary depending on your specific generator model and how it is used, failure to regularly service your generator will result in the build-up of soot and other deposits". This type of build-up can diminish your generator's performance, as well as longer-term consequences such as shortened lifespan. Coupled with



the demands of power generation during loadshedding and you could be heading for disaster if your generator is incorrectly maintained.

As easy as 1, 2, 3

"A minor service and oil change on your generator can go a long way in managing the unit's performance and its longevity," explains Bogiages. "We have just released our Tekma PowerX lubricant that has been formulated specifically for generators. Anyone can do this process – there are four basic steps."

- 1. Visual inspection.** Check all wires and connections on the generator.
- 2. Check the air filter.** You want to see a dirty filter – that means the filter has been doing its job by trapping large particles from entering the generator's motor. Clean or replace the filter as necessary.
- 3. Check the spark plugs.** This is what gets the generator started, so they need to be in perfect working order. If there is dirt or damage, replace them.
- 4. The oil change.** You cannot just pour any oil or lubricant into your generator – it needs to match the engine type (2- or 4-stroke). Tekma PowerX is formulated for 4-stroke generators to work in unison with South Africa's over-worked petrol and low-sulphur diesel gensets. Make sure that you have enough oil for your generator (read the instruction manual to get this information). Run your generator for a few minutes as this will warm up the existing oil and make it easier to drain. Find the oil tank (refer to the manual if needed) and place a container under it for the oil to drain into. If you need to change the oil filter, this is the time to do it. Close the oil tank tap and pour in your oil. Use a dipstick to check the correct amount of lubricant has been poured in, then start your generator. This will give the engine enough time to lubricate itself with the new oil. Once you are done, switch off the generator and check the oil levels, topping up if needed.

Source: www.motul.com

Conduit types and what to know about this electrical protection mechanism

While its core objective – protecting wiring – has remained the same for decades, many advancements have been made when it comes to electrical conduit. Aspects such as the materials used, the manufacturing process and even the installation of conduit have benefited from new technology and new ideas being implemented. Conduit specialists Champion Fibreglass explore the protective tooling on their website www.championfiberglass.com.

Conduit materials

There are two groups of conduit: Metal and Non-metal. These are then split into separate branches.

Metal conduit

- Electrical Metallic Tubing (EMT) is usually manufactured from coated steel and is more commonly used in residential applications. An aluminium variant is available and better suited where conduit needs to be surrounded by concrete.
- Intermediate Metal Conduit (IMC) is lighter than RMC but does the same job. It comes in threaded and unthreaded variants, but there is a downside: The walls are thinner, which means the chance of bends and dents is higher.
- Galvanised Rigid Steel (GRC) is more commonly used in larger industrial and commercial applications such as factories and shopping malls. As GRC can be installed outdoors, it has added ultraviolet protection, as well as protection against electromagnetic interference, which is important for shielding cables in it.
- Rigid Metal Conduit (RMC) is usually made from heavy steel, that has been galvanised, or a lighter aluminium. Due to the former's weight, strong threaded fittings are required to fix the conduit in position.

Non-metal conduit

- Electrical Non-metallic Tubing (ENT) is traditionally corrugated with a thin

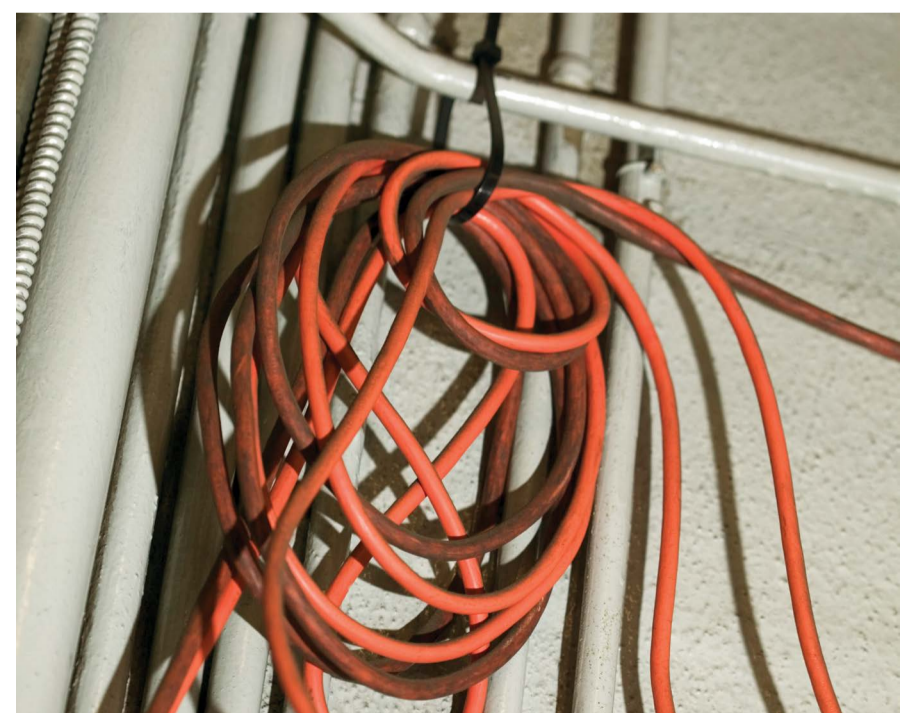
wall that is protected against flames. It should be installed in walls where it is cool. ENT is also more flexible than other conduits and can be bent by hand to be shaped around any obstacles in its path.

- Fibreglass Conduit (RTRC – reinforced thermosetting resin conduit) is manufactured using resin and fibreglass mats that are cured in an oven. This type of conduit is resistant to high temperatures and is the least corrosion-prone conduit. It is one of the cheaper types of conduit available and is lightweight thanks to the materials used.
- PVC Conduit has poor protection against ultraviolet light and has the highest percentage of expansion and contraction in varying weather conditions. It comes in numerous wall thicknesses, making it a favourite with contractors who may need to use various sizes on a project. It can be bent on-site with the correct equipment, but there may be issues should the environment it is installed in become too hot.
- Rigid Non-metallic Conduit (RNC) is smooth walled and usually manufactured from high-density polyethylene, polyvinyl chloride (PVC) or fibreglass. It is best used underground and features a high level of resistance to corrosion.

Points to ponder

There are several factors to consider when choosing conduit, namely:

- Accessibility once installed
- Conductivity
- Corrosion resistance
- Cost
- Distance between expansion joints
- Durability
- Fault resistance
- Fire resistance
- Memory
- Replacement
- Temperature range
- Toxicity
- Weight



Conduit is an important tool in electrical installations.



Why epoxy resin is one of the best materials for sealing junction boxes

A critical feature of any electrical box and junction joint is being sealed from external forces that could disrupt the current or even compromise the wiring housed within. Using an epoxy resin (whether solid curing or re-enterable resin that seals itself once tools, such as screwdrivers, have penetrated the membrane) is a quick and relatively simple solution that provides protection to your junction box. Here are a few things to know about resin sealing, sourced from www.electrolube.com:

- 1. Resin type.** There are two main resins to choose from. The typical epoxy resin cures and becomes solid. It comes in two bottles – the resin itself and an activating agent. They need to be measured accurately and the mixture must be stirred properly, with the two liquids combined thoroughly before it is poured into the junction box (or whatever container it is being used to seal). A slow pour results in fewer air bubbles, which is just easier on the eye as air bubbles will not affect the resin stability. Re-enterable resin cures soft, almost like children's slime toys. It seals the junction box, but you can access the fixtures carefully. Once you remove a tool, the resin closes and forms a seal again.
- 2. Environmental conditions.** Resin works in almost every environment – including those with high humidity, though you will need to let the pour cure longer (up to 72 hours) before closing the box. This kind of protection, being waterproof, can also be used for boxes that will be buried underground as it forms an impenetrable seal against dirt and water.
- 3. Protection from failure.** Resin does not conduct electricity so, should there be a short circuit or

fault, no one will be hurt by the current as the resin acts as an insulator. It is also an excellent heat dissipator, which means the box and electrical components within the junction box remain cool during operation. Thanks to this heat protection, users can safely handle the junction box without being burnt.

- 4. Solid sealed.** If the junction box is subjected to an impact, the hard-cured resin should act as a shock absorber and protect the electrical cables within the enclosure.



Worx adds Nitro Wet & Dry cordless vacuum to its list



The last thing many electrical contractors think about is keeping a jobsite clean... yet it happens to be one of the easiest to accomplish. China-based equipment manufacturer Worx is making it easy to clean up after yourself with the Nitro WX Wet-&-Dry vacuum, which features a brushless motor that delivers strong suction for quick pick up of all materials.

There are two sizes – 3l and 8l – which makes the WX a great option for small and large contractors and jobs. The unit

features two speed modes, 16Kpa of suction pressure, and a 1.1m³/min airflow that leaves nothing on the ground once the vacuum has passed over it. A shoulder strap makes the vacuum easy to manoeuvre around a jobsite, while the handle means users can carry the 3kg unit into the smallest spaces without hassle. The vacuum also comes with a wide nozzle for larger areas and a crevice tool to get the tiniest nook and cranny vacuumed clean.

Enquiries: www.worxsa.co.za

Riken Electric continues to grow following business revamp

Since its ownership change in early 2022, Pretoria-based electrical supplier Riken Electric has regained the loyal customer base it had built since being founded 40 years ago. This has been possible through the quality of products offered by Riken, as well as improved customer service.

"The past 18 months have been a whirlwind of growth at Riken," explains company CEO Brendyn Meyer. "The team started off with a rebranding campaign. While the Riken brand is respected in the market and has an excellent reputation, we needed an update. The modern new look reflects the strong values that make this brand unique, and which forms the foundation of an experienced management team. The blue and green colours in the logo have become synonymous with the values of trust, confidence and excellent customer service, values that every member of the team aspires to maintain."

Riken also embarked on an extensive expansion plan, opening branches in key areas countrywide. The team currently comprises of over 40 staff in strategic roles as the business continues to expand into niche markets where its technical skill and innovative thinking are required. "Every member of the Riken team adds significant value to the overall offering. Riken has invested heavily in expanding our technical knowledge base and skill, and we offer specialised and customised solutions that enable customers to overcome any obstacle, be it failure of the power grid or in their automation processes."

Meyer adds that through Riken's innovative thinking, combined with its excellent customer

service and good name, the rebrand has been a success. "We are in a fortunate position where we have been very well received in the market, and our loyal and supportive customer base has grown in a very short period of time."

The Riken team has also invested a lot of time in researching new products, both local and international. "We have expanded our product range with new innovations that add value for our customers," says Meyer. "We have put stringent quality and performance tests in place to ensure that our products operate the way they are intended."

At the start of 2023, Riken moved its head office to Irene, Pretoria to accommodate the expansion and growth of the business. The new premises is conveniently located close to the highway and airport and reflects a modern operating approach. "The open-plan office space supports our team dynamic, encouraging sharing of ideas, innovative thinking and a team whose skills span multiple areas," says Meyer.

Although Riken Electric expected significant growth over the past year, the extent of growth experienced surpassed even its most optimistic projections, explains Meyer. "This is a positive indicator that we are in touch with the needs of our customers, and we are on track to offer superior value. The blue water strategy continues to add growth potential for our business, and our management team is looking to the future with excitement and a strong commitment to build further on the solid growth achieved."

Enquiries: www.riken.co.za



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Digital marketing can be your best tool yet

Electricians and contractors can no longer rely on word of mouth to promote your business. One of the simplest ways to get your name out there is by using digital marketing – and thanks to social media, it is quicker, cheaper and more manageable than ever... if you know what you are doing.

Social media

Social media is free – platforms such as Facebook, X (formerly Twitter), LinkedIn, Instagram and others do not have a

subscription fee. They are accessible via computer or smartphone app, meaning you can post content from the office or on the jobsite itself. While this can work in tandem with a website, social media has all but replaced websites for many companies. The platforms also allow for direct communication via built-in messenger applications (like X's DM function and Facebook Messenger). Social media allows you to target specific customers (your followers) or boost your page (for a fee). You can also place ads on social media,

which will help you be visible to a larger audience.

Digital marketing

A high-performing online strategy can send your company from no-name to the only name. You will need to add more to your arsenal than just social media, though. You will need to consider tools like newsletter emails, YouTube content, web adverts and even sponsorships. This should be relatively easy to do with the right tools (or a marketing specialist). Blogs continue to be a favourite digital medium as that it lets you write longer format content (social media can be limited with the length of material you post – X allows you to post 280 characters in one post, while you can post a 4000 character post should you pay for its Blue Premium subscription of R208 per month).

SEO

Search Engine Optimisation (SEO) is a way to get your web presence ranking higher on Google searches. Between them, search engines Google and Bing deal with more than 8 billion searches each day. Many people do not scroll past the first two pages of search results, so it is better to have your name high enough to be on page 1 or 2. The easiest way to do this is to optimise your SEO by using specific keywords or phrases in your posts and website. Search engine algorithms search for content and then place results on their Search Engine Results Pages, which sees you rank higher or lower. In 2017 alone, Google recorded a

900% growth in people including the term 'near me' in their queries, while research shows that more than 80% of local phone searches convert to business.

Digital marketing does not need to be intimidating or difficult. Once you have the hang of posts, tweets and online content, you will be able to promote your business to a wider audience in the blink of an eye.

Source: www.comradeweb.com

Business skills that you need

As a contractor and small business operator, you need to be on top of your game 24/7. There is no such thing as an off day – you often must be ready to work at a moment's notice and perform to the best of your skills and abilities. Here are a couple of skills to maximise your business offering:

Adaptability

Electrical work often hides pitfalls and other problems that you may be forced to deal with on site. A simple short circuit may be the result of a bigger problem and having enough technicians and the right tools on hand from when you arrive will give the impression that you are ready for any situation.

Admin

Paperwork is not fun for anyone, but if you have yours in order, it will make your clients feel better. Send a quote within the deadline, invoice as soon as the job is done, and send a statement of account to show that the client's account is either overdue or paid up.

Business acumen

Running a company is more than just the actual job. It involves tasks like general admin (paying rent, settling rates, taxes and utility accounts), being able to lead a team, understanding people, managing clients and taking care of aspects such as corporate identities, partnerships, reputation management and more. If you struggle with something, there are free online courses that you can enrol in to help you – even software like Excel has a crash course video to help you.

Communication

This goes for internal and external formats. Your team needs to know what is required of them daily as well as on projects, while clients need to be kept informed on the business that they are giving you. There is nothing worse for a paying client than to ask for a document or update and be left hanging because you forget to mail them back. Keep a diary of people to speak to or mark emails as unread in your inbox, then set aside 20 minutes at the start and end of each day to tackle communication.

Organisation

As the business owner, you need to know everything about everyone all the time. If a piece of equipment is being serviced, for example, you need to know when it will be back so that clients who may need it can be given correct information.

Source: www.skillsyouneed.com



Digitise your low-voltage motor to be more efficient, says Siemens

Global automation giant Siemens says there is a formula that will help realise a simple but powerful remote condition monitoring system for low-voltage motors: Digitalisation. "The SIMOTICS Connect 400 and Insights Hug analytics app SIDRIVE IQ Fleet are plug-&-play connectivity modules that allow users to have a quick and comprehensive overview of their low-voltage motors' condition and over-all operational stage," says Siemens.

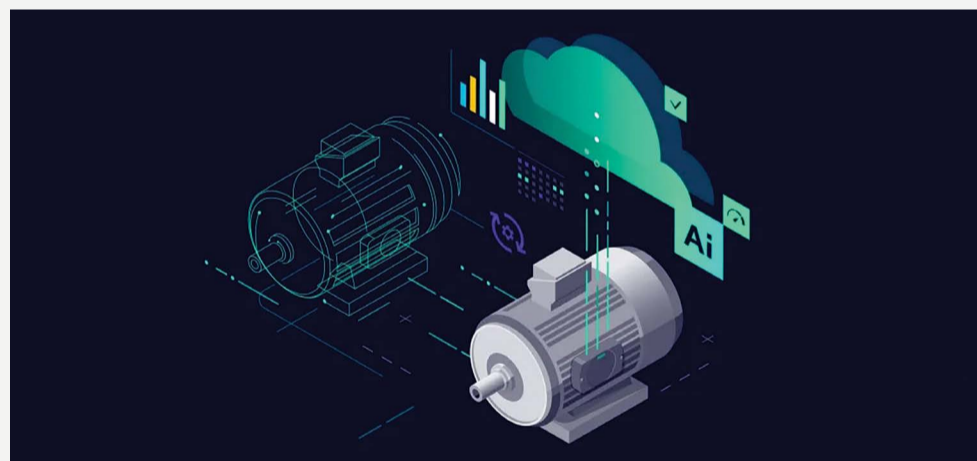
Benefits of digitising

Increased life cycle

Siemens' SIMOTICS Connect 400 module, once connected to the SIDRIVE IQ Fleet app, provides real-time information about your low-voltage motor. The device and app allow engineers to spot problems before they happen by highlighting a drop in performance. That means that equipment not operating optimally can be withdrawn from the production line, sent to maintenance for repairs, then brought back into operation with the least amount of downtime. This can prolong a machine's life by up to 30%.

Automated maintenance

An automated maintenance strategy is a must for businesses nowadays. This in essence is having a plan in place to remind you automatically what needs to be serviced and when, while also being intuitive and alerting users to equipment that suddenly develops an issue and needs to be withdrawn from the production line before irreparable damage is done. An automated maintenance strategy can reduce repairs costs by up to 40% as



machines are serviced rather than being repaired or even replaced.

Cost-saving

Artificial Intelligence (AI) and data analytics are at the core of digitisation. They are central to the software that runs the SIMOTICS Connect 400 and the SIDRIVE IQ Fleet, and they allow the digital motors to identify inefficiencies in the complex operation processes. By using these digital tools to optimise your processes, you can lower energy consumption (as machines will be operating at their best capacity) while also reducing CO₂ emissions.

One size fits all

Siemens has made its tech industry friendly. While you get the SIMOTICS and SIDRIVE features as standard on new Siemens low-voltage motors, the standalone device and app have been designed to work with non-Siemens motors too. Through research and development, Siemens has even optimised its diagnostic performance – the SIMOTICS Connect 400 is able to detect anomalies and

other analytics at measurement levels of 1 minute. The built-in sensors provide larger raw data that is uploaded to cloud level.

Hands-on usage

The unit's battery is replaceable, while the installation and configuration are simple and take only a few minutes, according to Siemens. The SIMOTICS Connect 400 sensor is glued to the motor, the app is somewhat autonomous and self-configures once users have input certain information, and information is uploaded to the app and cloud almost instantly. The digital dashboard is configurable to meet users' needs, and the information is easy to interpret.

By taking your low-voltage motor online with a monitoring tool and app, you can transform your business by having 24/7 information about performance at your fingertips. This means that issues will not sneak up on you but can potentially be seen before they develop into a significant problem that will cost you time, effort and money.

Enquiries: www.siemens.com



WEG partners with established operations to increase Africa footprint

Leading global electric engineering company WEG is continuing to invest and build business in Africa with exciting partnerships in the Democratic Republic of Congo (DRC) and Uganda.

DRC with Panaco

WEG's strategic alliance with Panaco as its value-added reseller (VAR) in the DRC has proven to be highly successful.

Thierry Kakese, WEG's Regional Manager – Central Africa, says, "As a major player, WEG has long been dedicated to establishing and nurturing a robust VAR partner network in the Central African region, ensuring sustainable growth and expanding our installed base of products and solutions."

Panaco was appointed as WEG's VAR in the DRC four years ago, and the company was one of the first electrical subcontractors operating in the country. With more than 40 years' experience, Panaco possesses the experience and capability to meet the escalating demand for WEG motors, drives and other products in the region.

Panaco and WEG's business goes further than just the mining sector, with attention being paid to other industries such as power and water utilities, as well as cement.

Financial Operations Director at Panaco, Khalid Patel, adds that to support the growing installed base and increased demand in the DRC, "Panaco and WEG will establish a support centre in the Katanga province. This facility will conduct technical assessments, offer local maintenance and repair services for low-voltage drives, and enhance overall support for our customers."

Uganda with Petrok

Likewise, in East Africa, WEG has partnered with Petrok as its VAR in the region.

Theodul Mwema, WEG's Regional Sales Manager for East Africa, says the projected business growth from projects like the East African Crude Oil Pipeline, along with the existing strength of sectors such as agriculture, manufacturing, utilities, cement and oil and gas in Uganda, provide potential opportunities for WEG to offer its products and solutions.

"This is an exciting step. We look forward to reaching more customers in Uganda with WEG's range of electric motors, as well as medium- and high-voltage solutions," he says. "We have been supplying customers in Uganda for over a decade, and this appointment builds our support for them and opens new markets for us. Our commitment to delivering efficient, reliable products with a low total cost of ownership, as exemplified by our W22 IE3 motor, shows our customer-centric approach which is appealing to businesses in Uganda."

Uganda's famous coffee industry is an

important sector for WEG, says Mwema, adding that many coffee factories use Brazilian processing machines fitted with WEG motors, drives and soft starters.

"Following a stringent vetting process, Petrok was chosen as our VAR and we are confident they will deliver the high standard of support to our customers that we expect," he says. "The company has the necessary experience in our field of operation, and

a strong technical team of engineers and technicians with the right product knowledge."

Petrok's premises in the capital city of Kampala allow for local warehousing of WEG low-voltage products such as electric motors, drives and others, as well as workshop facilities for small works. The company's sales team and customer base also ensure customers will be well served and distribution channels expanded.

"With the quality and reputation of WEG products, we can ensure the Ugandan market will benefit from the same low total cost of ownership as our customers everywhere," says Mwema. "This includes the five-year warranty on our popular WEG W22 IE3 motor, a promise of reliability that few of our competitors can match."

Enquiries: www.weg.net



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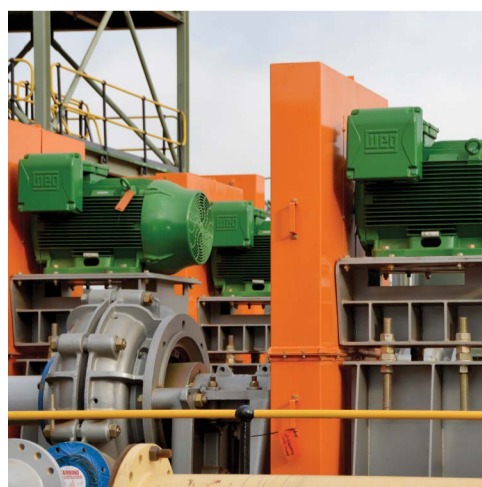
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CONTINUED FROM PAGE 1

AMID ALL THE GLOOM AND DOOM, THERE IS HOPE

then higher. To have people in your team who aspire to better their lives and to become professionals is the way to create a successful business," says Basson.

His belief in giving opportunities and helping people take those opportunities with both hands has led to JB Switchgear becoming synonymous with build performance and quality – and it is not just locally. "We have broken into the Australian mining sector. Just getting your product into Australia is no small feat. They are very protective of their industry, and loyal to local manufacturers. They like to support their own, and I admire that sense of camaraderie. It has spurred us on to be better with our products, to be the best and build excellent products to be a real benchmark competitor," says Basson.

"When you compare our products to others claimed to be really good, ours always come out highly rated for their robustness and user-friendliness. We are not a multinational company. Our products are built in South Africa, and we export around the world – no less than 75% of our current business is outside South Africa. Our biggest market currently is into Africa. There is a huge investment on the continent because it is 'an emerging market', so we are hard at work breaking into the rest of Africa as it is a big, developmental business, especially in the mining, metals and minerals sector," says Basson.

Currently JB Switchgear employs over 100 people at its factory and warehouse facility in Brakpan on the East Rand of Gauteng, and it is expanding. "Our premises are currently around 13 000m²," says Hingorani. "We also have a warehouse over the road, where the business was originally based, and we are looking at expanding further."

Hingorani adds, "We have now also moved into hybrid inverters, battery backup systems, UPS systems, and so on. It's a new product, a new company called Unitronic Power, and it has started to take off beyond expectations. There is a lot happening, our containerised substations are flying out the doors to destinations all over Africa, as are the modular substations that are prefabricated to specific customer requirements."

Rather than rest on its laurels, JB Switchgear continually adds new products to its already impressive portfolio and develops existing products. "In the past year alone, we have added about 30% new products to our range. That is due to our growth as a business and our desire to be the best," says Basson.

One of the most impressive products in JB Switchgear's catalogue is their Eagle Series of MCCs. "It is probably one of the most robust, user-friendly systems available today," explains the outgoing managing director. "We are approaching about 45 000 tiers of our Eagle series that have been installed all over the world."

Even a simple product, like gulley boxes, gets the 'Johan Basson engineering' treatment. "We developed, manufactured and performed the full suite of IEC 61439-1/2 type tests for 1000 Volt gulley boxes for the Venetia Underground Project in Limpopo Province. The usual rating is 525 Volts, but we tested for 1000 Volts, and we included internal arc tests to IEC 61641. The internal arc mitigation feature has been designed so that the starter can withstand an explosion inside without the risk of serious injury to operating personnel," says Basson.

A final word

Despite stepping down as MD, Basson has not left the building entirely. "I am staying on in a mentoring and consultancy role. When I started JB Switchgear, I had previous clients come straight over to us. They wanted to continue doing business with me as a brand. It has been my ambition always to have customers knocking at the door. I think we have been able to achieve that so far. I am leaving JB Switchgear in the very capable hands of Sharad and the EXCO Team. But I am here for a little while longer," he says.

"I humbly believe that we have become the benchmark for many of our competitors. They are always asking 'what are they (JB Switchgear) doing and how can we compete?' and that, again, is testament to the team we have built. We have people working for this company who want to be here, they want to make a difference and there is pride in our products. That is what makes a company – it is the people who are behind the products, whose names are on the products and there is pride in what they do. That makes JB Switchgear, I think, one of the best in the business," concludes Basson, handing over the keys to his new MD.

Enquiries: www.jbswitchgear.co.za

Oil checks cannot be ignored or forgotten about, warns WearCheck

Machinery and equipment can only operate to its full potential if it is looked after and maintained. Oil checks are often overlooked, but they are critical to a machine's performance and your business's success. Gert Nel, WearCheck's Divisional Manager: Transformers, and Corné Dames, WearCheck's Transformer Consultant, explore the importance of this quick and easy check.

"Ester oil is a type of insulating oil that is frequently used in electrical equipment. Natural esters are produced from vegetable oils such as rapeseed and canola. Synthetic esters are produced by the esterification of vegetable oils or animal fats," says Nel. "Esters are often blended with other chemicals to improve their properties."

Using natural ester oil has several benefits, namely:

- It is less flammable as it has a higher flashpoint and firepoint.
- It is biodegradable.
- It has a high dielectric strength and can operate in environments where higher voltage is present. Ester oil is also more stable over a wider range of temperatures.
- Most importantly, it contains no corrosive sulphur.

"Natural esters are not as resistant to oxidation as mineral oils. For this reason, their application in free-breathing transformers and other equipment is not recommended," explains Nel. "All practical measures should be taken to avoid continuous, long-term exposure to unlimited air exchange, particularly at higher operating temperatures."

Dames adds, "Oxidation occurs only at the surface of the liquid exposed to air, so thin-film exposure is a more significant concern than the liquid in the

tank. It is recommended to minimise the time and temperature that surfaces with thin films of natural esters are exposed to air, including un-tanked core and coils, radiators, heat exchangers, hoses and fittings."

The oil's exposure to air should also be limited to reduce, or even prevent, contamination by moisture. Most manufacturers provide recommendations for air-exposure limits of their products, how to detect such exposure and how to correctly handle the oil.

"Natural esters oxidise differently from mineral oils, causing polymerisation of the liquid and forming larger molecules that remain in solution. The rate of oxidation is highly temperature dependent, with every 10°C increase doubling the amount of oxidation," says Nel.

On the other side, when mineral oil oxidises, it forms reactive short-chain acids and carbonaceous sludge. "Such polymerisation of natural esters should not impact the dielectric strength of the insulating system. However, suppose the surface of the bulk liquid is exposed to continual exchange of air, the viscosity of natural esters can measurably increase, resulting in the lowered cooling capability of the liquid, which may necessitate some corrective action," says Nel.

While ester oils are mostly reserved for use in transformers, the same care and maintenance should be applied to all machinery and equipment. "Operators should embrace oils with fervour, recognising their pivotal role in enhancing efficiency and durability. The pathway to effective operation rests on clear communication, precise testing and understanding how and why oils and other lubricants are critical to machinery," concludes Dames.

Enquiries: www.wearcheck.co.za

Termination accessories from Pratley stop electricity in its flow

While adhesive specialist Pratley is best known for products like Pratley Putty and junction boxes, the 75-year-old company has a host of other products in its range. "We have competent and skilled design engineers, constantly developing new and innovative product solutions for our customers," says Eldon Kruger, Pratley's Marketing Director. "We also have a well-equipped, state-of-the-art electrical testing facility to develop and test new products." Among Pratley's top-performing products is its selection of electrical tapes, plugs and other items that have been designed to work in some of the harshest industrial conditions imaginable.

PVC electrical tapes

Insulation tape has been vital in all electrical power supply since day 1 – you cannot even fit a basic cable gland into an installation without electrical tape to insulate the connection. Pratley has two versions: PVC for normal application, as well as a flame-retardant option that is used mostly by large industry, mining and municipalities.

Pratley Rubber Tape is specialised self-amalgamating insulation tape that is best used in high-voltage applications. The company's High-Tension Splicing Tape is self-fusing and performs in applications such as splicing electrical terminations and for corona resistant insulation.

Blanking plugs

Something as seemingly simple as plugs are given the top treatment by Pratley's designers. The plugs, which are used to blank off unused plugs in junction



boxes, are manufactured in nickel-plated brass and a tough engineered plastic. This allows users to select the option that is best for their system, which includes general-purpose applications or explosive atmospheres and ex rated applications.

Cable retainers

These fittings are used to fix cables and other piping onto angle iron. With 25mm and 50mm options available, almost any type of strapping material can be fixed, be it cable ties or stainless steel.

"Most electrical installations require these products to complete an electrical installation," explains Kruger. "The benefit for customers is that they do not have to shop around for these accessories and can purchase them from one company. It saves time and resources for the end user." Kruger adds, "Our research continues with all our products. We strive to develop products to meet the needs of our customer base, which is diverse and varied. Pratley prides itself on its customer service and on developing highly innovative solutions for its customers. It also has highly qualified technical staff in all the large centres, both locally and internationally, to assist with any application requirement."

Enquiries: www.pratleyelectrical.com



Earth resistance can be a real annoyance at times

Where the ground is accessible in the area of interest, the exercise of measuring the resistance of an earth electrode to ground is, seemingly, an uneventful exercise, explains Richard Evert, National Director of the Earthing and Lightning Protection Association (ELPA). "Soil is not a good conductor of electricity. By nature, poor conductors introduce resistance to any electrical circuit and an earth electrode will therefore have some form of resistance." He adds that "an optimal lightning protection system (LPS) earth electrode has a low enough resistance to conduct the anticipated lightning current to ground without introducing dangerous voltages at the earth-termination system (ETS) or on any part of the down-conductor system (DCS)."

Things to remember

- The value of earth resistance must be less than the value prescribed by the designer.
- The value of earth resistance will increase with increasing soil resistivity.
- Soil resistivity will increase with a decreasing moisture content.
- Measure the earth resistance when the soil has the least amount of moisture present as that is when the highest value of earth resistance will be recorded.

The resistance of an earth electrode should be measured when it is installed. "If the value of resistance exceeds the maximum design value, the subject of soil conditions are irrelevant," says Evert. "But if the value of resistance is close to the limits, soil conditions need to be taken into consideration. Where an uncertainty

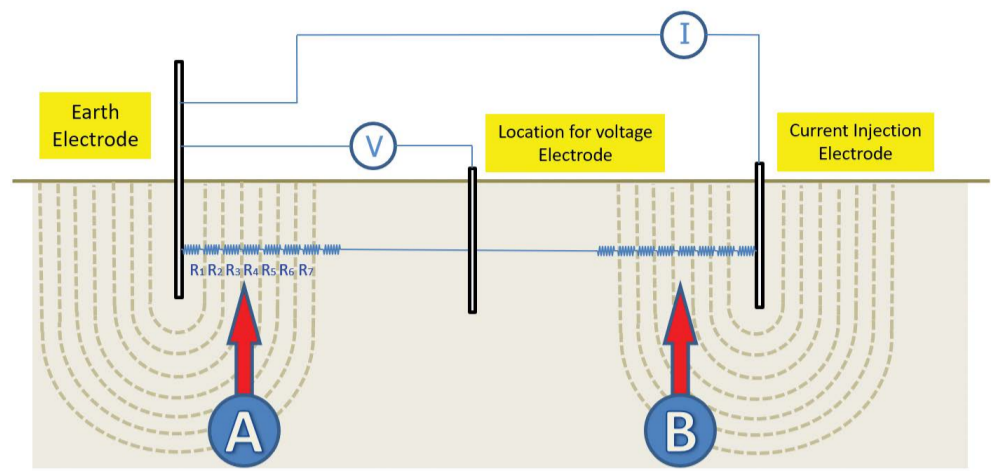
exists, subsequent measurements must be imposed as part of the asset management programs. Should the tested results be close to the limits and the soil has a high moisture content, the designer has failed to adopt the correct earth electrode for the conditions and most likely did not consider the correct soil conditions and soil resistivity values.

Limited space can often be a problem, says Evert. "The site of an earth electrode within a congested civil works structure can render it impossible to isolate and determine the resistance of an earth electrode. The LPS designer and the vested property stakeholder must determine an alternate strategy to assess the actual ground potential rise behaviour of the structures when the LPS is conducting lightning current." He adds that "it is the responsibility of the LPS designer to manage ground potential rise under all circumstances".

Putting equipment to the test

An earth resistance test is simplistic in its basic form, adopting Ohm's Law as a fundamental consideration. "You introduce current through the component being tested, then you measure the voltage produced across that component. Resistance is equal to the measured voltage divided by the injected current," explains Evert.

The equipment required for these tests is known as an earth resistance tester. More advanced products will typically include measurements of soil resistivity as a feature. "The test equipment must have an adequate power generating source to inject adequate current into the test circuit



to detect a measurable and matching voltage independent of the length of the current injecting test leads," explains Evert. "The recognised method of measuring the earth electrode resistance is by direct measurement of the earth electrode. This does not include measures of indirect measurements and adoption of assumptions and estimations. You must inject a test current with known parameters, measure the associated and matching voltage, then calculate the resistance.

The position of the current injection electrode is critical to the success of the test. "If the distance between the earth electrode and the current injection electrode is too short, the influences from the two electrodes will overlap and the total resistance of the earth electrode cannot be measured," says the ELPA director. "The position of the voltage electrode must be used to verify that the position of the current injection electrode is appropriate." The voltage produced from

the earth electrode resistance can only be measured when the influence from the earth electrode and the current injection electrode are adequately isolated by distance. "If the distance between the earth electrode and the current injection electrode is too short, the voltage measured will either be too low and only measuring a portion of the earth electrode resistance, or too high and including the resistance of the current injection electrode."

When conducting tests, strict protocols need to be adhered to in order to achieve accurate results that are then translated into usable information. There is another benefit of conducting correct tests: Any modification that needs to be done to the building structure can take place immediately. This means business operations can resume as soon as possible, everyone on site is safe, and equipment is given correct power supply.

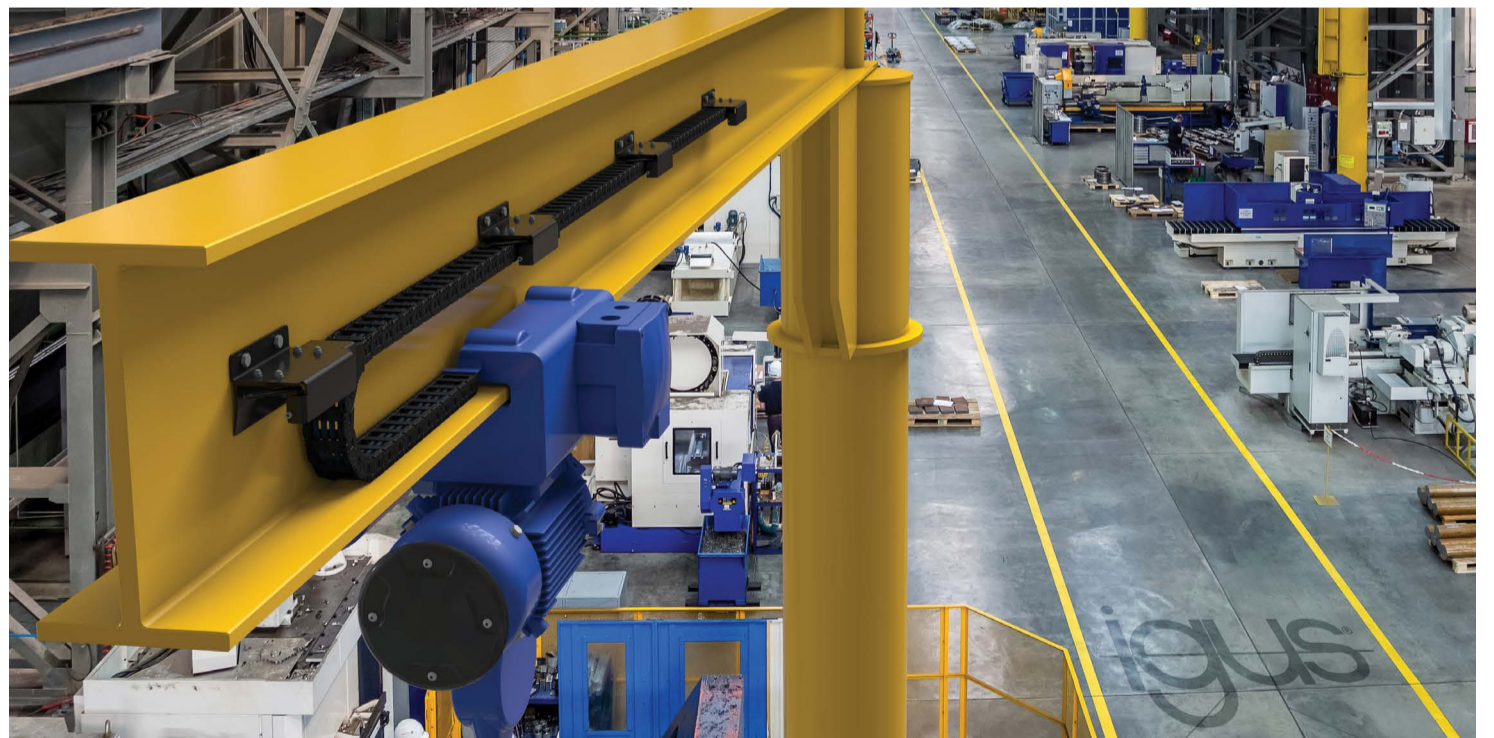
Enquiries: www.elpasa.org.za

Protect your machinery and production process with energy chains

Energy chains are defined as "a mechanical machine element that is used to guide and protect energy and data cables that have to withstand the most diverse environmental influences". In short, it is a polymer protection enclosure system that is used to shield cables from outside influences, while also allowing for internal movement and flexion that enables correct machinery operation. Energy chains are usually fixed to moving parts – like a conveyor belt of a moving machine bed.

Here are a few reasons from energy chain manufacturer Igus on why you should choose this protection system on your machinery, no matter how big or small it may be.

- 1. Better cable protection.** With its construction, which controls the minimum bending radius, an energy chain can shield and protect cables, hoses and other fixtures within it from physical damage. There is no added tension or stress on cables within the energy chain, which ensures less chance of failure as well.
- 2. Enhanced safety.** Energy chains contribute to a safer work environment by preventing cables from hanging loose. There is no risk of users tripping over cables lying around on the floor either as they are enclosed and connected to machines and equipment.
- 3. Increased reliability.** Energy chains are designed and built to provide reliable performance. This ensures increased



operation time and decreased downtime. "Unlike festoons, which are prone to snagging and wear, energy chains offer a more robust and controlled cable management solution," says Ian Hewat, Managing Director of Igus. "This is done by protecting the minimum bending radius. Our chainflex cable has been developed to run inside energy chains."

- 4. Reduced maintenance.** Energy chains, though their design profile, require

minimal maintenance. Once they are installed, routine checks are performed at scheduled dates and minor repairs, if needed, may need to be effected. But that is about it. Specialist installers will correctly measure and install a system that fits the user's needs and there should not be any further hassle.

- 5. Space efficiency.** "Energy chains are compact and space efficient, utilising available physical areas to their

best potential. There is no need for chunky fittings – instead, an energy chain maintains a tight-fitting low profile that holds cables in place without chance of damage during the machine's operation," says Hewat. There is the added benefit of most energy chains having extra space within the enclosure that allows users to add cables if needed.

Enquiries: www.igus.co.za

A rock solid case for circuit breaker diagnostics

Circuit breakers are often overlooked and under-appreciated in the electrical world. They perform a critical role in electrical circuits by protecting the system from damage caused by overcurrent or an overload of short circuit. "In short, they interrupt current flow as soon as the protective relays detect a fault," explains Casper du Plessis, Power Systems Operational Manager, Services at electrical giant Schneider Electric. "For this reason alone, circuit breakers should be maintained and inspected more often than we do right now." However, diagnostics may be more important.

What's the fault?

"When circuit breakers start to break in a plant or factory, it can lead to various problems, primarily downtime," explains Du Plessis. "This can be compounded by non-availability of spare parts. Replacing even a circuit breaker, which is quite a small piece of equipment, is a time-consuming task that involves changing several connections, resulting in significant downtime. It becomes even trickier when you deal with much older circuit breakers which contractors and electricians still deal with in many homes.

Downtime has a ripple effect, though, because it is not just the breaker that is a problem – there could be unforeseen surges that cause greater harm and damage to the system. "In the current energy provision landscape, extended down-time in any operation should be avoided at all costs. It is imperative that your business be running to the best of its ability in its most efficient state," says Du Plessis.

As the adage goes, an ounce of prevention is better than a pound of cure. By implementing a maintenance and diagnostic plan, you can ensure that critical components such as circuit breakers are closely monitored and checked for faults before they happen. "Diagnostics is emerging as a critical success factor in improving electrical room safety, durability and performance. Proper electrical equipment diagnostics requires a high level of human experience and expertise, sophisticated software tools, and broad access to equipment field performance data," says Du Plessis. "Breaker diagnostic tools assess the speed of breakers over time and whether they have slowed down. This kind of diagnostic test will highlight circuit breakers in the system that either need to be repaired or replaced. By performing this regularly, you can have a maintenance plan in place that ensures system integrity from the ground up."

The diagnostic tools do more than single out issues and problem areas, they generate reports that include data from visual inspections, as well as technical data from the various tests conducted on the breaker to assess its condition. "At Schneider Electric, our ProDiag diagnostic tools offer a combination of dedicated sensors and internal software that allows users to analyse circuit breakers, trip units, relays, fuses and other electrical components. Our ProDiag Breaker tool identifies the symptoms of undetected incidents or degradation of equipment and offers benefits such as detecting the early stages of breaker degradation, the protection of downstream electrical distribution equipment, goods and the people operating them, and enhancing reliability, mitigating unexpected shutdown risks and operating costs. In short, diagnostics can help prevent huge ripple-effect issues in your system. And while circuit breakers are tiny pieces of equipment, they are more important than many people realise," says Du Plessis.

Enquiries: www.se.com/za



Circuit breakers, though tiny, play a massive role in electrical circuits.

ABB's S800P high-performance mini circuit breaker packs significant power

Leading electrical manufacturer ABB has introduced its S800P series of circuit breakers. The series features a compact design but delivers performance far greater than would be expected, with line protection up to 50kA.

"The S800P provides unrivalled expandability for the most challenging, high-demanding requirements across a diverse range of segments and industries," says Etienne Delport, Vice President and Channel Manager for Smart Buildings and Smart Power, ABB Electrification, South Africa. "It combines size and performance to protect customers' installations."

The S800P has been designed and manufactured to meet the highest standards in the industry and the demands of users, and will work with a range of available accessories. "This makes the unit perfectly suited to different types of applications," explains Delport, "including railways, data centres, telecommunications, renewables and general industrial installations. The S800P guarantees complete safe electrical isolation of the circuit in compliance with IEC 60947-2. The range was designed with specific materials for traction and classified with a R26/HL3 hazard level in accordance with EN45545-2."

The S800P range complies with all regulations including fire and smoke requirements, while offering high-rated current protection (80A, 100A and 125A) at all pole configurations (1P, 2P, 3P, 4P) and B, C, D, K tripping curves. When used in rail applications, the series complies with vibration and shock resistance compliance. Quality control has revealed the S800P to positively test according to IEC 61373 for rolling stock equipment, as well as vibration tests for Category 1/Class B.

"The mechanical drive of the S800P is equipped with a trip-free release," explains Delport, adding, "The trip position display reliably indicates the exact



position of the moving contact. The trip position provides additional trip detection allowing for easy identification of the reason for any cut-off. The switch lever moves to the middle position in case of thermal or magnetic tripping."

The unit is shipped with an interchangeable terminal adapter for wires, cables and rigid conductors, allowing for a high level of comfort and flexibility during and after installation. The S800P also features quick and safe connection of the conductors via the integrated onboard terminal shutter that prevents incorrect underclamping of the connections.

Enquiries: www.abb.com/Africa

Maximise solar system installation and performance

The import of solar panels and inverter systems has skyrocketed in South Africa to new highs in 2023, with more than 3.4GW of equipment being bought this year. This is due to loadshedding, the instability of the grid and the cost of electricity from the SOE Eskom. But there is more to going solar than just buying the pieces and putting them together, says Rein Snoeck Henkemans, Managing Director of solar installation specialist Alumo Energy. "You need to maximise your solar installation. We have a team of experienced technicians who tailor the system to our clients' needs, then we make sure that we install the system correctly, and provide training and system management so that our clients get the performance they need."

Here are a couple of tricks and tips to remember with solar installations and how to maximise their performance:

- **Keep it clean.** We are not just talking about the actual installation, making sure that there are no exposed wires or that it looks untidy. The photovoltaic (PV) panels need to be kept clean from debris and even dust. Dirty panels can see electricity production drop by up to 10%.
- **Install smart devices.** This can be anything from geyser smartmeters that allow you to run your geyser for shorter periods during the day, to smartlights that automatically turn off when you leave the room.
- **Maximise usage during peak production.** Heavy machinery and appliances that consume a lot of power should be used mainly during the hours when your system is absorbing the most sunlight. Charge all devices such as laptops during this time and run pool pumps and geysers



(if they are on the solar system).

- **Adjust the panel placement.** If you notice that there is too much shade over your PV panels, you may consider moving the array to a more suitable position. This might be a small shift or something bigger, where you need to dismantle your system before the move. Tracking racks are becoming popular, too – they tilt slightly on an axis to point PV panels as directly to the sun as possible as it tracks across the sky.
- **Set your percentages.** Ensure that your solar system is set up in a tier structure so you always have at least 80% of your battery full when the sun goes down.
- **Efficiency is key.** Newer panels are far more efficient than those manufactured even five years ago – sometimes generating up to 20% more electricity.

Enquiries: www.alumo.co.za

Understanding power quality problems, starting at the DB board

The first place to inspect when you experience power quality problems is your service panel. From voltage sags and tripping circuit breakers, to overheating panels and spikes in your power, your distribution board (DB) can help you pinpoint your problems. But where do you start? The specialists at electrical tool and equipment manufacturer Comtest have put together an easy-to-follow guide on the five most common trouble spots on your panel and how to fix these issues.

Depending on the voltage and measurement requirements, you can use various tools for power quality troubleshooting, from digital multimeters to handheld single- and three-phase power quality analysers that perform many calculations automatically.

1. Bad circuit breakers

Since circuit breakers are pieces of equipment, they have a lifespan that needs to be monitored. Breaker parts such as contact points and springs wear out, and the physical switch mechanism can break. This is one of the easiest parts of the DB board to replace, but you first need to find the one that is giving trouble. Measurements of the circuit breaker voltage drop help to determine the breaker's overall condition. This is done by measuring across the line-to-load side of the branch breaker – if the voltage drop exceeds 100mV, the breaker should be replaced (it should be in the 35 to 100mV range).

2. Current balance and loading

To check the current balance and loading,

measure each feeder phase and current on each branch circuit. It is critical that the correct tool is used to record the measurement: A true-Root Mean Square clamp or true-Root Mean Square digital multimeter with a clamp-on accessory. An average responding clamp-on meter will not provide an accurate measurement because the combination of fundamental and harmonic current makes this a distorted waveform. A lower-cost average-sensing meter will tend to read low, leading you to assume that the circuits are more lightly loaded than they are.

3. Grounding hotspots – loose connections or terminals

Neutral ground bonds in subpanels are a violation of the electrical code, as well as of power quality performance wiring, but they are also quite common. Neutral ground bonds should be made at the transformer, never downstream of the main panel. When a neutral ground bond is made at a subpanel or receptacle, the ground path becomes a parallel return path for normal load current, which results in measurable current on the ground.

When it comes to hotspots, poor connections and the resulting heat loss are the main reasons for system inefficiency, and loose terminations lead to excessive source impedance. They are quite easy to find by using an infra-red thermometer, such as the Fluke 60 Series from Comtest, which allows you to detect a hotspot without having to make physical contact with the panel.

4. Harmonics

To check for harmonics, you need to measure the current on the feeder neutral. This usually falls between the 80 to 130 percent range of the feeder current because the third harmonic will add up in the neutral.

5. Voltage level (steady state) and voltage stability (sags)

The best way to check your voltage level and stability is to measure voltage levels of the branch circuits, phase-to-neutral, at the load side of the branch circuit breakers. If levels are low at the breaker, they will be even lower at the receptacle. This could be caused by low tap settings at the transformer, or even loose connections, long feeder runs, and overloaded transformers that create excessively high source impedance.

If intermittent voltage sags are the suspected issue, you will need to begin at the panel to isolate the cause. Are the sags a result of loads on the same branch circuit, or are they caused by loads elsewhere in the system? Comtest's Fluke Power Quality Analyser is a multi-channel recording instrument that can isolate the sag's source by trending voltage and current simultaneously.

If a voltage sag occurs together with a current surge, the sag is being caused by



a load on the branch circuit, which means that it was downstream of the measurement point and is considered a load-related disturbance. If the voltage sag coincides with a minor change in current, the sag has been caused by something upstream of the measurement point and is a source-related disturbance. If the sag is deep and approaches an outage, the source of the problem is more than likely going to be the electrical grid.

Enquiries: www.comtest.co.za

Track busways are a simple yet effective distribution system

A reliable, flexible power distribution system is critical to manufacturing and everyday business operation in manufacturing, industrial and commercial sectors, where upgrades are often required to enhance efficiency and optimise productivity.

Traditionally, when assembly lines need to be re-arranged or facilities need to be re-organised, it is also necessary to reconfigure the conventional electrical conduit and wiring power distribution system. "This upgrade requires removing existing electrical conduit and wiring, and then rewiring the system to bring power to new locations in the facility," explains the team from electrical manufacturer Legrand. "These tedious changes are often done at great inconvenience and cost to the business, with a potential loss of profits due to downtime and decreased productivity."

The key advantage of a track busway system is that users can bring the power source to machines and equipment, instead of trying to wire machines back to the power source at a distant panel board. "The simple linear design of track busways is more organised than conventional electrical conduit and wiring, making the power distribution system easier to design, install, maintain and also facilities later changes to the system layout," adds Legrand.

Get on track

Legrand's track busway system is a flexible, efficient alternative to traditional power distribution systems that lack flexibility in adapting to changes. Track busways provide localised power exactly where its required, and users can easily scale up power to

handle higher electrical load requirements. In addition, track busways offer significant long-term savings in the Total Cost of Ownership (TCO) of a power distribution system.

"Quick installation, easy adaptation to layout modifications, premises expansion or refurbishment, with minimal disruption, greater safety and improved performance are just some of the advantages of a track busway system over conventional busbar systems," says Legrand.

Since a track busway system is not hard-wired into the physical ceiling or walls, there is flexibility to make quick changes in the layout of the power distribution system. It is simple to take down the existing track busway sections, move them to new positions and reconnect the busway sections and plug-in units above the machines they serve, with minimal downtime.

"Another advantage of this system is scalability, where additional sections can be added to meet new requirements, for example, a factory expansion. If there is a need to scale up power, it is easy to replace existing plug-in units with new ones designed to support higher power requirements," adds the manufacturer.

With track busway systems, all the necessary components in a complete electrical distribution system – including breakers, connectors, power outlets, metering and surge protection – are built into the plug-in units. By installing busway systems and plug-in units directly above assembly lines or wherever power is needed, power can be provided exactly where it is needed.

"Our track busways can deliver power



levels of between 40 and 6300 amps, and up to 600VAC or VDC, single-phase or three-phase," says Legrand. "Depending on its length and power delivery rating, a single busway section can support multiple plug-in units. Depending on the number of outlets, a plug-in unit can support multiple power cords."

Unlike traditional conduit and wiring components, track busway sections and plug-in units are re-usable and can be moved from one location to another. A track busway system has been designed to facilitate easy maintenance and repair on individual machines. Since breakers and fuses are located within the plug-in units, instead of at a distant panel board, it is easy to turn off a machine by flipping the corresponding breaker switch on the plug-in unit for the machine that requires service. "This feature allows other

machines powered by the same plug-in unit to remain operational and also eliminates the potential error of turning off the incorrect machine."

In line with Legrand's commitment to the highest safety standards, all track busway systems have integrated safety features. "The track busway grid and all plug-in units, for example, have a built-in earthing system that ensures absolute safety. Additionally, because plug-in units provide localised power to machines, there is no need to run power cables and extension cords across the floor. This prevents potential fire and tripping hazards.

Track busways help minimise operational downtime and guarantee optimum productivity, while also providing significant long-term operational savings.

Enquiries: www.legrand.co.za

Electromagnetic interference and how to keep it out of your system

Electromagnetic interference (EMI) is described as “variable electrical currents and voltages regularly occurring in the environment that can disturb electrical equipment, ranging from cellphones and TVs, to Wi-Fi and data transmission”.

There are three types of EMI: Natural (a by-product of weather phenomena such as lightning, thunder and rain); Inherent (electrical noise produced within electrical equipment); and Man-made (created by different classes of electrical equipment such as cellphones, car ignitions and even lightbulbs). One of the easiest ways to block EMI and protect your system is by using shielded cables.

All wrapped up

Shielded cables look almost identical to unshielded cables, but there is one critical difference: What is inside. Shielded cables contain regular

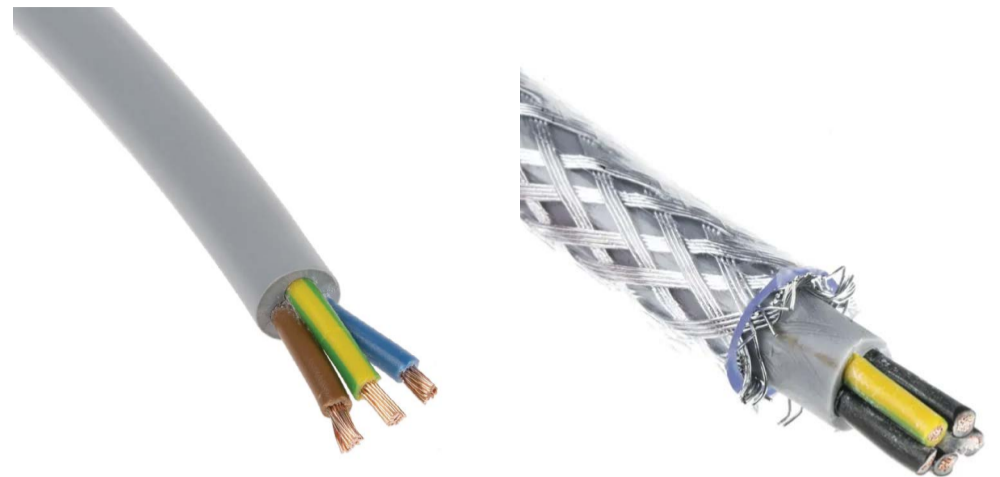
insulating conductors that are enclosed in a standard conductive layer... but there is a special protective shield later. “These are wrapped around the insulated conductors and protect them from EMI,” says Jem Matthews from US-based wiring and cable specialists Jem Electronics on its site, www.jemelectronics.com. “These shields are normally made from strands of braided copper, spiralled copper tape or even conducting polymers. They insulate the transfer of power from EMI and protect the quality of power being carried in the cables.”

Braided shielded cables can block up to 90% of EMI, spiral blocks 98% and metal-coated foil cables are able to block EMI completely. But how do you know what to use and when?

Shielded vs Unshielded

Shielded cables ensure a more constant supply of electricity because there is less loss of current. Thanks to the added insulation, shielded cables also give off less EMI. But they are heavier and cost more than regular unshielded cables (sometimes up to 10 times more), plus they take up a bit more space physically as there is extra internal material in the form of the shield.

Regular electrical cabling is flexible,



The difference between unshielded (left) and shielded cables (right) is pretty obvious.

thinner and lighter than shielded cables as there is no shielding material. They are also more cost-effective to install as they are mass produced on a huge scale and do not contain the added shielding. The problem is that they are susceptible to EMI – and this can disrupt the flow of electrical current (or data) – and they can produce noise of their own due to the current being carried.

Find a place

Shielded cables are best suited to

industrial environments where electrical flow is critical, such as factories and businesses where precision equipment is being operated on a large scale. It should be noted that while shielded cabling is recommended for high-voltage systems, it can be used on any system or circuit should there be sufficient operating space. Unshielded cabling, on the other hand, is more commonly found in commercial applications such as homes, where constant reliable power supply is preferred but not critical.

Geysers blankets and other ways to optimise water heating bills

With the cost of electricity skyrocketing and there being no end in sight, one of the easiest ways to lower your monthly usage account is by better managing your geyser. And it is not as difficult as you think.

• Install a smartswitch circuit breaker

Smartswitch manufacturer Tuya has a Smart Wi-Fi geyser timer that gets connected to your geyser circuit breaker in your DB board. This connects via your Wi-Fi network to an app on your phone that allows you to remotely turn off your geyser and turn it on. You can even pre-programme running times so that the geyser switches on and off at specified times. You only need your geyser to run for two hours to keep water hot for a 10-hour period, so saving on eight hours of usage (at nearly 3KW to run the geyser) equates to a fortune.

• Turn down the geyser temperature

Geysers are normally set to heat water at 75°C, which uses a lot of electricity. You can turn it all the way down to 50-55°C in South Africa. Anything lower than 50°C and you will run the risk of bacteria growing in your geyser.

• Add a geyser blanket

Geyser insulation blankets are not a gimmick – they have been proven to save between 10 and 20% energy consumption. This thermal insulation needs to be carefully fitted to the geyser and appropriate safety clothing needs to be worn should you buy a fibreglass blanket rather than a foil one.

• Move to gas or solar geysers

While the initial outlay is somewhat pricey, the long-term savings far outweigh the cost (a 150l regular geyser is about R5000, the same price as a 20l gas geyser). Solar geysers are connected to solar panels on your house roof and heat up throughout the day, while gas geysers heat water on demand – as soon as a hot water tap is opened and sufficient water flows through the pipes, a sensor inside the gas geyser triggers the igniter and water is heated. On average, a 9kg gas cylinder will last for 16 hours of continuous usage – that equates to 90 10-minute showers.

Sources: www.crompton.co.in
www.isootherm.co.za



A geyser smartswitch can control the times that your geyser operates.

Trafo serves growing demand for modular substations

Dry-type transformer specialist Trafo Power Solutions has broadened its product offering to include modular substations. The company has used its wealth of knowledge and experience in the industry to design and provide custom engineered electrical solutions.

“Since our entry into the market supplying dry-type transformers, we have noticed an increasing demand for complementary systems related to their application,” says David Claassen, Managing Director of Trafo Power Solutions. “Our evolution began with customer recognition of the level of our in-house expertise, and requests for packaged solutions which included our dry-type transformers.”

Customers needed a reliable supply partner with the competence and experience to understand the specific demands of each project and application, explains Claassen. “Trafo Power Solutions has proven itself in this role, right from the concept and design stage of a project, through to facilitating the manufacture, delivery and on-site commissioning.

He adds that modular substations, often referred to as E-houses, are prefabricated or modular structures that house electrical equipment and systems. They are designed to provide a secure, centralised environment for critical electrical components and infrastructure. “Often used in industrial settings, power plants, mining operations, oil and gas facilities and other applications where reliable and efficient electrical power is essential, an E-house would house a variety of electrical equipment such as switchgear, transformers, motor control centres, distribution panels and other power distribution and control devices,” says Claassen. “Most significantly, modular substations are built and tested in controlled workshop conditions, making the process more streamlined and cost effective, and ensuring optimum quality.”

These dry-type transformers are suited to the philosophy of modular substations, as they can be safely accommodated inside the compact structure, which enhances the benefits that modularity brings. Claassen adds, “The attraction of the modular structure is that it can be more easily

transported and installed on site – and having a built-in transformer makes sense.”

Traditional oil-cooled transformers must be installed in a purpose-built structure for safety reasons, as there is a risk of leakage, fire or explosion. This often means extra civil engineering construction on site, adding time and resources to the project. The cabling arrangement between the external transformer bay and the substation must then also be accommodated.

“The inherent safety of the dry-type transformer allows it to be installed close to the switchgear inside the modular substation, so there are shorter cable runs and an easier installation,” he explains. “The extra cost and management of on-site civils work are also avoided this way.”

Increasing its solutions offering has put the company at the head of the market as it no longer supplies just a single component. “We now provide a packaged and integrated solution that minimises its customers’ points of contact during their projects – be they an end-user or an engineering, procurement and construction management company,” says Claassen. “Not only does this save them time, but it also considerably reduces the risks associated with integrating the different aspects of electrical projects. He says that there is certainly a trend in the market where customers are looking for more integrated solutions, which allows better quality control and ease of installation.

The transition to a broader offering has been a natural, organic process for Trafo Power Solutions as it has never just provided standard off-the-shelf transformers. “We have always customised this equipment for each application, requiring an in-depth understanding of the customer’s needs before tackling the design process. Within our company, we have strong engineering expertise and experience, so it was a spontaneous transition into dealing with the other aspects of modular substations,” says Claassen. “We expect the trend towards modular substations to continue strongly.”

Enquiries www.trafo.co.za



NEKO launches its new illumination products in South Africa



Swiss-based lighting manufacturer, designer and distributor NEKO has brought its Think Design philosophy and lights to South Africa following its launch event in Cape Town last month. The event was attended by NEKO founder, owner and CEO Sven Speissegger, who has a proven track record as a lighting specialist.

"I love lighting. It is a passion of mine. I do not like the term 'specialist'. I prefer 'lover of lights'. It is a better term as it shows care for the industry, my products and what we are doing with NEKO," says Speissegger. "I believe in Think Design. You think about what you are doing, what you want and how to achieve that. Then you go about designing it. With illumination, you can do many things if you put your mind to it."

NEKO follows the principle of "European thinking in union with Asian efficiency",

which Speissegger explains as "creativity and grandeur combined with accuracy". "Our LED lights, for example, have been sustainably manufactured since I started the company in 2013. We have offices around the world and our production factory and coating plant are both in China. Since moving production to China, we have seen business grow to the point where we have needed to increase our premises to

keep up with orders. This is an indicator that we are doing something right."

The products unveiled include the brand's Skyjack downlights, which are recessed luminaires with a height of just 4.6cm. They are available in 2700 and 3000K and there are various models in the series, like the Skyjack D, which has a slightly recessed optic at UGR>19 to provide optimal glare control. There

is also the Koi chip-on-board LEDs that feature indirect up-and-down lighting that is perfect for staircases and corridors as it accentuates and illuminates walls in a beautiful glow of light.

NEKO is exclusively imported and distributed by European Light & Design Centre.

Enquiries: www.eldc.co.za

Circular Energy leads call for lightbulb and e-waste collection

Non-profit company Circular Energy is driving the call for responsible recycling in South Africa ahead of International E-Waste Day on 14 October. "In an era characterised by rapid technological advancements, the frequent replacement of electronic devices has led to a surge in e-waste generation," says spokesperson Patricia Schröder. "We are trying to involve the public and to alert them to this crisis."

By offering a streamlined process for donating used electronic goods and lightbulbs, which are notoriously difficult to recycle, Circular Energy empowers the public and businesses to take meaningful steps towards reducing their electronic footprint. "Our e-collection events are about making sustainable choices accessible and convenient. With technology constantly evolving, it's crucial that we address the challenge of e-waste responsibly. By providing a hassle-free opportunity to recycle unwanted devices, we hope to inspire positive change," says Schröder.

Circular Energy's commitment to environmental stewardship extends beyond recycling, explains Schröder. "It is about encouraging a broader shift towards sustainable practices. The e-collection events not only offer a simple solution for electronic disposal, they serve as a platform to raise awareness about the global e-waste crisis."

Enquiries: www.circular-energy.org

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Lighting has an impact both physically and psychologically

When it comes to illuminating a room, house or office, there is a lot more to planning and execution than just plugging a lightbulb in and switching it on. According to lighting specialists Eurolux, there are physical and psychological considerations that need to be considered.

Psychological impact

1. Circadian rhythm

Your body has an internal clock that works according to day and night light. This regulates how the body reacts when it is sleeping and when it is awake, so you need to get a certain amount of natural sunlight during the day, and likewise enough calming natural "light" at night. Having too many artificial light sources in a space could impact your natural rhythm, which has further impact on mental health.

2. Colour perception

The difference between warm and cool light has a huge impact on mood. Warm lighting brings a sense of cosiness and a relaxed, familial atmosphere, while cooler illumination results in a sense of determination and drive to complete tasks. Warm would be best used in the kitchen or living areas, while cooler works best in a home office, for example.



Artificial and natural light have an impact on your body.

3. Mood enhancement

The impact of lighting on mental health has been physiologically measured with simple tests. Being exposed to natural light or an artificial light that resembles sunlight leads to the release of serotonin in the brain – it is a neurotransmitter that promotes happy thoughts and well-being.

Physical impact

1. Eye health

Bad lighting can put undue strain and pressure on your eyes – this goes for both natural and artificial illumination. If you have too much lighting, there is an added glare factor, while too little light forces you to "look

harder" to see. This strain can have short-term consequences, such as headaches and discomfort, as well as long-term problems such as loss of eyesight and the need to use glasses or contact lenses.

2. Sleep quality

The amount and type of light you get before bed can hamper your sleep pattern. This is in line with the Circadian Rhythm mentioned above because your natural body clock will be out of sync if you have had too much of the wrong light and not enough correct illumination.

3. Vitamin D production

Your body needs sunlight every day to promote the release of vitamin D in your system. This nutrient is vital for bone health,

immune function and regulating mental health and moods. While South Africa is blessed with warm sunlight almost year-round, other countries have turned to ultra-violet lighting solutions to provide vitamin D to the body.

Having the perfect lighting is more important to your health than you realise. Whether it is skylights in your kitchen or new LED lights in your office, the way that you illuminate your environment can either hold you back or give you the mental and physical push you need to lead a better, healthier lifestyle.

Enquiries: www.eurolux.co.za

Radiant tackles loadshedding darkness with rechargeable LEDs



Lighting manufacturer Radiant is hoping to stop loadshedding's darkness in its tracks with an exciting range of rechargeable LED lighting products designed to operate for up to six hours on a single charge.

The T8 tubes are available in 600mm, 1200mm and 1500mm variants, featuring 3.7V lithium-ion batteries that require 15 hours of charge time.

The RD330 emergency downlights feature the same battery that provides three hours of running time, but there is advanced technology in the LED's engine. The downlights are dimmable and can operate at 100%, 50% and

25% illumination – users can get up to 12 hours of lighting if the RD330 operates at 25% lighting power.

Radiant has also unveiled a range of multifunction rechargeable flashlights and lanterns, all featuring micro USB chargers and variable brightness settings. They have a 1W integrated LED that provides 6500L colour temperature and up to 80 lumens on high setting. The flashlights and lanterns require a three-to-four hour charge time and can offer up to eight hours of lighting if used on low settings.

Enquiries: www.radiant.co.za

Regent Lighting helps bring illumination solutions to the padel courts



Lighting design engineers Regent Lighting Solutions recently helped with the overhaul of Johannesburg's iconic northern suburbs James & Ethel Gray Park by literally lighting up the sporting premises. The park is home to the brand-new Padel & Social Club, which Regent Lighting Solutions was contracted to help illuminate.

Using electrical contractor Stan Smith Electricians, also based in Johannesburg, Regent has designed an illumination solution that provides light across the courts for night-time games and the facilities where audiences can enjoy the games. Regent used the following equipment in the installation:

- The Tauris Pro 2 168W 034 lens was selected to provide effective lighting with high lux

levels and an even distribution of light over the playing area.

- The Argo 54W post top was used to illuminate the playground area.
- At the entrance to the facility, patrons are welcomed with a combination of lighting. Even symmetrical illumination is made possible with the Matla post top on 6m poles, and the Shuttle Trunion mounted light fitting highlights the trees with a narrow 30-degree beam reflector.
- The Lumina Mini 54W was used in the parking area to provide ample lighting and safety to players and guests as they return to their cars to head home at night.

Enquiries: www.regentlight.co.za



BEKA Schröder launches highmast solar lighting in Nelson Mandela Bay

Leading local luminaire manufacturer BEKA Schröder has supplied a solar lighting highmast solution in the city of Gqeberha, Eastern Cape. This pilot installation, in Stanford Road, is in line with the Nelson Mandela Bay Metropolitan Municipality's plan to protect its streetlights by keeping cables out of the reach of thieves – BEKA Schröder's Solarflood, which was used, is 20m tall.

"BEKA Schröder's Solarflood was chosen for this pilot project," explains Peter Badenhorst, BEKA Schröder's Branch Manager for the Eastern Cape region. "At 20m tall, the Solarflood will combat rampant cable theft and destruction of infrastructure in the city, while providing lighting for the community when there is loadshedding, thus increasing the safety and well-being of the community. This is the first solar highmast installation in the Eastern Cape, and a successful pilot project for the Nelson Mandela Bay Municipality."

It is all in the details

The Solarflood solar lighting high-mast solution is locally designed and manufactured and can withstand the onslaught of inland and coastal environments.

"The Solarflood provides a high-performing robust option for off-grid solar lighting needs," says Badenhorst. "The units come with a warranty of up to five years. We have designed the Solarflood in such a way that the corrosion-proof glass-reinforced polymer box, which houses the Lithium energy source and other critical system components, is permanently positioned in the shade as the panel array faces north. This effectively blocks high temperatures that often cause premature battery ageing."

The Solarflood features a high Ingress

Protection level (IP 66), and the photovoltaic energy conversion has been optimised by highly efficient monocrystalline solar module technology. "This design, in conjunction with our Maximum Power Point Tracking (MPPT) charging system and our lithium energy storage technology, provides a state-of-the-art quality system that offers the required system autonomy, as well as a long-lasting solution to operate in any of our very challenging African environmental conditions," concludes Badenhorst.

Enquiries: www.beka-schreder.co.za





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Signify's vertical farming bears fruit

Award-winning Dutch plant specialist Jarno Mooren and the research team at lighting giant Signify's experiments have literally borne fruit.

"When I brought a small pineapple shoot from my personal collection to our GrowWise research centre a few years back, I did not believe that it would ever bear fruit. Growing up in a forgotten and dark spot inside our single-layer cell, it had seen multiple tomato and raspberry trials come and go before it decided to give us this beautiful gift," says Jarno, revealing to news site www.verticalfarmdaily.com that the vertical farming centre has produced a pineapple.

"This achievement showcases the power and potential of vertical farming, and it serves as an inspiration to revolutionise our food production. If a pineapple can flourish without daylight, imagine what more we can achieve by exploring, innovating and collaborating to shape a brighter, more sustainable future," he says.



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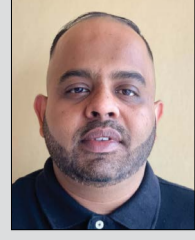
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ADAM AND EVE IN HEAVEN

A man died and went to heaven where there were millions of other people. Everyone was naked and looked as they did at the age of 21. He looked around to see if he recognised anyone. He saw a couple and he knew immediately they were Adam and Eve. How did he recognize them?

SEPTEMBER SOLUTION

The items were used by children to build a snowman that has now melted.

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- Standby and emergency power
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