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Students' solar car to take on the world's best in Australian challenge

ENGINEERING students at the North-West University (NWU) will rub shoulders with the big names in solar energy when they take part in the Bridgestone World Solar Challenge in Australia from 18 to 26 October.

Dubbed the 'Dakar of solar rallies' because of the harsh conditions and the searing heat of the Australian outback, the competition starts in Darwin in northern Australia, and 45 vehicles from 25 countries will be racing more than 3 000 km across the country to Adelaide.

Following the NWU's successes in the local Sasol Solar challenges in 2012 and 2014, the team has improved on the original design, harnessing new technology to make the new vehicle faster, lighter, more effective and stronger.

Prof Albert Helberg, team leader, says: "We will be competing against the top universities in the solar energy fields and want to prove that we can align ourselves with their expertise."

There are three classes in the competition and, the NWU team will participate in the aptly named 'Challenger' class. According to Helberg "it's all about the vehicle's speed and efficiency".

"We should cover the distance in seven days but we are aiming to do it in five days," says Helberg. "Usually only one-third of all participants complete the race in the allotted time."

When comparing the NWU's first solar car – the 2012 Batmobile – with the new one, the biggest difference is the weight. The Batmobile weighed more than 300 kg and the new Sirius X25 although bigger than its predecessor, weighs a mere 185 kg.

The drive system changed from two front-wheel drive motors in 2012 to a single rear-wheel drive motor. The battery pack is technologically better and also weighs less. The aerodynamics of the cockpit profile were based on the latest sailplane technology and the vehicle's control systems have brand-new technology that allow for adjustments to the vehicle's electric current during changing weather conditions while it is operational.

Six square metres of solar panels are affixed to the top of the vehicle and the cockpit profile is manufactured with carbon fibre and resin, which is three times stronger than steel, but obviously much lighter.

The vehicle must be able to travel at least 500 km per day to finish the race within the allotted time. While the speed of the Sirius X25 is limited to 120 km per hour, according to the team's research, the most effective speed is around 75 km per hour.

Objective

"Our biggest dream will come true if we can finish the race and, be the first ever team from Africa to cross the finishing line," he says, adding that this will put the team "in the record books". "This is a learning project, and part of our long-term vision. This experience will enable us to aim for a podium position in 2017. He says this race is not "merely another race that will cost millions of rand for finishing-line glory" – it has an impact on ordinary citizens. Replacing traditional household electrical appliances with appliances that work a mere 5% more effectively, would save energy equal to over half the electricity that the Koeberg power station generates. "In building this vehicle, we are proving that all personal energy needs can be



Engineering students at the North-West University who will take part in the Bridgestone World Solar Challenge in Australia from 18 to 26 October, seen here with their solar car, are: Ryno du Preez; Raynard du Preez; Estienne Janse van Rensburg; Arno de Beer (technical manager); Prof Albert Helberg (team leader); Waks van Tonder; and Bronwyn Payne.

met by renewable energy, even transport needs ... but because these contemporary components are not yet mass produced, not everyone can afford them. This is an effort to turn this around," says Helberg.

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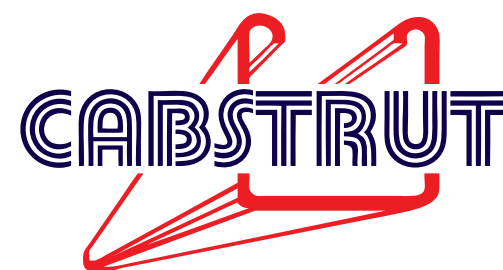


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Personality of the Month

The best way of learning about anything is by doing ...



Jonathan Palmer.

MANAGING director at PowerMan, Jonathan Palmer started in the electrical industry more than 30 years ago when his father asked him to join him in his new project to manufacture and supply low-cost entry level UPSs.

From the first five units that were individually cut, folded, drilled, painted and assembled in a friend's sheet metal shop in 1984 to a thriving business that, to date, has manufactured over 25 000 units, Jonathan has had an interesting journey along a steep learning curve.

His success in a fiercely competitive market would not have been possible without a good measure of tenacity, drive and ambition along with his unwavering determination to succeed.

Sparks: Where were you educated?

JP: My school years were split between the UK and South Africa and when my family immigrated to South Africa in 1976, I went to Greenside High and then to Damelin where I did a Diploma in Business Management.

Sparks: How long have you been involved in the electrical industry?

JP: We started manufacturing UPSs in 1984. In those days, all the units were less than 2 kVA and plugged into standard wall sockets. It was only in the early 1990s that we developed a range above 5 kVA that required electrical installation.

Sparks: When and where did you start your career?

JP: After a spell in the video rental business, I moved into the IT solutions industry. My father, John Palmer, had a software development company, and he had realised there was a demand for an entry-level, low cost UPS and set about having a unit designed. I had just sold my business and he asked me to join him for a while to help get the project started.

Sparks: What are the greatest changes you have seen over the years?

JP: During the 1980s and 90s the market was dominated by locally made UPSs, however, most of the UPS manufacturing companies have since closed down, having been taken over by larger companies, or entered into OEM agreements.

Sparks: What major projects have you worked on and what is your greatest accomplishment?

JP: I think one of the most rewarding projects has been the recent roll-out of UPSs for the CLLT (Computerised Learner Licence Testing) project. We handled the backup power and electrical installations for the project and

carry out planned maintenance.

The greatest accomplishment has to be manufacturing the first five PowerMan UPSs. We had some flat sheet metal and a friend's sheet-metal workshop. Each of the units was individually cut, folded, drilled, painted and assembled.

Our technician made up the PC boards and we wired the machines and got them running. It was the start of a manufacturing process that has yielded in excess of 25 000 machines.

Sparks: Who has been your inspiration or have you had a mentor who has influenced your career?

JP: My father had the biggest influence on my career. I was sales and business orientated, he was technical and business orientated. He was a rare breed of man that lived his life by the principles of honesty and integrity.

I learned a lot from him. Besides my father, I'd say I have the greatest respect for Richard Branson, who is the ultimate entrepreneur.

Sparks: What, to your mind, is one of the biggest challenges facing the industry at this time?

JP: To me one of the biggest issues is that this industry must maintain high standards. The training system also needs to be looked at. In previous years, electricians had to do a three- to four-year, apprenticeship, do a trade test and only then could they apply for a wireman's licence.

We come across many non-compliant installations that have not been done by registered electricians.

Customers need to be educated to understand the difference between a registered electrician who does work that is compliant and then issues a valid Certificate of Compliance and electricians who are unregistered

and whose work is neither compliant nor illegal.

Sparks: What do you enjoy most about your job?

JP: Currently, it's developing new product ranges. One of the biggest growth industries today is solar and we are putting together a full range of inverters and solar ready UPSs.

Sparks: How do you motivate your staff?

JP: We still have a family culture in the business and we have an open door policy with our staff. We keep them up-to-date on targets and achievements. Financial incentives are in place and are based on the company's performance.

Sparks: If you could 'do it all again', would you change anything? If so, what would that be?

JP: There are things we could have done differently but then everything happens for a reason.

Sparks: Would you advise a person leaving school to enter the electrical industry? And why?

JP: Absolutely. This is a great industry to be involved in. If they go the trade or engineering route they can work anywhere in the world. I believe power saving and backup solutions will remain huge growth markets nationally and internationally.

Sparks: What is your advice to electrical contractors and/or electrical engineers?

JP: Play by the book and don't take short cuts, but work cost-effectively.

Sparks: What is your favourite quote?

JP: "Do ye the little things in life." Saint David, patron saint of Wales

Sparks: Name three things on your 'bucket list' (things you want to do before you 'kick the bucket').

JP: To be involved in the development of a truly off-grid solution – power, water and gas – for homes or small businesses; play golf at St Andrews and Augusta; and visit Hawaii.

Technical Communiqué – Revision of SANS 10142-1 The wiring of premises Part 1: Low-voltage installations

Important changes to SANS 10142-1

THE SABS has announced changes to SANS 10142-1: The wiring of premises Part 1: Low-voltage installations. This document will be revised to add the requirements for the new plug and socket outlet dedicated systems to which newly built houses should comply with in future.

The requirements for the installation of plugs and socket-outlet systems for electric vehicles based on SANS 61851-1, SANS 62196-2, SANS 62196-3 and SANS 61851-23 will also be included in the revision of SANS 10142-1, thus allowing for the safe installation of socket-and-plug combinations for the charging of electrical vehicles. The requirements for a British plug and socket-outlet is taken out on the document since is no longer manufactured, sold and is not legal in South Africa.

The referenced standard for conduits has been updated from SANS 60614 series which is withdrawn to SANS 61386 series, SANS 1239 will be with-

drawn and replaced by SANS 60309-1 and SANS 60309-2. The test report for electrical installation was updated to include employee name, name of registered person, electrical contractors' registration number, date of registration and the expiry for registration in case there is a problem with the installation where the person who installed it can be traceable. A new additional test report and initial inspection schedule for a hazardous location as per SANS 60079-14 was added.

There are no other documents that can be used due to the use of different electrical accessories for installation as well as the frequency and the voltage used worldwide. This document provides protection against shock current, overcurrent, fault current, overvoltage, electrical arcs and excessive temperatures to ensure that people, animals and property are protected from hazards that can arise from the operation of electrical installation. In South Africa,

the use of this document is applicable to electrical installations on fixed appliances such as water heaters, cooking appliances, appliance for space cooling and heating, motors, electric fences, steam generators as well as boilers.

The revision of this standard was recommended because:

- It provides opportunity for vehicle recharging electrical infrastructure to be available locally which would give an option to purchase electric vehicles
- The infrastructure for electric vehicles will provide a conducive environment for the importation of electric vehicles.
- It will also pave the way for local manufacturers to establish vehicle plants that manufacture electric vehicles.
- Maintenance costs will also be minimised as cases of explosions and fires are addressed by the standard.

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Working knowledge by Terry McKenzie-Hoy

Series, parallel and volt drop – what works and what doesn't work

THE other day, I sent two technicians to go and wire up loudspeakers in a church. These are not the usual type of loudspeakers – each of them has its own power input rated at 5 V. Apart from that, they also have an audio input.

A loudspeaker generally works like this: a copper coil is wrapped around a magnet and the coil is connected to the cone. When ac current goes through the coil, it moves backwards and forwards on the magnet and causes the cone to vibrate. The coil has a resistance, commonly called the impedance, which varies from about 6 ohms to 16 ohms. Small loudspeakers are

about 6 ohms and large ones are about 16 ohms.

The amplifier, which drives this, has an output that is usually rated at 8 ohms. This output will work well if connected to 8 ohms and above; and it will work okay if connected to 6 ohms. But below the 6 ohm level, the loudspeaker will distort.

Back to my technicians ... they installed all the speakers and called me to come and hear how they sounded. It was not good. After some investigation, I discovered that they had connected the power supply of each loudspeaker in parallel with the other loudspeakers (which is correct) but, since they had 12 loudspeakers, the voltage across the

power input of the most distant speaker was only 4 V.

I pointed out to them that this was probably due to volt drop in the cable since they had used a 0,5 mm² cable for the power supply. I also pointed out that the total cable run was about 30 m.

Since the loudspeakers were equally spaced and since each loudspeaker draws 3 W power, we could work out that at 5 V, each loudspeaker was drawing about 0,6 A. The cable from the power supply to the first loudspeaker would therefore carry the total load of all the loudspeakers, which is $12 \times 0,6 = 7,2$ A.

The current rating for a 0,5 mm² cable is about 3 A; the volt drop is about 9 V per amp per 100 m; and so, for the 2.5 m of cable from the power supply to the loudspeaker, the volt drop is $9 \times 2,5 / 100 \times 7,2 = 1,6$ V.

One can understand therefore, why the furthest loudspeaker had a low voltage. Insofar as the audio inputs to the loudspeakers ... they had connected them all in parallel. The result was that the total impedance seen from the signal input point of view was $1/12 \times 8$ ohms, which is very little. Since the loudspeaker is meant to draw 3 W you would have to pass quite a bit of current for the loudspeaker to be effective. What they should have done was to have connected pairs of loudspeakers in series and then put them in parallel with the other pairs – and this would have taken the total impedance to about 6 ohms, which would have been okay.

In our electrical world, few things are connected in series. In the electronic world, many things are connected in series. Specifically, it is quite often that instrumentation is connected in series so that different transducers can respond in different ways to different inputs. I was quite surprised by the efforts with the church loudspeakers. But I realised that, unlike my youthful years that were full of tinkering with amplifiers and loudspeakers and so on, the youthful years of my technicians were full of successions of computer games and equipment. These are so designed that when you plug them in, they either work or they don't. A great deal of knowledge is required in order to know what works with what but there is very little fundamental knowledge. This is a shame.

Just a final word about loudspeakers: for distributed PA systems such as in supermarkets or shopping malls, it is common to supply the loudspeakers by a system that is called a '100 V line' system. In this system, each loudspeaker is fitted with a transformer and the amplifier gives out a signal that is rated at 100 V ac. All the loudspeakers are connected in parallel and the transformer of each loudspeaker changes the signal to suit the 8 ohm impedance of the loudspeaker.

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Mike Cronin, MD, Elquip Solutions.

ELQUIP Solutions has announced its latest distributorship agreement with German company, the Hoffmann Group.

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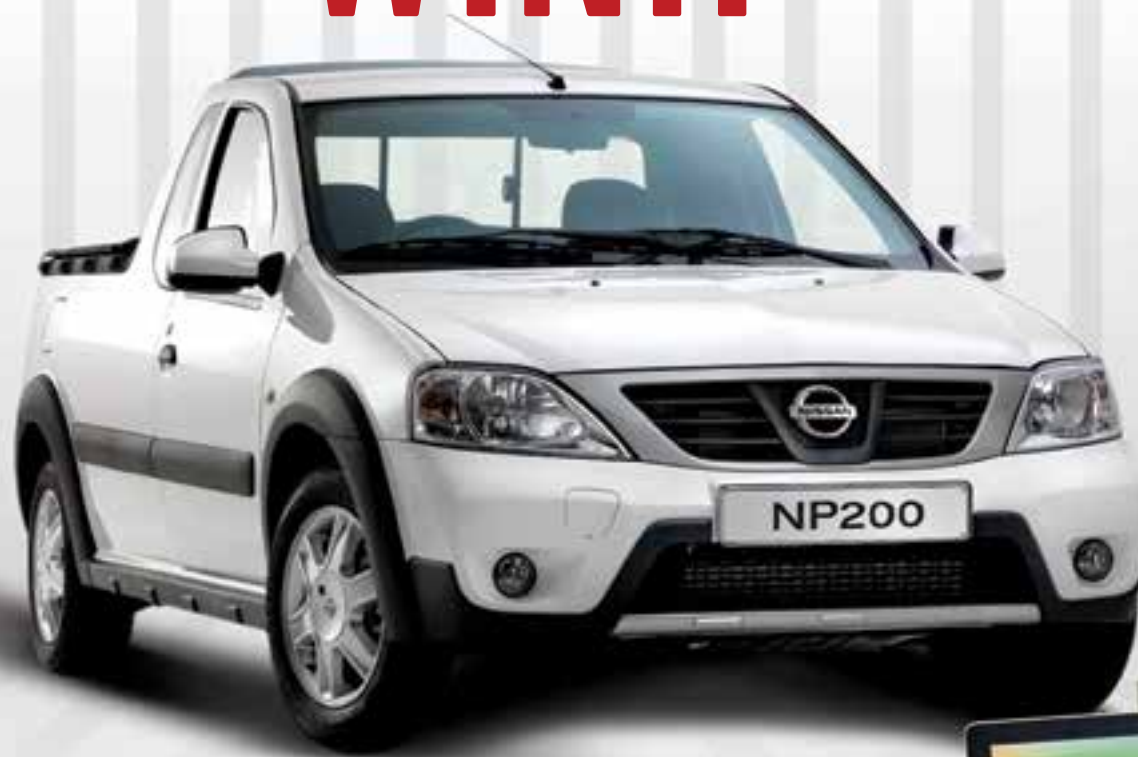
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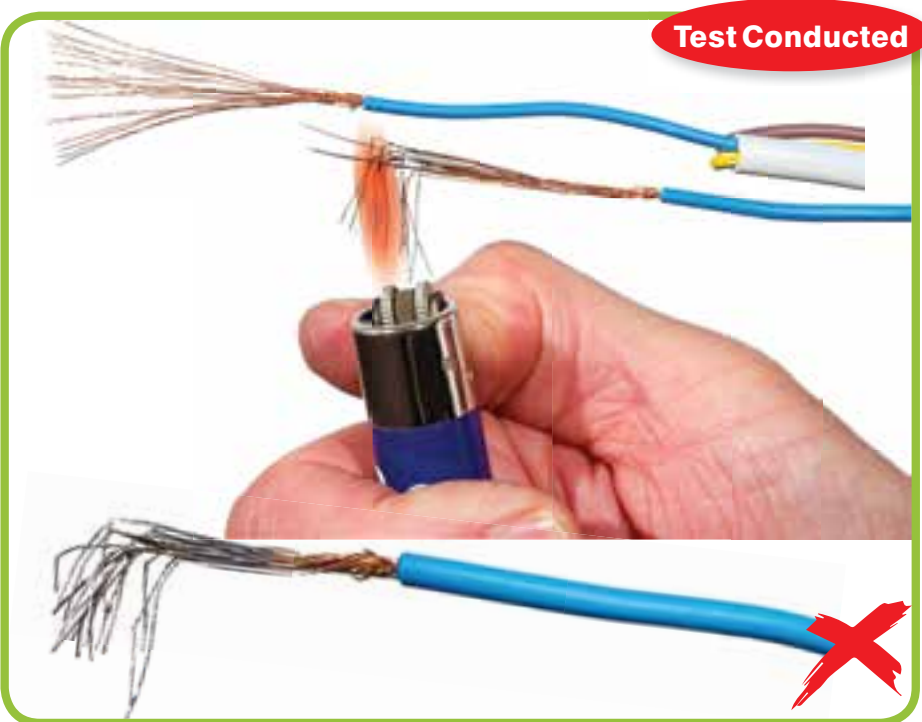
DANGEROUS & UNSAFE electrical cable

Two simple tests

A variety of electric cable is used to bring electricity into buildings, to distribute it within a building and to power devices in daily use. **There is a large amount of sub-standard and dangerous cable being distributed in South Africa.**

One of the most frequent and dangerous measures taken by unscrupulous suppliers to reduce cost, is to use other metal and alloys instead of specified material as the conductor, and this is not discernible from the appearance of the cable. Here are two simple tests which can be conducted to identify unsafe cable.

Flame test for Aluminium in finely-stranded cable: Strip off the insulation, spread the wire strands a bit and hold a flame under the strands.



Copper-coated material such as aluminium, instead of specified pure copper, will burn and droop. Such cable is illegal and unsafe.

Magnet test for steel content in cable: Apply a magnet to the cable.



If the magnet is attracted, it is likely to be a sub-standard and dangerous power cable as neither copper nor aluminium (which is permissible in sizes from 16 mm² and larger) is magnetic.

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Getting to grips with SANS 10142-1 by Hannes Beard

New species of 'flowers' on the West Coast

MY previous column covering the Occupational Health and Safety Act (Act 85 of 1993) was rudely interrupted when I stepped in front of a truck in my nightmare – remember? Well perhaps that nightmare is still with us ... but in another guise.

I've just returned from an extensive road trip through the drier parts of our beautiful country. This time of the year, many of my compatriots travel from far and wide to witness the splendour of this barren land when it comes alive with the most colourful flower carpets in the most unexpected places. And then I saw a different species of flora that was sprouting all over the place ... And this new species does not fade away and astound us again next year with its splendour; no, what I saw does not bear fruit nor does it flower. Wind turbines kill birds instantly with those huge, rotating arms and when they fly into the concentrated solar energy field from some solar farms, they are literally vaporised.

I am, of course, referring to the many alternative power plants constructed by Independent Power Producers, on the West Coast and especially in the Northern Cape. This invariably prompts me to start thinking about standards – what standards, whose standards ... because most of the technology, if not all of it, has never been used anywhere in this country.

Then there are the environmental concerns, too: acres of land covered with a blanket of metal and glass that cross the natural water ways that, in the rainy season, are supposed to quench the thirst of next season's flowers ...

Let's hope that in an endeavour to support the supply of candles in the country, the powers that be do not ignore some or most of the following in Section 43 of the Occupational Health and Safety Act, namely the Regulations:

43. Regulations.

(1) The Minister may make regulations –

- (a) As to any matter, which in terms of this Act, shall or may be prescribed;
- (b) Which, in the opinion of the Minister, are necessary or expedient in the interests of the health and safety of persons at work or the health and safety of persons in connection with the use of plant or machinery, or the protection of persons other than persons at work against risks to health and safety arising from or connected with the activities of persons at work, including regulations as to ...
- (c) As to the preventive and protective

measures for major hazard installations with a view to the protection of employees and the public against the risk of major incidents;

(d) as to the registration of premises where employees perform any work or where plant or machinery is used and the fee payable to the State in respect of such registration;

(e) whereby provision is made for the continuation of any registration under this Act;

(f) as to the registration of plant and machinery and the fee payable to the State in respect of such registration;

(g) as to the establishment of one or more committees for the administration of a provision of the regulations, the constitution of such committees, the functions of such committees, the procedure to be followed at meetings of such committees, the allowances which may be paid to members of such committees from money appropriated by Parliament for such purpose and the person by whom such allowances shall be fixed;

(h) prescribing the records to be kept and the returns to be rendered by employers and users and the person or persons to whom such returns shall be rendered;

(i) as to the designation and functions of health and safety representatives and health and safety committees and the training of health and safety representatives;

(j) as to the activities of self-employed persons; and

(k) as to any other matter the regulation of which is in the opinion of the Minister necessary or desirable for the effective carrying out of the provisions of this Act.

(2) No regulation shall be made by the Minister except after consultation with the Council, and no regulation relating to State income or expenditure or to any health matter shall be made by the Minister except after consultation also with the Minister of State Expenditure and the Minister for National Health and Welfare, respectively.

(3) In making regulations the Minister may apply any method of differentiation that he may deem advisable: Provided that no differentiation on the basis of race or colour shall be made.

(4) A regulation may in respect of any contravention thereof or failure to comply therewith prescribe a penalty of a fine, or imprisonment for a period not exceeding 12 months, and, in the case of a continuous offence, not exceeding an additional fine of R200 or additional imprisonment of one day for each day on which the offence continues: Provided

that the period of such additional imprisonment shall not exceed 90 days.

(5) A regulation made under section 35 of the Machinery and Occupational Safety Act, 1983 (Act No. 6 of 1983), which was in force immediately prior to the commencement of this Act and which could have been made under this section, shall be deemed to have been made under this section.

The regulations that a Minister can make according to the above, can be loosely categorised as follows:

General regulations

- General Administrative Regulations.
- General Safety Regulations.
- Major Hazard Installation Regulations.

- Regulations for Hazardous Biological Agents.
- Explosive Regulations.
- Construction Regulations.

Health regulations

- Asbestos Regulations.
- Diving Regulations.
- Environmental Regulations for the Workplace.
- Facilities' Regulations.
- Hazardous Chemical Substances Regulations.
- Lead Regulations.
- Noise Induced Hearing Loss Regulations.

Mechanical regulations

- Driven Machinery Regulations.
- General Machinery Regulations.

- Lift, Escalator and Passenger Regulations.
- Regulations concerning the Government Certificate of Competency.
- Vessels Under Pressure Regulations.

Electrical regulations

- Electrical Installation Regulations.
- Electrical Machinery Regulations

The above is what the Act itself, in a more long-winded way, has to say in Section 43. I am confident that all the new technologies comply but no-one has actually confirmed this.

So go forth... apply a regulation while you're wide awake, it should avert a nightmare.

May the force be with you until we meet again.

Lightning safety and protection for Africa



Foster Lubasi (co-ordinator at ACLE-Zambia); Ian McKechnie (Innopro/Wits); Prof Mohd Zainal Abidin Ab Kadir (deputy dean, research and innovation, Universiti Putra Malaysia); Prof Ian Jandrell (Wits/Innopro); Prof Mary Ann Cooper MD (founding director).

INNOPRO directors Ian McKechnie and Ian Jandrell recently participated in, and contributed to, the 2nd African Centres for Lightning and Electromagnetics (ACLE) International Symposium, 'Strategic Interventions to Mitigate the Hazard of Lightning'. Both McKechnie and Jandrell are appointed as research advisors to the ACLE.

McKechnie, who is also an Honorary Research Fellow at the University of the Witwatersrand, comments that "it was a pleasure to again have the opportunity to participate in the ACLE activities and to make a meaningful contribution towards lightning safety and protection on the African continent". Having previously also participated in the 1st symposium in 2014 in Entebbe, Uganda, his formal presentation to the symposium this year was on the topic of 'A strategic and structured approach to effective lightning safety and protection'. He adds that Innopro considered the opportunity to make a contribution of their team's specialist expertise and experience, and engineering leadership, in this field to be an important element of their social responsibility in Africa.

Jandrell, who is the Dean of the Faculty of Engineering and the Built Environment, and CBI-electric Professor of Lightning, at the University of the Witwatersrand (Wits), notes that the opportunity was also used to initiate links between Wits and the University of Zambia and to start exploring the possibility of joint skills development activities in this space. Jandrell also made a formal presentation to the symposium on the 'Physics of lightning'.

Held from 11 to 13 August in Lusaka, Zambia, the event also saw the launch of the Zambian national ACLE centre. ACLE is a pan-African network dedicated to decreasing deaths, injuries and property damage due to lightning.

The symposium and ACLE are supported and facilitated by the Non-Aligned Movement (NAM) Science and Technology Centre, and the NAM S&T director general Professor Dr Arun Kulshreshtha was also present, along with ACLE founding director, Prof Mary Ann Cooper.

The ACLE is hosted at the Makerere University in Kampala, Uganda.

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MAKITA has added a twin 18 V Lithium-Ion cordless tool to its comprehensive range. The DHR263ZK Rotary Hammer is powered by two 18 V batteries, installed in series to supply energy to the powerful 36 V dc motor drive system. This offers greater versatility as it utilises your existing 18 V battery and charger system, as well as being a significantly more affordable option than having to purchase a 36 V tool and batteries.

Makita's Jean-Pierre du Plessis says the DHR263ZK's three-mode operation utilising a SDS plus one touch slide chuck – rotation only, rotation plus hammering and hammering only – ensures easy operation and handling. The built-in LED light with pre-glow and afterglow functions illuminates the workspace for greater accuracy in poor light conditions.

"Operator comfort and more control during operation have not been overlooked. An ergonomically designed vibration-absorbing handle with sure grip reduces the magnitude of vibration and hand fatigue," explains Du Plessis. Measuring 350 mm in length, the

new DHR263ZK has a 26 mm capacity in concrete, 13 mm in steel and 32 mm in wood. It features a no-load speed of 0 – 1 200 r/min and delivers 0 – 4 800 blows per minute. The rotary hammer is supplied in a carry case but all tool bits are sold separately.

"For use in outdoor applications or harsh environments the DHP263ZK has extreme protection technology, which provides enhanced protection from dust and dripping water. When the remaining battery capacity decreases below a certain limit, the motor automatically stops and a solid red light reminds you to replace the battery. There is one warning lamp for each individual battery," says Du Plessis.

This model is compatible with the Makita 5.0 Ah (45 minutes charge time), 4.0 Ah (36 minutes charge time) and 3.0 Ah (22 minutes charge time) batteries.

The batteries and the charger are sold separately. The 3.0 Ah batteries are interchangeable with other 18 V Makita Lithium Ion cordless tools in the range, while the 4.0 Ah and 5.0 Ah batteries are compatible

with all models that start with a 'D' in the model name and have a star on the battery terminal. The rechargeable and eco-friendly Makita 18 V 3.0 Ah Li-Ion batteries provide longer run time. The LXT Li-Ion battery generates an impressive 430% more lifetime work with two-and-a-half times more cycles.

"Using cordless technology is a simple and effective way to ensure productivity when a power source isn't available but without compromising on performance," concludes Du Plessis.

For further information or your nearest Makita dealer visit www.makita.co.za

Enquiries: +27 11 878 2600



Precision screw driving made easy with lightweight drill/driver

BOSCH Industrial Power Tools senior brand manager, Juergen Lauer says that the new GSR drill/drivers from Bosch are suitable for use in a variety of applications, which include screw driving of small to middle-sized screws and drilling in various materials such as wood and metal.

"The GSR 1440 and the GSR 1800 drill/drivers can be used with a

number of materials, including soft and hardwood, sheet metal, dry wall, dowel, plastic and tiles."

The Bosch GSR 1440 LI Professional drill/driver features a lightweight 1.3 kg design, with a 14.4V 1.3 Ah Lithium-Ion (Li-Ion) battery. The GSR 1800 LI Professional drill/driver features the new 'black-pack' 18 V sliding battery pack, and a compact 1.4 kg design.

The batteries feature electronic cell protection (ECP) which prevents overloading of the battery, overheating, and deep discharge, thereby extending the life of the battery by up to 400%.

Lauer explains that the Bosch GSR 1440 and the GSR 1800 feature 25 torque settings, allowing for "perfect torque adjustment for precise screw

driving. "The variable speed trigger ensures that the user has control of the tool at all times. There are two speed settings, one with optimised torque for screw driving and one speed setting for drilling."

According to Lauer, the GSR range of drill/drivers is suitable for use by plumbers, renovators, carpenters, joiners and electricians.

"The tools feature a slim grip circumference with a soft handle for fatigue-free work. There is an integrated bit holder to store an additional screwdriver bit on the tool. Both the GSR 1440 and the GSR 1800 come standard with a carrying case for easy and convenient storage," he concludes.

Enquiries: +27 11 651 9600

'Best practice days' create awareness of new energy developments

MORE than 80 energy enthusiasts attended Schneider Electric's 'Best Practice Days' at its Midrand Schneider Electric Campus recently.

The Best Practice Days are free events hosted by Schneider Electric up to three times a year with the purpose of introducing customers to new technologies and innovative products that are available to them in order to achieve energy efficiency.

A critical aspect of these events is equipping the delegates with a sensible approach to these new applications and a thorough understanding on how to fittingly deploy these solutions. "Importantly, 'Best Practice Days' are not focused on product presentations or sales pitches, but provide a platform for Schneider Electric to create awareness of the latest developments in energy efficiency solutions.

We have also found them to be ideal events to bring about a change in mindset from 'legacy technology' to the business benefits new technology can bring to an organisation from a cost and productivity point of view," explains Ernie Smith, southern Africa's vice president: Partner Business at Schneider Electric.

"Consequently, a fundamental objective is to equip delegates with the knowledge of how to utilise new products appropriately because when proven products are not applied correctly, they are subject to premature damage and do not produce all the benefits they are designed to achieve."

The latest event was structured around two main technical topics: surge protection devices (SPDs) and residual current protection. The day highlighted, in particular, how SPDs provide a degree of protection against transient over-voltage, a concept that was contrasted at the event against that of temporary over-voltage. The second topic emphasised protective devices that are aimed at mitigating the risks associated with electric shock, and dealt with both direct contact and indirect contact scenarios.



Ernie Smith, southern Africa's vice president: Partner Business at Schneider Electric.

"In general, people will typically only install what is required by law, or by insurance providers. We however believe that it is fundamental to have a proactive rather than reactive approach to energy management and, as such, inform our clients about the benefits of prudent selection and deployment of protective equipment as a pre-emptive measure," adds Leslie Monk, specification engineer at Schneider Electric South Africa. "Indicative of the success of the event was the genuine interest expressed by delegates and their engagement with the subject matter and Schneider Electric's specialists."

For information about the next 'Best Practice Days' event, go to za-training@schneider-electric.com.

Enquiries: +27 11 254 6400



Imported high quality dismantling tool



Garry Lumpe Imports has newly arrived stock of imported dismantling tools from Knipex. This high quality tool is used to dismantle round cables exceeding 25 mm in diameter and removes all kinds of insulation layers. The dismantling tool has fibreglass reinforced body and a replaceable blade – and both sides of the blade can be used. It is perfectly suitable for longitudinal and circular cutting and the cutting depth can be adjusted to up to 5 mm. Handy, safe to use and effective, this tool is a must for electricians who need to strip larger cables quickly and easily.

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New MD with strong track record



Peter Griffiths.

ARROW Altech Distribution (AAD) has announced the appointment of Peter Griffiths as its new managing director, following the retirement of long-time incumbent Andre du Preez, who stepped down at the end of August.

Griffiths brings considerable experience to the role, having served the Altron Group for the past 14 years, most recently as the general manager of Altech GDL, a principal subsidiary of Altech Multimedia.

Commenting on the appointment of Griffiths as his successor, Du Preez said that Griffiths had proven himself to be an excellent leader with a strong track record.

According to Griffiths, the appointment represented a milestone in his career and he was looking forward to continuing the legacy of excellence instilled by Du Preez.

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Report back on World Skills, S o Paulo 2015 – well done Jeandr !

FOR the first time, South Africa participated at the recent WorldSkills competition held in S o Paulo, Brazil, from 11 to 16 August. Although Jeandr  van der Watt, our contender in the electrical skills category, didn't win a medal, I would say with certainty that he represented South Africa with distinction.

While Jeandr  had no idea of what awaited him in Brazil, I believe that sharing his experiences will definitely help future participants to prepare for the next WorldSkills competition, which will be held in Abu Dhabi in 2017. I

sincerely hope that Jeandr 's participation and commendable performance in S o Paulo will inspire other young and talented artisans to make at Abu Dhabi a personal goal.

The competition

To begin, the marks allocated for the competition are: Safety – electrical and personal – (10); commissioning and function (25); circuit design (10); measurements (5); installation of equipment and wireways (15); wiring and termination (15); installation testing (10); programming – KNX home auto-

mation and PLC – (10); total 100.

Jeandr  was required to do the following tasks: circuit design; wireway installation; wiring and termination; installation testing; programming the KNX home automation system as well as the Siemens PLC logo eight; fault finding on an oscillating and dual-speed panel – all in a cubicle that measured 1.6 m x 2.4 m and in the allocated time of 20 hours and 30 minutes.

When Jeandr  was preparing for the competition at P&T Technology, we tried to get the exact equipment that he'd be using in Brazil but this wasn't entirely possible so he really needed the five hours he was allocated to familiarise himself with the equipment provided at the competition. Nevertheless, we found that the main differences between Brazilian and South African conditions were that the conduit had to be heated by a heat gun in order to bend cable clips, cable brackets and saddles.

These differences not only affected Jeandr  but participants from other parts of the world also had to contend with the different conditions. On the first day of the competition it was expected of him to complete the installation of all the wireways and start drawing in some of the cables and conductors.

Day two required him to complete the wiring and installation of all the components in the distribution boards.

Day three was when all the cables and conductors had to be terminated. Jeandr  did the fault-finding component of the competition on day three. Time allocated for this element was one hour and he was required to find 10 faults on a pre-wired oscillating and dual-speed panel with power off. The types of faults on the panel included timer settings, overload settings, short-circuit faults, open circuit faults, high resistant joints and interconnection faults.

Day four – the last day of the competition – two-and-a-half hours were set aside for the programming of the KNX home automation system and the PLC system and, finally, competitors were allowed to test and commission the circuit.

Those of us who have been in this industry for a while will understand the magnitude of the project and that to complete all of the associated project tasks within the allocated time required competitors to work at high intensity. It should be taken into account that as this was the WorldSkills competition, the very best competitors from 38 countries were competing against each other in the electrical installation skill module of the competition.

It was the first time in many years that a South African was competing and there was no one we could consult with in order to prepare Jeandr  adequately for this very tough competition. In light of this, I believe that Jeandr  did his country proud. In the final allocation of the results he was placed 26th overall. The winner of the electrical installations competition was Junior Carlos from Brazil (gold medal); the silver medal was won by Hui Xiqi from China and the bronze medal went to Seto Kazuki from Japan.

I believe that, considering the skills that Jeandr  demonstrated during the competition, South Africans need not stand back for the rest of the world – and this holds true for all the competitors who represented South Africa in S o Paulo. Looking back on the competition now that we are all a little wiser, I believe that we need industry to work in partnership with local training institutions in preparing young artisans so that, when the next WorldSkills competition comes around, South African entrants will be fully prepared, competent and confident.

Any companies that would like to begin training artisans with a view to entering them for the 2017 WorldSkills competition can contact the WorldSkills South Africa director, Ester van der Linde on vanderlinde.e@dhet.gov.za or go to the website www.worldskillsa.org

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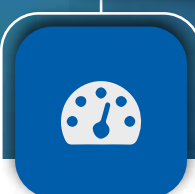
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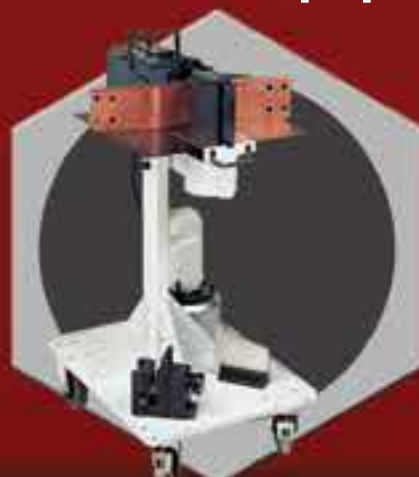
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Mark Palmer – Electrical Approved Inspection Authority Southern Africa (EAIASA)

On the road to a cleaner industry: the 'renaissance' of electrical installation policing

SOME months ago, I briefly alluded to the Department of Labour reiterating its commitment to safety in the electrical industry. In what I would describe as a major step towards achieving this objective, the Department of Labour hosted a 'Safety Indaba' in June this year at which the newly-appointed chief inspector, Tibor Szana clarified the Department of Labour's role in effective safety enforcement.

In his presentation, Mr Szana was very clear about his approach to non-compliant electrical installation work and the effective control of those who are performing such work. His commitment

to the inspection and enforcement of applicable regulations and standards is unambiguous and I quote Mr Szana: "We can no longer tolerate a situation where more than 20 000 electricians roam freely as a law unto themselves."

Many years of being involved with the policing of electrical installations has culminated in me joining forces with the Electrical Approved Inspection Authority Southern Africa (EAIASA) with the primary task of expanding this Approved Inspection Authority (AIA) model – initially throughout the country and later extending to the southern African region.

As a result of the DoL's commitment to active enforcement, I recently met with department officials to discuss the role of AIAs in the new "framework for the electrical industry" as presented at the Safety Indaba. This includes the processes to be adopted and implemented by the AIAs with special emphasis on the investigation of invalid Certificates of Compliance (CoCs). I am hopeful that these investigative processes will be finalised by the chief inspector in due course and that the electrical contracting industry, in particular, will have adequate exposure to the legal parameters in which this AIA will be operating.

It is especially concerning that notwithstanding the AIA functions being clearly prescribed in the Electrical Installation Regulations 2009 (EIR), that there are still many registered persons and electrical contractors who are either ignorant about or misinformed as to the authority of the AIA. In particular, aspects surrounding the issuing of CoCs and the validity thereof, need special mention.

When referring to the EIR Regulation 7, sub regulation 7, the following is prescribed;

"If an inspector, an approved inspection authority for electrical installations or supplier has carried out an inspection or test and has detected any fault or defect in any electrical installation, that inspector, approved inspection authority for electrical installations or supplier may require the user or lessor of that electrical installation to obtain a new certificate of compliance..."

What should be taken from this Regulation by registered persons and electrical contractors is the clear understanding that should faults or defects have been detected during an inspection conducted by an AIA, a previously issued CoC can be declared invalid. It is certainly not within the mandate of any person or organisation, therefore, to override such a determination, unless due process has been implemented.

By due process, therefore, I again refer to the EIR, where in terms of Regulation 10 the following is prescribed:

"(1) Should a dispute arise over the interpretation of a health and safety standard referred to in regulation 5(1) between a user, a registered person, an electrical contractor, an approved inspection authority for electrical installations or a supplier, as the case may be, an affected person may appeal against that interpretation to the chief inspector. (2) A person who refers a dispute referred to in sub regulation (1) shall serve a notice of dispute, setting out fully the nature and grounds of the dispute, on both the chief inspector and the person whose interpretation he or she is disputing, by personally delivering the notice of dispute or sending it by registered post. (3) The person whose interpretation is disputed shall within 14 working days of the date on which he or she received the notice of dispute, forward a notice setting out the reasons for his or her interpretation to the chief inspector. (4) The chief inspector shall, after having considered the grounds and the cause of the dispute, confirm, set aside or vary the interpretation of the safety standard in question or substitute it for the interpretation, which in the opinion of the chief inspector, ought to have been given."

Again, I would like to reiterate that registered persons and electrical contractors should take from this Regulation that *only the chief inspector* can override an interpretation of a safety standard as contemplated by Regulation 5, given by the AIA following an inspection. To emphasise the application of law therefore, it is not within the mandate of any person or organisation to advise a registered person or electrical contractor to ignore a finding by the AIA or to suggest that such a finding is in fact compliant unless the due process of dispute has been entered into. More importantly, it must be remembered that such a non-compliant finding would have rendered an issued CoC invalid and, therefore, a contravention in terms of EIR Regulation 9 sub regulation 3:

"If at any time prior to the issuing of a certificate of compliance any fault or defect is detected in any part of the electrical installation, the registered person shall refuse to issue such certificate until that fault or defect has been rectified..."

It is advisable that registered persons and electrical contractors become conversant with the application of law and personal consequences of contravention when invalid CoCs are issued. The Department of Labour is certainly going to exercise its authority in matters of safety enforcement and the AIA is a legislated vehicle to accomplish this.

I hope to further detail the process that this AIA intends implementing in the near future in order to inform the electrical contracting industry in particular of the legal obligations when interacting with this AIA. It is anticipated that this AIA will shortly have an inspectorate in Gauteng and the Free State in addition to the existing inspectorate in the Western Cape.



DLX2069M Tool Set

The model below is powered by two 18V batteries in series to supply the same power as a 36V machine.

DHR263ZK - 36V (18V + 18V) Cordless Combination Hammer

18v + 18v → 36v

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DHP456ZK 18V Cordless Impact Drill/Driver

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- Steel:	13mm
- Wood:	38mm
Impacts per minute:	Hi: 0 - 22,500 / Lo: 0 - 6,000
No load speed (r/min):	Hi: 0 - 1,500 / Lo: 0 - 400
Max. fastening torque:	Hard: 50Nm / Soft: 36Nm
Net weight:	1,6kg

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The ECA(SA) and ECA(NAMIBIA) to work together to unite electrical contractors in Africa

At its Strategic Planning Conference held in March this year, the Electrical Contractors Association (SA) made a decision to establish links with our colleagues in Africa to establish an organised Electrical Contractors Association of Africa.

We took seriously the advice offered by Victor Kgomoewana*, the guest speaker at the Presidential Excellence Awards of 2014, who said that it is not possible to analyse or to adopt a stance on Africa and the opportunities it presents from the comfort of Sandton.

After I had been exposed to the Association of Electrical Installers of Europe, which rode on the back of the European Union when I attended its congress in Brussels and later in Helsinki, an idea started to take shape in my mind... Just like the Europeans were able to unite despite their many challenges, we Africans also have important reasons why we should unite.

Armed with a new resolve, the ECA(SA)'s president, Michael Straton and I set off on a mission to

meet our Namibian counterparts in August 2015.

Naturally, the Electrical Contractors' Association of Namibia has to protect its members' best interests and, first and foremost, it has to protect the members' territory from being invaded by large electrical contracting companies in South Africa.

We allayed any fears that our Namibian neighbours may have had and assured them that we had no intention of opening any frontiers and invading their territory. We also made it clear that our objectives are to unite the electrical industry and, ultimately, to earn the respect of everyone who works within the electrical industry as well as the end-users in the southern African region and elsewhere on this continent.

Our goal is to work together and draw strength from each other – united in the African spirit of being humble – and not trying to outsmart each other, which would only compromise the integrity of this trade and its end-users. The resultant commercial 'fruits' would be a natural consequence: stability brought about by certainty.

At the meeting we pointed out areas where we could help each other protect the interests of our members and colleagues elsewhere on the continent. We could not have timed the trip better. Our colleagues in Namibia are currently faced with the huge task of establishing and adopting the Electrical Installation Regulations and the Electrical Workers and Contractors Act. They are looking to finalise both pieces of legislation

by the end of this year. The Electrical Workers and Contractors Act 2015 (Draft) is a fresh enactment based on pure Namibian conditions. The EIRs are strikingly the same as the Republic of South Africa's Electrical Installation Regulations of 2009. The President of the Electrical Contractors Association of Namibia presented both documents to me whilst I was sitting at a club enjoying a pint of Windhoek Lager. I offered the ECA(SA)'s assistance in this process – and at no charge to our Namibian colleagues. The 'free of charge offer' can be blamed on the Windhoek but the effort that has followed emphasises our commitment as an association to establish and bring to light the dream of an Electrical Contractors' Association of Africa. I have since gone through the documents and made some suggestions that I believe could be of value and disseminated this to my colleagues in Namibia. Having done this bit, I am more than ever convinced that we need each other. The Namibians seek to copy the EIRs of South Africa but these have not been adequately adapted to Namibian conditions. The EIRs are a strange entry into the legislative environment of Namibian society and this is demonstrated aptly by the contradictions between the Electrical Workers and Contractors Act 2015 (Draft) and the Electrical Installation Regulations of Namibia because the former is home-grown and the latter is simply an implantation. Just as a body part must be carefully assessed before heart transplantation surgery (as they would tell you in the medical profession), the same

applies in respect of legislation. Legislation interferes with societal arrangements and must be sensitive to what is already in place to achieve harmony whilst introducing improvements.

I must congratulate our counterparts in Namibia though, for securing a statutory presence in the Electrical Workers and Contractors Licensing Board to be established in terms of Section 5 of the draft Electrical Workers and Contractors Act 2015. I think it is a decisive step forward, which should be adopted elsewhere because the status of being a representative of organised business in a particular sector must enjoy political and statutory recognition.

They must be careful, though, not to concede too many powers to the elusive "chief director" mentioned in the EIRs under discussion.

The process of uniting electrical contractors around the continent has begun. We are motivated by a very big and credible 'why'. Finding the 'how' is a lesser challenge. We started in Namibia and intend to reach out to all our colleagues in the SADC region by year end. Circumstances permitting, we may be able to launch the Southern African edition by 2016. We are looking forward to the experience and are looking to work with our government as we set out on this mission.

As Thabo Mbeki reminded us – we are Africans.

*Victor Kgomoewana is the author of 'Africa is open for business'.

City of Joburg and City Power to host electricity convention

The City of Johannesburg, in partnership with City Power, will host the centenary convention of the Association of Municipal Electricity Utilities of Southern Africa (AMEU) to be held from 4 to 7 October at the Sandton Convention Centre in Johannesburg.

The theme of the convention is 'Alternative Trajectories Towards the SA Electricity Regime' and industry stakeholders will discuss various important issues affecting electricity generation and transmission.

This historic conference also marks AMEU's centennial celebrations and will be attended by national and international key stakeholders in the electricity generation and transmission sector.

Delegates will discuss a number of topical issues that include alternative energy sources, load shedding mitigating plans, cable theft, smart grids and electricity losses.

Senior government representatives, including the Minister of Energy, and the Minister of Co-operative Governance and Traditional Affairs, will address delegates on 5 and 6 October.

Sicelo Xulu, president of the AMEU says the conference will discuss pivotal issues affecting the electricity sector in South Africa.

"We are looking forward to insightful deliberations on a range of issues that hamper the development of the sector and we remain confident that the outcomes of this conference will outline a roadmap that will chart the way forward for the industry."

For further information, contact Hloni Motloun on 071 637 7990 or hmotloun@citypower.co.za

Enquiries: www.ameu.co.za

New distributor for cables appointed



MAGNET, a specialist in the supply, implementation and support of electrical equipment, industrial instrumentation and automation, has been appointed distributors for the Lapp Group in southern Africa.

"Magnet's carefully structured expansion programme encompasses a strategy to extend the product range to meet exact market demand," says Brian Howarth, managing director, Magnet.

Important products in the Lapp range include the Olflex range of oil resistant and highly flexible power and control cables, suitable for many applications, including control systems, assembly lines, control panels and data processing equipment.

A mainstay of the brand, Olflex Classic 110 cables are number coded multi-conductor power and control cables, designed for use in



all electrical equipment in dry, damp or wet conditions.

This series, with VDE certification of conformity with factory surveillance, is available in a wide choice of standardised lengths and individual cuts. There are more than 140 items in this range, with up to 100 conductors.

These flame retardant cables, which are constructed from fine wire strands made of bare copper wires, have special PVC-blend insulation and cores twisted in layers. There is an Olflex cable to suit the full range of industrial installations – from fixed to highly flexible as used in power chains or moving machine parts and robots.

These cables are used in dry or damp rooms that are subject to medium mechanical loads and in torsional applications, which are typical for the loop in wind turbine generators (WTG). This range is also designed for power chains, for a travelling distance up to 5 m.

In power chains and with occasional flexing, Olflex 110 cables can withstand tempera-

tures up to 70 °C and in fixed installations, the temperature range is between -40 °C and 80 °C. In occasional flexing, the minimum bending radius is 10 times the outer diameter, in power chains it is 15 times the outer diameter and in fixed installations it is four times.

For more extreme temperature applications Lapp offers the expanded ambient temperature range of Olflex heat cables.

The series also includes cables which are screened, halogen-free control cables, with high flexibility for easy handling and installation, screened PVC control cables with a transparent outer sheath, and small cable diameters for space saving installations. A 4 kV test voltage ensures high electrical performance.

To complete and secure every installation, Lapp offers Skintop cable glands and Epic connectors. If additional protection is required, Lapp recommends Silvyn protective cable conduit systems and cable carrier systems.

Magnet supports this range with a technical advisory, installation and maintenance service throughout Southern Africa.

Enquiries: +27 31 274 1998



Local MCCs for Lesotho diamond mine

JB Switchgear's wiremen, Julius Malemela and Milton Matshinye, with two typical Eagle Series panels. JB Switchgear Solutions was recently awarded a multi-million Rand contract for the design, manufacture and supply of motor control centres (MCCs) for the Liqobong diamond mine in Lesotho. Well-known project house DRA placed the order on behalf of the end client and manufacturing is expected to be completed by March 2016. The Liqobong diamond mine is located at the head of the Liqobong valley in the Maluti Mountains of northern Lesotho. Ownership of the mine is held by Firestone Diamonds (75%) and the Lesotho Government (25%) Liqobong is a robust project with over 11-million carats in reserve. The total open pit resource contains

over 17-million carats down to 393 tons per hour (twin stream 250 tonne) to yield 1.1-million carats per annum over a 15 years' life of mine. JB Switchgear's scope of supply includes eleven 'Eagle Series' motor control centres, seven of which will be installed into modified marine containers and three on outdoor skids. Incomers are typically rated for 2 500 A at 525 V, and fault levels up to 50 kA. Intelligent electronic overloads are used, and the communication protocol is Ethernet. Starter sizes vary between 4 kW and 250 kW. In addition, 16 remote I/O panels, 30 variable speed drives (VSDs), 15 soft-starters, 14 distribution boards, 70 field isolators and a PLC panel will also be supplied by JBSS.

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Crabtree Electrical Accessories
Fusecomp
HellermannTyton
Kemtek Imaging Systems
Lapp Group
Major Tech
MCE Global Suppliers
Power Process Systems
Radiant Group
R&C Instrumentation
Stone Stamcor
Versalec
Voltex
Waco Industries
Zest Electric Motors

Contactors, breakers, relays

ABB SA
 Full range of contactors, breakers, relays
ACDC Dynamics
 Covering all low to medium voltage needs from brands including TC, C&S, Gewiss and Teraskai
ACTOM Electrical Products
 Complete range of low voltage circuit breakers, isolators, earth leakage devices and wiring accessories
Alstom Protection & Control
 TAIAN contactors/relays
ARB Electrical Wholesalers
 Full range of low voltage circuit breakers, isolators, earth leakage devices and wiring accessories
CBI-electric: low voltage
 Mini contactor relays up to 12 A; contactors and contactor relays three- and four-pole; AC-1 contactors up to 2 600 A; AC-3 contactors up to 1 600A; overload relays, bi-metal up to 630 A; electronic units up to 1 600 A
Legrand
 Full range of MCBs, MCCBs, ACBs and contactors
Major Tech
 Vetri 3 kA and 6 kA one-, two-, three- and four-pole MCBs; Vetri IS one-, two-, three- and four-pole isolator switches; Vetri EL RCCBs (residual current circuit breaker without integral overcurrent protection) 6 kA one-, two-, three- and four-pole isolator switches; Vetri Ready Boards – VRB1 ready board with 50A overload protection; VRB1L ready board with 50 A overload protection and light; VBE12ASMT populated 12-way distribution board; VBW8ASP populated weatherproof swimming pool distribution board
MCE Global Suppliers
 MCE ac magnetic contactors three-pole and four-pole; MCE thermal overload relays; MCE relays and bases; Onesto MCCBs; Hyundai MCCBs; Hyundai air circuit breakers
Power Process Systems
 Full range of contactors, breakers and relays
R&C Instrumentation
 Full system power management local and via Internet
Schneider Electric
 Full range of contactors, breakers and relays
Voltex
 Full range of contactors, breakers, relays
Voltex LSis
 Full range of contactors, breakers, relays
Zest Electric Motors
 Full range of contactors, breakers, relays

Contact

ABB SA
 Avi Ramdhin / Elvis Khumalo
Aberdare Cables
 Annelene Sivalingum
ACDC Dynamics
 Elmari
ACTOM Electrical Products
 Russel Ramsden
Alstom Protection & Control
 Faisal Hoosen
Alvern Cables
 Stephen Liasides
ARB Electrical Wholesalers
 Arvi Ramdass
Atlas Group
 Annie Storar
Bellco
 Fred Wilson
Cabstrut
 Juanita Kanagan
CBI-electric: low voltage
 Marco Martin
Crabtree Electrical Accessories
 Sales
Fusecomp
 Gunter Hundsdorf
HellermannTyton
 Sales
Lapp Group
 Sales
Legrand
 Johan Bosch
Major Tech
 Rhodam Evans
MATElec
 Simon Noyce
MCE Global Suppliers
 Sales
NewElec
 Luc Dutrieux
Power Process Systems
 Sales
Radiant Group
 Gerard Pillay
R&C Instrumentation
 Gerhard Otto
Schneider Electric
 Sales
South Ocean Electrical Wire Co
 Yasmin Mahomed
Stone Stamcor
 Mark Talbot
Versalec
 Roland Fry
Voltex
 Hugh Ward
Waco
 Jaco Coetzee
Zest Electric Motors
 Johan van Niekerk

Flameproof

Aberdare Cables
 Flamosafe
ACDC Dynamics
 Full range of flameproof products; lighting enclosures, limit switches, plugs, sockets, pushbuttons, fans, sirens, beacons and accessories
ARB Electrical Wholesalers
 Full range of flameproof products
Atlas Group
 Full range of flameproof products
Bellco
 Full range of flameproof products
Phambili
 Full range of flameproof products
R&C Instrumentation
 Ex-certified infrared thermometers
Voltex
 Full range of flameproof products
Waco
 Full range of flameproof products
Zest Electric Motors
 Full range of flameproof products

Fans for motor applications

ACDC Dynamics
 Extensive range of fans – O.Erre and others
ARB Electrical Wholesalers
 Full range of fans for motor applications
Bellco
 Full range of fans for motor applications
MCE Global Suppliers
 MCE panel fans
Power Process Systems
 Fans for motor applications
Voltex
 Full range of fans for motor applications

Drives and soft starters

ABB SA
 Full range of drives, soft-starters
ACDC Dynamics
 Full range of Vacon VSDs and Aucom soft starters
Alstom Protection & Control
 VSD panels; soft-starters
ARB Electrical Wholesalers
 Full range of drives/soft starters
Bellco
 Full range of drives/soft starters
CBI-electric : low voltage (Automation and Controls)
 Eaton drive range: (LV) 0.75 – 2.2 kW; 0.75 – 250 kW; LS drive range (LV) 0.1 – 2.2 kW; 0.1 – 800 kW; (MV) 3 – 11 kV; soft starters: 7.5 – 277 kW; 18.5 – 525 kW; 30 – 900 kW;
MCE Global Suppliers
 MCE manual motor starters, direct online starters, star delta starters, reversing starters
Power Process Systems
 Full range of drives/soft starters
Voltex
 Full range of drives/soft starters
Zest Electric Motors
 Full range of drives and soft starters

Cable glands, lugs, and ferrules

ACDC Dynamics
 Full range of cable glands, lugs and ferrules
ACTOM Electrical Products
 Full range of termination and jointing requirements
ARB Electrical Wholesalers
 Full range of cable glands, lugs and ferrules
Atlas Group
 Full range of cable glands, lugs, ferrules
Bellco
 Full range of cable glands, lugs, ferrules
HellermannTyton
 Full range of cable glands, lugs and ferrules
Lapp Group
 Skintop cable glands
Legrand
 IP68 cable glands; Cabstop cable glands
Major Tech
 Comprehensive range of pre-insulated crimp terminals, up to 6mm²
MATElec
 Cable glands for round cable: No 00, No 0, No 1, No 2 in black and white; cable glands for flat cable: No 0, No 1 in black and white; galvanised saddles: 20 mm and 25 mm
Power Process Systems
 Full range of cable glands
Stone Stamcor
 Manufacturer of Stamcor lugs and ferrules tested to IEC61238-1
Voltex
 Full range of cable glands, lugs and ferrules
Waco
 Full range of cable glands, lugs and ferrules

Wiring and wiring accessories for motor applications

Aberdare Cables
 Housewire/Panel flex (wiring inside the terminal box)
Alstom Protection & Control
 Customised enclosures and starters
Alvern Cables
 Permotrail; Permo power; ALVK R-vK trailing cable; H07; Singleflex
ARB Electrical Wholesalers
 Full range of wiring and wiring accessories for motor applications
Bellco
 Full range of wiring and wiring accessories for motor applications
Legrand
 Full range of wiring accessories for motor applications
MCE Global Suppliers
 MCE contactors, overloads and accessories
Phambili
 Full range of wiring accessories for motor applications
Power Process Systems
 Full range of wiring and wiring accessories
R&C Instrumentation
 Infrared inspection windows
Voltex
 Full range of wiring and wiring accessories
Voltex LSis
 Full range of wiring and wiring accessories

Armoured/shielded cables

Aberdare Cables
 Bells & Mains
ARB Electrical Wholesalers
 Full range of armoured and shielded cables
Atlas Group
 Full range of armoured/shielded cables
Bellco
 Full range of armoured/shielded cables
Lapp Group
 Unitronic data communication cables; Olflex power and control cables
Power Process Systems
 Full range of armoured and shielded cables
South Ocean Electrical Wire Co
 Flame retardant (FR) armoured cable 600/1 000 V; low halogen (LHFR); flame retardant (ECC FR) armoured cable; armoured cable (FR) 1.9/3.3 kV; single core PVC AWA cable; aluminium flame retardant armoured cable; Surfex wires
Voltex
 Full range of armoured and shielded cables

Cable support systems

ACDC Dynamics
 Wide range of Gewiss and Ardic cable support systems
ACTOM Electrical Products
 Cable support systems to suit all installations
ARB Electrical Wholesalers
 Full range of cable support systems
Atlas Group
 Full range of cable support systems
Bellco
 Full range of cable support systems
Cabstrut
 Full range of cable support systems
Major Tech
 Plasti-Loc cable ties ranging from miniature cable ties to extra heavy duty; manufactured from nylon 6/6 in black and natural
Power Process Systems
 Full range of cable support systems
Voltex
 Cabstrut range of cable support systems

Gearboxes for motor applications

ABB SA
 Full range of gearboxes for motor applications
ARB Electrical Wholesalers
 Full range of gear boxes for motor applications
Bellco
 Full range of gear boxes for motor applications
Stone Stamcor
 Hydro Mec gearboxes
R&C Instrumentation
 Vibration switches and transmitters
Voltex
 Full range of gear boxes for motor applications

Cabinets for motor applications

ABB SA
 Full range of cabinets for motor applications
ACDC Dynamics
 Full range of cabinets and enclosures for all purposes
Alstom Protection & Control
 MCCs; special and standard starters
ARB Electrical Wholesalers
 Full range of cabinets for motor applications
MCE Global Suppliers
 Onesto steel enclosures, MCE steel enclosures
Phambili
 Full range of cabinets for motor applications
Power Process Systems
 Full range of cabinets for motor applications
R&C Instrumentation
 Infrared inspection windows
Voltex
 Full range of cabinets for motor applications
Voltex LSis
 Full range of cabinets for motor applications
Waco Industries
 Full range of cabinets for motor applications
Zest Electric Motors
 Full range of cabinets for motor applications

Motor protection and surge protection

ABB SA
Full range of motor and surge protection

ACDC Dynamics
Extensive range of motor and surge protection products

Alstom Protection & Control
Micom motor protection relays

ARB Electrical Wholesalers
Full range of motor protection/surge protection

Atlas Group
Full range of motor and surge protection

Bellco
Full range of motor and surge protection

CBI-electric: low voltage
Motor protection standard and electronic up to 65 A; DC protection for solar applications up to 63 A

Fusecomp
Electrical fuses for all purposes from international manufacturers; surge protection products

Legrand
Full range of MCBs, MCCBs, ACBs and contactors

MCE Global Suppliers
Onesto surge arrestors, Schenker surge arrestors

NewElec
Full range of motor protection and control relays for stand alone as well as field bus communications supporting a wide range of protocols

Phambili
Full range of motor and surge protection

Power Process Systems
Full range of motor protection and surge protection

Schneider Electric
Acti9 DIN-mounted iPF Type 2 or 3 LV surge arrestors; Acti9 DIN-mounted iPRD Type 2 or 3 LV withdrawable surge arrestors; Tesys power control and switching contactors, Tesys T motor management system

Voltex
Full range of motor and surge protection

Voltex LSis
Full range of motor and surge protection

ABERDARE
CABLES
Driven by Powertech
+27 11 396 8000

RADIANT
+27 11 386 0000

Cable management accessories

ACDC Dynamics
Full range of wiring accessories

ACTOM Electrical Products
Full range of accessories for all types of installations

ARB Electrical Wholesalers
Full range of cable management accessories

Atlas Group
Full range of cable management accessories

Bellco
Full range of cable management accessories

Crabtree Electrical Accessories
Full range of cable management accessories

HellermannTyton
Full range of cable management accessories

Kemtek Imaging Systems
Brother labelling systems – laminated and heat activated labels

Lapp Group
Cable accessories including UV resistant cable ties, steel cable ties and twist tail cable ties; Fleximark cable marking products

Legrand
Full range of cable management systems

Major Tech
Full range of nylon 6/6 weather-resistant cable ties

MATElec
Cable clips for round cable: 3 mm to 14 mm white or black reinforced nails; cable clips for flat cable: 5 mm to 18 mm white or black (reinforced nails)

Phambili
Full range of cable management accessories

Power Process Systems
Full range of cable management accessories

Radiant Group
Full range of cable management accessories

Stone Stamcor
Brady cable identification marking systems

Voltex
Full range of cable management accessories

PPS
POWER PROCESS SYSTEMS
+27 11 494 3550

ZEST
WEG Group
+27 11 723 6000

ARB Electrical Wholesalers (Pty) Ltd.
+27 31 910 0200

Controls for motor applications

ABB SA
Full range of push buttons, pilot lights, switches and emergency stop buttons and accessories

ACDC Dynamics
Full range of controls for motor applications

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

ARB Electrical Wholesalers
Full range of controls for motor applications

Bellco
Full range of controls for motor applications

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

Legrand
Complete range of control and signalling units; industrial sockets, plugs, appliance inlets and interlocked switched sockets

MCE Global Suppliers
MCE pushbuttons and control stations; MCE time switches and temperature controllers, MCE pendant stations

NewElec
Full range of controls for motor applications

Phambili
Full range of controls for motor applications

Power Process Systems
Full range of controls for motor applications

Voltex
Full range of controls for motor applications

Voltex LSis
Full range of controls for motor applications

Waco
Full range of controls for motor applications

Zest Electric Motors
Full range of controls for motor applications

HellermannTyton
+27 11 879 6600

ABB
+27 10 202 5000

MCE ELECTRIC
+27 11 683 0641

Displays

ABB SA
Full range of displays

ACDC Dynamics
Comprehensive range of displays, energy meters, digital multimeters, network analysers and panel meters – digital and analogue

ARB Electrical Wholesalers
Full range of displays

Invirotel
Full range of displays

Legrand
Lexic meters

MCE Global Suppliers
MCE ammeters, MCE voltmeters

Power Process Systems
Full range of displays

Radiant
Full range of displays (meter reading, etc)

Voltex
Full range of displays

Disclaimer: Information will be published as supplied. Only distributors and manufacturers who meet the deadline are included in the guide. The onus is on distributors and manufacturers to ensure that the editor is notified of any changes to existing listings.
Email: sparks@crowm.co.za

NEW ELEC
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Bringing Power to your Product
+27 11 452 1415

S.W. PRODUCTS
+27 11 615 7193

voltex
your electrical connection
+27 11 879 2000

Crabtree
Powertech
+27 11 874 7600

ACDC DYNAMICS
+27 10 202 3300

MAJOR TECH
08 61 62 5678





A jubilant winner from the Western Cape, Kurt Maritz (Maritz Electrical), with his boarding pass.



Voltex KwaZulu-Natal Region

Successful events reward clients and send eight lucky rugby fans to Twickenham

In June, Voltex launched a nationwide campaign, 'Engage2Win', with eight coveted tickets to the 2015 Rugby World Cup at Twickenham up for grabs. The campaign was mainly an 'incentive reward' competition while the ultimate goal was to gather information from loyal customers about their experiences with Voltex and to encourage engagement on multiple platforms such as social media, mobile, web, radio, in-store and customer events while simultaneously providing Voltex with tangible information to improve customer service.

To support customer breakfast runs held at branch level over a month, Voltex enlisted the participation of valued suppliers: 3M; Aberdare Cables; Bright Star Lighting; Cabstrut; CCG;

Crabtree; HellermannTyton; Hycon Marechal Technology; Impact Energy; Legrand; Major Tech; OSRAM; Voltex LSis; Phambili Interface; Philips; Schneider Electric; South Ocean; Radiant; Stone Stamcor; Waco; Three-D Agencies; and Voltex Lighting.

During August, Voltex customer evenings were held in eight regions – Gauteng, North East, KwaZulu-Natal, Western Cape, Eastern Cape, Limpopo, Central and Southern Cape.

The Gauteng region

The Voltex Engage2Win Gauteng customer evening, held at the premises of the Atlas Group distributor in Alrode, Alberton on Thursday, 13 August, was a "great success" says Annie Storar, branch manager for the Atlas Group and MC for the evening. She says that this success was due to "the capable leadership and guidance of Ahmed Baig, the Voltex Gauteng regional manager". Annie Storar kept the hundreds of guests entertained throughout the evening with generous prizes, sponsored by Voltex suppliers, going to lucky ticket holders.

The highlight of the evening was the draw for a trip to watch the Rugby World Cup in Twickenham on 31 October. The lucky winner who will be at the game is Gavin Pearl. "The purpose of this event was to 'engage' with all our customers and reward them for their continuous support," says Baig. He says the event also gave all the Voltex national and regional suppliers an opportunity to showcase their products." Stan Green, CEO of Voltex, thanked the company's customers and suppliers for their ongoing support. "The Voltex footprint has most definitely grown since our first Engage campaign in 2012," he says. There was demonstrated by the huge turnout for the event, which included hundreds of customers, suppliers and Voltex managers and sales staff from the Gauteng region.



Off to the World Cup final! Egbert Viljoen (Egbert Elektries) from the North East region with Peter Schuurman (Centurion branch manager).

Voltex Eastern Cape Region



Voltex North East Region



Engage2win

Gauteng Region



Ahmed Baig (Gauteng regional manager, Voltex and Atlas Group) with Stan Green (C EO of Voltex).



Nadine Kramer (Voltex) with Gavin Pearl (Pearl Power), the Gauteng region's grand prize winner who will be going to the 2015 Rugby World Cup final to be played in Twickenham; and Gary Jacks (manager, Voltex Bramley).

We're all going to TWICKENHAM ...

The grand prize winners drawn from eight regions are:

- North East:** Egbert Viljoen
- Gauteng:** Gavin Pearl
- Western Cape:** Kurt Maritz
- Eastern Cape:** Keith Baws
- Central:** Johan Koortzen
- Limpopo:** Roger Winnan
- KwaZulu-Natal:** Jimmy Van Rooyen
- Southern Cape:** Sheldon York



License agreement extended in MV market



VOLTEx MV/LV Solutions has been a Siemens Technology Partner for the 8PT and S8 ranges of LV Switch-

gear since 1 March 2014 and, on the strength of this partnership, the directors felt the time was right to expand

the agreement with Siemens to include manufacturing LV switchgear. This extended license agreement will enable Voltex MV/LV Solutions to offer a full solution to the client from MV through to LV in the growing medium voltage market. In addition, it offered the perfect opportunity to develop local skills in the manufacture of MV switchgear and technological expertise to Siemens standards.

The three employees chosen to go for the partnership training were Luca Petersen, Damien Buchanan and Neil Stewart. The training took place at the Siemens production facility in Getze, near Istanbul in Turkey, where they learnt the design, manufacturing, assembly and testing of the Simoprime MV switchgear.

This range of air-insulated, metal-enclosed, metal-clad medium voltage switchgear is for indoor installation with maximum ratings of 17.5 kV/40 kA/3 600 A.

The product range includes circuit breaker panels (incoming and outgoing), metering, disconnecting bus-

coupler and bus riser panels from 7.2 kV to 17.5 kV with vacuum contractor panels in 7.2 kV and 12 kV, available in panel widths of 435, 600 and 800 mm at a depth of 1 860 mm.

Commenting on the level of training, Luca Petersen says, "The training quality at the Siemens facility was exceptionally high and being able to bring back these new skills to be used locally is enormously rewarding."

Vacuum interrupters are highly proven and a widely used technology, having 64% of the world market share when it comes to medium voltage switching. Simoprime uses the Siemens Sion 3AE5 and 3AE1 vacuum circuit breakers which range from 7.2 kV to 24 kV and are suitable for withdrawal and fixed mounting arrangements within the panels. Operations also take place behind an interlocked closed front door, giving the customer complete peace of mind knowing that the operator will be safe. The switchboard fulfills all the mandatory type tests required for the new IEC 62271-200.

The first Simoprime order was placed in December 2014 by Consulting Engineers Bosch Projects comprising panels for Sumitomo Rubber in Ladysmith. The first four panels were for an upgrade to its 3.3 kV pump house board and were delivered to site in April.

The remaining 12 panels commissioned, replaced the existing 11 kV Sub-station 1 main intake board and were delivered in May. The next MV project currently in production has been commissioned for Tanelec in Zambia.

Voltex MV/LV Solutions provide tailor-made manufacturing products and services, which are directly sold to the end-user. It has a central focus in the production of LV/MV panels and switchgear, variable speed drives, motor control centres, distribution boards, mini-sub, standby generators and specialised assemblies.

All products and services are IEC and SABS certified and tailored specifically for end-users.

Enquiries: +27 31 783 4607

Capacitance meter for accurate measurements



The easy-to-read 11 000-count display MT957 LCR and capacitance meter from Major Tech provides direct and accurate measurements of inductors, capacitors and resistors with different frequencies and selectable auto ranging. This handheld, battery-operated meter has convenient front panel push buttons and controls that include functions such as data hold, maximum and minimum record and relative mode. This meter is designed for general applications especially in field maintenance and service applications," says Major Tech's Werner Grobbelaar, adding that the meter has an IP67 rating.

Enquiries: +27 11 872 5500

Full range of round-plug connectors from M5 to M58

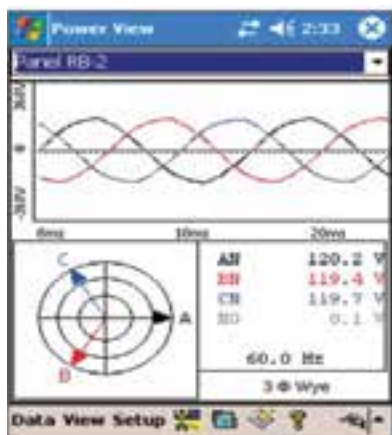
Phoenix Contact has expanded its product line with the new M17, M23, and M40 round-plug connectors. This means a full range of plug connectors from M5 to M58 are now available for signal, data, and power transmission. The three new models M17, M23, and M40 add moulded round-plug connectors to the portfolio. The straight and angled plug connectors are available for signal transmission with up to 17 pins. Six and eight pins are available to transfer power of up to 70A. The new moulded, angled M23 can be rotated by 240°, allowing conductors to flexibly and easily exit any device in various directions. Another new addition to the range is the Advance product line with freely configurable, EMC-protected M23 round-plug connectors for signal transmission with up to 19 connections. All new plug



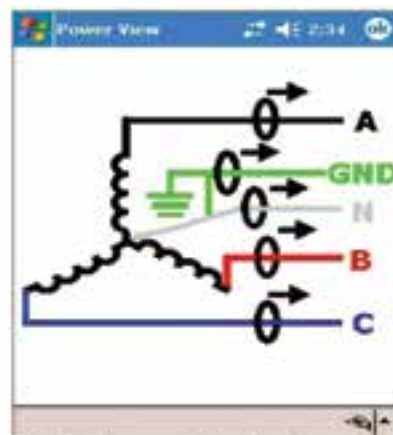
connectors are also optionally available with the Speedcon quick-locking system for quick installation in just half a turn.

Enquiries: +27 11 801 8200

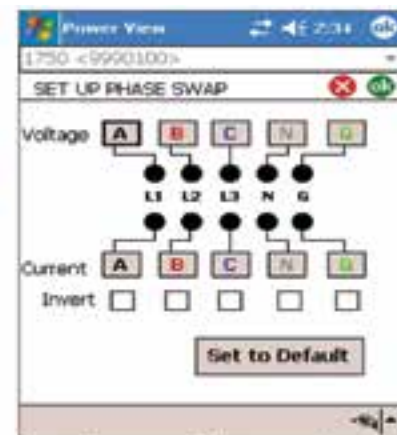
New high-performance power quality three-phase recorder launched



View measurements real-time with wireless PDA interface.



Configurations are simple with wiring diagrams to guide you.



No need to reconnect wires—swap channels internally using the PDA interface.



THE Comtest Group, Fluke's authorised test and measurement distributor for South and southern Africa, has introduced the Fluke 1750 three-phase power recorder, for power quality and monitoring of power quality disturbances. These power meters automatically record every power quality parameter and event, on every cycle continuously for applications as diverse as:

- Long-term analysis: uncover hard-to-find or intermittent issues; monitor critical equipment, capturing power quality events to correlate with equipment malfunction.
- Power quality surveys: quantify power quality throughout a facility, documenting results with comprehensive reports.
- Quality of service compliance: validate incoming power quality at the service entrance.
- Equipment installation/commissioning: benchmark: power system prior to install to insure quality of service.

The 1750 allows for quick and reliable configuration via the ARCHOS 43 Internet Tablet which provides a window into what the instrument is recording, allowing for quick and reliable configuration even in awkward test locations. It provides power quality measurements that comply with IEC61000-4-30 standards for correct evaluation of all measured values, including voltage, current, power and harmonics. It captures every measurement, on every channel with cross-channel and current triggering capture as well as every parameter: voltage and current on three phases, neutral and ground.

With the 1750, the user may apply thresholds after the data is collected with Fluke Power Analyse Software, so that there is no possibility of missed information due to incorrect setups. The intuitive PC software allows for easy analysing of data and the generation of reports with automated EN50160 reporting and compliance. The feature, 'Auto Report' creates either standard reports or customised reports and, with the plug-and-play feature, set-up is easy with self-identifying current probes and single-lead connections.

The 1750 features 5 MHz, 8 000 Vpk waveform capture, giving the user a detailed picture of even the shortest of events, while the SD memory card or 100 BaseT high-speed Ethernet connection enables quick and reliable retrieval of the data.

Enquiries: +27 11 608 8520

Performance at a price you can afford

Tektronix basic oscilloscopes are full featured instruments that offer sampling performance, automated measurement capabilities and time saving features that won't challenge your budget. Whether you're looking for an oscilloscope with extensive monitoring and analysis capability or one that's specifically designed to handle the challenges found in today's electronic teaching labs, the TBS family of oscilloscopes are an excellent choice to handle everyday test challenges.



From R 6 900 ex VAT



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For all your service, repair and calibration requirements



Three-stage cooling transformers for Sebenza



Seen in ACTOM Power Transformers' Wadeville, Germiston plant is a core and winding assembly being lowered into the tank of a large 315 MVA 275 kV power transformer similar to those on order for City Power's new Sebenza intake substation.

ACTOM Power Transformers has won several prized contracts for large high-rated power transformers since entering this market in 2012, following a major upgrade of its design and production capabilities to enable it to produce units of up to 315 MVA at 275 kV.

The upgrade and expansion project, which ACTOM Power Transformers undertook with the assistance of world-leading specialist transformer design consultants, Felber Engineering of Austria, was a major advance as the highest rated units the division was capable of producing prior to the upgrade were 45 MVA at 132 kV.

The advance has enabled the division to enter market sectors it was unable to fully serve previously, as well as compete more effectively with imported high-rated brands on offer.

Since entering this market, ACTOM Power Transformers has won several contracts for high-end transformers in the municipal sector and is seeking to achieve similar success in the power generation sector.

Among metropolitan municipalities the division is already catering to in this respect is Johannesburg's City Power. It won a R66-million contract in mid-2014 to manufacture and supply three 315 MVA 275 kV/88 kV/22 kV autotransformers for installation in the new 400 kV/275 kV/132 kV Sebenza intake substation currently under construction next to Kelvin power station near Kempton Park.

Enquiries: +27 11 824 2810

CoC seminar in PE in October

TONY McDonald of the ECB(SA) will present a seminar on 'How to complete a CoC and test report for all installations and the requirements of SANS 10142-1 (Amd 8)' in Port Elizabeth from 8am to 4.30 pm on 13 October. The course is designed specifically to cover the legal responsibilities of electrical contractors' and their clients. For more information on the cost of the course, venue and how to register email info@ecbsa.co.za.

Enquiries: +27 12 751 2290

Routine insulation testing a necessity

STARTING an electrical drive on a machine that has been standing for a long time should be avoided until the insulation level of the motor has been found acceptable.

Insulation degradation can occur as a result of moisture ingress in motors that stand for long periods – a situation typically found in plants that work seasonally or in applications where there is a high degree of water contamination.

Insulation is subject to many elements that can cause it to perform at a less than acceptable level.

Excessive heat or cold, moisture, vibration, dirt, oil, and corrosive vapours can all contribute to deterioration. For this reason, routine insulation testing is necessary.

NewElec's EC/ED relay solves this problem by monitoring the insulation integrity of the motor windings and

feeder cables to earth while the motor is standing. The main contactor is prevented from closing into a circuit in which the insulation level to earth has deteriorated to an unacceptable level.

The selected 'lock out' relay model determines the acceptable insulation level, while the fused measuring circuit protects the relay against inadvertent damage due to incorrect connections.

Compact in design, the EC/ED is suitable for installation in flameproof enclosures.

Included in the protection package are the relay, an 11-pin plug-in base and a three-phase choke. The product may be used regardless of the starter configuration.

Enquiries: 0860 103 041



Cape Town
T +27 21 845 4108
73 Sabax Road Aeroton Johannesburg
T +27 11 494 3550 F +27 11 494 3572
powerps@iafrica.com
www.ppspower.co.za

Only the finest state of the art facilities for our customers



Assemblies manufactured to SABS 1765 for the safety of distribution boards

Sustained service levels produce healthy relationships



A typical MNS configuration for an advanced motor control centre (MCC).



MNS contributes to a safe maintenance environment.

Proven protection: ABB's MNS low voltage switchgear ensures years of smooth operation for specific Sasol Synfuels plants in Secunda, with a combination of superior technology and customer-focused service.

LOW voltage (LV) switchgear equipment may conform to all the current IEC standards and have been subject to the most rigorous testing, but it is only in the daily usage over time that the true value of the design and control parameters of such equipment becomes evident

Sasol's Secunda Synfuels Operations is now realising the benefits of its decision

to migrate certain plants to ABB's MNS LV switchgear more than 20 years ago.

"The problem was that the 'old' system could not match the very harsh conditions at the Secunda plant; it had a single point of failure and no built-in redundancy. Fault-finding was a major challenge," says Leigh Visser, senior foreman at Sasol Synfuels Outside Ash and Water division. "We chose ABB's MNS product range as the requirement is for switchgear products suited to the harsh conditions on the plant: both in terms of dust ingress and heat, as well as meet safety requirements," says Visser.

MNS LV switchgear features enhanced operator safety features that include the ability to rack out and rack in without having to open the door. Added to this are separate compartments for controls and power cables, and internal arc fault containment.

Due to Sasol-specific requirements, Sagren Nair, chief technologist at Sasol Group Technology was involved in the design, concept and commissioning of technology for Sasol, as well as the quality assurance/quality control of equipment, and Nair himself has been closely involved with MNS switchgear since 1996.

In the waste water environment at Sasol Secunda, Nair explains, there was a high risk of arc-flashes dropper bus bars which has been eliminated by the multi-function separation of the MNS design. "With MNS each bus bar is segregated from the other – which means significantly increased safety as well as ease of maintenance.

Early in January 2015, ABB MNS LV switchgear was put through an unexpected test when there was an incident in one of Sasol Secunda's substations. Albert Pretorius, chief electrical technologist at Sasol Synfuel's test department, who has extensive working experience with ABB MNS in the steam plant environment, explains: "There was a rupturing fault inside the tier isolator causing the board's incomer to trip. Thanks to the monitoring system of MNS the fault was quickly picked up and we could take immediate action. Not only that, but the problem was contained and limited to the point of ignition only."

The design of ABB MNS features the withdrawal of modules and contacts, allowing for targeted maintenance on a problem area without having to shut off the entire system. The net result is minimal downtime.

"The board was back up and running within 24 hours, where, without MNS, it would have taken two to three days," says Pretorius.

"It is critical that the switchgear is able to withstand the harshest environment and operational conditions. We have had an ABB MNS board at the steam plant since 2000 with only one rupturing fault, and no injuries. The simple layout of the MNS panels makes it easy to maintain and replace components. It has also been designed in such a way that it does not allow mistakes, with the added feature of having access to all components from the front of the switchgear."

The MNS system is a very easy board to work on; and the installation and maintenance is a team effort - everyone is familiar with it," Pretorius says. "The beauty is, once it is installed, nothing changes – the only training necessary is in control, protection and metering of the board. It certainly has made my job easier."

Since MNS was introduced in the early 1970s, the basic design and construction of the system have remained unchanged. However, ABB's highly proactive research and development (R&D) division has ensured a steady evolution in reliability, availability, maintainability and safety (referred to as 'RAMS'), and modifications and extensions can be added or retrofitted to existing switchgear installations.

"The on-line, real-time monitoring of the process plant with MNS provides increased information and data which is invaluable for accurate decision-making."

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Investment in technology results in smaller customised mobile substations



says that the first mobile units engineered by the company in South Africa were mobile diesel generators and the company used this experience, together with the application of WEG's advanced technology, to engineer a mobile substation solution suitable for the harsh and demanding African conditions.

"What is particularly significant is that, with this mobile substation technology, it is possible to move these units to wherever

they are required. This provides optimum flexibility, not just to power utilities, but also to other operations such as mines, quarries and rural areas," he adds. Zest Energy leveraged WEG's 20 years of experience in engineering transformers to develop a transformer that has significant weight reduction. "This re-engineering was necessary to minimise both the weight and the physical size of the transformers. One way that we were able to achieve this requirement was by employing ODAF (oil direct air force) cooling," says Vrey.

MOBILE substation technology has been used in South America for many years and WEG Brazil has an established reputation for the supply of this technology with an extensive footprint of successful installations.

Zest Energy was responsible for bringing this technology to the African continent and since its first units were supplied to Eskom in South Africa, the company has expanded its solutions to include a wide range of mobile substations and mobile switching stations.

Coenraad Vrey, managing director of Zest Energy,

He explains that an intimate understanding and knowledge of various applications means that the company is able to meet very specific requirements. "As an example, for a particular mobile substation for Eskom, we engineered a transformer with a low impedance value to comply with the project specifications, while still ensuring that the overall substation weight remained within the South African road ordinance requirements.

"We worked closely with the utility and in an effort to assist with the unit's operation, we made use of offload selector switches to select the primary and secondary ratios. This was essential as previous technologies in place required that the transformer be opened and the links manually changed inside the transformer. Our solutions resulted in savings in time and enhanced safety, with increased ease of operation," says Vrey. "Because these units are multi ratio and will be connected to different network operational voltages, we built technology into the control system that will ensure the correct voltage is selected, thus reducing any human error. The equipment has

a comprehensive earthing system incorporating copper bars with connectors. This provides Eskom with different earthing interfacing points to which connections to the local earth system can be made. Similar, customised mobile substation solutions can be developed for utilities throughout Africa, all with an emphasis on fit-for-purpose practicality and safety," Vrey concludes.

Enquiries: +27 11 849 3142

Motorised change-over switches and gensets

ACDC Dynamics, sole distributor of Gave low voltage switchgear in South Africa, offers a full range of the world renowned motorised change-over and manually operated rotary cam switches.

The Y-Series range from Gave, has been designed to perform remote changeover operations.

ACDC Dynamics' brand manager, Rudy Raath, says, "The range offers extraordinary performance and superior switching technology providing for extended electrical endurance, safety isolation and high make/break capacity."

Switching characteristics

- Load break switch at 90 degrees.
- Silver alloy contacts.
- Easy accessibility to terminals.
- Protected cable clamps with IP20 protection.
- Body cells on self-extinguishing GRP.

Installation of the Y-Series is simple due to the built-in common-load link.

Driving and control characteristics

- Mechanical operation driven by an internal geared electric motor.
- Electronically controlled motor operation with magnetic recognition.
- High capacity microprocessor.
- Number of operations completed are available at a push of a button on the five-digit display

The Y-Series is a safe option that guarantees positive switching and complies with IEC 60947-3 and IEC 61000 standards.

The complete set of the Y-Series includes the following elements:

- One input signal required for mechanical changeover switch position;
- Digital position display;
- Power supplies 12 and 24 V dc and 80 to 220 V ac;
- Compact and rear panel fixing;
- Endurance > 10 000 on load electrical operations and 50 000 on mechanical operations;
- Manual and automatic override;
- One motor drive steel shaft ensures mechanically positive switching; and
- Auxiliary contact for remote confirmation.

Jason Snyman, the genset brand manager, says that ACDC Dynamics stocks a full range of industrial, commercial and domestic generators in diesel, petrol, single-phase, three-phase, silent and open type. The generators are available

from 1 kVA sine-wave digital inverter generating sets through to 80 kVA, three-phase diesel water-cooled units. "We also supply large gensets according to customer specifications as well as a full range of ATS and motorised switchgear for auto change-over from utility power to standby gensets."

ACDC's technical specialists are available to assist clients with selecting the most appropriate solution for their installations. More information on the Gave motorised change-over switches and genset offerings can be found on the website: www.acdc.co.za

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CHIC and beautifully designed, the latest range of EGLO indoor lighting – available exclusively through Eurolux – also offers tailored functionality.

This range from EGLO Leuchten of Austria has an impressive line-up:

Rondo

The swanky Rondo collection is perfectly designed to be used in lounges, hallways and kitchens. Available as a ceiling pendant or table lamp – that can also double up as a floor lamp – the shade is a sphere of opal glass set on a modern, polished chrome base. This lamp is 200 mm in diameter and 1 100 mm high and it can be used in a variety of ways: by clustering a group of three pendants that are suspended at different heights or simply by using the Rondo as a floor lamp, for example.

Palomaro

Another collection that not only provides pleasing ambient light but also creates a striking wall or ceiling feature is the energy-efficient Palomaro, fitted with LEDs. Available in three colours – anthracite, cream and taupe – and three sizes (50 x 11 cm; 40.5 x 10 cm; and 32.5 x 9 cm), it can be used singly or as a cluster of lamps. The cover on the base of the Palomaro lamp produces a soft light with no distracting glare. The screen is made of plastic, which is white inside and has fabric in one of three colours on the outside.

Another two attractive lamps from the EGLO range are the Vilanova and Riccio track lights. As Shaun Bouchier, director at Eurolux explains, track lighting used to be “strictly utilitarian”, with straight electrically charged tracks and basic fixtures inserted along the track.

“Now the tracks have become works of art,” he says, adding that the designs will complement the interior décor of any home. “Track lighting is used for task lighting to illuminate a kitchen island or countertop or as accent lighting to focus attention on a specific area such as framed photographs, paintings or architectural features.”

Vilanova

The Vilanova is a polished chrome five-LED spotlight track system. The round lampshades give the impression of webbed glass and, combined with the smooth silver surface of the track, makes for an especially elegant look. This is a track lighting system that bridges the gap between modern and traditional, which adds to its appeal.

Riccio

The Riccio has a modern edge and is ideal for kitchens with its white high-gloss and chrome finish. Fitted with four 50 W GU10 lamps, each lamp can be independently directed to provide the required task lighting for different areas of a room.

Rosello

The quirky EGLO Rosello spotlight is the perfect choice for a contemporary home. Featuring a circular polished chrome base and a shade that is half gloss white and half polished chrome, the Rosello's single spot is designed to provide ambient light in any room of the house.

“These collections clearly illustrate that while EGLO's design approach is detail-oriented, the lamps are funky and a perfect choice for any indoor space – rustic or retro – without having to go over budget,” concludes Bouchier.

Visit www.eurolux.co.za for a look at the complete range of EGLO products on offer at Eurolux.

Enquiries: +27 21 528 8400

Easy to instal energy saving controls for lighting

MAJORTech's microwave motion sensors make good environmental sense in today's world where energy saving devices reduce cost while lowering CO₂ emissions.

Major Tech's Werner Grobbelaar explains: "Microwave sensors generate an electromagnetic (RF) field between transmitter and receiver, creating an invisible volumetric detection zone. If an object moves in the sensor's field, the returning microwave will be at a different frequency, higher or lower than the original signal transmitted," he says, adding, "therefore microwave sensors offer a greater distance of coverage and are more reliable at greater distances".

He says Major Tech microwave motion sensors can penetrate through doors, glass and thin walls, which means that these security sensors can be placed behind objects. "Ideal for home use, educational institutions and commercial properties, these sensors are easy to install, provide high probability of detection and low nuisance alarms.

"Notably, as saving energy is more important than ever, controlling lighting with a motion sensor can save up to 60% of lighting energy costs depending on occupancy behaviour and the amount of natural light available."

Based on occupancy, these sensors use microwave technology (5.8 GHz) and detect even the slightest movement in its detection zone to turn lighting on and off. Sensors can identify between day and night, are SENS adjustable, time delay can be added continually and time is adjustable, except for the MS362, which has an IP44 rating and is an outdoor microwave sensor. The MS360, MS361, MS363 should be installed indoors and mounted on a ceiling at a height of around 2.5m.

"The detection range (radius) can be adjusted to a minimum of one metre and a maximum of 8 m. The lights can be set to stay on from about 10 seconds to a maximum of 12 minutes, and, to ensure the light does not come on during the day, the light control setting can be set between three and 2 000 lux," explains Grobbelaar.

"The MS360 can be connected to new luminaires or to an existing light fitting and, as the product has no external lenses, they are unobtrusive and vandal-resistant; and another major benefit is that no external control boxes are required, making the units cost-effective and easy to install," concludes Grobbelaar.

Enquiries: +27 11 872 5500



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KJ40
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Radiant is committed to a brighter, greener future by creating lighting and solar solutions which are beautiful by design and inspired by nature. We offer the widest range of superior quality lighting solutions for the home, office and garden. Radiant is a responsible, caring company that always has the best interests of our clients at heart.



Take a virtual tour ...



MAJORTech's new interactive LED lighting showroom features an extended range of top LED lighting products. Working demonstrations of the LED range of decorative lighting – from ceiling spot lights and downlights to step lights, wall lights, star-lights, midi and mini ceiling lights, pendant lights and garden lights – can be viewed, touched and operated under the guidance of expert technical advice from Major Tech's staff. To take a 'virtual tour' and view the beautiful, modern stainless steel and acrylic range of LED lighting, download the QR code reader app from Android Market or the App Store, scan the QR code above and watch the video.

Enquiries: +27 11 872 5500

New generation of flexible LED strips for accent lighting



OSRAM'S Value Flex Eco LED strips mean that it is now possible to adapt the light source to the design – and not the other way around.

The flexible, shadow-free LED strips of continuous lighting can be individually adjusted – and the uniform light due to single binning makes them perfectly suited to semi-professional accent lighting.

The professional 24 V system provides greater efficiency and can be used along the entire strip, even in extended lengths, without any drop in voltage and reduction in lighting intensity. The flexible OSRAM LED modules, which are suitable for indoor and outdoor use, are available in various lighting intensities and colours. Intelligent thermal management combined with suitable control

gear ensure optimum efficiency and a long lifespan.

Installation is easy because of the self-adhesive back and the accessories available assist in problem-free installation. With these Value Flex Eco LED strips, OSRAM addresses end-consumers and semi-professional users.

Benefits and features

- Flexible and cuttable LED strips for seamless light lines.
- Up to three years' system guarantee.
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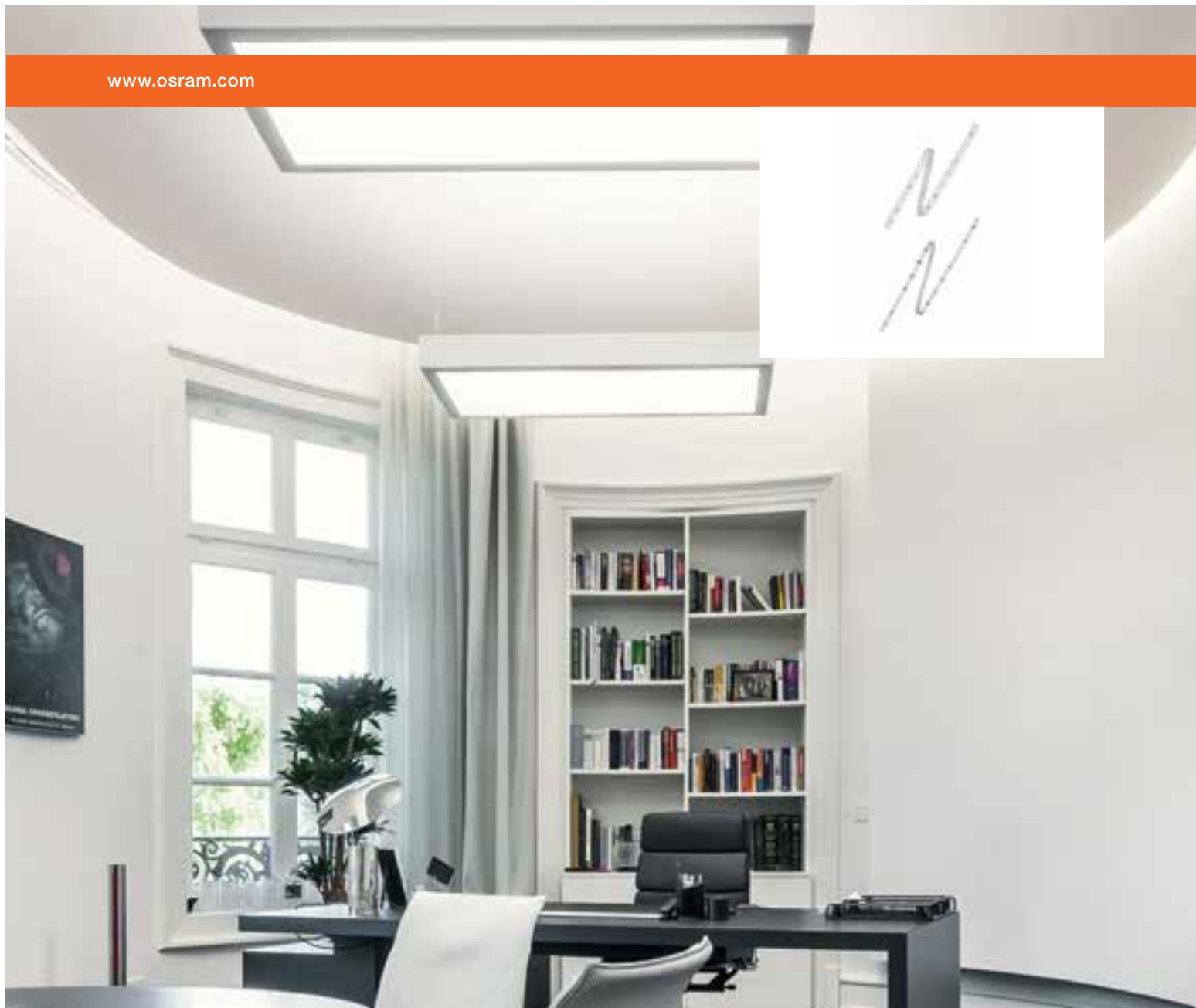
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Light is OSRAM

OSRAM 

Stainless steel LED luminaire for Zone 2 applications



The Nordland N50 – LED 600/1 200 is a high performance stainless steel LED industrial luminaire, designed for dust and corrosion Zone 2 / 21,22 environments. Glare free with a highly efficient lighting application, the luminaire offers excellent lumens, long life, and controlled heat management. The aluminium gear tray carries the LED driver and LED strips and is designed to act as a reflector for retrofitting existing standard stainless steel fluorescent luminaires. Two cords allow the gear tray to be suspended from the body during installation and service. Emergency versions use a dedicated LED module, which operates only when in emergency mode. The N50 is available in two wattages and sizes: 33 W for 600 mm and 64 W for 1 200 mm. The rated life is >50 000 hours and the luminaire has a five year warranty.

Enquiries Tel. +27 11 662 4300

'Home grown' top post LED luminaire



THE Zela from BEKA is a cost-effective LED post top, designed and manufactured in South Africa, providing a new contemporary design using state-of-the-art LED technology.

The Zela is characterised by its distinct flat, conical diffuser, made possible by the utilisation of LED technology. In addition, the carefully designed cooling fins add elegance by continuing the smooth flow of the line of the pole.

This versatile new luminaire is suitable for the lighting of Group B road lighting, general area lighting, parks and gardens, and security lighting, amongst other applications. It is designed to replace HID post top luminaires (up to 100 W HPS) with an energy saving of up to 70%.

The Zela emits a pleasant, glare-free light due to the indirect lighting and the highly efficient white reflector (symmetrical light distribution). It is also available in an asymmetrical version for effective LED street lighting applications, or where lighting control and low glare are important factors to consider.

The Zela is designed for LED light sources between 19 W and 55 W at an ambient temperature of up to 35 °C.

Enquiries: +27 11 238 0078

New lighting company launched in Australia

SCHRÉDER recently extended its worldwide presence by establishing the first office of Schröder Australia in Perth, Western Australia. This will enable the group to better serve the strong demand for intelligent LED lighting solutions in the Australian market.

"We have been active in this exciting and dynamic market for a while. Now is the right time to directly enter this market by opening our own Schröder company, bringing us closer to our growing customer base. We see that the transition to intelligent lighting solutions in Australia is very much aligned with our philosophy and thinking. We further believe our offer of technically advanced high-quality LED luminaires and smart control systems will be well-received in the market," explains Dieter Poleyn, Schröder's regional director for IMEAA (India, Middle East, Africa and Australia).

"The Perth office will be run by the state manager of Western Australia, Mike Huyerman, our previous distributor, who has realised various projects in Western Australia."

Schröder lighting solutions can already be found on the the Westlink M7 in Sydney, in the Eastlink tunnels in Melbourne, the West Coast Highway walkway in the City of Stirling precinct, the roads in the Karratha Housing Estate, the car park of the Sorrento Beach Life Saving Club in the City of Joondalup, on the walkway and internal roads of the Admin Office in the City of Belmont as well as in a large number of urban decorative projects in the cities of Adelaide, Canberra, Sydney, Gold Coast and Melbourne.

"Betacom will remain our appointed distributor for the Eastern States of Australia and New Zealand.

Schröder Australia will offer the market a complete range of energy-efficient LED lighting products including the group's latest state-of-the-art Shuffle, OMNIstar, Ampera and Yoa, smart control solutions including the Owlet Nightshift remote management system, as well as glass fibre reinforced polyester poles."

The company launch was attended by various decision makers, specifiers and end-users, where Dieter Poleyn (Schröder's regional director for IMEAA), Wimpie Ludwick (sales director, Schröder Australia), Murray Cronje (manager: applications and training, BEKA Schröder) and Derek Watson (regional manager, BEKA Schröder) presented various commercial and technical topics.

For more information, visit www.schreder.com.au.

Enquiries: +27 011 238 0000

The Schröder Team at the Schröder Australia company launch event, from left to right: Derek Watson (regional manager, KwaZulu Natal, BEKA Schröder); Sarob Jain (business development manager, Schröder Australia); Carl Watson (managing director, BEKA Schröder); Janeane Hamman (financial manager, BEKA Schröder); Mike Huyerman (state manager, Western Australia, Schröder Australia); Mistelle Eyles (office administrator, Schröder Australia); Wimpie Ludwick (sales director, Schröder Australia); Nadja Smith (communications officer, BEKA Schröder); Murray Cronje (manager: applications & training, BEKA Schröder); Clive van den Heever (senior sales engineer, Schröder Australia); and Dieter Poleyn (regional director for IMEAA, Schröder).



BEKA SCHRÉDER'S LED FLOODLIGHTING RANGE



BEKA LEDFLOOD

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- Easy to install
- No lamp or component replacements for more than 10 years
- Energy savings up to 70%
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- Surge protection 10kV/10kA

OMNISTAR

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- Modular concept to adapt to a wide range of specific needs
- ThermiX® (resists extreme temperatures: T_a up to 55°C) and IP 66 tightness level for long-lasting performance



Northcliff Country Club Squash courts lighting upgrade



WHEN Nordland Country Club needed to upgrade the lighting in its squash courts, they approached Nordland to undertake the project. The challenge was to replace the existing nine old T12 open-channel 2.4 m 75 W fluorescent luminaires with a more energy efficient light source and yet maintain or improve the illumination levels required for a club level squash court. The original installation provided an average illumination level of about 500 lux with a total power consumption of 1 485 W. The new installation of 12 surface-mounted enclosed LED luminaires provides an average illumination level of 626 lux and a power saving of 35% per court was achieved, while the light levels improved by 22%.

Enquiries: +27 11 662 4300

BEKA Schröder (Pty) Ltd

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Must have multi-function plug-in lights



The BE range encompasses a plug-in light, with an adjustable night light function, which also acts as a removable torch; an automatic on-off light and USB adapters.



LEGRAND'S new BE range forms part of the company's recently launched electrical devices for the DIY sector.

The BE range encompasses a plug-in light, with an adjustable night light function, which also acts as a removable torch; an automatic on-off light and USB adapters.

"These handy devices, which are available with a slick black or white design, are easily integrated with various wiring devices, adapters and international multi-sockets," says Johan Bosch, Legrand's general manager.

"Legrand has developed these modern DIY gadgets for convenience, comfort and flexibility."

In the event of a power failure, the plug-in lighting device automatically turns on to maximum intensity, with a cold light LED. By clicking on the lens, the

courtesy light function, with a warm glow, is activated. When the light is off, the lens can be pressed for a few seconds to switch between a warm to cold light.

This unit also acts as a removable torch, which is convenient at night, particularly during load shedding.

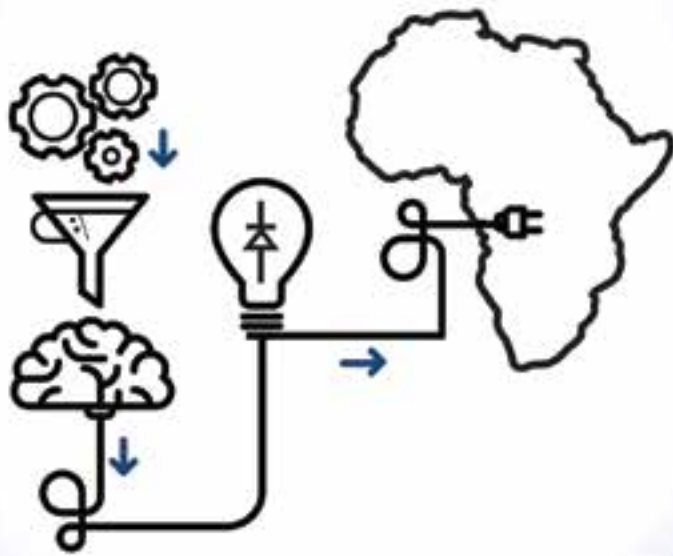
In manual mode, the BE lighting device is plugged into the socket and by pressing the lens, it is used as a courtesy light, with warm illumination. In automatic mode, a warm light LED automatically switches on and off, depending on the light intensity in the room. The dimmer function enables light intensity to be adjusted.

USB adapters, which are suitable for the home, office, or during travel, are plugged into a socket, providing a safe and convenient method of re-charging mobile devices.

Other new Legrand products for the DIY sector include video door entry kits, UPS systems, LED night lights, extension cords, tower charging systems and a range of Arteor switches and sockets.

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LED lighting upgrade for Cape clinic



Anthea Abrahams and Cynthia van Rensburg (WCPG Heideveld CDC) with Richard Carter (Crush Nationwide) and Christian Thomas (Elex Khanyisa).

Venture Lighting International SA and Crush Nationwide Lamp Disposal celebrated the life of Nelson Mandela by replacing 76 standard fluorescent 58 W tubes with 22 W LED Venture tubes in the clinic at the Heideveld Community Day Centre in Cape Town. Chris Brown at Venture Lighting says all the lamps were replaced by electricians from Crush sister company, Elex Khanyisa, under the supervision of the Chris Maud, electrical engineer (Western Cape Provincial Government). To ensure the retrofit was truly 'green' the old lamps were then taken to Crush Nationwide to be disposed of in a safe and legal manner. The benefits to the clinic are numerous and include much improved lighting levels and better colour rendering, and the 30 000 hour lamp life will reduce maintenance costs and, most importantly, save over 2.5 Kw of energy.

Enquiries: +27 21 709 0180

Easy to install, low in maintenance



Nordland's NML 16-LED bulkhead range is designed to operate LED light sources. The slim design optimises the LED characteristics and offers different optical versatility systems where energy saving is required. The bulkhead range is suitable for mounting heights up to 6 m. Easy to install and low in maintenance, the luminaires are suitable for indoor and outdoor applications such as security lighting, conveyor lighting, parking area lighting and storage facilities. Wattages are available are 35 W and 60 W with various optic configurations. The rated life is >50 000 hours and the luminaire has a five-year warranty.

Enquiries: +27 11 662 4300

AURORA: HELPING YOU MAKE THE ENLITE CHOICE

Warwick Webber, Aurora's Technical Director, reveals essential considerations when choosing flat panels for work spaces.

Although lumens and hours are important factors for customers when choosing LED panels, there are actually three key features that should not be ignored, particularly when considering a range for the office, education and commercial environment. These are SDCM, flicker and UGR.

Aurora Group has recently launched Enlite, a fast-moving range of Aurora-designed and engineered quality products available through wholesalers and lighting specialists for quick installation. Within this range are the E6060 panels that have been designed with quality features to enhance lighting within work space environments.

"Issues such as flickering and glare in panels can trigger problems such as headaches, fatigue, blurred vision, eye-strain and reduced visual task performance and distraction within a work place," says Warwick Webber. "When choosing a product range for these type of environments, the overall product features need to be considered."

SDCM

All light sources have a colour temperature, a level of warmth or coolness, measured in Kelvin (K). Colour consistency of all light sources is measured so that they are within acceptable tolerances in terms

of colour deviation. Colour uniformity in panels is essential. This is often expressed by the size of MacAdam ellipses using the term "Standard Deviation of Colour Matching" (SDCM)

The American National Standards Institute (ANSI) and other standards organisations have defined standards for specifying the colour of a light source's output.

The MacAdam ellipse is a measurement of colour variation.

It is accepted that an SDCM of 1 is undetectable, with 2-3 having virtually no colour deviation, with an SDCM of 6 or less being the accepted requirement for ErP compliance.

"To ensure that all lighting panels in the same range are of the same colour, we chose 4 SDCM as we feel this ensures colour consistency within a workplace."

UGR

The International Commission on Illumination, known as the CIE defines glare as the visual conditions in which there is excessive contrast or an inappropriate distribution of light sources that disturbs the observer or limits the ability to distinguish details and objects and the CIE

recommends the Unified Glare Rating (UGR) as quantitative measurement of glare.

When considering glare, we look at two types - Discomfort Glare and Disability Glare.

Discomfort Glare results in an instinctive desire to look away from a bright light source or in the difficulty to see a task, whilst Disability Glare impairs the vision of objects without necessarily causing discomfort.

The UGR is a measure of the discomfort glare, which stems from a light source where the luminance is greater than what the eye can adapt to. The degree of discomfort glare within a given environment is a mathematical calculation of several factors, the size and luminance of the light source, the dimensions of the space, the position of the light source in relation to line of sight and the background luminance against which the glare is being experienced.

The Unified Glare Rating calculations are calculated in accordance with the CIE document CIE 117-1995 - Discomfort Glare in Interior Lighting. The CIE definition of Discomfort Glare is "glare that causes discomfort without necessarily impairing the vision of objects". Glare which impairs the vision of objects is termed Disability Glare and is not covered in the metric of UGR.

UGR values generally range from 10 to 30 where a low value indicates little discomfort glare and the higher the value, indicates increasing discomfort glare up to an uncomfortable situation. Artificial lighting systems producing UGR values of 10 or less are assumed to produce no discomfort.

"Attaining a low UGR at high wattages is not an easy task and we are very happy to be able to achieve a UGR rating of 19, which we feel is very acceptable for commercial office applications."

LED Flicker

The human eye is sensitive to flickering light, which can lead to various health implications. Due to this, the issue of flicker is an important consideration when selecting lighting for commercial applications.

There are two basic forms of flicker. One is AC power frequency related light fluctuation, usually at twice the supply frequency. The second is light fluctuation primarily caused by incompatibility of the light source to LED Driver and/or switch/dimmer.

Percentage Flicker and Flicker Index are used to quantify flicker in a light source.



It is the amplitude variation between the maximum and minimum values. Flicker Index is a more efficient calculation as it includes differences in waveform shape. Replacing traditional light sources with more efficient and longer-lasting LED-based solid-state lighting (SSL) is an undeniable trend in the lighting industry. Like Fluorescent and HID, LED lighting is directly connected to the AC Power Supply that operates at 50Hz, but unlike Fluorescent or HID, Solid-State Lighting is a Direct Current (DC) device.

This means that as long as constant current is supplied, the LED will illuminate without flicker but may still suffer from ripple (caused by the rectification of AC to DC).

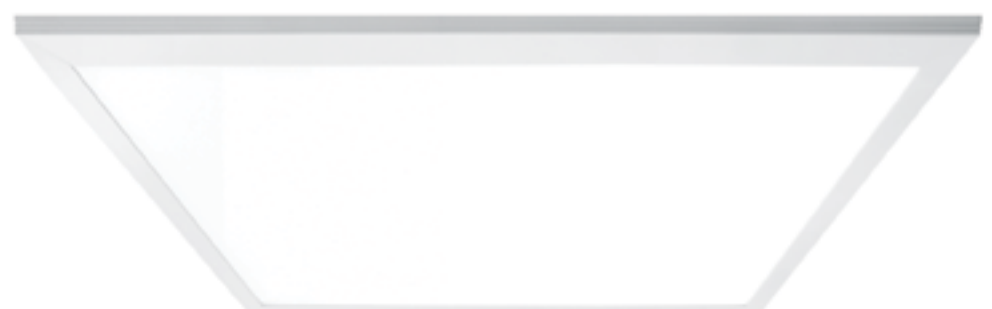
Standards are unclear in terms of maximum acceptable flicker in LED lamps and dimmable LEDs, particularly at the lower end of the dimming scale. Many drivers in the market place have a simple circuit design to minimise cost to the detriment of flicker, but removing flicker is a focus of the Enlite range without compromising costs.

"LED flicker is often caused by poor driver design but the Enlite driver has been carefully developed to minimise flicker and at a power factor greater than 0.9."

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EN-FP6060/50 5000K

1-10V Dimmable
EN-FPD6060/40 4000K
EN-FPD6060/50 5000K

Features & Benefits

- SDCM <4 providing consistent light colour quality
- Suitable for installation in 15 & 24mm T-bar ceilings
- Suspension & surface mount kits now available
- UGR 19 (Unified Glare Rating) - suitable for offices
- 1-10V Dimmable option and separate Emergency Pack available
- Flicker free driver - Power Factor >0.9
- 1.5kV surge protection
- 3 year warranty

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An **AURORA**[®]
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...the Enlite driver has been carefully developed to minimise flicker...

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Bright Spark

A hairy situation

Uncle Jack was going bald. One day, Mary, who was not known for her politeness, remarked to him, "I don't suppose that there is anyone in the world who has as few hairs as you do!"

"Don't be silly!" said her brother Gary. "The less hair you have, the more likely it is that someone else has the same number."

If you were completely bald, you would have the same number of hairs on your head as millions of other completely bald people. But I bet there isn't anyone with the same number of hair on their head as I have," and he shook his thick hair from side to side.

"On the contrary," said uncle Jack. "It is quite certain that there are many people in the world with the same number of hairs on their heads as you have!"

"You can't know that" said Gary, "because you haven't counted the enormous number on my head!"

Uncle Jack smiled

Why was uncle Jack so confident?

September solution

The two desperadoes

Jake was grinning because he had switched the white ball for another black one, so Guts was bound to draw a black ball and die. But if the boss agreed to Jake showing the second ball – which was bound to be black - Jake would be in trouble as his trick was discovered!

NOVEMBER FEATURES

CABLES AND CABLE ACCESSORIES

Regular topics such as cables, cable accessories, cable management systems, cable sizing, skirting, trunking, conduit, cable trays, cable marking and labelling, cable jointing techniques, wire sizing, fault finding, hazardous areas, flameproof, cable terminations, glands, cable installations and trenching will be included.

STANDBY AND EMERGENCY POWER

Stand-alone generator sets, batteries, uninterruptible power supplies, maintenance powerline filtering and testing, emergency wiring and lighting, supplies for computer rooms, hospital supplies, process equipment

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Insulation resistance, Continuity, Earth Resistance, variable RCD test with Pass/Fail indication, Line Voltage with Frequency, Loop and PSC test, Phase Rotation, Bluetooth, SD Card and Voltage recording with graph. The meter comes with 3.5" TFT colour LCD display and it's fast sampling and dual display, clear symbols and exceptionally wide viewing angle are perfect for easy and safe readings. The MT390 comes with software that assists with ensuring the safety of electrical installations in domestic, commercial and industrial applications.



- SD memory
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- Bluetooth
- 10 Functions including: IR, Continuity, RCD, Earth Resistance, Loop & PSC, Voltage with Hz, Phase Rotation
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- Safety design with sliding shield plate to avoid electric shock
- 3.5" TFT colour LCD display with 320 x 240 pixels
- Test probe with test button

* Earth spikes and leads optional extra

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