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## LIGHTING IN AFRICA: MUCH NEEDS TO CHANGE

**G**oktug Gur, Signify President and CEO for Middle East, Turkey, Africa and Pakistan, recently visited South Africa on a whirlwind tour of the continent. Sparks Electrical News was able to sit down with him to find out how the company is using its position to find solutions to the challenges of access to electricity, lack of education around energy efficiency and sustainability as well as regulation and compliance issues within the lighting sector on the African continent.

**Q: Could you give us an overview of your thoughts on the lighting market in Africa as it stands?**

**A:** Every country in Africa is unique, with its own challenges to overcome. The only way to facilitate energy access in a market is to understand the underlying factors which stand in the way. This goes beyond just treating the symptoms by providing technical and payment solutions.

We are seeing how lives are improving everyday thanks to solar lanterns. In Africa, the light of a single solar lantern goes beyond lighting a space, it also charges a mobile phone, makes people more productive, increases safety, and improves the quality of life.

While this is a significant solution, it's important to remember that solar lanterns are not the ultimate solution for universal energy access. It's a good start on the energy access staircase required in Sub-Saharan Africa, a region where a number of poor people continues to rise.

South Africa is one of the world's least energy efficient nations. We use approximately 40% of Africa's electricity and are the 12<sup>th</sup> highest emitter of greenhouse gasses in the world. Our national addiction to energy has led to the situation where our reserve margin is unsustainably low, and the reliability of our electricity supply is under threat. Our energy habits have adverse effects on our economy, our environment, and our health.

As a business, that requires us to introspect and look at how we can use our products and services to be solutions driven while we are all facing these challenges.

Designed with our South African market in mind – as everyone is encouraged to use electricity sparingly to help ease the pressure off the national grid – we came up with the Philips Battery Backup Lamp. Philips Rechargeable Backup LED Lamp is a reliable product intended to put our customers at ease that they will have light regardless of power cuts and load-shedding. Above all else, it also delivers a sense of care and safety during those challenging moments that are out of our control.

**Q: What opportunities do you believe exist for the lighting market on the African continent?**

**A:** Before the market can evolve to its full potential we need to urgently address and find solutions to the challenges of access to electricity, lack of education around energy efficiency and sustainability as well as regulation and compliance issues within the lighting sector. Only then will we be able to look at the opportunities that exist and which can be created to not only elevate the lighting market but also contribute to collectively finding solutions to the challenges which influence the efficiency and growth of the economy.

As the solar sector continues to grow, there is an increased need for people with business and technical skills to distribute, install, and maintain the technology. Establishing the technical know-how enables lighting interventions to be durable, resilient, and sustainable in the long run. Thus, by working to empower women and youth through employment, these interventions will similarly support local socio-economic and livelihood development where it is needed most.

Poor access to affordable and sustainable technologies for lighting is a major hindrance to development in communities across Africa. In response to such needs Signify enables access to light development for off-grid communities through support



Goktug Gur, Signify President and CEO for Middle East, Turkey, Africa and Pakistan.

by the Signify Foundation by supplying solar-powered home lighting systems and lanterns. One of our focus areas is on human capital development for the solar ecosystem. Signify has worked hard to create a number of solutions for solar lighting such as Philips SunStay and SmartBright street LED products which offer solutions for areas that are not yet connected to the grid, new streets, areas where they are renovating existing installations or areas where it is difficult to lay cables due to geographic conditions.

As with many other industries, the ebb and flow of technological advancement has resulted in the lighting industry undergoing significant change over the last few years. One of the most important of these technological developments has been

CONTINUE ON PAGE 5

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## Efficiency in electric motors drives savings, sustainability

In the absence of legislation to drive energy efficiency in South Africa, it is vital that local industries recognise the commercial benefit of converting to high efficiency motors, says Zest WEG sales manager for electric motors Francois Labuschagne.

In pursuit of global targets to reduce the pace of climate change, many countries have legally enforced the use of certain efficiency classes of motor, but not South Africa. Labuschagne points out that as much as 40% of the power consumed on the national grid is to drive electric motors. This means that any improvement in motor efficiency would significantly reduce the total electricity load,

and help reduce carbon emissions from coal-fired power generation.

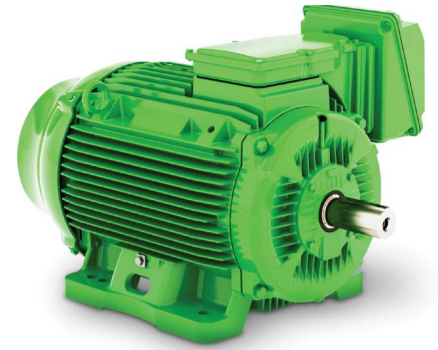
"However, even without being forced by law, motor users have a strong commercial incentive to install high efficiency motors," he argues. "This is because a motor's purchase price typically makes up only about 2% of its lifecycle cost over 10 years. With another 3% of this cost consumed by maintenance, a full 95% of the cost of running a motor is the energy it consumes."

It is clear, then, that reducing the energy consumption is the best way of saving costs when it comes to operating motors. One of the challeng-

es, though, is that many companies incentivised their procurement departments to save money on upfront capital purchases – rather than on the broader cost to company.

"Where purchasers do not understand where their motors' real costs are incurred – that is, in their energy consumption – they will continue to pursue a false economy by choosing products with the lowest capital cost," he says. "The small amount saved upfront is very quickly lost through higher running costs."

He points out that, as a global electric motor manufacturer, WEG has been making efficiency



A WEG IE4 super premium efficiency motor.



The WEG IE5 electronically commutated motors are well suited for fan applications.



A WEG IE5 electronically commutated motor.

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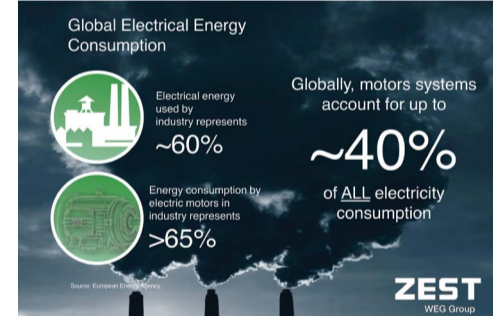
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An overview of global electric energy consumption.

innovations to its motors for decades – positioning it well to meet current and future market trends. In South Africa, Zest WEG has gone as far as to offer its IE4 super premium efficiency motors from 37 kW upwards at the same price as the IE3 premium efficiency units.

"We have recently taken another important step in our efficiency and sustainability journey, offering the market our new IE5 motor – and taking our offerings into the ultra-premium energy efficiency class," he says. "These motors are well suited for fan applications, and have great potential in the agricultural sector in environments such as chicken farms."

Using smaller fans in these situations can give users the opportunity to install multiple units where they used to have only one large fan. As temperature conditions change throughout the day, one or more of the fans can be switched off completely, further reducing energy consumption.

"We are very excited about this electronically commutated motor, which comes with an integrated variable speed drive (VSD) and can be locally or remotely controlled," says Labuschagne.

Enquiries: [www.zestweg.com](http://www.zestweg.com)



## How to grow a small electrical business

After years slaving away as an apprentice electrical contractor, you have made the gutsy move to start your own electrical business. With 'business owner' added to your resume, how do you grow your electrical business to its fullest potential? We've got a bag of tricks for taking things to new heights – here's what you need to know.

### 1: Start with your digital marketing

In the digital age, everything is online (case in point, many of you are probably reading this online right now). It's how we communicate, access education, read the news or book a table at a local restaurant. It's also how most people find an electrician. If you aren't using digital marketing, you'll have a hard time growing your business.

### 2: Update your website

Did you know that you have 50 milliseconds to impress your viewers with your website? If yours doesn't lure them in, they'll move right along to the next one. There are things you can do to update your website – like improve your SEO and keep your design crisp. Another important thing is to have a call to action – loud and clear. Don't make it difficult for people to get in touch – have your details at the ready.

### 3: Refresh your photography

A great website will help sell your business, but only if your photography is up to scratch. If your budget can't stretch, some good quality shots from your smartphone will do the trick, or ask your friend, sibling or spouse to help you out.

### 4: Use online directories

There's no space for old-fashioned phonebooks anymore – the internet has taken over. There are lots of online business directories for electricians no matter where you live. They're an affordable way to spread the word of your business to a wide audience – without having to worry too much about digital skills. A simple, good-quality photograph, some contact details and a link to your website should do it.

### 5: Make the most of free tools

Digital marketing is important – we've made that clear. But updating it doesn't have to break the bank. These days, free online tools are a great resource to get your electrical services out there and grow your business.

Try out Google My Business to promote your business through a listing on Google Search and Google Maps. Otherwise, you could give MailChimp a go – it's a subscription-based software with a free basic plan that allows you to send professional-looking offers, newsletters or surveys to your customer database.

### 6: Let customer reviews do the talking

Studies show that 90% of people read online reviews before visiting a business. Customer reviews are important no matter what business you're in, but for an electrical business, they're particularly important.

### 7: Up your social media game

Social media has taken the marketing world by storm. If you aren't using it to promote your business, you might want to consider it.

- **Facebook:** With more than two billion active users worldwide, Facebook is the biggest social media platform. It's a great way to market your electrical business through a range of formats – video, posts and photos.
- **Instagram:** These days, if a business isn't on Instagram, you might wonder whether it even exists in real life. Instagram has a huge influence in promoting businesses whether you're in hospitality, fashion or the trade industry. It's particularly beneficial for younger target markets who spend a lot of time on their phones.
- **YouTube:** Video is quickly becoming the number one-way brands market their businesses. YouTube's revenue has grown nearly \$19 billion in just ten years – so there's no denying it's an effective marketing tool. We know what you're thinking – how can you market your electrical business on YouTube? There are endless ways.

Why not start a channel answering common electrical questions? Or showcase a day in the life of an electrician to gain traction on your channel? Whatever the way, it's a sure route to growing your business.

- **LinkedIn:** Don't forget about the electricians who might want to come and work for you, or another trade company looking to join forces. Before they pursue a chat with you about a job or collaboration, they'll want to suss you out via LinkedIn – so make sure yours is up to date and looking flash.

### 8: Make the most of offline marketing techniques

- **As an electrician, you tend to emergencies of all sorts.** Day to day, your client base extends from university students who've blown their switch box to elderly retirees needing assistance. For that reason, your marketing needs to be far-reaching and diverse.

Even in the digital age, offline marketing shouldn't be forgotten. There's still a place for it, and if used wisely, it could be hugely beneficial to growing your electrical business. Here are a few tips to give you a head start:

- **Brand your vehicle:** If you haven't got your van sign-written yet, there's no easier way to market your business than to personalise it with your company logo and contact details. It's a one-off expense that could bring you a lot of business long-term. If you have staff or other vehicles, consider doing the same with them.
- **Place a print ad:** Remember, as an electrical business owner, you're targeting a wide range of people – and not all of them will be connected with social media. An ad in your local newspaper will reach the eyes of those people, covering all your bases.
- **Make connections:** As much as we advocate for modern systems, we can't deny that a good old-fashioned chat can spread the word of good business. Networking is a fool-proof method for growing your business. And what's more, it won't cost you a thing. Check your local area to see if there are any professional business networks running.
- **Use business cards:** Although a lot of your business is going to come through your website and other online channels, there's still room for the business card. Keep a few on hand for when you find yourself chatting to a prospective customer, or pop them into your neighbours' mailboxes next time you're passing.
- **Look sleek in uniform:** As an electrician, you'll meet lots of potential clients every day. What better way to market your business than to wear the brand? A uniform or company T-shirt won't break the bank, looks professional, and it's an easy and effective way to spread awareness of your business.

### 9: Take a step back to reflect

When you own an electrical business, it's easy to get wrapped up in the daily grind and forget to pause and reflect. But this is an essential part of growing your business – and if you never review how you're doing, you'll never know how to grow. Not sure how you'll find the time? Below we've got some simple changes you can implement.

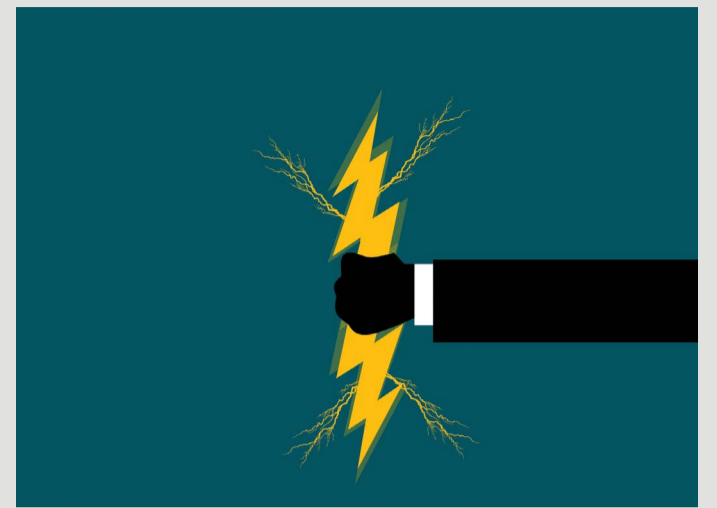
- **Review finances:** Let's be frank – if you're not on top of finances, the future of your business isn't looking flash. The most important thing is knowing where your budget is going, so you can always see where you could rein things in and spend more wisely.
- **Take a holiday:** We know what you're thinking – how can I possibly take a holiday? I've got a business to run, jobs to manage and staff to train! We hear you, but the thing is – taking a break is hugely beneficial to your business.
- Not only is it important for you to switch off, but you might also find that some time away brings new inspiration or ideas for how to improve your business. Plus, it gives your staff a chance to take the reins, which is empowering for them – and will benefit your business long-term.
- **Chat with your staff:** Without your staff, you have no business. When was the last time you checked in with them to see how they're doing? Keeping a good rapport with your entire team is important for their productivity and development and it'll help future-proof against mishaps. Make an effort to check in with every staff member at least once a month, and watch your business thrive because of it.

### 10: Time for change – pivot and grow

In every business, the time comes when the old ways of doing things don't work anymore. Maybe it's your staff arrangements, the services you provide or the audience you're targeting – but whatever the case, you need to be resilient and proactively make changes when they're needed. Here are some things you can try:

- **Upskill yourself or your staff:** If things are running a little slower than you'd like, you might want to consider upskilling. Investment in professional development is an investment in your business. In today's world, technology is changing all the time – and if you don't keep up, you'll get left behind.
- **Shift your audience focus:** A bold way to grow your electrical business is to expand to a new target market. Do your research and keep up to date on local developments or renovations in your area. That way, you'll score the work before any other electrician gets in. Or, send out a special intro offer to a suburb further afield to win the business of a completely new market.
- **Knuckle down on management:** Most electricians start the old-fashioned way – jotting down job details using a notepad and pen. Problem is, you could be losing profit by forgetting to charge for extra materials, dropping client information and missing jobs – obviously, not good for business.
- **Get your business sparking**

Establishing a new electrical business takes hours of blood, sweat and tears. There's no point going through all of that if the business isn't going to be a success. Your strategies for growing a business are even



more important than the steps it takes to start one. With a few tweaks to your marketing, some time away to pause and reflect and a commitment to upskilling yourself and your staff, your business will soar.

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## Major Tech multimeters updated to include solar power requirements

Major Tech has launched the latest update to its MT1887 (rated CAT IV 600V) True RMS professional multimeter, making it easier to use and providing additional functionality to streamline users' productivity. The MT1887 is rated IP67 and is one of the first multimeters aimed at the growing solar power industry in South Africa.

The solar energy market in South Africa is expected to increase by 23.31 TWh from 2021 to 2026, at an accelerated CAGR of 29.74% according to Technavio. In addition, under the Renewable Energy Independent Power Producers Programme (REIPPP), South Africa aims to install 8400 MW solar generation capacity by 2030, increasing that to 18 GW by 2050.

With the increase in solar power on both a large scale and for residential use, electrical contractors must have the tools at hand to be able to handle up to 1500 V dc – as required in solar installations. The updated MT1887 meets these needs as it can handle between 400 mV and 1500 V dc.

Other measuring ranges offered by the MT1887 include dc V up to 1500 V and ac V to 1000 V, 4-20mA process loop measurements with a percentage reading, temperature measurement from -50°C to 1000°C, ac and dc Micro Amps up to 10 A, capacitance to 40 mF and frequency to 100 MHz. It is designed to assist in solving problems on power distribution, motor drives, electromechanical equipment and plant automation. It also includes an automatic Non-Contact Voltage detection where the LCD backlight turns red when ac voltage above 110 V is sensed. An intrinsically safe version, the MT1887IS is also available.

There are three standout features of the new MT1887 that will be of special importance to contractors:

- The large 40 000 count backlit LCD with the added advantage of a 41-segment analogue bargraph.
- Real-time Bluetooth functionality allows the user to transmit data to the Android or iOS mobile app in real time for viewing, organising and sharing recordings. Users can also add their own notes or recommendations to the data and then share this via email, WhatsApp and more.
- The MT1887 has a rugged, double moulded rubber case designed for heavy duty use and an IP67 waterproof and dustproof ingress protection rating. This means the device is fully protected against dust and other particles and can withstand full immersion in up to 1 m of water for up to 30 minutes. Major Tech multimeters were one of the first to have been designed to meet IP67 requirements.

Simultaneously, Major Tech has also updated the MT1885 with similar features and functionality, with a large 6000 count backlit LCD capable of producing a 61-segment analogue bar graph. The MT1885 can measure dcV up to 1500 V and acV to 1000 V, temperature measurement from -20°C to 1000°C, ac and dc Micro Amps up to 10A, capacitance to 100 mF and frequency to 10 MHz. It also includes the automatic NCV function where the LCD backlight turns red.

The launch of the updated MT1887 and MT1885 once again demonstrates Major Tech's drive to provide its customers with the latest equipment to assist them in completing their daily tasks, including on solar power installations – efficiently and safely, while increasing their productivity with real-time recording and reporting functionality.

Enquiries: [www.major-tech.com](http://www.major-tech.com)



The MT1887.



The MT1885.

## Meet the Cablenet Electrical management team

**Cablenet Electrical** is a dynamic electrical contractor based in Gauteng which prioritises sustainability and environmental protection. The company draws inspiration from providing efficient and sustainable renewable energy solutions towards a clean energy future.

### Teddy – Managing Director

Teddy formed Cablenet Electrical in 2013 after noticing a gap in service provision in the energy sector. He started doing subcontracting projects and attended Maxi-Solar Academy to acquire more knowledge regarding renewable energy. Since then, he has continuously increased knowledge and experience in renewable energy and electrical systems installations and maintenance.

### Kukunda – Team Leader

Kukunda is an electrician with experience in project execution, design, plant defect elimination and maintenance. He has impeccable dedication to maintaining high occupational health, safety and environmental (OHSE) standards as set in the industry and company policies.

dustry and company policies.

### Etumeleng – Projects Manager

Etumeleng holds a Bachelor of Business Administration degree and has experience in Human Resources and Bookkeeping. She joined Cablenet Electrical in 2019 as an administrator, overseeing the day-to-day operations of the company

### Nomzamo – Site Manager

Nomzamo is Electrical Engineering Technician proficient with cutting-edge diagnostic equipment as well as traditional repair methodologies. She has in depth knowledge of working with electrical machines, electrical power systems, high voltage systems, power electronics, ac/dc, converters, electromechanical systems and performing MV and LV Transformer tests, Motor test, fault finding and analysis. She also has technical knowledge in VSD drives, PLC, HMI and SCADA.

Enquiries: [www.cablenetelectrical.co.za](http://www.cablenetelectrical.co.za)

## Enhanced safety for machine operators

After two years of restrictions, exhibitions and events are now re-opening globally. Good news for local industry is that Electra Mining Africa will go ahead as a live in-person event this year. Several other exhibitions have taken place over recent months with excellent results being reported by all involved.

Imagine what could happen if a machine operator switches off a process but then accidentally enters the area of operation without checking if all the machinery has come to a complete standstill. Even the slightest movement of say, rotating saw blades could cause serious injury.



To mitigate such an event happening, the industrial safety device company Bernstein has released a new generation of safe mechanical guard locking switches. The SLC guard locking safety switch is an interlocking device which combines two safety products in one; namely, the safe monitoring of the door position and the safe monitoring of the guard lock. This ensures

that safety guards, doors and other covers remain closed as long as a dangerous condition persists.

"The SLC is a cost-effective and user-friendly development from Bernstein," explains Karin Visser, managing director of sole importer Anglo Allied Engineering. "During development, it was important to reduce the functions to the essentials and to consider the primary requirements of the customers."

Thus, for example, mechanically highly stressed components – such as the rotating head – are made of metal. This makes it extremely robust and durable. The plastic housing, on the other hand, is light and functional. A variant with M12 plug connector allows a particularly simple connection to the machine. Another user-friendly feature is the possibility of flexible contact assembly: The contact combination of NC and NO for monitoring the door position and the guard locking can be freely combined at the factory. The specific requirements of customers can be configured individually. Should it be necessary to open the guard locking when the machine is switched off – e.g., for maintenance work – the SLC is equipped with an auxiliary release as standard, which can be operated with an Allen key.

Enquiries: [info@angloallied.co.za](mailto:info@angloallied.co.za)

## Solid Wedge celebrates 20 years of excellence

February 2022 marks an important milestone for Solid Wedge, Southern Africa's leading electrical and instrumentation solutions provider, as the company celebrates its 20th anniversary. Consistency of supply and service has been key to the company's success over the past two decades, even in the face of typical boom and bust cycles associated with its business environment.

Established in February 2002, Solid Wedge offers a wide range of electrical and instrumentation solutions through a comprehensive product and service portfolio. Over the years, the company has closely associated itself with well-known electrical equipment brands through agency, distributorship and system integration.

While the company's flagship brands have traditionally been Schneider Electric and Festo, Solid Wedge continues to research the market for new technologies by carefully selecting ISO certified products that conform to South African Standards, while meeting its customers' everchanging needs.

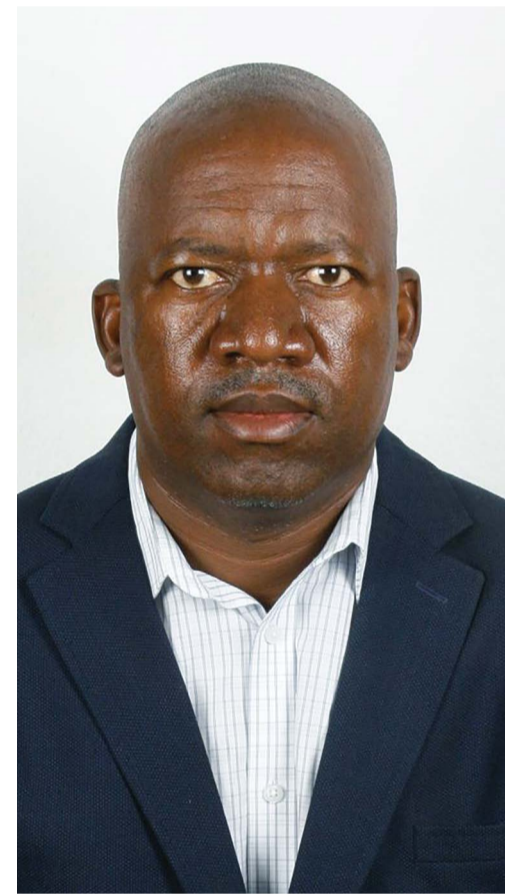
Products and the complementary technical backup and aftersales service are offered through the company's wide distribution network in SADC countries, which comprises well manned offices in South Africa, Zimbabwe and Zambia.

"One of the key success factors for our business over the past 20 years has been the quality of products and the service that we offer. As a business, we are also renowned for maintaining high levels of integrity in all our engagements," says Solid Wedge's MD, Llyod Dzinotyweyi. "Central to our success over the years has also been the ability to adapt to the everchanging market landscape and trends."

Commenting on some of the key achievements over the past 20 years, Dzinotyweyi is proud of having grown the business to a point where it has become an equal opportunity employer to a lot of people, thus providing sustainable means of livelihood to many families.

"The business has managed to sustain livelihoods of its stakeholders and also provided massive return on investment to its shareholders consistently for many years," he says. "Over the past two decades, we have also managed to deal with other established companies and added real value to their businesses through our service and product offering."

One of the biggest challenges in business is to address and adapt to rapid changes. Over the past few years, the business world has changed by leaps and bounds, and it is changing even faster. To retain the competitive edge, Solid Wedge has been quick to adapt to the changing operating environment.



Llyod Dzinotyweyi, Solid Wedge MD.

In the electrical and instrumentation environment, Dzinotyweyi believes that the Internet of Things (IoT) is shaking up the business world. The use of IoT technology has provided businesses with new ways of managing data to monitor important processes, give new insights, boost efficiency and allow companies to make more informed decisions.

"One of the key trends we have also seen is that the marketplace has become more accessible, albeit to everyone, so we have to continue finding ways to define our space and niche in such a cut-throat environment," he says. "We have also seen new businesses emerging, grow faster and quickly disappear. We take cognisance of the causes, which helps us to manage our growth and survival trajectory to remain alive and operational."

In conclusion, Dzinotyweyi says Solid Wedge has a bright future, only if the company embraces new market trends as they unfold and adapt accordingly. "Nothing in business today is to be taken for granted. Adaptation is key to survival and growth," concludes Dzinotyweyi.

Enquiries: [www.solid-wedge.com](http://www.solid-wedge.com)



## Thermal imaging of cables and electrical panels

Thermal imaging is simply the process of converting infrared (IR) into visible images that depict the temperature differences of the scene under view by using a thermal camera. Using an IR camera, images are taken of the electrical panel board, concentrating on the equipment and electrical connections therein.

The camera can therefore judge the temperature of the focused items and, by way of colour, they can be indicated differentially.

With the cost of thermal imagers dropping over the years, thermal imaging of electrical panels has become very popular. Insurance companies, acknowledging that the cost of electrical fires has a negative impact on their bottom lines, have shown support of thermal imaging being undertaken regularly on larger installations. This approach adds value from a preventative maintenance perspective, which is good engineering practice.

### The science: This is how/why it works!

When current (I) flows in a conductor there is a loss seen as heat due to the resistance (R) of the conductor material, for example, loss is  $I^2R$  current seen then to play the most active role. Therefore, all conductors will show a heating effect when carrying a load current. How do we use this IR to find a problem?

The idea here is to look for areas where the heating shows far higher than the general trend. A marginal variation is probably no cause for concern. A current balancing should always be done in all conductors so the thermal stresses are balanced; for this reason the load should be balanced, as best possible, across the three phases.

### Interpretation

If all that has been said above is good, when would one start to have concerns? Interpretation is where things can get a bit tricky, for instance, where does one start to object to the level of the heat?

From basics we now know that all conductors under load current display heat, so the panel being tested should be in the run state

and not OFF or just switched on. Allow for 2-3 hours prior to taking readings.

Conductors are also connected in series with the cables, lugs, busbars, circuit breakers and contactors. The circuit breakers, contactors and similar equipment will have been designed for the maximum load that can be safely applied. As the panel loads are never at maximum levels the heat temperature obtained has to be lower if the correct cable size has been used.

For circuit breakers, the allowable temperature rise at the point of connection is 70°C, i.e. ambient +70°C.

Unless the circuit breaker/contactor has been damaged or worn out at end of life it should not be subject for concern and the power connections should rather be the point of scrutiny.

Finally, do not anticipate issues with every connection, only those that have additional indication, e.g., insulation damage, heat discoloring, etc.

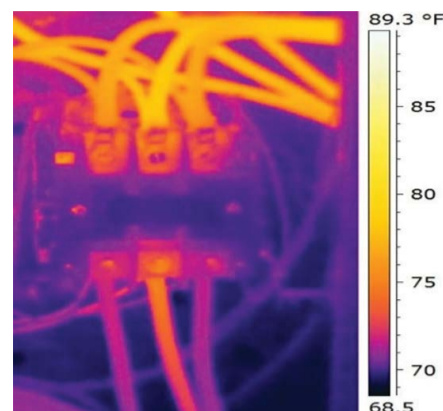
Not unlike x-rays, IR scans produce internal conditions within the circuit breakers and contactors. Note also that the correct cable size removes internal heat from these devices, so cable sizing will become important. Hot contact tips on their own are to be expected and should not ordinarily be of concern. However, there is no harm in erring on the side of caution. A lot will be learned from practice over time.

By Kevin Flack

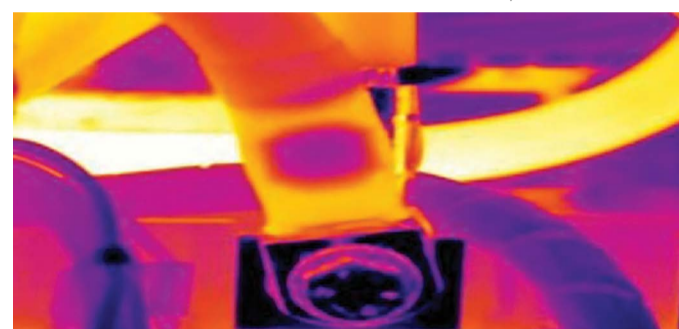
Flack has recently retired from industry and believes he still has valuable in-depth knowledge of the South African electrical landscape due to wide experiences gained in his 45+ years working career. In these trying COVID-19 times, Flack can provide online training to keep your staff up to date on all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



Classic reason for using IR scan. Practical example: RH cable found far higher temp than others, check and compare current load, connection for tightness, remove if possible to check in detail, conductor insulation peeling back and burning.



Centre cable slightly hotter than others, probably good if all phases balanced anticipate 2-5°C warmer on centre all things equal.



Potential poor connection, note connection issue may be internal on the lug not always the connection proper. This is especially of concern on Al cables. Check conductor size for actual load.

CONTINUE FROM PAGE 1

## Lighting in Africa: Much needs to change

LED technology, which has allowed for a range of benefits to lighting applications such as longer lifespan, lower carbon emissions, enhanced efficiency as well as a marked improvement in the quality of light. This has ultimately culminated in LED lighting systems obtaining an ever-growing market share.

The decay of Africa's power infrastructure is worrying but it also holds opportunities for feasible solutions to our energy crisis in which government and the private sector should want to participate in.

Businesses face a choice to either position for the continuation of the current status quo or make the necessary investments to capitalize on several emerging developments in the lighting sector pushing to reverse the trend.

### Q: How is Signify looking to push the company's growth in Africa?

A: With Sub-Saharan Africa currently having the lowest electricity generation capacity and experiences the most acute forms of energy poverty in the world, Signify has worked hard to create a variety of solutions for solar lighting. In order to ensure our innovations contribute to a safer, smarter, and more sustainable world.

To ensure that our growth equates to alleviating challenges, as a business everything we do across the continent has to speak to our strategic values as a business:

1. Customer centricity: Building a more customer-focused, more localized operating model and driving improved process excellence.
2. Differentiated offers: Developing and delivering differentiated lighting products through multiple distinctive brands.
3. Growth for sustainability: Addressing global issues by focusing on growth areas for sustainability such as Climate action, Circular economy, Food availability, Safety & security, Health & wellbeing.
4. Digitalization: Improving our digital front and back-ends and increasing our data analytics capabilities to better serve our customers.

### Q: What are the main challenges facing the lighting sector in Africa?

A: Access to reliable electricity is the backbone of any modern economy. Access to electricity in sub-Saharan Africa was set to decrease in 2021. Just last year, some 597 million people did not have electricity connections in the region, while in 2020 electrical energy was inaccessible to 581 million Africans. Investments in technologies will play a key role in improving access to electricity in Africa.

Through our inhouse technology and innovative and strategic thinking in order to find long-term solutions to these challenges, Signify has invested in and is working hard towards transitioning the off-grid lighting market from fossil fuels to more clean, efficient, accessible and affordable alternatives, such as solar LED lights. Technology changes in the industry are driven by the industry, as well as consumer demand, displaying a willingness from all stakeholders to implement energy-efficient systems.

If sub-Saharan Africa is to meet the UN Sustainable Development Goals, including goal 7 to ensure access to affordable, reliable, and modern energy for all and goal 13 to combat climate change and its impact, electricity should not only be affordable and reliable, but also from clean energy sources.

The region needs a significant increase in investments in renewable energy projects. It is even more important with the digital revolution. The development of new technologies is evolving fast, and so to keep up with this as an industry we need to ensure that the sector efficiently adopts to these changes. Big investments in energy storage systems or backup capacity are needed for when the sun does not shine or when the wind is not blowing. Concentrating solar power technology is one of these systems. If solar power projects are to succeed in African countries, it's key to make finance less risky, to strengthen institutional

capacity so that regions can co-operate, and to improve domestic logistical infrastructure.

In line with our purpose to unlock the extraordinary potential of light for brighter lives and a better world, Signify is dedicated to not only offering residential lighting solutions, we're also using our resources to invest in finding smart lighting solutions and services through Connected home lighting and Interact our flagship professional connected lighting brand. It's important to us that we enhance public spaces, workplaces, and homes regardless of where you find yourself in the world and the challenges that comes with that. As a brand we want our customers to feel empowered and enjoy a unique quality of light in a safer and more sustainable world.

Enquiries: [www.signify.com](http://www.signify.com)

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## BBF Safety Group exhibits at A-OSH Expo 2022

The continent's leading occupational health and safety (OHS) trade show, A-OSH Expo, returned to Gallagher Convention Centre in Johannesburg, running over three days from 31 May to 02 June 2022.

"All aspects of safety, security and health at work and environmental issues are brought together at A-OSH Expo. We are so pleased to see our OHS exhibitors once more," says Mark Anderson, portfolio director at Specialised Exhibitions.

Entrance was free, and to add to the visitor's experience, A-OSH Expo was co-located with three other Specialised Exhibitions shows, namely Securex South Africa 2022, Africa's leading security trade exhibition; Facilities Management Expo, which brings together all aspects of products and services associated with property and building management and maintenance; and Fireexpo South Africa 2022, focusing on the fire safety and rescue sector.

### New products, on-stand expertise, competitions and more with BBF Safety Group

At this year's event, BBF Safety Group, an integrated workplace safety solutions provider, had a number of new products on-stand, as well as competitions and give aways.

BBF Safety Group launched a host of new products at the show, including the new and improved BOVA Rigger Boot. The mould was devel-

oped in consultation with a podiatrist to improve fit and comfort, with better slip resistance of the sole. This range has also achieved electrical resistance to 20 kVA and improved water resistance with S2 rated leather.

Another new BOVA product introduced at A-OSH Expo was the Obsidian work boot, custom-engineered to meet the specific requirements of the bottling industry. With SeamSecure™ water proofing treatment, a Dual Compound Rubber sole and SRC Slip resistance rating, Obsidian provides the ultimate protection in damp environments. The boot also features a DualGuard™ system with a steel midsole to defend against vertical penetration by sharp objects, and a steel mesh layer on the upper to protect against horizontal penetration. As an additional protection feature, the boot features an anti-scoff wrap to protect the leather upper from the general nicks and cuts.

With BOVA moving into the Work at Heights category, the BBF Safety sponsored the Work at Heights Theatre at A-OSH Expo this year. Interested parties saw the showcased BOVA range, including new products – rope, rescue kits, lifelines and more. BBF also gave a sneak peak of its Premium Range too, due to be launched later in the year. Aside from enjoying the fantastic speakers, the first 50 people who attended the Work at Heights theatre talks received a BOVA gift bag, as well as

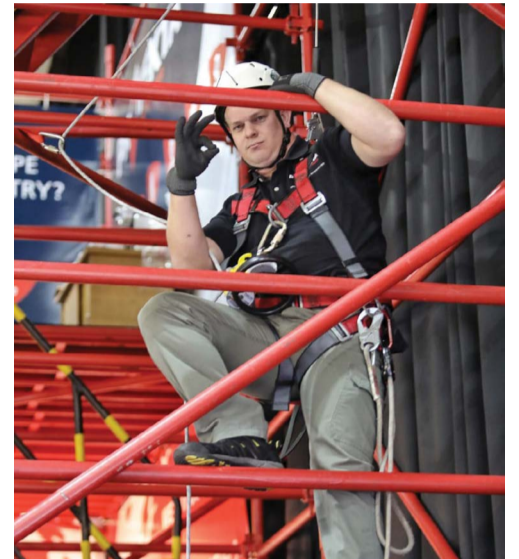
being entered into a draw to win a R10 000 voucher to the Apple iStore.

The company also featured its new and improved TRAX range – TRAX 2.0, which boasts fantastic improvements in terms of weight, flexibility, styling and slip resistance, as well as a number of new safety footwear styles recently launched by Lemaitre. In addition, with a growing offering in thermal protection, BOVA's new Arc flash range offers innovative protection from the hazards of an arc flash with inherent flame resistance in a lightweight and breathable solution. BBF showcased some of its offerings for protection in oil and gas environments and molten metal splash protection.

Visitors to the BBF stand were able to enjoy a barista-brewed cappuccino, take a moment to get their shoes shined, book time to consult on any SHEQ requirements in the meeting rooms, and stood a chance to win safety footwear prizes and other giveaways during the course of the show.

Finally, the Group was proud to host Dr. Anette Thompson, a noted research podiatrist focusing on foot anthropometry and haemodynamics applied to footwear design, on 1 June 2022, who gave a presentation on the importance of foot health and the role that safety footwear plays.

Enquiries: [www.bbfsafety.co.za](http://www.bbfsafety.co.za) and [www.aosh.co.za](http://www.aosh.co.za)



## Making multimeters accessible for all

Multimeters have, since they were first invented in 1920 by Donald Macadie, a British Post Office engineer, been the domain of the electrical contractor. HellermannTyton's new range, aimed at the DIY'er or homeowner, is changing that.

Essentially, a multimeter is a box of electronic circuitry that allows you to troubleshoot just about any type of electrical wiring or device. How do you use a multimeter? You simply dial the proper function and scale, touch the two test leads to the wiring or device in question and check the meter reading. Depending on the setting, the multimeter will tell if you have a broken connection, no power, poor connections, faulty parts and more.

With all its numbers, dials and switches, a multimeter can be pretty intimidating, especially for the untrained. Yet it is well worth learning, is relatively inexpensive and should be in the toolbox of anyone seeking to do wiring diagnostics and appliance repair.

HellermannTyton is a global leader in its industry with world class sales, development and manufacturing operations based in 37 countries worldwide. HellermannTyton South Africa is an ISO/TS 16949 quality approved manufacturer and distributor of cable accessories, test instruments, connectors and components for use within the electrical, automotive and associated industries.

The company is strategically located with its head office, manufacturing and distribution facilities situated in Johannesburg, and branch offices in Durban, Port Elizabeth and Cape Town. This, coupled with a team of over 80 sales staff, ensures its customers have immediate access to product, sales and technical assistance.

With the new T85D Digital Multimeter, HellermannTyton is making multimeters less complicated. Ryan Burger, Divisional Product Manager – Tools and Instruments at HellermannTyton notes that the product is designed for people who are interested in electronics. "It is aimed at technicians, colleges, or the inquisitive homeowner or DIY'er, although we must state that all electrical work should be done by a qualified electrician," he says. "It is a product that is easy to use – there is no dial, so it is simply plug and play. You plug in the test leads and the multimeter automatically registers if you are measuring resistance, voltage or current."

Despite a retail price of just R418, the multimeter, which is powered by 2 x 1.5V AAA batteries and which comes standard with test leads, is packed with useful features. Along with being a cost effective True-RMS multimeter for more accurate and clear readings, a built-in flashlight allows users to light the area while testing, for instance a DB. The T85D also features an

LCD digital display, full intelligent automatic range, Diode test, Firewire recognition, capacitance test, a backlight, and non-contact EF detection (NCV). "The non-contact EF detection is a handy addition for the homeowner," says Burger. "It is a non-contact voltage detection function, where the user presses the NCV button and moves the device towards the wire or plug to determine if there is a current flowing through a cable without any physical contact. For instance, if a light switch is on but the light isn't working, the homeowner (DIY'er) can hold up the multimeter to a dead lamp and, if it beeps, it means that the lightbulb is getting power but the lightbulb is faulty. This provides quick and easy troubleshooting to see whether something is working."

The T85D, the latest addition to the DIY range, was launched in February and sold out within weeks. More stock was subsequently ordered and the product will be available in retail stores imminently. Other multimeters in the range include the T1300H and the T835, which also measures temperature.

*HellermannTyton recommends that all electrical work is conducted by a qualified electrician to ensure safety of both personnel and installation as well as compliance to SANS regulations.*

Enquiries: [www.hellermanntyton.co.za](http://www.hellermanntyton.co.za)



## Cost-effective electrical termination solutions for the construction industry

Pratley has a range of cost-effective electrical solutions available to assist contractors in a recovering construction industry. "It is important that one does not compromise on quality in favour of cost, which is especially important when it comes to safety-critical electrical termination equipment such as cable glands and junction boxes," comments Pratley Marketing Director Eldon Kruger. "We have a range of cable glands and junction boxes that strike this balance well, ensuring both quality and cost-effectiveness on your next project."

When it comes to non-metallic cable glands, and unlike ordinary PVC cable glands, Tuffton compression glands from Pratley are made from a tough engineering plastic, which means that they are virtually unbreakable and do not suffer from frustrating 'thread jumping'.

They are SABS-approved and comply with SANS 60529. An IP68 seal protects these glands from dust ingress and ensures that they are completely waterproof for immersion up to 2 m. The glands can be adapted for use with flat twin and earth cables by simply replacing the standard compression bush supplied with a special adaptor bush. They are available in various sizes in black, grey, or white.

The Pratley Econo Box junction box is designed and manufactured specifically with the needs of the contractor in mind. Made of a tough, corrosion-resistant engineering plastic,

it is fitted with a raised dome lid that is held down by stainless steel screws to make the Econo Box tamper- and waterproof.

This SABS-approved junction box is manufactured complete with encapsulated internal earth to ensure earth continuity between all gland entries. Featuring four threaded entries, it is IP68 (2 m continuous) and IP66 rated, and can accommodate an N35 rail, spacers, and terminals.

The ZED® gland range for armoured and unarmoured cable is a low-cost option of nickel-plated brass cable glands for use with SWA and unarmoured cable. Supplied complete with nickel-plated locknuts, the range is SABS approved to SANS 1213. A range of accessories is available, and the unarmoured range of ZED glands is IP68 rated when fitted with a nipple gasket.

"All of these products form part of our extensive range of cable glands, junction boxes and related accessories for both normal and hazardous locations available from Pratley," concludes Kruger.

Established in 1948 by George 'Monty' Pratley, the various companies in the Pratley stable rest on a foundation of research and innovation in both the manufacturing and mining sectors.

Enquiries: [www.pratleyelectrical.com](http://www.pratleyelectrical.com)



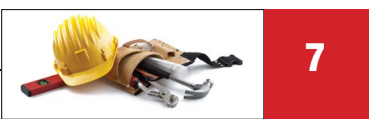
The ZED gland range for armoured and unarmoured cable is a low-cost option of nickel-plated brass cable.



Tuffton compression glands from Pratley are made from a tough engineering plastic.



The Pratley Econo junction box is designed and manufactured specifically with the needs of the contractor in mind.



## Make connections at Electra Mining Africa 2022

After two years of restrictions, exhibitions and events are now re-opening globally. Good news for local industry is that Electra Mining Africa will go ahead as a live in-person event this year. Several other exhibitions have taken place over recent months with excellent results being reported by all involved.

The exhibition and its line-up of conferences and free-to-attend seminars will take place from 5 to 9 September at the Expo Centre, Nasrec, in Johannesburg.

With over 75% of exhibition floor space already sold, exhibitors are eager to get back to the face-to-face environment and to the business and trade opportunities that Electra Mining Africa offers. For the past five decades, Electra Mining Africa has built a strong reputation for its ability to connect people and industries, buyers and sellers.

Hundreds of exhibitors are ready to showcase their latest innovations, technology, products and services at Southern Africa's biggest mining, electrical, automation, manufacturing, power and transport trade exhibition and the collective industries are looking forward to this year's event.

Charlene Hefer, Portfolio Director at Specialised Exhibitions, a division of Montgomery Group, says, "Electra Mining Africa is a trade show that provides the ideal platform for buyers and sellers to connect, for industries to come together, and to give our country's growth and development the boost it needs."

Enquiries: [www.electramining.co.za](http://www.electramining.co.za)



## SAPVIA steps forward and changes guard

The South African Photovoltaic Industry Association is stepping forward into a new decade of solar with a new CEO and a changing of the guard with the election of a new Chairperson.

The Association, which was officially launched in 2010, held their Annual General Meeting on 09 June 2022 and members democratically elected a new Chairperson and a MANCO. This is the first time in its history that the Association has had a black, female Chairperson working with a black, female CEO.

Chanda Nxumalo takes on the role of Chairperson for the solar association, bringing a track record of 13 years delivering in the renewable energy and power sector. She has extensive experience working in technical, business development, and executive capacities in African, American, and European markets. Chanda holds a Masters in Engineering, Economics and Management from the University of Oxford. Chanda has served as Spokesperson and Vice-Chair for SAPVIA and is currently Director in Harmattan Renewables, a consultancy focused on providing technical, commercial and environmental advisory services as well as asset management for renewable energy projects across Sub-Saharan Africa.

Alongside a new Chairperson, SAPVIA has also recently appointed Dr Rethabile Melamu as CEO. A Chemical and Environmental Engineer by training, Rethabile has become renowned for her international expertise in the green economy and energy sectors. She has leveraged both the theoretical and practical to harness innovative smart technologies to mitigate the impact of climate change in society, with a dedicated focus on African sustainable development.

SAPVIA is a member-led organisation formed with the express purpose of growing the solar PV sector's role in powering South Africa's future. The Association advocates, engages and influences on behalf of members to harness the power of solar PV and capitalise on the opportunities it offers companies, individuals and the broader South African economy.

"I am delighted to take on the role of Chairperson at SAPVIA and it will be my pleasure to serve alongside our new CEO and our MANCO. The Association is only as strong as our members and together we have achieved so much, but we must work harder to ensure that this new decade of solar realises its full potential," said Chanda Nxumalo, SAPVIA Chairperson and Harmattan Renewables Director.

"Solar PV continues to demonstrate that it is the least-cost, quickest-to-build option for power generation and we must work to ensure that it contributes even more to the economic upliftment and empowerment of individuals and communities. I am confident that our membership base has the experience, expertise and dynamism to deliver another decade of solar that maximises the opportunity for our members and South Africa."

The Association's tenth Annual General Meeting saw the introduction of six commissioners onto SAPVIA's management board: Frank Spencer (Bushveld Energy); Lena Chirwa (Enel Green Power SA); Maloba Tshehla (ED Platform); Melissa Hill (juwi Renewable Energies); Adv Mtho Xulu (Nashua Group), and Phemelo Mitchell (SunElex Group). These new members will serve a two-year term, ending at the AGM in 2024.

"The new Board has a wealth of knowledge and expertise and we are grateful for their willingness to commit their time, energy and expertise to building SAPVIA and the PV industry. I look forward to working with them as well as stakeholders across the energy sector and in government to deliver value to our members, the public sector and South African citizens," said Dr Rethabile Melamu, SAPVIA CEO.

These new members will serve a two-year term, ending at the AGM in 2024. The following current Manco Members will remain in office for the second year of their two-year terms: Chanda Nxumalo, Daniel Goldstuck, DeVilliers Botha and Sunette Smith.

The AGM also marked the stepping down of a number of board

members who have worked tirelessly to professionalise the Association and ensure that SAPVIA is a trusted partner to government. Dr Rainer Nowak has given 10 years of service, Dr Richard Doyle - 3 years of service, Norman Moyo - 2 years of service and Wido Schnabel - MANCO member since 2013 and Chairperson from 2019 to 2022. Wido Schnabel performed the role of Chairperson alongside his role as Head of Strategic Alliances & Business Development for the Middle East and Africa at Canadian Solar.

"I am stepping down from my role as Chairperson at a time of great change for the Association. But I know and trust that the operational team, with our new CEO at the helm, will ensure that we capitalise on the opportunities for solar PV. I must thank the Secretariat for their support throughout my tenure, and to the MANCO, who have all given of their time voluntarily, you have my deepest gratitude.

Together the Chair, SAPVIA MANCO and CEO will work to advocate, engage and influence on behalf of members to harness the power of solar and capitalise on the opportunities it offers for individuals and all of South Africa.

SAPVIA is now the go-to organisation for all matters relating to the development, regulation and promotion of solar PV in South Africa and sub-Saharan Africa. SAPVIA is governed by a board of nine commissioners and a Chairperson elected democratically on an annual basis by its members at the Annual General Meeting. From its rank the management board elects the Vice-Chairperson, Treasurer and Spokesperson.

The SAPVIA mission is to vigorously mobilise support for the sustainable growth of solar PV in South Africa and the rest of Sub-Saharan Africa.

Enquiries: [www.sapvia.co.za](http://www.sapvia.co.za)



Dr Rethabile Melamu, SAPVIA CEO.



Chanda Nxumalo, SAPVIA Chairperson.

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 ABB South Africa  
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 O-line  
 Full range of cable securing products  
 Phoenix Contact  
 Range of cable securing products  
 Pratley  
 Full range of cable securing products  
 Struffast  
 Full range of cable securing products  
 SW Products  
 Steel saddles  
 Three-D Agencies  
 Cable ties in nylon, Polyprop and stainless steel  
 Valsa  
 Range of cable securing products  
 Voltex  
 Full range of cable securing products  
 Waco  
 Range of cable securing products  
 Zap Wholesalers  
 Full range of cable securing products

## CABLE GLANDS

ACDC Dynamics  
 Full range of cable glands  
 ACTOM Electrical Products  
 CCG and Pratley glands and shrouds  
 ARB Electrical Wholesalers  
 Full range of cable glands  
 Bellco  
 Full range of cable glands  
 CCG Cable Terminations  
 Range of cable glands  
 CED – Consolidated Electrical Distributor  
 Tosun; Stone-Stamcor  
 HellermannTyton  
 BWR, Compression Glands (SABS approved) from size 0 to 7. Nylon glands  
 available  
 Helukabel  
 Range of cable glands  
 Jointmaster  
 Full range of cable glands  
 Legrand  
 ISO glands and PG glands  
 Magnet Electrical Supplies  
 Range of cable glands  
 Matelec  
 Size 00 to 2. Conduit and Push-in glands  
 O-line  
 Full range of cable glands  
 Phoenix Contact  
 Range of cable glands  
 Pratley  
 Cable glands and junction boxes  
 Riken Electric  
 Full range of cable glands  
 Superlume  
 Superlume has innovative cable connection glands  
 SW Products  
 Sprague connectors  
 Three-D Agencies  
 BW and compression glands; Polyamide glands  
 Trinity Cables  
 Range of cable glands  
 Universal Cables  
 Full range of cable glands  
 Valsa  
 Range of cable glands  
 Voltex  
 Full range of cable glands  
 Waco  
 Full range of cable glands  
 Zap Wholesalers  
 Full range of cable glands

## CABLE JOINTS

Aberdare Cables  
 LV, MV and HV cable joints  
 ACDC Dynamics  
 Full range of cable joints  
 ACTOM Electrical Products  
 Full range of cable joints  
 ARB Electrical Wholesalers  
 Range of cable jointing products

## CABLE JOINTS

Bellco  
 Full range of cable joints  
 Eurolux  
 Size 1 to 50 joining kits  
 HellermannTyton  
 Large selection of heat shrinkable joints available in various sizes. Straight-  
 through and branch gel cable joints and connectors which UV and weather  
 resistant and easy to install. RELICON Tow component Gel with excellent  
 insulating properties.  
 Helukabel  
 Full range of cable joints  
 Jointmaster  
 Range of cable joints  
 Magnet Electrical Supplies  
 Range of cable joints  
 MCE Electric  
 MCE cable joint kits  
 O-line  
 Full range of cable joints  
 Riken Electric  
 Full range of cable joints  
 SW Products  
 Steel conduit fittings  
 Superlume  
 Superlume supplies Straight, T and X connection cable glands.  
 Three-D Agencies  
 Range of cable joints  
 Trinity Cables  
 Range of cable joints  
 Universal Cables  
 Full range of cable joints  
 Valsa  
 Range of cable joints  
 Voltex  
 Full range of cable joints  
 Waco  
 Full range of cable joints  
 Zap Wholesalers  
 Full range of cable joints

## CABLE MARKING

Aberdare Cables  
 Unique conductor marking technology  
 ABB South Africa  
 Full range of cable marking systems  
 ACDC Dynamics  
 Full range of cable marking systems  
 ACTOM Electrical Products  
 Full range of cable marking systems  
 ARB Electrical Wholesalers  
 Full range of cable marking systems  
 Banding & Identification Solutions Africa  
 Band-it identification systems for cable marking  
 Bellco  
 Full range of cable marking systems  
 Brady Corporation  
 Full range of cable marking systems  
 Brother International SA  
 Complete range of cable marking systems  
 CED – Consolidated Electrical Distributor  
 Tosun  
 HellermannTyton  
 Full range such as Helagrip, Ovalgrip Cable Markers, Wire Identification Clip  
 (WIC) markers, heat shrink markers, labels including PV labels  
 Helukabel  
 Full range of cable marking systems  
 Legrand  
 CAB 3 and Duplex identification and marking systems for easy identification  
 of circuits  
 Magnet Electrical Supplies  
 Range of cable marking systems  
 Phoenix Contact  
 Cable marking systems  
 Riken Electric  
 Full range of cable marking systems  
 Three-D Agencies  
 Cable markers; heatshrink markers and machines  
 Voltex  
 Full range of cable marking systems

## BUSBAR TRUNKING SYSTEMS

ARB Electrical Wholesalers  
 Full range of busbar trunking systems  
 Bellco  
 Full range of busbar trunking systems  
 CED – Consolidated Electrical Distributor  
 Tosun  
 Legrand  
 Complete distribution systems for currents up to 6300 A  
 O-Line  
 Full range of busbar trunking systems  
 Phoenix Contact  
 Busbar trunking systems  
 Universal Cables  
 Full range of busbar trunking systems  
 Voltex  
 Full range of busbar trunking systems  
 Voltex MV/LV Solutions  
 Full range of busbar trunking systems  
 Zap Wholesalers  
 Full range of busbar trunking systems

## EARTH BARS

ACDC Dynamics  
 Full range of earth bars  
 ARB Electrical Wholesalers  
 Full range of earth bars  
 Bellco  
 Full range of earth bars  
 CED – Consolidated Electrical Distributor  
 Tosun  
 Legrand  
 Distribution blocks  
 Major Tech  
 Full range of Econo board earth bars: 4-, 6-, 8-, 10-, 12-, 15-, and 18-modules  
 MCE Electric  
 MCE DIN rail earth bars; MCE fully insulated earth bars  
 Phoenix Contact  
 Range of earth bars  
 Riken Electric  
 Full range of earth bars  
 Universal Cables  
 Full range of earth bars  
 Voltex  
 Full range of earth bars  
 Waco  
 Full range of earth bars  
 Zap Wholesalers  
 Full range of earth bars

## NEUTRAL BARS

ACDC Dynamics  
 Full range of neutral bars  
 ARB Electrical Wholesalers  
 Range of neutral bars  
 Bellco  
 Range of neutral bars  
 CED – Consolidated Electrical Distributor  
 Tosun  
 HellermannTyton  
 Earth rods for electric fences  
 Major Tech  
 Neutral bars: 4-, 6-, 8-, 10-, 12-, 15-, and 18-modules  
 MCE Electric  
 MCE DIN rail neutral bars; MCE insulated neutral bars  
 Phoenix Contact  
 Range of neutral bars

## NEUTRAL BARS

Riken Electric  
 Range of neutral bars  
 Voltex  
 Full range of neutral bars  
 Zap Wholesalers  
 Full range of neutral bars

## LV CABLES

Aberdare Cables  
 Comprehensive range  
 ACDC Dynamics  
 Full range of LV cables  
 ACTOM Electrical Products  
 Full range of LV cables  
 ARB Electrical Wholesalers  
 Range of LV cables  
 Bellco  
 Full range of LV cables  
 Helukabel  
 Full range of LV cables  
 Magnet Electrical Supplies  
 Full range of LV cables  
 Riken Electric  
 Full range of LV cables  
 South Ocean Electric Wire Company  
 Range of LV cables  
 Trinity Cables  
 Range of LV cables  
 Universal Cables  
 Full range of LV cables  
 Valsa  
 Range of LV cable  
 Voltex  
 Full range of LV cables  
 Zap Wholesalers  
 Full range of LV cables

## MV CABLES

Aberdare Cables  
 Paper Insulated Cables up to 33 kV; XLPE Insulate Cables up to 132 kV  
 ACTOM Electrical Products  
 Full range of MV cables  
 ARB Electrical Wholesalers  
 Full range of MV cables  
 Bellco  
 Full range of MV cables  
 Helukabel  
 Full range of MV cables  
 Magnet Electrical Supplies  
 Full range of MV cables  
 Trinity Cables  
 Range of MV cables  
 Universal Cables  
 Full range of MV cables  
 Voltex  
 Full range of MV cables  
 Zap Wholesalers  
 Full range of MV cables

## CONDUIT

ABB South Africa  
 Full range of conduit  
 ACDC Dynamics  
 Full range of conduit  
 ACTOM Electrical Products  
 All PVC and steel conduit and fittings  
 ARB Electrical Wholesalers  
 Range of conduit  
 Bellco  
 Full range of conduit  
 Central Support Systems  
 Broad range of conduit  
 Crabtree South Africa  
 Full range of conduit  
 Eurolux  
 20 mm and 25 mm conduit  
 HellermannTyton  
 Flexible conduit  
 Helukabel  
 HeluCond; Flexible conduit  
 Magnet Electrical Supplies  
 Range of conduit  
 Matelec  
 PVC Elbows and Ts – 20mm and 25mm; PVC Junction boxes 1-, 2-, 3-,  
 4-way + lids; Half-moon Trunking (25 x 8 | 35 x 10 | 50 x 15 | 70 x 20 | grey  
 and white)  
 O-line  
 Full range of conduit  
 Phoenix Contact  
 Range of conduit  
 Riken Electric  
 Full range of conduit  
 Schneider Electric South Africa  
 Flexible corrugated conduit  
 South Ocean Electric Wire Company  
 Range of conduit  
 Struffast  
 Full range of conduit  
 SW Products  
 Steel conduit fittings  
 Three-D Agencies  
 Full range of conduit  
 Valsa  
 Range of conduit  
 Voltex  
 Full range of conduit  
 Zap Wholesalers  
 Full range of conduit

## TELECOM, INSTRUMENTATION AND CONTROL CABLES

ACTOM Electrical Products  
 Full range of telecom, instrumentation, and control cables  
 ARB Electrical Wholesalers  
 Full range of telecom, instrumentation and control cables  
 Bellco  
 Full range of telecom, instrumentation and control cables  
 Central Support Systems  
 Full range of telecom, instrumentation and control cables  
 Helukabel  
 Screened cable; Mylar cable; Submersible cable  
 Legrand  
 LCS3 Data Communication cables  
 Magnet Electrical Supplies  
 Range of telecom, instrumentation and control cables  
 Major Tech  
 Cable and LAN testers for the telecommunications industry  
 Phoenix Contact  
 Full range of telecom, instrumentation and control cables  
 Universal Cables  
 Full range of telecom, instrumentation and control cables  
 Voltex  
 Full range of telecom, instrumentation and control cables

## CABLES FOR HARSH ENVIRONMENTS

ACTOM Electrical Products  
 Suppliers of anti-termites cables; silicone single wires and cabyres; H07RN-F  
 rubber cables  
 ARB Electrical Wholesalers  
 Range of cables for harsh environments  
 Bellco  
 Full range of cables for harsh environments  
 Helukabel  
 High temperature cables; Halogen-free cable  
 Magnet Electrical Supplies  
 Range of cables for harsh environments



**CABLES FOR HARSH ENVIRONMENTS**

- Matelec**  
Silicone Cab Tyre; 10mm 3C; 15mm 3C; 25mm 3C
- Eurolux**  
Hazardous area lighting
- Phoenix Contact**  
Range of cables for harsh environments
- Trinity Cables**  
Range of cables for harsh environments
- Voltex**  
Full range of cables for harsh environments

**TRAILING CABLES**

- Aberdare Cables**  
Elastomeric Insulated Cables; Flexible Cables (Types H05 RN-F, H07 RN-F); Welding Cables; Mining Trailing Cable (up to 33 kV)
- ACDC Dynamics**  
Full range of trailing cables
- ACTOM Electrical Products**  
Rubber and PVC trailing cables
- ARB Electrical Wholesalers**  
Full range of trailing cables
- Bellco**  
Full range of trailing cables
- Helukabel**  
H07 RN-E; H05 VV-F; RV-K
- Jointmaster**  
Range of joints and terminations
- Magnet Electrical Supplies**  
Range of trailing cables
- Phoenix Contact**  
Range of trailing cables
- Riken Electric**  
Full range of trailing cables
- South Ocean Electric Wire Company**  
Range of trailing cables
- Trinity Cables**  
Range of trailing cables
- Universal Cables**  
Full range of trailing cables
- Voltex**  
Full range of trailing cables
- Zap Wholesalers**  
Full range of trailing cables

**FLEXIBLE CABLES**

- Aberdare Cables**  
A range of low voltage flexible cables including cabtyre, panel wire, submersible pump, welding, nitrile trailing, power cables
- ACDC Dynamics**  
Full range of flexible cables
- ACTOM Electrical Products**  
Welding cables, cabtyres, trailing cables, panel wires, submersible cables
- ARB Electrical Wholesalers**  
Range of flexible cables
- Bellco**  
Range of flexible cables
- Helukabel**  
Solar cable; Mining cable
- Jointmaster**  
Range of joints and terminations
- Magnet Electrical Supplies**  
Range of flexible cables
- Phoenix Contact**  
Range of flexible cables
- Riken Electric**  
Full range of flexible cables
- South Ocean Electric Wire Company**  
Range of flexible cables
- Trinity Cables**  
Range of flexible cables
- Universal Cables**  
Full range of flexible cables
- Voltex**  
Full range of flexible cables
- Zap Wholesalers**  
Full range of flexible cables

**LUGS, FERRULES, CONNECTORS, PRE-INSULATED TERMINALS**

- ABB South Africa**  
Full range of lugs, ferrules, connectors, pre-insulated terminals
- ACDC Dynamics**  
Full range of lugs, ferrules, connectors, pre-insulated terminals
- ACTOM Electrical Products**  
Full range of lugs, ferrules
- ARB Electrical Wholesalers**  
Full range of lugs and ferrules
- Bellco**  
Full range of lugs, ferrules, connectors and pre-insulated terminals
- CED - Consolidated Electrical Distributor**  
Tosun
- Eurolux**  
Range of SABS-approved lugs, ferrules, connectors and pre-insulated terminals
- HellermannTyton**  
Complete range of lugs, ferrules (with SANS approval) connectors and pre-insulated terminals
- Helukabel**  
Full range of lugs and ferrules
- Jointmaster**  
Mechanical shearbolt connectors (lugs and ferrules) for use on MV cables
- Legrand**  
Starfix ferrules
- Magnet Electrical Supplies**  
Range of lugs, ferrules, connectors, and pre-insulated terminals
- Major Tech**  
Two-, three-, five-pole terminal connectors
- Matelec**  
Porcelain connectors, screw connectors, strip connectors, quick connectors
- MCE Electric**  
MCE wire connectors and MCE-Morsettitalia DIN rail terminals
- Phoenix Contact**  
Range of lugs, ferrules, connectors and pre-insulated terminals
- Pratley**  
Range of lugs, ferrules, connectors and pre-insulated terminals
- Riken Electric**  
Full range of lugs, ferrules, connectors, pre-insulated terminals
- Stone Stamcor**  
Full range of copper/aluminium bi-metallic, compression lugs and ferrules; 11 kV and 36 kV mechanical lugs and ferrules; full range of pre-insulated terminals
- Strutfast**  
Range of lugs, ferrules, connectors, and pre-insulated terminals
- SW Products**  
Copper lugs and ferrules
- Three-D Agencies**  
Copper, aluminium and bi-metal lugs and ferrules; pre-insulated terminals
- Trinity Cables**  
Range of lugs, ferrules, connectors and pre-insulated terminals
- Universal Cables**  
Full range of lugs, ferrules, connectors and pre-insulated terminals
- Valsa**  
Range of lugs, ferrules, connectors and pre-insulated terminals
- Voltex**  
Full range of lugs, ferrules, connectors and pre-insulated terminals
- Waco**  
Full range of lugs, ferrules, connectors and pre-insulated terminals
- Zap Wholesalers**  
Full range of lugs, ferrules, connectors and pre-insulated terminals

**SPECIALISED CABLES**

- Aberdare Cables**  
Fyrsure fire survival cables; Petrosure lead sheathed; Airfield Lighting; SafeEarth; Pullwire; Solardac PV; Raildac (locomotive and rolling stock); VSD
- ACTOM Electrical Products**  
Range of specialised cables
- ARB Electrical Wholesalers**  
Range of specialised cables

**SPECIALISED CABLES**

- Bellco**  
Range of specialised cables
- Helukabel**  
PH30 cable; PH120 cable
- Legrand**  
Range of specialised cables
- Phoenix Contact**  
Range of specialised cables
- Universal Cables**  
Range of specialised cables
- Voltex**  
Full range of specialised cables

**PANEL WIRING, TERMINALS AND TERMINAL BLOCKS**

- Aberdare Cables**  
Full range of panel wiring, terminals and terminal blocks
- ACDC Dynamics**  
Full range of panel wiring, terminals and terminal blocks
- ACTOM Electrical Products**  
Full range of single and multi-core panel wires
- ARB Electrical Wholesalers**  
Range of panel wiring, terminals and terminal blocks
- Bellco**  
Range of panel wiring, terminals and terminal blocks
- CED - Consolidated Electrical Distributor**  
Tosun
- Legrand**  
Viking 3 connection terminals
- Helukabel**  
Enclosures
- Magnet Electrical Supplies**  
Panel wiring, terminals and terminal blocks
- Major Tech**  
Two-, three-, five-pole terminal connectors
- MCE Electric**  
Full range of panel wiring, terminals and terminal blocks
- O-line**  
Full range of panel wiring, terminals and terminal blocks
- Phoenix Contact**  
Panel wiring, terminals and terminal blocks
- Pratley**  
Panel wiring, terminals and terminal blocks
- Riken Electric**  
Range of panel wiring, terminals and terminal blocks
- South Ocean Electric Wire Company**  
Panel wiring, terminals and terminal blocks
- Three-D Agencies**  
Connector strips
- Valsa**  
Range of panel wiring/terminals and terminal blocks
- Voltex**  
Full range of panel wiring/terminals and terminal blocks
- Zap Wholesalers**  
Full range of panel wiring/terminals and terminal blocks

**CABLE LADDERS, CABLE TRAYS**

- ACDC Dynamics**  
Full range of cable ladders, cable trays
- ACTOM Electrical Products**  
All cable ducting and trays
- ARB Electrical Wholesalers**  
Full range of cable ladders and cable trays
- Banding & Identification Solutions Africa**  
Band-It stainless steel cable ties for cable trays
- Bellco**  
Full range of cable ladders, cable trays
- Cabstrut**  
Powerack weld-free cable ladder; return flange cable tray; welded wire mesh tray
- CED - Consolidated Electrical Distributor**  
CMG
- Central Support Systems**  
Range of cable ladders and cable trays
- Legrand**  
Cablofil cable trays
- Magnet Electrical Supplies**  
Range of cable ladders and trays
- O-line**  
Full range of cable ladders, cable trays
- Riken Electric**  
Full range of cable ladders and cable trays
- Strutfast**  
Full range of cable ladders, cable trays
- Universal Cables**  
Full range of cable ladders and cable trays
- Valsa**  
Range of cable ladders and trays
- Voltex**  
Full range of cable ladders, cable trays
- Zap Wholesalers**  
Full range of cable ladders, cable trays

**CRIMP TOOLS AND CUTTERS**

- ACDC Dynamics**  
Full range of crimp tools and cutters
- ACTOM Electrical Products**  
Range of tools and equipment for cables
- ARB Electrical Wholesalers**  
Range of crimp tools and cutters
- Banding & Identification Solutions Africa**  
Band-It stainless steel cable tie tools/tensioners
- Bellco**  
Full range of crimp tools and cutters
- HellermannTyton**  
Full range of crimp tools and cutters
- Helukabel**  
Range of crimp tools and cutters
- Jointmaster**  
Specialised cable preparation tools and preparing MV XLPE cables
- Magnet Electrical Supplies**  
Range of crimp tools and cutters
- Major Tech**  
Full range of high quality drop forged crimpers
- MCE Electric**  
MCE cable cutters, wire strippers and crimping pliers
- Phoenix Contact**  
Range of crimp tools and cutters
- Riken Electric**  
Full range of crimp tools and cutters
- Stone Stamcor**  
Full range of handheld, hydraulic and battery crimping and cutting tools
- Three-D Agencies**  
Hydraulic crimpers and cutters; manual crimpers; battery operated crimpers
- Universal Cables**  
Full range of crimp tools and cutters
- Valsa**  
Range of crimp tools and cutters
- Voltex**  
Full range of crimp tools and cutters
- WACO**  
Full range of crimp tools and cutters

**CABLE TRENCH COVERS**

- ARB Electrical Wholesalers**  
Full range of cable trench covers
- Bellco**  
Full range of cable trench covers
- Central Support Systems**  
Range of cable trench covers
- O-Line**  
Full range of cable trench covers
- Universal Cables**  
Full range of cable trench covers
- Voltex**  
Full range of trench covers

**HellermannTyton**

+27 (0)11 879 6600



+27 (0)11 874 7600



+27 (0)11 879 2000



+27 (0)11 955 2190



+27 (0)10 202 6995



+27 (0)11 452 1415



+27 (0)11 394 2020



+27 (0)11 396 8000



+27 (0)82 607 1509



+27 (0)11 608 2970



+27 (0)12 804 2226



Consolidated Electrical Distributor

+27 (0)11 314 8869



## The importance of junction box certification

The general definition or function of an enclosure or junction box is that it is a device used to protect electrical equipment and to allow the safe termination of either electrical or instrumentation cables into that equipment. Equipment could be circuit breakers, switches, terminal blocks, lighting, certain electronic or instrumentation devices or sensors etc. Enclosures such as junction boxes could also be used to simply join cables together in order to continue or terminate an electrical circuit.

Some junction box manufacturers claim "SANS approval" for their products based on their junction boxes being certified to SANS 60529 only, which is the standard covering Ingress Protection commonly known as the IP rating.

However, there is more to enclosures and junction boxes than mere ingress protection. For instance, a junction box may pass an IP68 rating which is total immersion in at least 1 or more of water but so will a sealed Tupperware box!

In addition to the IP rating, junction boxes also need to protect and be protected against external influences or service conditions such as:

- 1) Extreme temperatures
- 2) Mechanical impact
- 3) Corrosion and chemical attack.
- 4) Solar radiation or UV
- 5) Protective earth.

Showing approval to SANS 60259 does not demonstrate that a junction box has been tested to all these above requirements. These additional requirements are covered in the following standards:

- SANS 62208: Empty enclosures for low-voltage switchgear and control gear assemblies - General requirements.
- SANS 62262 Degrees of Protection Provided by Enclosures for Electrical Equipment Against External Mechanical Impacts.
- SANS 60947-7-2 covers the short circuit and continuous current requirements for junction boxes containing terminals or connectors which have an earthing facility.

Here we look at each individual protection and what the standards say:

### Ingress protection

SANS 60529 Degrees of Protection Provided by Enclosures (IP Code) is actually a relatively mild set of tests considering the performance expectations of enclosures in industrial and mining applications. For example, the IP X6 test is a test conducted on brand new samples against ingress from high pressure water jets for only three minutes!

In reality, junction boxes are subjected to all kinds of environmental influences and could be installed in areas where a water spray lasts for several hours or is continuous. Examples being a coal washing plant or a car wash facility.

CCG has tested all its junction boxes to a far more stringent DTS 01 Deluge test developed by Shell for use on offshore rigs. In this test, junction boxes are thermally conditioned for six weeks and then mechanically conditioned through vibration for eight hours then energised to its maximum rating prior to being subjected to powerful jets of salt water for three hours. This test simulates far more realistic installation conditions.

### Extreme temperatures

SANS 62208 Clause 7 'Service Conditions' requires that junction boxes be tested for an ambient air temperature range of between 40°C to -25°C.

CCG's range of Junction boxes are manufactured from a specially formulated DMC compound which has been independently tested and certified for use in extreme temperature ranges of between -60°C and 110°C.

### Mechanical impact

Together with the IP rating, the most important protection rating required from a junction box is its resistance to mechanical impact. This is especially important for robust industrial and mining installations.

SANS 62208 Clause 9.7 'Degree of protection against external mechanical impacts (IK Code)' requires a verification of the degree of protection against mechanical impacts and tests shall be carried out in accordance with IEC 62262. The enclosure shall be fixed on a rigid support as for normal use and the impact energy shall be applied three times to each exposed surface. The impacts shall be applied with even distribution over the faces of the enclosure. After the test, the enclosure shall continue to provide the IP rating and dielectric strength as claimed by the manufacturer.

(Picture 3) shows a junction box that claims an IP66 rating and yet it has failed just one IK10 impact test compared to a CCG junction box (Picture 4) which has passed the required three IK10 or 20 joule impact tests. 20 joules equate to a 1 kg weight dropped onto the junction box from a height of 2 m.

### Corrosion or chemical attack

Many junction boxes are manufactured from metal such as mild steel or aluminium and even though they are painted or powder coated, the long-term effects of weathering and exposure to industrial pollution, sulphur dioxide, marine salt spray, etc, will still result in corrosion (Picture 5).

CCG's junction box range (Picture 6) is manufactured from a corrosion resistant non-metallic DMC compound which resists the ravages of corrosion.

### Solar radiation or UV

A main concern with non-metallic junction boxes is the resistance to UV or solar radiation. CCG's range of Junction boxes have been independently tested in accordance with the stringent requirements of ISO 4892-2 in an exposure chamber using a xenon lamp and a sunlight simulating filter system. The samples were exposed, without cycling, under dry conditions at a black standard temperature of 65 ± 3°C for between 1000 and 1025 hours.

Unlike plastic injection moulded junction boxes (Picture 7) CCG's DMC junction boxes (Picture 8) are thermoset which demonstrate exceptional resistance to harsh UV radiation.

### Protective Earth

According to SANS 0142, the protective conductor (PE), is connected to the source earth, either through a separate conductor or the armour of the cable or both. This means that the protective earth conductor is connected through to the cable armour via the dedicated earth terminal and terminal rail, through the junction box earth plate and to the gland.

IEC 60947-7-2 specifies requirements for protective conductor terminal blocks with PE function up to 120 mm<sup>2</sup> (250 kcmil) and for protective conductor terminal blocks with PEN function equal to and above 10 mm<sup>2</sup> with screw-type or screwless-type clamping units, pri-

marily intended for industrial applications.

According to this standard, protective conductor terminal blocks are used to form the electrical and mechanical connection between copper conductors and the fixing support. The fixing support being the combination of the metal terminal rail, the junction box's internal earth plate or earth ring and the metal cable gland entry threads or cable gland locknut.

In order to test the effectiveness of the PEN and the PE in junction boxes, CCG conducted independent tests according to the most relevant standards which are IEC 60947-7-2 (Protective connector terminal blocks for copper conductors) and IEC 62444 (Cable glands for electrical installations). The logic for this is that both those standards contain tests that require the passage of a current to earth in either a continuous or short-term fault condition.

IEC 60947-7-2 contains two relevant tests. The first (Clause 8.4.5) requires a continuous current of the maximum rating for the terminal block to be passed through the terminal block until thermal stability is reached. For this test currents from 32A up to 192A were passed through an earth cable connected to the earth terminal block and from the terminal block through the earth plate into the cable armour via a cable gland.

For the second test (Picture 9) the CCG range of Junction boxes with gland entries with 5 full nickel-plated brass threads, as shown in (Picture 10), were subjected to the short circuit test requirements of IEC 62444 and IEC 60947-7-2 The required currents of 500A (1 sec.) to 1920A (1 sec.) were easily achieved. As a comparison and to demonstrate how important junction box cable gland entry threads are, a junction box with a thin metal thread insert of only 1.5 threads embedded in the plastic junction box body (Picture 11) was tested but failed these tests.

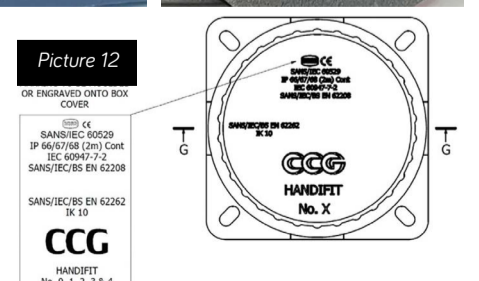
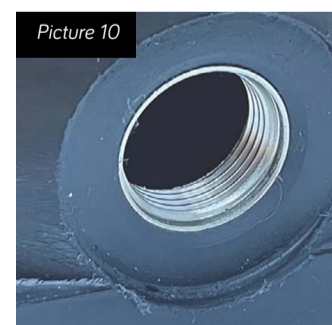
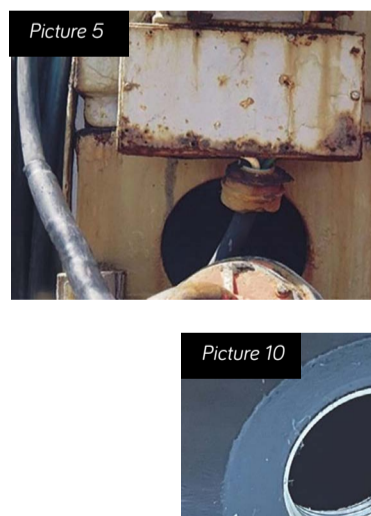
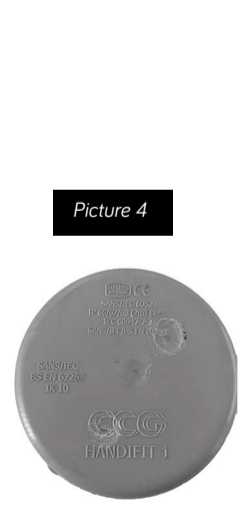
BOX SIZE	CONTINUOUS CURRENT	IEC 62444 SHORT CIRCUIT (1 sec)	IEC 60947 SHORT CIRCUIT (1 sec)
No. 1	76A	500A	1920A
No. 2	125A	500A	1920A
No. 3	192A	500A	1920A
No. 4	192A	500A	1920A

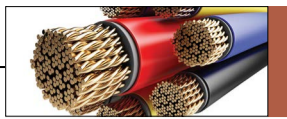
CCG conducted extensive short circuit and continuous current testing on cable glands, earth tags and junction boxes. The following tests results, shown in Table 1 were achieved.

Junction boxes and enclosures are probably the most important method of protecting expensive and critical electrical equipment from a vast array of environmental damage, however their performance is often overlooked in the narrow pursuit of "low price" options. When selecting junction boxes, the specifier or installer should question the supplier if their offered product has been tested to all the criteria and standards listed above and independent test certificates should be requested. (Picture 12) shows the required marking for a fully certified Industrial Junction Box.

By Arthur Cameron, Marketing and Sales Director, CCG Cable Terminations (Pty) Ltd

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### Innovative, new wire ID solution

Brady, a global leader in industrial and safety printing systems and solutions, announced today the launch of a new print-on hook material designed to identify wire and cable bundles.

As data centres increase in size and complexity, the challenge to correctly identify cable bundles, efficiently, has become more important. When installing and updating cables, a misidentified cable can interrupt data, cause outages and make troubleshooting more difficult, limiting overall productivity.

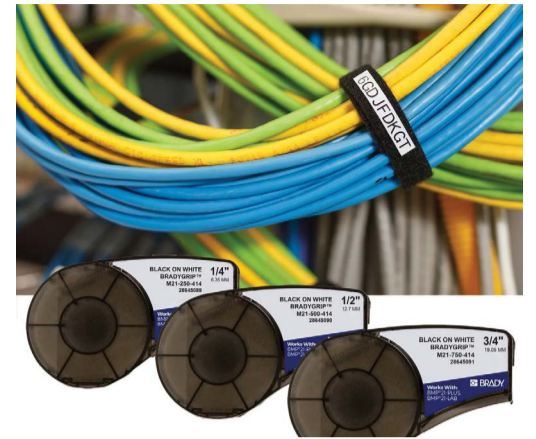
Since hook and loop solutions are already used heavily in the datacom industry (as they are less likely to damage cable insulation), Brady partnered with Velcro® Brand to create an innovative solution: BradyGrip™ Print-on Hook Material featuring Velcro® Brand Hook. This exclusive new product combines high-performing Brady materials with Velcro® Brand technology. It can be printed on, then placed on Velcro® Brand One-Wrap® Ties to identify wire or cable bundles.

"Today there's a focus on greater efficiency in the wire and cable industries," says Adam Meaux, senior global product manager at Brady. "And faster application and identification are key. We developed BradyGrip™ to improve the way identification is done in the field, saving both time and money. And by offering a product that can be both printed on and placed, we've done just that. Truly, there's nothing like BradyGrip™ on the market. It transforms the way people work."

This innovative new material allows Brady to reach a variety of markets that rely on markers to identify wire and cable bundles: datacom, telecom, electrical, medical and construction work. A key feature of BradyGrip™ is its print-on capabilities. Barcodes, text, graphics – all can be printed on this durable, high-quality material. This replaces error-prone or illegible handwritten markers with faster, clearer printed ID. Something a busy data installer only dreams of, until now.

BradyGrip™ is the newest addition to Brady's well-established line of identification solutions. Additionally, the company offers an extensive line of labelling materials, ribbons, printing systems and software to fully establish itself as a world-wide leader of complete printing solutions.

Brady Corporation is an international manufacturer and marketer of complete solutions that identify and protect people, products and places. Brady's products help customers increase safety, security, productivity and performance and include high-performance labels, signs, safety devices, printing systems and software. Founded in 1914, the company has a diverse customer base in electronics, telecommunications, manufacturing, electrical, construction, medical, aerospace and a variety of other industries. Brady stock trades on the New York Stock Exchange under the symbol BRC.

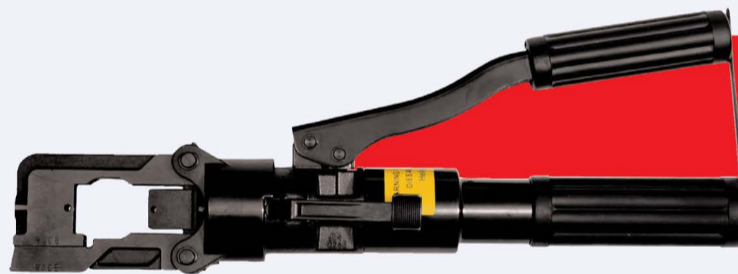


**HellermannTyton**  
www.HellermannTyton.co.za

# Getting the best out of your HYDRAULIC CRIMPER

## 1 Before using crimper for first time and after long periods between use:

- Keep crimper head down
- Advance and retract piston 2-3 times before pressure is reached



## 2 Pre-use check:

- For oil leaks

## 3 Care and Maintenance:

- Clean crimper carefully after use especially around pump drive and piston moving parts to avoid damage, HellermannTyton's FOSPRO is recommended
- After repeated use, check oil reservoir every 6 months to make sure it is full
- Service and calibrate your crimper every 12 months or every 6 months with frequent or heavy use
- Hydraulic fluid must be changed every 24 months by a qualified hydraulic technician



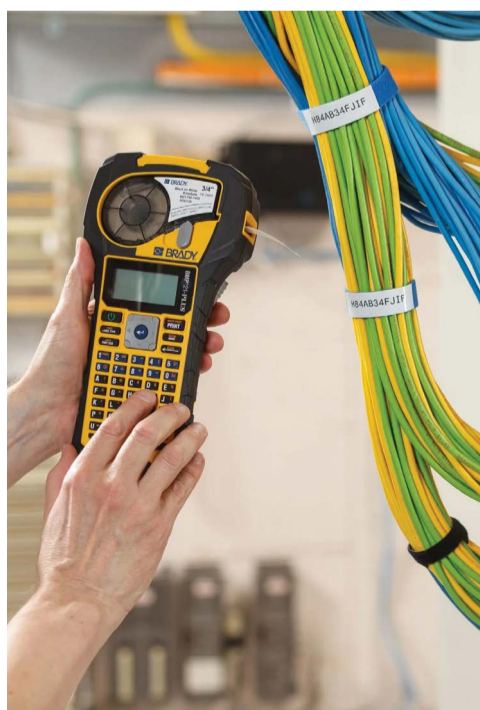
## 4 Storing your crimper:

- Carefully store in its hard case in a dry clean area
- Remove dies from crimper head
- Keep handles closed to prevent damage to head
- Should not be stored under load
- Avoid direct sunlight and high humidity

- To prevent corrosion or rust during long storage periods, spray a thin coating of HellermannTyton FOSPRO



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## Why a commercial UPS should never be used in an industrial application

Many process industries create harsh environments for various reasons, including mechanical vibration and chemical vapour contamination. The latter results in corrosion, high levels of dust (which can be corrosive and/or conductive) and vermin ingress (rodents, reptiles, insects). Other factors are temperature extremes (both high and low), condensing humidity and reciprocating tilting actions (such as onboard a ship or an oil rig).

In applications with harsh environments, an industrial UPS should be the automatic choice because it offers higher safety levels, less risk of expensive downtime due to power failures, a longer lifespan and reduced servicing costs. All industrial processes are controlled by automation and control systems (SCADA/DCS/PLC), field instrumentation, MCCs, VSDs, actuators and field communication systems, all of which require perfect control power. To ensure continuous, safe operation of production processes in harsh environments, as well as emergency shutdown of potentially dangerous processes, it is critical that the power supply to these systems is continuous.

### Safety-critical systems

Situations where human life could be threatened (e.g., disaster warnings, evacuation warnings, rail signalling, emergency lighting) require absolute security of electrical power for their operation. Furthermore, safety-critical systems such as signalling (rail), emergency evacuation warnings, fire warnings and emergency evacuation lighting cannot fail under any circumstance due to the possibility of injury and/or loss of life, as well as massive financial losses as a result of extensive plant damage and loss of production.

### Expected lifespan

In a 'controlled' or 'normal' environment, the design life of a commercial UPS is typically ten years. An industrial UPS is designed to last a minimum of 15 years, while operating at high loads and in harsh conditions.

### What are the implications of using an incorrect UPS for an application?

A commercial UPS is designed to operate in less aggressive environments – that is, temperature-controlled and free of dust, vibration, corrosion and vermin. Because of this, UPS designers can set the internal components of a commercial UPS to operate closer to their design limits. This reduces the cost of manufacture.

The expected lifespan of internal components in a commercial UPS installed in a harsh environment is likely to be far shorter than that of a UPS designed for industrial applications. The results of using a commercial UPS design in an industrial process could therefore result in premature, unplanned failure of the UPS, leading to costly downtime, loss of production and possible damage to equipment, which could concurrently give rise to unsafe/unstable conditions.

### Possible risk implications

There are a number of risks associated with using an incorrectly rated or designed UPS that may not be able to cope with the stresses under which it is expected to function. Commercial UPS designs are not expected to perform under the same environmental conditions that an industrial designed unit will.

ABB has 13 different UPS families designed for all global standards, from 1 kVA to 5 MW (LV) and 11kV,

2.25 MVA UPS blocks, which can be paralleled for capacity up to the utility supply capacity. Of these, three families are specifically intended for industrial applications in the IEC market, namely the ABB PowerLine DPA, the ABB PCS100 UPSi and the PCS120 MV UPS.

By engaging with our customers and our partner network, ABB can assist with designing a solution to ensure technical compliance that is relevant to the environmental conditions under which the UPS is expected to operate. In addition, factory trained and certified UPS technicians means that ABB can effectively service the global installed UPS base.

### Main features of a commercial UPS

- Applications are data centres in banks, offices, airports and central train stations.
- The interruption of AC power may disrupt data processing and telecoms, but does not present an inherent risk of injury to people or property damage.
- Aimed at business continuity and data protection.
- Key attributes for control room and data centre infrastructure are energy efficiency, power expansion capability, optimised footprint, optimised cooling system, standardised power blocks and N+1 redundancy, remote control and monitoring.
- Manufacturing process order: Configure to order.

### Main features of an industrial UPS

- Applications are digital automation and control systems, instrumentation, communication and electronic devices in manufacturing, transportation and utilities.
- The interruption of ac power may result in the



Ivor Becks, Sales Specialist, UPS Systems, Southern Africa, ABB South Africa

- loss of finished products or hundreds of person hours to reset production equipment.
- Aimed at 24/7 operation and personnel and operational safety.
- Key attributes for manufacturing plants and industrial control rooms are continuous operation, parallel redundant operation, galvanic isolation, system degree of protection, short-circuit and overload capability, safety, fire protection, integration into the electrical control system.
- Manufacturing process order: Engineered per order/configure to order plus customisations.

By Ivor Becks, Sales Specialist, UPS Systems, Southern Africa, ABB South Africa  
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## Stationary battery basics: Jars and straps



There is so much terminology related to stationary batteries that it is hard to know what everything means. So, what is the difference between jars and straps?

### What is a jar?

A stationary battery jar is a container that holds the cell or group of cells and electrolytes. It is also commonly referred to as a battery case or cell case. Jars are typically made out of some kind of thermoplastic substance although hard rubber is sometimes used as well. If the battery contains nickel-cadmium cells, the jar may even be made out of steel. Vented lead-acid batteries normally have transparent jars to allow for plate and sediment inspection.

### What is a strap?

A stationary battery strap is a component in a cell that joins plates of like polarity in parallel. It is an electrical conductor that is made of copper. It generally has a lead or tin plating for lead-acid cells. Nickel-cadmium cells require a different connector. They are typically made with nickel-, cadmium-, tin-plated copper, or even steel bar. Occasionally, the strap may be insulated

with copper wire or lead (with or without a copper insert) for lead-acid batteries, depending on the manufacturer's specifications.

### Stationary batteries

Transportation batteries function as start/stop batteries. The primary discharge occurs when the vehicle is started. After that, it spends the rest of the drive time recharging. Motive power batteries do not operate this way. Instead of only being used to start the machinery, there is a continual discharge. Stationary batteries are used constantly while in operation and used until depleted, or until the job is done, and then recharged after use.

Franklin Electric Grid Solution electrical system testing technology is used by six major automotive manufacturing facilities in South Africa in on-vehicle equipment, recording events that may lead to battery or electrical system failure. In addition to this, two leading South African battery manufacturers and distributors have committed to using the Midtronics technology in their facilities and distribution outlets.

Enquiries: <https://bit.ly/3J9wOjJ>

## Transformers for standby gensets in the Cape



Dry-type transformer specialist Trafo Power Solutions supplied four transformers for use in standby diesel generator sets in the Western Cape province.

The transformers will step up the 400 V supply from the generators to serve the 11 kV networks at customer sites. Two 2000 kVA gensets were supplied into a Cape Town hospital and multiple 550 kVA gensets to a West Coast company in the fishery sector.

This contract further expands Trafo Power Solutions' installed base of dry-type transformers in the province, where it has seen considerable growth in recent years, according to the company's managing director David Claassen.

"We design our transformers for the demanding and corrosive conditions in this coastal area," says Claassen. "The sealed windings of these cast resin transformers are well suited to

the harsh environment, and related elements such as the enclosures are all stainless steel and specially treated."

He says the low-loss transformers conform with the European directive on energy efficiency, ensuring customers can control their power consumption costs in the face of rising electricity prices. Part of Trafo Power Solutions' value-added service included arranging the necessary logistics as well as commissioning of the units.

With their high safety levels and low risk to the environment, dry-type transformers have become a popular choice globally across a range of industry sectors. These include mining, food and beverage, marine, rail, and oil and gas. Trafo Power Solutions' offerings also include custom-designed solutions for dry-type miniature substations, dry-type reactors (or induc-

tors), and temperature control and protection relays for electric motors, generators and transformers.

One of the challenges successfully overcome with the gensets supplied to the Cape Town hospital was tying the control philosophy of the new gensets to the customer's existing network and being able to control existing equipment in that infrastructure.

The six 550 kVA prime rated locally manufactured gensets for the fishery sector are driven by Volvo engines and form part of the plant room. This project involved extensive electrical design work and the supply of all the cable work related to the equipment in the power plant. In addition, the plant room synchronises with Eskom and had to be approved by this power utility.

Enquiries: [www.trafo.co.za](http://www.trafo.co.za)

## Bringing solar power to reservoir monitoring

Remote monitoring has brought about many benefits for utility managers, but how can telemetry devices be used to monitor sites that have no power infrastructure? Here Ian Loudon, international marketing and sales manager for remote monitoring system manufacturers Omniflex, discusses how solar powered wireless telemetry systems are a cost-effective, secure and reliable solution for remote reservoir monitoring.

Whether it's a single water tank or a large water dam, powering a monitoring system on a remote site, several kilometres away, with limited access to grid infrastructure is challenging. Often, these sites go unattended for long periods and are vulnerable to overfilling. Because these systems are critical to ensuring continuity of supply and the prevention of overflow and waste, water utility managers often must fund costly infrastructure projects to support installation.

Because manual inspections cannot feasibly be carried out regularly on a remote reservoir, utility managers will feel caught between a rock and a hard place when it comes to balancing cost, security and efficiency. So, what is a suitable solution?

### Simply solar

It is a misconception that all solar powered devices require an infrastructure. Yes, it was once the case that solar panels, battery chargers, back-up power supplies and telemetry devices were fitted separately in costly and complex installation projects. However, with a growing reliance on automation and the need for monitoring devices to protect assets, new solar powered telemetry systems have been developed that are cost-effective and easy to install.

Device manufacturers are now making programmable RTUs with integrated solar charge regulators in small footprints. These RTUs have terminals that directly plug into the batteries, so all the system requires is for the device to be connected to a solar panel and a backup battery.

Water utility managers can save considerable costs in upgrading the existing infrastructure by using devices such as Omniflex's Teleterm S3 Series, weighing just 350 grams. Being solar powered, the device does not dissipate as much heat as mains powered electronics. This, coupled with its compactness, allows it to sit comfortably in a secure, weather-proof IP 67-rated enclosure with its backup battery.

### Considering the concerns

It is understandable that reservoir managers will have concerns over the efficacy and reliability of solar powered devices. Power budgeting for batteries is a particular design constraint and battery selection is made considering worst case scenarios. For example, on days where there is less sunlight, panels can't produce charge at maximum capacity and the batteries must take up the slack for repeated charge and discharge cycles. However, modern batteries have advanced quickly and now have greater tolerance for deep discharge cycling. This allows more technology to be deployed in these power constrained applications.

Battery life concerns have been considered by device manufacturers. For example, the S3's power consumption is low, at just 35 milliamps at 12 Vdc. To save power, the devices are programmed to store data locally and only transmit intermittently



on a cyclic basis. On a reservoir you might want to know the usage profile over a 24-hour period. The S3 series can be programmed to take a reading every hour, but report back every once every 24 hours, saving power. All data is backed up and secured on a SD memory card, and power is used sparingly making the Teleterm S3 the ideal deployment for reservoir monitoring.

To avoid uncertainty when power is low, an internal backup battery is provided for the processor, to power the real-time clock and keep synchronisation. If the external main batteries were to fail, the backups allow the device to shut down gracefully without corrupting

any stored data. When communication comes back on, this data can then be securely transmitted back to the control room either via a cloud-based Data2Desktop network or license-free band radio.

Solar powered devices will continue to push the boundaries of what remote monitoring systems can offer. For remote locations where power is limited, safety is critical and cost-effectiveness is desired, water utility managers can be rest assured that their system remains reliable and secure in any eventuality.

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## Eaton to expand collaboration with Microsoft on grid-interactive UPS technology

Intelligent power management company Eaton has announced it will expand its collaboration with Microsoft to accelerate applications of its EnergyAware uninterruptible power system (UPS) technology in key segments worldwide. The expansion is part of a new strategic framework agreement between Eaton and Microsoft designed to address major industry developments including digital transformation, sustainability and the energy transition.

A key element of the strategic framework agreement is the inclusion of Eaton's proprietary EnergyAware UPS technology in Microsoft projects. The primary function of a UPS is to provide backup power protection for mission critical applications and facilities and to protect them from grid outages or power quality issues. Through close collaboration over several years, Eaton and Microsoft have added digital capabilities to the UPS, which allows it to be used as a distributed energy resource (DER) to support grids with high levels of variable renewable energy generation.

This will allow for a new generation of 'grid-interactive' data centres, including those operated by Microsoft, to support grid operators with the provision of critical flexibility services. Selling flexibility

into the grid is an opportunity for data centres to monetize underutilized assets, for example by providing energy storage and supplying the fast frequency response services that grid operators will increasingly need as renewable capacity increases and the grid loses the inertia associated with fossil fuel generation.

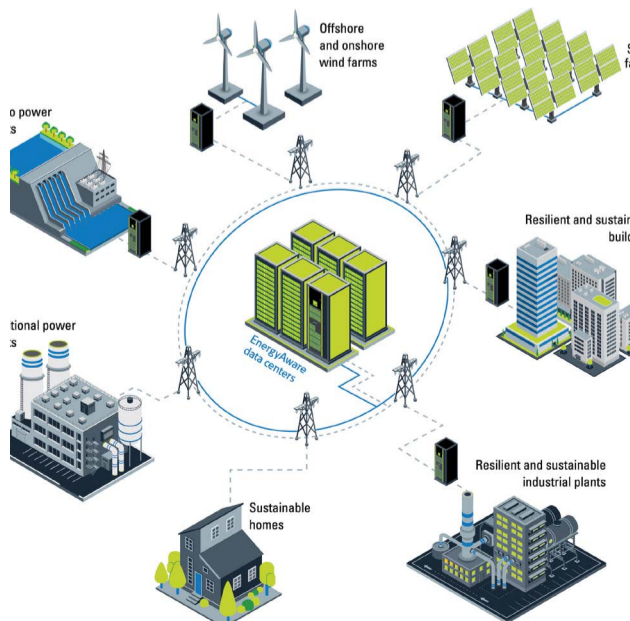
Explaining the significance of this, Craig McDonnell, senior vice-president and general manager of the Energy Transition and Digital division at Eaton, said: "A grid-interactive UPS helps decarbonize energy at grid level which means that its sustainability benefit extends beyond the data center. This changes the game in terms of energy management within the data center's overall environmental impact profile."

"A grid-interactive data centre is one where its extensive electrical system functions not only to protect customer IT data and applications but also to provide valuable electrical services back to the transmission system operator and the grid. These auxiliary services will be increasingly critical to help grids cope with high levels of variable renewable energy," said Sean James, Director of Data Center Research, Microsoft.

### About Eaton

Eaton is an intelligent power management company dedicated to improving the quality of life and protecting the environment for people everywhere. We are guided by our commitment to do business right, to operate sustainably and to help our customers manage power today and well into the future. By capitalizing on the global growth trends of electrification and digitalization, we're accelerating the planet's transition to renewable energy, helping to solve the world's most urgent power management challenges, and doing what's best for our stakeholders and all of society

Enquiries: [www.eaton.com](http://www.eaton.com).



## Why electrical contractors should include backup power in projects

South Africa's electric grid goes hand in hand with unpredictability and downright volatility at times. And as we're all too aware, a less reliable grid translates to more frequent blackouts, which directly impacts business and residential communities.

It's hard to accomplish anything in the modern world without electricity. And with many organisations following hybrid work model, backup power has become non-negotiable.

To this end, backup power such as UPSs should therefore become part of electrical contractors' proposals when tendering for a business project or working on a residential contract.

Adding a UPS to your quote is relatively straightforward and you can do the installation yourself. If you need assistance to plan and size the most suitable UPS for the job, you can work with a channel partner of a reputable UPS brand to select and propose the appropriate option. For larger facilities we work hand in hand with our channel partners to ensure your UPS installation is done properly and to the highest standard.

Additionally, if a UPS is not requested in project, you can recommend it as an additional value add your electrical upgrade or installation points. Here are some important points which should form part of your proposal:

- What is the short-term and long-term financial impact on the business if the power goes out?
- How would an outage impact the customer's operations?
- Do life-safety risks increase when there is a power outage?
- In the case of a high-end residential customer, how would they benefit from UPS for communications, surveillance, gaming, remote work, and remote learning?
- What's the downtime cost of a production machine?

By providing UPS technology, you can expand the scope of your services through long-term contracts that also include UPS service and remote monitoring. Most of our large and industrial UPS have data-capture and monitoring capabilities in order to optimise its health and performance.



George Senzere, solutions architect, Secure Power at Schneider Electric.

Furthermore, you can deliver the monitoring services or sub-contract to a vendor, such as Schneider Electric, to monitor backup operations while you maintain contact with the customer. Essentially as an electrical contractor you could expand your services by moving into the managed service provider space and increase your business margins.

Installation and post-implementation monitoring, and maintenance services will keep you linked to the customer for the long term. You can use these services as a differentiator from contractors which is a major plus, ensuring you can foster a long-lasting and mutually beneficial relationship with your customer.

Ultimately, by proposing a backup solution such as UPS, you are showing initiative and forward thinking in protection customer's valuable assets and productivity environments.

By George Senzere, solutions architect, Secure Power at Schneider Electric

Enquiries: [www.se.com](http://www.se.com)

## BEKA Schröder supplies LED highbay lighting for workshop

BEKA Schröder has supplied the LED highbay lighting solution at Liebherr-Africa's crane workshop in Springs near Johannesburg. BEKA Schröder was approached by Liebherr-Africa as they were looking for a reliable LED lighting luminaire manufacturer and supplier.

BEKA Schröder's ECOBAY, an LED lowbay and highbay lighting range, was the luminaire of choice due to its reliable performance, low dust accumulation and versatility, with no need for relamping and regular maintenance.

The ECOBAY was designed and manufactured in South Africa and is the ideal luminaire for lighting industrial facilities at optimised light levels. It offers substantial energy savings, high performance and is able to operate at high ambient temperatures. Available with four typical lumen packages and

various light distributions, the ECOBAY is perfectly suited for multiple indoor lighting applications.

The ECOBAY not only lowers initial investment; it maximises it by providing a comfortable environment for staff while limiting energy consumption to what is absolutely necessary.

### The right lighting makes the difference

As the average annual energy bill continues to rise, owners, operators, and managers of industrial facilities need to cut costs and improve employee productivity. BEKA Schröder's LED lighting solutions enable you to transform your lighting from a necessary expense to a strategic asset by:

- Reducing energy and operating costs considerably.
- Complying with health and safety

standard light level requirements.

- Creating a comfortable working environment for better productivity and quality of work.
- Providing a quick return on investment.

BEKA Schröder's in-house lighting design team is able to assist with ensuring an optimised lighting solution for the area to be illuminated. The company's after-sales service ensures complete satisfaction with the installation.

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

Enquiries: +27 (0)11 238 0000



The locally designed and manufactured ECOBAY illuminates Liebherr-Africa's crane workshop.

SHEDDING LIGHT WITH PHILIP HAMMOND

## The importance of standards and compliance in lighting

I realise as I write this article for the July edition of Sparks Electrical News, that we have passed the halfway mark for the year and from here on it is downhill all the way until the end of 2022.

The next chapter in our series of light is about 'Standards and Compliance.' It is essential to have a detailed knowledge about this topic, so much so that Joseph Rey-Barreau, a New York lighting designer and architect said: "It's a new world of lighting. People must think about it more than ever." Albert Hanley, another architect, said: "Design is defined by light and shade and appropriate lighting is enormously important."

### Introduction

We learned that the eye responds to the stimulation of light. The light is converted on the retina into electric signals which are transmitted to the brain where the picture is formed. The object or scene is seen in shades of grey when the illumination level is low, but as the illumination level increases, we are able to distinguish colours and enjoy better acuity. This is typical for an observer with normal, or near normal, sight. People who have alternative colour vision will see the object or scene differently. This is not covered in this course but in later courses as it is a specialist topic.

The object or scene is seen subjectively by the observer because of the eye's ability to adapt to different illumination levels. This subjectivity of illumination levels must be converted into an objective assessment so standards can be applied and standard meters can be used to measure the light levels. The illumination level suitable for one person to work efficiently, may not be suitable for another, for example, the age of the observers may be different.

Research has been carried out over many years to recommend the illumination level that would most likely please most people who perform a particular task. In these studies, the tasks were made independent of the literacy of the worker and one such study was the use of the 'Landolt's Ring' which is a ring with a small break in its circumference similar to a 'C'. The rings were grouped in arrays of 5 by 5, with the opening in the rings pointing in different directions. Some of the rings had their openings pointing to twelve o'clock and the observers were asked to count or mark these within a specified time. The sheets of rings were changed and so the illumination level changed, and the exercise was repeated.

The new sheet of rings may have larger or smaller rings or the contrast of the ring to the



background was reduced. These changes made the task easier or more difficult for the observer and the performance of each test was recorded. The sheets can be related to various work tasks and this formed one of the bases for the standard illumination levels in codes of practice in many countries. The illumination level recommended satisfied 90% of the users with a 90% performance level.

A number of tests were carried out in this way and many field measurements were taken to establish what the illumination levels should be for the task. The accuracy, safety and the comfort of the performer was considered. These recommended illumination levels have been included in the design guides and codes of practice in many of the participating countries, including South Africa. In 1996 the SABS Code of Practice 10114: The lighting of interiors Part 1 Artificial Lighting was published. The code recommends illumination levels for safety and for productivity.

### The SANS (South African National Standards)

SANS recommends illumination levels for productivity at a 90% level of performance for the average worker within an age group up to 25-years of age. The recommended illumination levels listed are for most of the tasks encountered in industry, the hospitality industry, schools and homes. The code describes how the field measurements must be made. In many installations, the task that will be performed in that area may not be known and the tasks were assumed so that the lighting design could be done. The selected illumination level is then provided across the complete area.

Later, when the building is occupied, the task actually performed may be different, or many only performed in a small part of the area. In this situation the lighting design should be modified to suit the new layout, so that the light-

ing design complies with the recommended code of practice.

The standards define how the illumination levels may change near and within the field of vision. This recommendation is for the comfort of the worker and for his or her safety. The code recommends that the illumination levels should be within the ratio of three to one close to the task. The worker's eye will then be used to working at one illumination level and will not have to adapt to different levels which will cause eye fatigue. The eye muscles will get tired if they constantly have to change the iris position, due to the light levels and focusing on the detailed task. The recommended variation of the illumination levels within 5 m of the task must be within five to one, so the eye does not have to adapt to new light levels, which may cause temporary blindness and could cause an accident. This is similar to the blindness experienced when one walks into a dark room after being in full sunlight. The eye has to adapt to the lower illumination level. Another example is the blindness experienced after a flash from a camera.

SANS 10114-1:2020: Lighting for Interiors updated in 2020 for the first time in a long time is based on the European Standard EN 12464-1: 2021: Lighting for Interiors. Unfortunately, SANS 10114-1: 2020 is a poor copy of the European Standard EN 12464-1:2021.

I therefore encourage all lighting designers and consulting electrical engineers to purchase their own copy of EN 12464-1: 2021 and to use the highest available international standard. We must not accept mediocrity.

Once again, I am always prepared to assist any readers and give basic advice about lighting to minimise their risk of non-compliance. Next month we will take a closer look at some more standards that are applicable to lighting and lighting design.

Enquiries: phil@bhalighting.co.za

## Refresh your desk with new lighting

Given the increase in remote working opportunities spurred on by the pandemic, this could mean making the shift from working in an office outside of the home, to setting up a workspace within the home.

### Lighting for computer work and writing

The overhead lighting found in most rooms of a home is great for giving your dedicated workspace a general level of illumination, but it won't suffice for computer work, writing, or school projects. Whether a flush mount or pendant, chances are that it will likely be positioned behind you when you're seated at your desk, casting shadows on your work area. If it



is a suspended design it may even cause a glare or reflection on your computer or laptop screen – the last thing you need when you are doing hours of work at a time.

The easiest way to combat this is by adding a task light to your workspace. While an office-style lamp is ideal, a trusty bedside lamp will also do the trick. The important thing is the size and placement of the lamp. A small lamp on a large desk may not provide sufficient illumination to reach exactly where you need it, creating pools of darkness. On the other hand, a lamp that is too large for the space will simply overwhelm your desk.

### Lighting for video calls

Zoom meetings have become the norm now and are sometimes favoured in place of in-person meetings. A bad lighting setup is not only unpleasant to work in, but it also impacts how you're perceived during meetings. To communicate effectively and professionally during video calls, you need to get the balance of your lighting layers just right.

Start by ensuring there is no window, door, or light source directly behind you as this contrast of light does not translate well on camera. You want the room to be illuminated by a general soft ambient light, so your pre-existing overhead fixture should have you covered.

Next, avoid having your face illuminated from above or below as this causes unflattering shadows. The best lighting effect comes from placing a light source on either side of your screen. You can use two different styles of fixtures for this (for example a table lamp on one side and clip-on lamp on the other) but it's important that the colour temperature of the bulbs are the same. Typically, a temperature range of 2700 K to 4500 K will be most comfortable.

Equally important is the Colour Rendering Index (CRI) of the bulbs. The CRI measures how true-to-life colours look beneath a given light source, so if you appear slightly washed out in your video calls, this may be the culprit. An LED light source with a CRI rating between 85 and 100 is best. This CRI also promotes good eye health, because it gives you the ability to see contrast when reading and writing.

Enquiries: www.eurolux.co.za



## Rethinking how we sell lighting control systems

Lighting controls offer many benefits but have yet to become as widely adopted as was hoped.

Despite decades of promoting the energy savings that controls can provide, the DOE estimates that 66% of commercial buildings and 93% of industrial buildings lack any type of control beyond an on/off switch as of 2017. It is time to try a new approach that encompasses everything that controls have to offer, according to Liesel Whitney-Schulte, Program Director, DesignLights Consortium, and Dan Mellinger, Principal, Energy Futures Group.

In a recent webinar hosted by the IES, Liesel and Dan laid out their plan for "A New Sales Pitch." Many first-generation LED fixtures are beginning to need to be replaced, so this is the perfect time to implement controls in retrofit projects. As we rebound from the pandemic and infrastructure funding increases, the outlook for the construction sector is bright. And, funding for energy efficiency programs remains widely available. We must strike while the iron is hot, but we need a thorough and comprehensive approach. As we have seen, emphasising only the energy savings is not enough.

Lighting control systems can be thought of as existing on a spectrum. On the simple end of the spectrum, you have stand-alone controls. These are basic control systems that provide energy savings through processes like dimming and occupancy sensing. They communicate one way with a luminaire or load controller and are not connected with other control devices. On the more integrated end of the spectrum, you have networked lighting controls, where everything is coordinated, enabling a wide range of valuable

new capabilities for building owners.

The DOE estimates that, currently, only 4% of indoor LED luminaires are associated with networked lighting controls. If we could increase the adoption rate of these control programs, the savings would be measured in billions. But in order to do so, we need to change our approach. Our current track record suggests that, without changing our approach, we will fall well short of the DOE's connected lighting goal, and, in doing so, waste billions of dollars.

At this point, the energy savings associated with controls are indisputable, but the non-energy benefits are often ignored, even though these benefits might be the most desirable to customers. The 3-30-300 rule is illustrative here, and although it refers to the US dollar, the idea should be easy to follow – companies typically spend only \$3 per square foot per year for utilities, compared to \$30 for rent and \$300 for payroll. So, previous sales pitches, focusing solely on energy savings, don't seem very appealing to consumers. If, instead, we emphasize benefits of controls that affect the \$30 and \$300 categories, companies might be more likely to get on board. As Dan noted, "We have to speak to what is valuable to these facility managers, business owners, building operators, and contractors."

Non-energy benefits include improved circadian wellness, space utilisation, asset tracking, wayfinding, and emergency assist. We are quickly moving toward a more digitalised environment in which everything is connected. Smart buildings offer centralised control of all of a building's systems, and given its ubiquity and uniformity, lighting is well-positioned to be an integral part of this connected infrastructure.



Dan highlighted an example from Minnesota in which the lighting was coupled to the HVAC system. This led to a dramatic increase in the energy cost savings of the building through processes like thermostat setbacks, ventilation resets, and VAV box turndowns. The added cost of the HVAC/lighting control was recovered in less than a year by the energy savings.

So, what do we need to do moving forward? We need to focus on the right value proposition. We need to find a way to quantify the non-energy benefits so that they can be more easily understood and relayed to the customer.

To summarise, lighting controls have failed to achieve the adoption rates that many felt were possible. The main selling point, so far, has been the energy savings associated with controls. But, consumers have not been convinced by this, especially given how energy efficient LED products already are. So, a comprehensive approach to the full range of benefits offered by controls is needed. Lighting is well positioned to be a centrepiece of smart building technology as building systems become more integrated, so there is a great opportunity to see widespread implementation of networked lighting controls. Doing so will lead to billions in savings.

Enquiries: [www.edisonreport.com](http://www.edisonreport.com)

## Research indicates individual lighting controls can improve worker productivity



Research conducted in 2020 indicates that the control of light impacts indoor environmental quality (IEQ)-productivity belief more than other IEQ control.

Indoor environmental quality (IEQ) plays a key role in determining occupants' productivity at work; however, analyses of the interconnected factors among building physical, attitudinal, social and demographic components in one study are lacking. To fill this research gap, this study investigated these interconnected factors' influence on occupants' IEQ-productivity belief, defined as a personal, subjective evaluation of the linkage between the impacts of five IEQ aspects (the quality of indoor temperature, air, natural and electric lighting, and acoustics) and productivity. A cross-sectional survey data was collected in university offices from six countries (Brazil, Italy, Poland, Switzerland, Taiwan and the U.S.).

Results of multiple linear regression models indicate that IEQ satisfaction is the strongest positive predictor of the IEQ-productivity belief and this relationship is stronger in private offices. Country of residence is the second primary predictor. Several attitudinal-behavioural factors, including thermal comfort, perceived ease of controlling indoor environmental features, and attitudes toward sharing controls are all positively associated with IEQ-productivity belief. Interestingly, the level of control accessibility to light switches has the strongest impact as opposed to other controls. On the other hand, group norms and conformity intention are not significant predictors.

Regarding demographics, men are more likely than women to perceive the IEQs to have positive impacts on their productivity, without considering other variables in the regression model; however, women are more likely than men to consider all IEQs as having positive impacts on productivity, after considering other variables. These findings provide suggestions for prioritizing wellness in the workplace at the early design stage.

Read the full research article: [www.sciencedirect.com](http://www.sciencedirect.com)

## Two new sleep studies show impacts of light on young children and adults

A recent study by a research team at the University of Colorado at Boulder suggests even slight exposure to dim light can disrupt a youngster's sleep. The research found any type of light exposure before bed can impact the production of a hormone called melatonin. Melatonin comes from the pineal gland in the brain and impacts your circadian rhythm, a 24-hour biological clock in charge of regulating when to sleep and when to stay awake.

The research team recruited 36 children between the ages of three to five for a nine-day study where children wore wrist monitors to track their sleep and light exposure at night. The first seven days recorded the children on a stable sleep schedule to normalize their circadian rhythms and adopt a pattern where melatonin levels increase at the same time each evening. On the eighth day, the team transformed the children's home into "caves" where they placed black plastic on the windows to dim the lights. They also took saliva samples from each child every half hour starting in the early afternoon until after bedtime to look at when the children's biological night began and the level of melatonin at that time.

On the last day, every child played a game on a light table one hour before bedtime, in a similar position as someone looking at a lit-up phone or tablet. The light intensity varied from five lux to 5,000 lux (one lux is equivalent to the light from a candle three feet away).

Results show exposure to light suppressed melatonin levels by 70 to 99 percent in comparison to the previous night. Unlike adults, exposure to light made a bigger difference in melatonin suppression than brightness.

Specifically, lights at five to 40 lux – dimmer than the average room – suppressed melatonin by 78 percent. Moreover, melatonin production continued to be delayed for an additional 50 minutes after exposure to light.

"Together, our findings indicate that in preschool-aged children, exposure to light before bedtime, even at low intensities, results in robust and sustained melatonin suppression," says Lauren Hartstein, a post-doctoral fellow in the Sleep and Development Lab at CU Boulder.

Read the full research article: [www.studyfinds.org/night-light-children-sleep/](http://www.studyfinds.org/night-light-children-sleep/)



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