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'Select' club for electricians and contractors launched



Having fun at the Schneider Electric Club SElect launch are: Antony Junius, (channel manager); Nico van der Merwe (director, retail division); Belinda Aslett (channel manager, electricians, retail division); and John Raptakis (marketing manager, partner business, retail division). Club SElect is an exclusive programme for southern African registered electricians and

contractors, designed to drive benefits for its members by linking Schneider Electric's business partners, communicating valuable opportunities, and sharing industry best practices, so as to drive a standard of excellence in the region. According to Eric Leger, country president for southern Africa at Schneider Electric, Club SElect members are given access to a tailor-made, private website that offers information on products, technology and solutions, as well as customised training, configurations and support. The portal also includes a partner locator to generate business opportunities. Club SElect aims to help electricians and contractors operate their businesses "more efficiently, profitably, professionally and personally".

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Jeandré to represent SA at World Skills competition

JEANDRÉ van der Watt (22), a young electrical apprentice artisan from Vereeniging who works at Nampak Glass in Alberton, is brushing up on his skills in preparation for the WorldSkills competition to be held in Brazil from 11 to 16 August 2015. He is being guided by his mentor, Nick du Plessis at P&T Technology in Germiston. Jeandré won the 'Electrical Installations' category at the SA World Skills competition that was held in January, beating eight other contestants in this category at the Cape Town International Convention Conference Centre.



Jeandré van der Watt.

The South African finalists, representing 19 skills areas, will travel to Brazil on 7 August to compete against contestants from 72 member countries in 47 skills in traditional trades such as electrical, welding and plumbing as well as multi-skilled technology careers that include IT software solutions and graphic design.

WorldSkills South Africa represents an opportunity to emphasise the key role that artisans play in the economy. The benefits for competition entrants are considerable and qualifying for the international competition affords each participant a highly experienced mentor in his or her field.

Participating in the international competition is equivalent to four or five years of professional training with all the benefits of that experience: confidence and character building and many networking opportunities.

Apprentice artisans who are interested in taking part in the 2016 SA Skills competition can find out more about the competition on the WorldSkills SA website: www.worldskillssa.org.za

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If your dreams don't scare you, they're not big enough



Alexis Barwise.

ALEXIS Barwise, the young and dynamic managing director at DEHN Africa for the past two years, is a relative newcomer to the electrical industry.

In the eight years since he earned his degree in electrical and electronic engineering, his keen interest in lightning and surge protection has grown into a passion.

Although he has rapidly risen to the position of managing director of an international company, he remains modest. A dedicated team player who has a vision for the company, he delights in sharing his knowledge while motivating and inspiring his staff.

Sparks: Where were you educated?

AB: I matriculated from Klerksdorp High School and then went to North-West University from 2003 to 2007, where I obtained a B Eng (electrical and electronic) degree.

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

AB: I've been in this industry for almost eight years.

Sparks: When and where did you start your career?

AB: In 2007, I started with Wise Design in Pretoria as an electrical design engineer in charge of the electrical team.

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

AB: I would say that today there is a far better understanding of lightning and the need for lightning protection, and people are more aware of working within the correct standards. This heightened consciousness has also led to superior lightning protection products and solutions being manufactured.

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

AB: A major project that I worked on was the design, construction and commissioning of the Johannesburg Stock Exchange's Tier 3 data centre. This particular installation, completed in 2011, was the first of its kind and took the stock exchange to the next level in data centres.

It was particularly significant for me as it was an opportunity to build a start-to-end solution, which incorporated the design, management and support of this project.

Sparks: Have you won any awards?

AB: Yes. I was proud to be awarded the EMEA Order of Merit, 2011 to 2013 from Schneider Electric.

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

AB: Jonathan Duncan, the director of the information technology business for central, north and east Africa at Schneider Electric, has been the greatest influence on my career. He was an incredible boss who gave me the greatest amount of respect and understanding – and he had faith in me.

This is something I'll always remember and hope to replicate with other young people within the industry. I'll never forget that he once told me that one day I would be his boss!

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

AB: Strikes and load shedding are challenges that are affecting the electrical industry as well as the fluctuating commodities pricing, which all directly affect business in this sector.

Sparks: What do you enjoy most about your job?

AB: I really have a passion for this market and I love to share my knowledge. It's so gratifying to meet others who are interested in learning. In fact, we had a recent seminar in Nigeria where

the room was so packed that some attendees who couldn't be accommodated inside had to listen to the presentations from outside through the windows! Working with the team we have in Africa is fantastic; and the team spirit is almost tangible.

Sparks: How do you motivate your staff?

AB: I believe in leading by example and being appreciative of the roles played by each person on my team.

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

AB: I feel that I've made the right decisions at the right time, as if my destiny was planned upfront – and I'm exactly where I want to be.

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

AB: Yes, absolutely. Trends show that the electrical sector is the backbone of all industries so it holds far less risk than other sectors. There will always be growth and opportunities in the electrical industry.

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

AB: I would advise contractors to be fair, honourable and honest advisors, and to keep up-to-date on the industry standards.

Sparks: What is your favourite quote?

AB: "If your dreams don't scare you, they're not big enough."

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

AB: I would love to visit Rome, see the Vatican and immerse myself in the history of the city. Then I would like to be in a position to give away 50% of my wealth when I turn 50; and lastly, I would

like to be able to be instrumental in saving lives in Africa by ensuring that death or injury caused by lightning becomes a thing of the past.

DEHN Africa has already put this movement in motion by joining forces with the African Centres for Lightning and Electromagnetics (ACLE) to protect African schools and students specifically from lightning strikes and the resultant injuries.



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Obituary

Well-known training officer mourned



BONGANI Sydwell Gumbi, a well-respected training officer at P & T Technology in Germiston, passed away suddenly on 1 April.

Known as a man with a 'big heart' who always gave willingly, Sydwell was regarded as a dedicated trainer who had the inborn ability to inspire the students in his care to study and work hard so that they could become excellent electricians.

Before joining P&T Technology seven years ago, Sydwell worked at the Electrical Contractors' Association of South Africa and was already well-established in the field of electrical training.

Many qualified electricians who passed through his capable hands will remember how his flair for motivating his students

achieved excellent results.

Sydwell was admired and respected by his colleagues not only for his skill as a trainer but also for his work ethic, his strength of character and his willingness to help.

"Sydwell will be deeply missed and his passing leaves a void in our company and the training industry," says Nick du Plessis, managing director at P&T Technology, adding that everyone at P&T Technology offers sincere condolences to his family and friends.

Du Plessis says Sydwell epitomised the quote from Albert Einstein: "The value of a man should be seen in what he gives and not in what he is able to receive."

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Working knowledge by Terry McKenzie-Hoy

Three things electricians of the future should know about

IT'S a strange thing when you are in the electrical business ... For some reason you are expected to be an expert on everything electrical. If the washing machine breaks, you are supposed to fix it. Come Christmas time if the Christmas tree lights don't work, you're supposed to fix them (although I must admit that when I am asked to fix Christmas tree lights, I say that I am Catholic and I don't work on Christmas day).

There are other things we're meant to know. For example, when a new battery is invented by Elon Musk's company, Tesla, we are supposed to know how it works. People don't seem to realise that, apart from the fact we probably don't how

the Tesla Powerwall home battery works, it is also quite likely that we will never know because Tesla isn't about to tell us.

So, in this month's column I thought I would explain – in simple terms – some technologies that are improving, the first of which is batteries.

Batteries

The first battery, called 'the Voltaic pile' was invented in 1799 by Italian physicist and chemist, Alessandro Volta (1745 – 1827). The battery consisted of alternating layers of copper and zinc immersed in a jar full of sulphuric acid. Batteries based on this principle are still used today since they are rugged and reliable. The latest 'all smart'

batteries are lithium ion batteries. These have an energy density of about 200 W hours per kilogram. Thus, put simply, a 1 kg battery could produce 40 A at 5 V for one hour. Thus, a 50 kg battery can produce about 10 kW for one hour. This is very much better than a lead acid battery.

However, since no battery is fully efficient, it takes more than 200 W per kilogram to charge the battery. Nevertheless, one can see that if we make a 20 kW hours battery then we have the potential to supply power to a small house. Naturally the battery will have to drive an inverter. Not only this, there will also have to be some charging arrangement for the battery. One may

wonder why on earth anybody would want to run a house on a battery that has to be charged anyway. The point is that it could be charged when the system load is low, which will be of benefit to power system operators.

So, if you are to be the electrician of the future, you are going to have to know something about inverters and battery chargers and batteries.

Fuel cells

I have written about fuel cells before and many readers will remember that if you take a battery and connect it to two electrodes – positive and negative – and put the electrodes in water, then hydrogen will come off one electrode and oxygen off the other.

In a similar way, a fuel cell draws in oxygen from the air and hydrogen from a cylinder and produces water and electricity.

Thus, a fuel source of the future could be a fuel cell supplying houses or small towns. The problem is that the fuel cell requires hydrogen – and quite a bit of it: at 5 kW a fuel cell uses 65 litres of hydrogen a minute. To generate the hydrogen by conventional means as described above (that it, by electrolysis) really means that all one is doing is operating a system that is inherently inefficient.

An alternative, however, is to consider that hydrogen can be produced by the process of catalytic cracking (as done in the oil refinery) and could become available.

So, perhaps electricians of the future will have to know something about fuel cells as well.

LEDs

Another technology that is advancing so rapidly that even experts in the field are being taken by surprise is that of illumination using light emitting diodes (LEDs). These diodes are getting ever brighter and more efficient. Shortly, there are going to be whole panels of LED lights that consume very little electricity.

The electrician of the future should know about this technology because it's growing quickly and the implications are astonishing: Imagine if you could light up a whole building of five stories using no more than 1 kW of electricity. This may sound ridiculous but I don't believe it's impossible.

Let's wait and see.

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Lightning and surge protection for rooftop photovoltaic (PV) systems

ACCORDING to the South African Photovoltaic Industry Association (SAPVIA), PV is the fastest growing power generation technology in the world.

Between 2006 and 2009 the installed capacity globally grew on average by 60% p.a. Today, more than 35 GW of PVs have been installed and are operating worldwide, producing more than 30 TWh of clean energy per year.

Bearing in mind that self-generated electricity is generally cheaper and provides a high degree of electrical independence from the grid, PV systems will become an integral part of electrical installations in the future. However, these systems are exposed to all weather conditions and must withstand them over decades. The cables of PV systems frequently enter the building in question and extend over long distances until they reach the grid connection point.

Lightning discharges cause field-based and conducted electrical interference. This effect increases in relation to increasing cable lengths or conductor loops. Surges do not only damage the PV modules, inverters and their monitoring electronics, but also devices in the building installation. More importantly, production facilities of industrial buildings may also be damaged and halt production.

If surges are 'injected' into systems that are far from the power grid – which are also referred to as stand-alone PV systems – the operation of equipment powered by solar electricity, such as medical equipment, water supply, and so on, may be disrupted.

Necessity of a rooftop lightning protection system

The energy released by a lightning discharge is one of the most frequent causes of fire. Therefore, personal and fire protection is of paramount importance in case of a direct lightning strike to a building. The installation of PV modules does increase the risk of lightning strikes as the collection area increases and substantial lightning interference may be injected into the building through these systems. Therefore, it is necessary to determine the risk resulting from a lightning strike as per IEC 62305-2 (SANS 62305-2) and to take the results from this risk analysis into account when installing the PV system. For this purpose, DEHN, for example, offers a service through its consulting division, DEHNconcept, which can conduct the risk analysis and design a lightning protection system (LPS) for the site.

These standards require that a lightning protection system according to class of LPS III be installed for rooftop PV systems (> 10 kWp) and that surge protection measures are taken.

As a general rule, rooftop PV systems must not interfere with the existing lightning protection measures.

Necessity of surge protection for PV systems

In case of a lightning discharge, surges are induced on electrical conductors. Surge protective devices (SPDs), which must be installed upstream of the devices to be protected on the alternating current (ac), direct current (dc) and data side, have proven effective in safeguarding electrical systems from these destructive voltage peaks. Section 9.1 of the CLC/TS 50539-12 standard (Selection and application principles – SPDs connected to photovoltaic installations) calls for the installation of surge protective devices unless a risk analysis demonstrates that SPDs are not required.

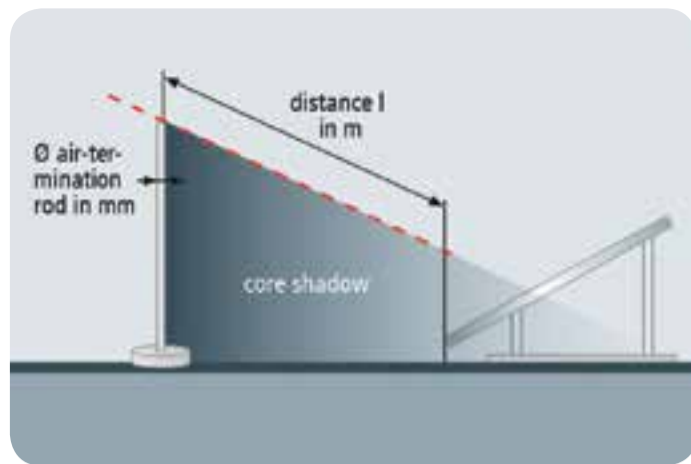
According to IEC 60364-4-44, surge protective devices must also be installed for buildings without external lightning protection systems such as commercial and industrial buildings.

Cable routing of PV systems

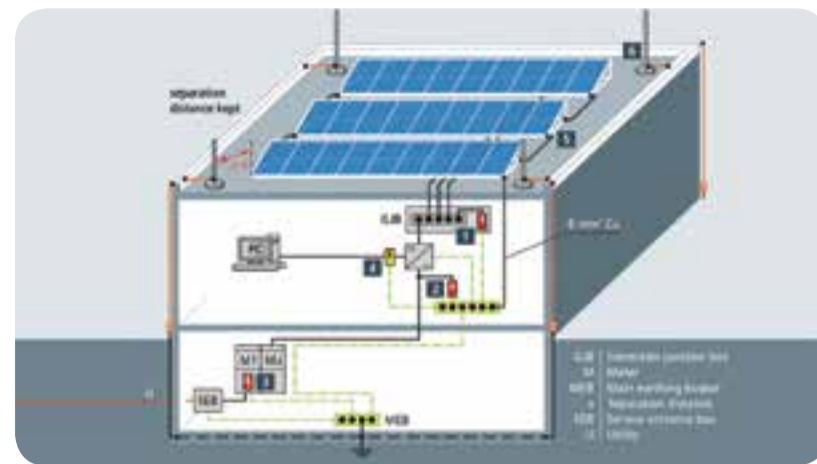
Cables must be routed in such a way that large conductor loops are avoided. This must be observed when combining the dc circuits to form a string and when interconnecting several strings. Moreover, data or sensor lines must not be routed over several strings and form large conductor loops with the string lines. This must also be observed when connecting the inverter to the grid connection. For this reason, the power (dc and ac) and data lines must be routed together with the equipotential bonding conductors along their entire route.

Earthing of PV systems

PV modules are typically fixed on metal mounting systems. The live PV components on the dc side feature double or reinforced insulation (comparable to the previous protective



A building with external protection system and sufficient separation distance.



The distance between the module and the air termination rod required to prevent shadows.

insulation) as required in IEC 60364-4-41. The combination of numerous technologies on the module and inverter side, with or without galvanic isolation, results in different earthing requirements. Moreover, the insulation monitoring system integrated in the inverters is only permanently effective if the mounting system is connected to earth. The metal substructure is functionally earthed if the PV system is located in the protected volume of the air termination systems and the separation distance is maintained.

International guidelines require copper conductors, with a cross-section of at least 6 mm² or equivalent, be used for functional earthing. The mounting rails also have to be permanently interconnected by means of conductors of this cross-section. If the mounting system is directly connected to the external lightning protection system, due to the fact that the separation distance cannot be maintained, these conductors become part of the lightning equipotential bonding system. Consequently, these elements must be capable of carrying lightning currents.

The minimum requirement for a lightning protection system designed for class of LPS III is a copper conductor with a cross-section of 16 mm² or equivalent. Also in this case, the mounting rails must be permanently interconnected by means of conductors of this cross-section. The functional earthing / lightning equipotential bonding conductor should be routed in parallel and as close as possible to the dc and ac cables / lines.

UNI earthing clamps can be fixed on all common mounting systems. They connect, for example, copper conductors with a cross-section of six or 16 mm² and bare round wires with a diameter from eight to 10 mm, to the mounting frame in such a way that they can carry lightning currents. The integrated stainless steel (V4A) contact plate ensures corrosion protection for the aluminium mounting systems.

Separation distances as per IEC 62305-3 (EN 62305-3)

A certain separation distance must be maintained between a lightning protection system and a PV system. It defines the distance required to avoid uncontrolled flashover to adjacent metal parts resulting from a lightning strike to the external lightning protection system. In the worst case, such an uncontrolled flashover can set a PV plant on fire.

The calculation of the separation distance can be easily and quickly calculated by an analysis package, such as the DEHNconcept, for example.

Core shadows on solar cells

The distance between the solar generator and the external lightning protection system is absolutely essential to prevent excessive shading. Diffuse shadows cast by, for example, overhead lines, do not significantly affect the PV system and the yield. However, in case of core shadows, a dark clearly outlined shadow is cast on the surface behind an object, changing the current flowing through the PV module. For this reason, solar cells and the associated bypass diodes must not be influenced by core shadows. This can be achieved by maintaining a sufficient distance. For example, if an air-termination rod with a diameter of 10 mm shades a module, the core shadow is steadily reduced as the distance from the module increases. After 1.08 m only a diffuse shadow is cast on the module.

Special surge protective devices (SPD) for the dc side of photovoltaic systems

The U/I characteristics of photovoltaic current sources are very different from that of

conventional dc sources: They have a non-linear characteristic and cause long-term persistence of ignited arcs. This unique nature of PV current sources does not only require larger PV switches and PV fuses, but also a disconnect for the surge protective device, which is adapted to this unique nature and capable of coping with PV currents.

Selection of SPDs according to the voltage protection level Up

The operating voltage on the dc side of PV systems differs from system to system. At present, values up to 1 500 V dc are possible. Consequently, the dielectric strength of terminal equipment also differs. To ensure that the PV system is reliably protected, the voltage protection level up of the SPD must be lower than the dielectric strength of the PV system it is supposed to protect. The CLC/TS 50539-12 standard requires that Up is at least 20% lower than the dielectric strength of the PV system. Type 1 or Type 2 SPDs must be energy-coordinated with the input of terminal equipment.

If SPDs are already integrated in terminal equipment, coordination between the Type 2 SPD and the input circuit of terminal equipment is ensured by the manufacturer.

Application example 1: Building without external lightning protection system

In a building without external lightning protection system, dangerous surges enter the PV system due to inductive coupling resulting from nearby lightning strikes or travel from the power supply system through the service entrance to the consumer's installation. Type 2 SPDs are to be installed at the following locations:

- Dc-side of the modules and inverters;
- Ac output of the inverter;
- Main low-voltage distribution board; and
- Wired communication interfaces.

Every dc input (MPP) of the inverter must be protected by a Type 2 surge protective device. European standards require that an additional Type 2 dc arrester be installed on the module side if the distance between the inverter input and the PV generator exceeds 10 m.

The ac output of the inverters are sufficiently protected if the distance between the PV inverters and the place of installation of the Type 2 arrester at the grid connection point (low-voltage infeed) is less than 10 m. In case of greater cable lengths, an additional Type 2 surge protective device must be installed upstream of the ac input of the inverter.

Moreover, a Type 2 surge protective device must be installed downstream of the meter of the low-voltage infeed.

If inverters are connected to data and sensor lines to monitor the yield, suitable surge protective devices are required.

Application example 2: Building with external lightning protection system and sufficient separation distances

In this case, the primary protection goal is to avoid damage to persons and property (building fire) resulting from a lightning strike. Here it is important that the PV system does not interfere with the external lightning protection system. Moreover, the PV system itself must be protected from direct lightning strikes. This means that it must be installed in the protected volume of the external lightning protection system. This protected volume is formed by air-termination systems, such as air-termination rods, which prevent direct lightning strikes to the PV modules and cables. The protective angle method or rolling sphere method may be used to determine this protected volume.

A certain separation distance must be maintained between all conductive parts of the PV

system and the lightning protection system. In this context, core shadows must be prevented by, for example, maintaining a sufficient distance between the air-termination rods and the PV module.

Lightning equipotential bonding is an integral part of a lightning protection system. It must be implemented for all conductive systems and lines entering the building which may carry lightning currents. This is achieved by directly connecting all metal systems and indirectly connecting all energised systems via Type 1 lightning current arresters to the earth-termination system. Lightning equipotential bonding should be implemented as close as possible to the entrance point into the building to prevent partial lightning currents from entering the building.

The grid connection point must be protected by a multi-pole spark-gap-based Type 1 SPD. If the cable lengths between the arrester and inverter are less than 10 m, sufficient protection is provided. In case of greater cable lengths, additional Type 2 surge protective devices must be installed upstream of the ac input of the inverters.

Every dc input of the inverter must be protected by a Type 2 PV arrester. This also applies to transformerless devices. If the inverters are connected to data lines, for example to monitor the yield, surge protective devices must be installed to protect data transmission.

Another possibility to maintain the separation distance is to use high-voltage-resistant, insulated HVI conductors, which maintain a separation distance up to 0.9 m in the air. HVI conductors may directly contact the PV system downstream of the sealing end range.

Application example 3: Building with external lightning protection system with insufficient protection distance

If the roofing is made of metal or is formed by the PV system itself, the separation distances cannot be maintained. The metal components of the PV mounting system must be connected to the external lightning protection system in such a way that they can carry lightning currents (copper conductor with a cross-section of at least 16 mm² or equivalent). This means that lightning equipotential bonding must also be implemented for the PV lines entering the building from the outside.

Lightning equipotential bonding must also be implemented in the low-voltage infeed. If the PV inverter(s) is (are) situated more than ten metres from the Type 1 SPD installed at the grid connection point, an additional Type 1 SPD must be installed on the ac side of the inverter(s). Suitable surge protective devices must also be installed to protect the relevant data lines for yield monitoring.

PV systems with micro-inverters

Micro-inverters require a different surge protection concept. To this end, the dc line of a module or a pair of modules is directly connected to the small-sized inverter. In this process, unnecessary conductor loops must be avoided. Inductive coupling into such small dc structures typically only has a low energetic destruction potential.

The extensive cabling of a PV system with micro-inverters is located on the ac side. If the micro-inverters are directly fitted at the module, surge protective devices may only be installed on the ac side.

Conclusion

Solar power generation systems are an integral part of today's electrical systems. They should be equipped with adequate lightning current and surge arresters, thus ensuring the long-term faultless operation of these sources of electricity.



Mark Palmer, Western Cape Electrical Inspection Authority (WCAEIA)

The legal requirements of 'properly used' in CoCs (Part 1)

THIS month I'd like to tackle an area of certification that seems to be misunderstood by the electrical industry as a whole – that of electrical equipment being 'properly used'.

This already confusing scenario is aggravated when Registered Persons cover up non-compliant installation work by deliberately using other interpretations on the standards that are, in fact, just watered down advice from sources that may not fully comprehend or understand the legal requirements.

The term 'properly used' is raised in Annexure 1 of the Certificate of Compliance document. Now, in my opinion, because the words 'properly used' form part of a statement and are not an actual statement, these words are frequently not read in the context in which they must be legally applied.

I would like, therefore, to look at the legal implications of this in more detail:

"I (Registered Person name) (ID Number), a Registered Person, declare that I have personally carried out the inspection and testing of the electrical installation described in the test report as per the requirements of (nature of electrical installation), and deem the electrical installation to be reasonable safe when properly used."

To fully comprehend the meaning of 'properly used', one has to consult the Occupational Health and Safety Act 85 of 1993 where the definition of 'properly used' is contained.

'Properly used' means *used with reasonable care, and with due regard to any information, instruction or advice supplied by the designer, manufacturer, importer, seller or supplier.*

In comprehending the intention of the legislator here, it has to be understood that there is, in fact, a **dual** responsibility created. Firstly, the **user** of an electrical installation (as more specifically detailed in the Electrical Installation Regulations 2009) has to use something with 'reasonable care'. This responsibility is coupled with the responsibility of the **provider** of the article or substance who has to provide information and instructions in order to enable the user thereof to use it properly.

In all instances it must be clearly understood that any component used within a low voltage electrical installation must comply with a standard, which is referred to in the incorporated standard SANS 10142-1:

EIR 5(2) – *"No person may use components within an electrical installation unless those components comply with the standards referred to in the relevant incorporated standard ..."*

Furthermore, in terms of these standards to which components must comply, the manufacturer of the component is legally obligated to ensure that instructions are available concerning the safe installation and use of the component. Many of these instructions are, in fact, incorporated in the standard to which the component complies.

Again, I must highlight the requirements of the Act;

Section 10 – General duties of manufacturers and others regarding articles and substances for use at work Sub section 1

"Any person who designs, manufactures, imports, sells or supplies any article for use at work shall ensure, as far as is reasonably practicable, that the article is safe and without risks to health when properly used and that it complies with all prescribed requirements."

Here it is important to note that this section of the Act goes even further and extends this responsibility not only to the manufacturer but also to 'others'.

These 'others' to which the Act refers (and certainly in the scope of low voltage electrical installations) include Registered

Persons and electrical contractors.

Sub section 2

"Any person who erects or installs any article for use at work on or in any premises shall ensure, as far as is reasonably practicable, that nothing about the manner in which it is erected or installed makes it unsafe or creates a risk to health when properly used".

And this is where my dilemma lies.

Where components are not correctly installed (including distribution boards, cables, enclosures, disconnectors, etc.) there is a clear contravention

of safety legislation. Many of the cases of non-compliance, which I deal with on a daily basis, include these contraventions and when they are exposed, affected registered persons tend to look for justification for the non-compliant electrical work.

This 'justification' is an attempt to disregard the entire scope of the intention of legislation by only looking at the two words contained in the very same declaration I started with, which are 'reasonably safe'.

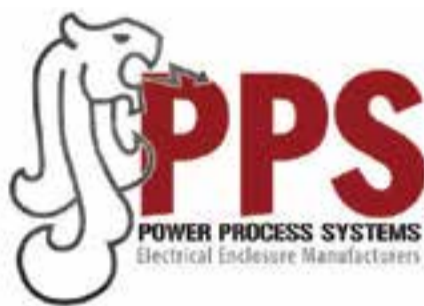
These two words in the context of which non-

compliance is justified, do not however appear in the definitions contained either in the Act or in the Regulations.

The Act, however, only deals with two aspects in this context: 'reasonably practicable' and 'safe'.

Next month, I intend to clarify these two aspects in line with the 'properly used' issue discussed in this column with specific reference to the issuing of valid Certificates of Compliance.

To conclude, I'd like to leave Registered Persons with a thought on which to ponder: 'Is reasonably safe the same as being reasonable dead?'



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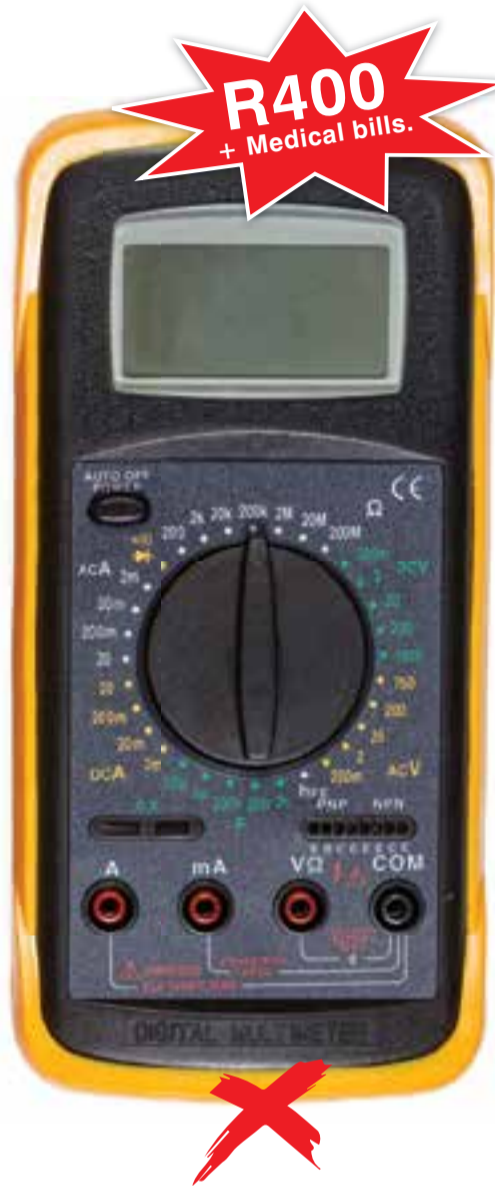
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Assemblies manufactured to SABS 1765 for the safety of distribution boards

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Purchasing the correct instrument for the application is vitally important. Indiscriminate selection based on price alone is a safety risk and could prove much more costly. Even fatal.

Instruments should be manufactured to IEC standards to ensure safe operation. These are categorized as CAT I to CAT IV.

The higher category corresponds to electrical environments with greater transient energy and is also required for humid environments.

Consider the application and look carefully at the instrument's specifications before making a purchasing decision.

This communication is published by the SAFEhouse Association in the interests of the safety of electrical contractors.

Be Safe. Always ask for and use SAFEhouse members' products and services:



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The South African Safehouse Association is an independent, registered, non-profit organization established by the electrical industry and committed to communicating with customers.

The South African Safehouse Association has been established to combat this proliferation of dangerous products and services by:

- Making the market aware of the risks in using such products and services
- Exposing sub-standard products and services
- Persuading specifiers, suppliers and distribution channels not to recommend or to offer such products and services for sale

For more information contact: Pierre Nothard
Cell: 083 414 4980 | Tel: 011 396 8140
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www.safehousesa.co.za





Let's all be safe – take a stand against unsafe products

UNSAFE electrical products are potentially lethal – whether it's a dodgy extension cord or a counterfeit earth leakage device. The good news is that electrical contractors can now put their combined force behind the SAFEhouse Association to help rid this country of these dangerous products.

Sparks talks to Pierre Nothard, chairman of the SAFEhouse Association, about its objectives and achievements over the past two-and-a-half years and, importantly, what the readers of Sparks Electrical News can do to make South Africa a safer place, electrically speaking ...

Sparks: What is SAFEhouse?

PN: SAFEhouse is a non-profit industry association established to address the prevalence of sub-standard electrical products and services in South Africa.

Sparks: What are the objectives of SAFEhouse?

PN: The key objectives of SAFEhouse are to inform the market, in its broadest possible definition, of the prevalence of sub-standard products and services; to alert users to the risks associated with such products and services; and to persuade the distribution channels not to deal in such products and services.

Recently, SAFEhouse has also been tasked by its members to engage with the NRCS (National Regulator for Compulsory Specifications) with a view to initiating co-operative action to deal with this issue and with some other aspects related to the implementation of the regulations.

Sparks: To what extent have you achieved your objectives?

PN: Our market communications have been consistent and, we think, informative. We do not yet have the financial capability for widespread consumer-type communications, but we have been able to create increasing awareness in the industry amongst those who distribute and install electrical products.

Financial resources are, of course, necessary for whatever we take on and, in this regard, we have been pleased with the growth of membership as this places us in a position to concentrate more on dealing with specific issues of non-compliance. This intensified concentration has come about this year and has produced some good results in alerting resellers to risky products and getting sub-standard products returned to suppliers. We have also just commenced a process of engagement with the NRCS and there are promising developments in this regard.

To summarise: SAFEhouse has made good progress so far but there is still much work to be done.

Sparks: What resources are available to SAFEhouse to address the primary issues?

PN: Philosophically, our major strength is our determination to uncover the truth and courage to advertise it. Physically, some would say we are under-resourced relative to the enormous size of the task, but we are very conscious of the fruitless existence of industry associations for their own sake and wish to avoid being a bureaucratic cost-centre and little else.

We have, therefore, deliberately been careful about a premature commitment to resources. We make extensive use of members' considerable skills, knowledge, facilities and other resources to keep costs down and we have employed experts as needed case-by-case

Sparks: What about membership?

PN: So far we have focused a lot on growing the membership base so as to acquire the financial capability to do the job. With 34 members we are now in a position to concentrate more on identifying and dealing with specific instances of non-compliance. Step-by-step, we will acquire what is needed to continue progressing towards a comprehensive and more powerful capability.

Sparks: Can you clarify the involvement of the NRCS and initiatives with any other authorities?

PN: From the beginning, we made our presence

and our strategy known to the NRCS, the South African Bureau of Standards (SABS) and the Department of Trade and Industry (dti) and we have, as a matter of course, submitted formal reports about the cases we have investigated to the NRCS. This did not lead to anything in the way of co-operative activities but we have recently taken the initiative to develop such co-operation.

Sparks: What are the major challenges SAFEhouse faces?

PN: There are three major challenges: First, the apathy of our industry. We are good at complaining, but not so good at imagining what can be done and worse at committing to action.

For example: The lighting sector is riddled with sub-standard products but we have few specialist members from that sector and we get very few lighting cases reported to us.

Secondly, many of the cases reported to us do not have enough information to enable us to act on them. SAFEhouse is increasingly taking the initiative to itself patrol for sub-standard products and services.

Thirdly, sufficient funding is always an issue; as we all know, there is never enough money. SAFEhouse is funded by its members and getting entities to participate in the current economic environment is not easy. The drive for membership remains a priority.

Sparks: Discuss the successes and failures, if any, of SAFEhouse.

PN: My biggest disappointment is our failure to attract more of the retail sector to support the SAFEhouse initiative. That channel clearly has a huge influence on which products are available to the residential market in particular. It is regrettable, perhaps telling, that the attitude is often: "What's in it for us?"

Successes? The growth in membership has been pleasing. During the past few months, we have had three cases of non-compliant products being voluntarily removed from shelves by retailers after we had alerted them. We also sense an increasing awareness of the SAFEhouse initiative and, more importantly, of the issues we deal with. It is now becoming easier to get the attention of senior people who are able to take quick, decisive actions about the products contained within their offerings.

Sparks: Does SAFEhouse have any current cases pending, how many and what is the nature of these cases?

PN: We currently have nine cases on the go. The issues are typically around the use of sub-standard components, for instance cable that uses sub-standard conductor-material, and also dimensional and other such aspects that undermine safe electrical connection in products.

Sparks: It is said that some of your members themselves deal in sub-standard products ...

PN: It is significant that four of the current cases involve members lodging complaints about another member's products. We encourage this and deal with every case as we would if it were otherwise. Of course SAFEhouse members, having committed to the code of conduct, are immediately receptive and co-operative.

Sparks: What are the future plans and focus areas of the association?

PN: SAFEhouse will continue the drive for membership; we will concentrate more on pursuing and exposing cases of non-compliance; and we will develop and implement co-operative actions with the NRCS.

Sparks: How can electrical contractors assist SAFEhouse?

PN: The readers of Sparks Electrical News can help themselves and, in the process, SAFEhouse, in a number of ways:

First, they should be aware of – and opposed to – the prevalence of sub-standard products and installations; actively be on the look-out for these and report them to SAFEhouse with the following information:



SAFEHOUSE PRODUCT EVALUATION – FAILURE RISK ASSESSMENT SUMMARY

PRODUCT	VALUPAK CORD EXTENSION SET- Type K-KBO (2 SAMPLES 4.1 AND 4.2)
NON COMPLIANCE	1. CABLE TYPE – Aluminium conductor
RISK	Higher cable resistance and lower flexibility
POSSIBLE OUTCOME	Overheating caused by high resistance also with repeated flexing of the cable, conductor's break and further increase electrical resistance with increased risk of fire.
PICTURE	

In the case of sub-standard products:

- The reason for suspecting sub-standard status (not just 'a shot in the dark').
- Product identification (a photograph is ideal).
- The identity of the seller and/or installer.
- The location of the seller/installer – an address is certainly helpful.
- Their own contact details – at least a telephone number or an email address.

In the case of a sub-standard installation, we need the following information:

- The reasons for suspecting the sub-standard status.
- The address of the installation.
- A photo of the problem area if possible. SAFEhouse can send a photographer if the installation is accessible and sufficiently illustrative.
- The identity of the installer, if possible – or at least a 'lead'.
- The contact details of the end-user (at least a telephone number or email address).
- Their own contact details

I should emphasise that we do not reveal the identity of the complainant. The issue is not about who complains – it is about validating

can contact us with information and we will investigate and expose installations that are significantly sub-standard and which present a safety risk to users. Of course non-ECA(SA) members can also contact us. We cannot react to relatively minor instances. It depends on the size and consequence of the matter to the user



SAFEHOUSE PRODUCT EVALUATION – FAILURE RISK ASSESSMENT SUMMARY

PRODUCT	SAFU 3M CORD EXTENSION SET- Type SP-102
NON COMPLIANCE	1. Minimum contact weight gauge (SANS 104-1) Fail
2. MARKING	– Earth Symbol marking on the plug.
3. Incorrect rating of product filed with 1.0 system cable	
4. ALUMINIUM Conductors	
RISK	Loss of contact with plug pins
POSSIBLE OUTCOME	Overheating and fire
POSSIBLE OUTCOME	Marking not to standard
POSSIBLE OUTCOME	Overheating of cable if loaded to 10A as marked on the product
POSSIBLE OUTCOME	Overheating and fire. The product is dangerous and should be withdrawn from the market.
POSSIBLE OUTCOME	Possible rejection of product by NRCS
PICTURE	

and exposing the issue, whether product or service.

Sparks: What should contractors look out for when selecting products?

PN: Contractors should be suspicious when they come across prices that are substantially below the going rate for a product. Avoid unbranded products. Check for proper markings on the products – if the contractor is not sure what to look for, they are welcome to contact SAFEhouse for further information. Buy reputable brands and deal with reputable wholesalers. If in doubt, check with SAFEhouse for any information they may have about a particular product.

Sparks: How can SAFEhouse be of benefit to electrical contractors?

PN: The Electrical Contractors' Association of SA is a member of SAFEhouse so members

as to whether we can take it on or not. With good information, we are able to warn potential customers if they are contemplating dealing with a contractor who may be 'suspect'. We can also provide contractors with information about products and contractors that we have investigated and possibly about others.

Sparks: How can companies join SAFEhouse?

PN: Anyone wanting to join SAFEhouse or who wants to know more about the association can call me. To join SAFEhouse, companies must be signatory to the SAFEhouse constitution and code of conduct and commit to the membership contribution.

Enquiries: 083 414 4980

For more information email Pierre Nothard at pierren@safehousesa.co.za

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Supply Voltage: Mains powered

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Getting to grips with SANS 10142-1 by Hannes Baard

Cut corners ... but heaven help you if something goes wrong

IN last month's column, we looked at the legislative side of the Department of Labour's inspectors who are appointed under the Occupational Health and Safety Act (Act 85 of 1993). We concentrated on their powers and when and where they may conduct inspections, whether announced or unannounced.

A close friend of mine in the industry often says, "Cut corners if you wish, but heaven help you if something goes wrong". And, he's not referring to the actual things going wrong, but rather the 'legal eagles' and others who will appear from out of nowhere to take a piece of your flesh. And isn't it funny ... you may get away with cutting corners for a while but the moment something happens and people start asking questions, it's amazing how the shadows come alive.

So, let's have a look at how to go about getting your butt out of it, if you really are not in the wrong...

Section 35 of the Occupational Health and Safety Act (Act 85 of 1993) explains it like this:

35. Appeal against decision of inspector

(1) Any person aggrieved by any decision taken by an inspector under a provision of this Act may appeal against such decision to the chief inspector, and the chief inspector shall, after he has considered the grounds of the appeal and the inspector's reasons for the decision, confirm, set aside or vary the decision or substitute for such decision any other decision which the inspector in the chief inspector's opinion ought to have taken.

(2) Any person who wishes to appeal in terms of subsection (1), shall within 60 days after the inspector's decision was made known, lodge such an appeal with the chief inspector in writing, setting out the grounds on which it is made.

So, it's quite simple, even in the Occupational Health and Safety Act. Should you believe that an inspector has acted wrongly – perhaps that he has not considered all the facts or that he has misinterpreted the Act or a Regulation – you can write to the chief inspector (within 60 days of the inspector's decision) stating all the facts and the reasons you believe the inspector's action was unjustified.

But it does not end here ...

(3) Any person aggrieved by a decision taken by the chief inspector under subsection (1) or in the exercise of any power under this Act, may appeal against such decision to the industrial court, and the industrial court shall inquire into and consider the matter forming the subject of the appeal and confirm, set aside or vary the decision or substitute for such decision any other decision which the chief inspector in the opinion of the industrial court ought to have taken.

(4) Any person who wishes to appeal in terms of subsection (3), shall within 60 days after the chief inspector's decision was given, lodge such appeal with the registrar of the industrial court in accordance with the rules of the industrial court.

Maybe the above is a tad more difficult and you will have to be very careful as you're going to be telling the 'boss man' that he's wrong.

The difference between subsections (1) and (2) and (3) and (4) is that in the first two sections you are only saying the inspector was a bit harsh, but in the follow-on sections you are telling that to the chief inspector himself. Hopefully you'll get a fair hearing ...

(5) An appeal under subsection (1) or (3) in connection with a prohibition imposed under Section 30 (1) (a) or (b) shall not suspend the operation of such prohibition.

In my previous column, you learned that an inspector or the chief inspector can issue a 'prohibition notice' whereby a contractor or manufacturing facility is actually stopped from carrying on any further work. Subsection (5) acknowledges that the prohibition notice is such a significant action that an inspector would not summarily issue such notice without good reason and therefore, the prohibition will stand while you appeal the inspector's actions.

36. Disclosure of information

No person shall disclose any information concerning the affairs of any other person obtained by him in carrying out his functions in terms of this Act, except -

(a) To the extent to which it may be necessary for the proper administration of a provision of this Act;

(b) For the purposes of the administration of justice; or

(c) At the request of a health and safety representative or a health and safety committee entitled thereto.

I can't help but smile when I read Section 36. None of the information that came to your attention while you were carrying out your job as a safety rep, for instance, shall not make its way to Facebook now, you hear?

37. Acts or omissions by employees or mandataries.

38. Offences, penalties and special orders of court.

39. Proof of certain facts.

Sections 37, 38 and 39 occupy some six or more pages in the Occupational Health and Safety Act so I'll summarise because those sections are of more interest to the legal people when a case gets to court. Phrases such as "he shall be liable to be convicted and sentenced in respect thereof as if he were the employer or user" and "make such an

order against the employer and not against such employee or mandatary" scare me no end. Better to leave it to the boffins to decide who is who.

40. Exemptions

(1) The Minister may, for such period and on such conditions as may be determined by him, exempt any employer or user or any category of employers or users, generally or with respect to any particular employee or category of employees or users or with respect to any matter, from any of or all the provisions of this Act or the provisions of a notice or direction issued under this Act.

41. This Act not affected by agreements

Subject to the provisions of sections 10 (4) and 37 (2), a provision of this Act or a condition specified in any notice or direction issued there under or subject to which exemption was granted to any person under Section 40, shall not be affected by any condition of any agreement, whether such agreement was entered into before or after the commencement of this Act or before or after the imposition of any such condition, as the case may be.

An example of the exemptions contemplated in Section 40 and all its subsections (1 through 6) including Section 41 can be found in the exemption that was granted in terms of the 'Driven Machinery Regulations' in 2005. Published in Government Gazette No 27305, Notice R158, dated 18 February 2005, exemption was granted in terms of Section 40(1) until 29 April 2005 to all entities performing load testing on all lifting machinery. It stated that lifting machine inspectors should be registered by April 2005, but granted exemption until March 2006 when all such inspectors had to be registered with the Engineering Council of South Africa (ESCA).

You are exempt till next time.

BBBEE empowerment trust benefits previously disadvantaged employees

A FIRM belief that its employees are the glue that holds any business structure together and drives it towards sustainability forms the rationale behind the Zest WEG Group's strategy to establish an empowerment company – Zest Empower Co (Pty) Ltd – which will have a 25.1 % shareholding in Zest WEG Electric, the entity responsible for all sales within the borders of South Africa.

Louis Meiring, CEO of Zest WEG Group, says, "The Group's history is characterised by fairness, trust and respect, a passion for its work, excellence in customer service and the recognition of all people and communities. The Group has operated a CSI initiative and its outreach has stretched across many areas of South Africa."

The beneficiaries of the empowerment trust include all permanently employed, previously disadvantaged employees across all the South African operations of Zest WEG Group Africa. In an effort to outline the benefits that these employees will experience, the organisation launched a roadshow that was taken to all its operations in the country. The roadshow clearly explained the complexity and significance of the trust and emphasised the Group's pas-

sion for its people and the recognition of their loyalty and contribution to its success.

"It was critical to the success of the initiative that we maintain a high degree of transparency. The concept has been well accepted by employees and has stimulated increased levels of two-way communication, a positive contributor to driving improvements within the company," says Meiring.

Zest WEG Group's philosophy of partnering not only with its customers but with its own people exhibits a cognisance that employees are, in fact, the most important customers in the business. This is evidenced by the fact that Zest WEG Group was previously black empowered through direct investment ownership by Medu Capital.

"Interestingly, Medu Capital, which is a private equity investor, had an investment horizon of five years but actually only exited the relationship after seven years. This move coincided with the start of official negotiations for the sale of Zest to WEG and once the negotiations were concluded we immediately began reviewing various options to ensure that we would meet the BBBEE code of practice," Meiring explains.



Louis Meiring, CEO of Zest WEG Group.

Finding the most sustainable model, that would secure the interests of the business and simultaneously provide benefits for our employees, was approached in a methodical and careful manner over an 18-month period. After careful consideration we believe that the current model is not only synergistic to all stakeholder needs, but is also extremely sustainable," says Meiring. As part of the restructuring process, Zest WEG Electric will be introducing a new non-executive



Zest WEG Group's philosophy of partnering not only with its customers but with its own people exhibits a cognisance that employees are, in fact, the most important customers in the business.

board member – Jack Phalane an attorney from Fluxmans.

"The company will continue on the strong foundation created over the past 35 years and will remain dedicated to the unwavering commitment and support to our customers. This new structure, we believe, will return us to a Level 4 BBBEE contributor status," Meiring concludes.

Zest WEG Group Africa, a registered South African company, will be responsible for all sales into Africa. All the manufacturing entities, namely WEG Transformers Africa, Shaw Controls and Zest WEG Genset Division will become divisions of Zest WEG Manufacturing. Zest WEG Manufacturing will, in turn, be wholly owned by Zest WEG Group Africa.

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Cabstrut
 Juanita Kanagan
CBI-electric: low voltage
 Aletta Olivier
Comtest
 Val Verwer
Crabtree Electrical Accessories
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Eaton Electric SA
 Marlene Coetzee
Electro Test Instrumentation
 Winston Browning
Legrand
 Luk Ivens
Magnet Electrical Supplies
 Kevin Govender
Major Tech
 Werner Grobbelaar
MCE Global Suppliers
 Sales
Megger
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Omron
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Pretoria Motor Control Gear Products (PMCG)
 Hannes Schwartz or Colin Laubscher
Radiant Group
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Sabelco
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Schneider Electric
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Vert Energy
 Grand Robertson
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 Hugh Ward
Voltex Lighting
 Marc Rudman
Voltex LSis
 Gary Paterson
Voltex MV/LV Solutions
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Waco Industries
 Jaco Coetzee
Zest Electric Motors
 Stephen Cook

Labelling

Atlas Group
 Full range of labelling
Bellco
 Full range of labelling
Brady SA
 Full range of labelling requirements
Phambili Interface
 Full range of labelling
Voltex
 Full range of labelling

DBs, main breakers, circuit breakers, overload

ABB
 Full range of contactors, circuit breakers, and relays
ACDC Dynamics
 Full range of DBs, main breakers, circuit breakers, etc
Allbro
 Distribution boards and ready boards
Alstom Protection & Control
 LV air circuit breakers
ARB Electrical Wholesalers
 Full range of DBs, mains breakers, etc
Atlas Group
 Full range of DBs, breakers, etc
Bellco
 Full range of DBs, breakers, etc
CBI-electric: low voltage
 Full range of DBs, breakers and relays
Crabtree Electrical Accessories
 A range of 6 kA MCBs (includes isolators, earth leakages and miniature circuit breakers); a range of 12 and 18 DIN flush mount distribution boards
Eaton Electric SA
 Full range of DBs, main breakers, circuit breakers, etc
Legrand
 Surface- and flush-mount DBs; full range of breakers and protection devices; Lexic contactors; Lexic MCB; Lexic MCCB breakers
Magnet Electrical Supplies
 Full range of DBs, mains breakers, circuit breakers, etc
Major Tech
 Full range of distribution boards including flush-mount Econo boards, surface-mount IP65 boards, IP65 clear/grey enclosures and IP55 junction boxes; specialists in populated ready boards 3 kA and 6 kA mini circuit breakers, isolator and earth leakage switches
MCE Global Suppliers
 Onesto circuit breakers, earth leakages, Onesto distribution boards – flush and surface mount
Megger
 Megger test instruments for circuit breakers
Pretoria Motor Control Gear Products (PMCG)
 Full range of contactors, breakers and relays
Schneider Electric
 Series 4 DBs and circuit breakers
Strut-Ahead
 Comprehensive range of contactors, breakers, and relays
Voltex
 Full range of circuit breakers
Voltex LSis
 Full range of circuit breakers
Waco
 Wide range of circuit breakers
Zest Electric Motors
 Full range of DBs, main breakers, circuit breakers etc

Load management

ACDC Dynamics
 Full range of load management solutions
Alstom Protection & Control
 Load shedding relays
CBI-electric: low voltage
 Full range of load shedding relays, etc
Magnet Electrical Supplies
 Full range of load management solutions
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 Onesto load shed relays, electronic load shed relay
Omron
 Relays

Switchgear

Actom Electrical Products
 SBV indoor equipment, SBV3+3E, SBV4+4E, SBV5+5E, SBV-24, vacuum intern pres, ring main units and extensible switchgear, compact MV switchgear
Allbro
 Insulators and busbar supports
Alstom Protection & Control
 LV municipal electricity distribution; metering and distribution enclosures
ARB Electrical Wholesalers
 Full range of switchgear
Atlas Group
 Full range of switchgear
Bellco
 Full range of switchgear
CBI-electric: low voltage
 Full range of switchgear
Eaton Electric SA
 Full range of switchgear
Legrand
 Miniature circuit breakers from 1 – 125 A; b-, c- and d-curve moulded case circuit breakers from 16 – 1 600 A; air circuit breakers from 800 – 6 300 A
Magnet Electrical Supplies
 Full range of switchgear
MCE Global Suppliers
 Pushbuttons, control devices, pilot lights, emergency stops, toggle switches, control stations, time switches, temperature controllers, pendant controls, joysticks, float switches, fireman switches, micro switches, mini switches, limit switches, foot switches, ammeter switches
Megger
 Megger test instruments for switchgear
Omron
 Low voltage switchgear
Sabelco
 Advanced LV electrical assemblies
PMCG
 Full range of switchgear
Voltex
 Full range of switchgear
Voltex LSis
 Full range of switchgear
Voltex MV/LV Solutions
 Full range of switchgear
Zest Electric Motors
 Full range of switchgear

Mini substations

Actom Electrical Products
 Compact mini substations; maximum rating: 22 kV up to 1 000 kVA available in mild steel, fibreglass or 3CR12; enclosures in Type A or B configuration
ARB Electrical Wholesalers
 Full range of mini substations
Atlas Group
 Full range of mini substations
Bellco
 Full range of mini substations
CBI-electric: low voltage
 Full range of mini substations
Eaton Electric SA
 Full range of mini substations
Legrand
 Extendable mild steel enclosures
MCE Global Suppliers
 Hyundai and Onesto MCCBs, MCBs and ACBs
Voltex
 Full range of mini substations
Voltex MV/LV
 Full range of mini substations
Zest Electric Motors
 Full range of mini substations

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

MV to LV transformers

Actom Electrical Products

Distribution transformers from 16 kVA to 5 mVA, power transformers from 6 mVA to 315 mVA

Allbro

Transformer bushings and tap change switches, protection equipment

ARB Electrical Wholesalers

Full range of MV to LV transformers

Atlas Group

Full range of MV to LV transformers

Bellco

Full range of MV to LV transformers

CBI-electric: low voltage

Full range of MV to LV transformers

Eaton Electric SA

Full range of MB to LV transformers

Legrand

Compact DIN rail-mounted transformers; LV transformers

Magnet Electrical Supplies

Full range of MV to LV transformers

Megger

Megger test instruments for power and distribution transformers

Schneider Electric

Electronic LV lighting transformers

Voltex

Full range of MV to LV transformers

Voltex MV/LV Solutions

Full range of MV/LV transformers

Zest Electric Motors

Full range of MV to LV transformers

Metering (measuring instruments)

ACDC Dynamics

Full range of measuring instruments

Actom Electrical Products

Full range of metering instruments

Alstom Protection & Control

Meter test blocks

ARB Electrical Wholesalers

Full range of metering instruments

Atlas Group

Full range of metering instruments

Bellco

Full range of metering instruments

Eaton Electric SA

Full range of metering instruments

Electro Test Instrumentation

Full range of metering instruments

Magnet Electrical Supplies

Catu MV and HV voltage detector complete with audible and visual alarm, contact type; Chauvin Arnoux current, power and harmonic clamp-on meters; Chauvin Arnoux Qualistar power quality analyser, digital with scope and 4 Mb of storage; Metrahit multimeters with optional data logging features

Major Tech

Compact power analysers; power quality analysers; current loggers; current and voltage loggers; leakage and loggers; full range of professional ac and ac/dc clamp meters; compact ac and ac/dc clamp meters

MCE Global Suppliers

Ammeters, voltmeters

Voltex

Full range of measuring instruments

Meters

Actom Electrical Products

Single phase direct kWh meters, single and three-phase Ct operated kWh meter, single phase kWh meter with cyclometer, single phase meter with LCD display and polycarbonate cover

Allbro

Meter boxes

Alstom Protection & Control

Three-phase and single-phase electromechanical and electronic meters;

Three-phase and single-phase electromechanical and electronic meters; measurement centres; three-phase programmable electronic meters

ARB Electrical Wholesalers

Full range of meters

Atlas Group

Full range of meters

Bellco

Full range of meters

CBI-electric: low voltage

Full range of meters

Eaton Electric SA

Full range of meters

Legrand

Analogue and digital DIN rail-mounted meters

Magnet Electrical Supplies

Full range of meters

Major Tech

Compact power analysers, power quality analysers, current loggers, current and voltage loggers, leakage loggers; full range of professional ac and ac/dc clamp meters, compact ac and ac/dc clamp meters

MCE Global Suppliers

Avanti current monitors, analogue panel meters

Pretoria Motor Control Gear Products (PMCG)

Full range of meters

Radiant Group

Range of meters

Voltex

Full range of meters

Voltex LSis

Full range of meters

Waco

Full range of meters

Pavement cubicles and boxes

Allbro

Pole mounted distribution boxes

Atlas Group

Full range of pavement cubicles, boxes

Alstom Protection & Control

LV municipal, utility distribution and metering

ARB Electrical Wholesalers

Full range of pavement cubicles, boxes

Bellco

Full range of pavement cubicles, boxes

Eaton Electric SA

Full range of pavement cubicles, boxes

Legrand

Full range of enclosures in mild steel, polycarbonate and stainless steel

Voltex

Full range of pavement cubicles, boxes

Energy billing

ACDC Dynamics

Full range of energy billing solutions

Atlas Group

Full range of energy billing solutions

Bellco

Full range of energy billing solutions

Eaton Electric SA

Full range of energy billing solutions

Magnet Electrical Supplies

Full range of energy billing solutions

Radiant Group

Range of energy billing solutions

Voltex

Full range of energy billing solutions

Building management systems

ACDC Dynamics

Full range of building management systems

Comtest

Fluke 983 particle counter; Fluke 200 series carbon monoxide/dioxide tester

Eaton Electric SA

Full range of building management systems

Electro Test Instrumentation

Full range of building management systems

Omron

Omron PLC

Schneider Electric

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Training and development by Nick du Plessis

Trade test applications – cutting the confusion about entry requirements

FOR some time, there has been confusion about the entry requirements needed by candidates who wish to apply to write a trade test. In July last year, the Department of Higher Education and Training presented transitional arrangements in order to address this problem and provide clear guidelines for these candidates.

In a previous column, I discussed trade tests for those people who have not followed a formalised training programme and the definitions of Section 28 of The Manpower Training Act (Act 56 of 1981), which states under point (1): "... any person who satisfies the training board that he has undergone training or gained experience in the trade in question of a nature and for a period which reasonably concurs with the conditions of apprenticeship for the trade in question and, in the opinion of the training board is adequate, admit him to a trade test in accordance with the said standards."

This 'Section 28 option' for candidates to do the trade test has now been replaced with The Skills Development Act (Act 97 of 1998) that also makes reference to those people with experience to undergo a trade test.

This can be found in Section 26D 2 (c): A person may apply to undergo a trade test in respect of a trade if "an accredited trade test centre has certified that the person has acquired sufficient prior learning related to that trade".

National Artisan Development Transitional Arrangements – Revised Section 1.2

Candidates who have not gone through a formal

artisan learning programme but possess the relevant years' of work experience in a related trade may be granted access to a trade test if they have completed the following:

- 1 N2 certificate including the relevant trade theory subjects and a minimum of three years' relevant work experience; or
- 2 Technical trade theory programs quality assured by a SETA deemed to be at NQF Level 3 and a minimum of three years' relevant work experience; or
- 3 Relevant Engineering NCV at NQF Level 3 and a minimum of three years' relevant work experience; or
- 4 Relevant Engineering NC(V) 4 plus completion of all relevant work experience modules and a minimum of 18 months' relevant work experience; or
- 5 Technical Grade 12 with maths, science and related trade theory subjects and a minimum of three years' relevant work experience; or
- 6 Grade 9 and a minimum of four years' relevant work experience; or
- 7 Relevant (directly related to the trade theory subjects) N6 Certificate or National Technical Diploma (T, S or N stream) with 18 months' relevant work experience.

All of the options in revised Section 1.2 refer to "relevant work experience" and this is the part that is not always understood by candidates when making application.

I recommend that prospective candidates obtain a copy of the curricular and verify that their work experience is aligned with the requirements

defined in the curricular. This is especially important if prospective candidates have only worked in a specific job and have limited experience, and if they don't have experience in the full spectrum of that trade. Once they know what is required and where their experience is lacking, they should work towards getting experience in those areas.

As at many other trade test centres in the country, P & T Technology's trade test centre requires every candidate to complete a pre-trade test evaluation prior to registering for the trade test (this requirement can be found in the transitional arrangements document).

This process ensures that candidates meet all the legal requirements. However, if gaps in a candidate's experience are indeed identified, we tell the applicant where these gaps are and we offer advice on how the gaps can be closed.

Once the prospective candidate has experience in all the areas defined in the curricular, they are

then ready to apply for a certificate that will allow them to submit an application to do a trade test.

Those certificates that allow candidates to do the trade test are issued by the Quality Council for Trades and Occupations (QCTO) and reference is made to Section 26D of the Skills Development Act.

Remember that applicants are only issued with a certificate if they possess all the necessary skills and knowledge linked to this qualification.

The transitional arrangement's revised document can be obtained from the various SETAs or downloaded from QCTO website.

Should anyone not be able to obtain the necessary documentation, they can email me at nick@pandtttechnology.co.za and I will assist them.

Enquiries: +27 11 827 4113

Solar rooftop PV solution – 50 kW demo project unveiled in Menlyn, Pretoria



POWERTECH System Integrators, a subsidiary of Powertech and the Altron Group, has introduced a fully funded, off balance sheet solar rooftop photovoltaic (PV) solution for South Africa's rapidly expanding renewable energy sector.

The offering, aimed at corporates, allows customers access to a hybrid energy solution that utilises both grid power and solar energy, resulting in long-term savings.

This grid-tied system is placed on a rooftop or shaded carpark and is based on two major components: PV modules that are able to convert sunlight into current, and an inverter (or multiples thereof) that is able to convert the direct current (dc) power generated by the PV modules, into usable alternating current (ac) power. The electrical supplies from both the rooftop PV system and the municipal network are joined at the electrical distribution board.

This robust solution is designed with, and backed by, world class manufacturers and all products utilised have UL, IEC and TUV certifications. PTSI currently has a rooftop solar PV rooftop system at its head office in Pretoria, generating 60 kW of dc power, converted to 50 kW of ac power.

The offering will be best suited for corporates with large roof space and constant base loads seven days a week, such as mining companies, commercial property owners and industrial facilities.

PTSI's model allows for the system to be built, maintained and owned by PTSI, and the electricity generated to be provided through a power purchase agreement (PPA).

The price of electricity produced by the PV system will be equal to the tariff currently in place, less a nominal discount. Customers will also have 'buy-back' options during the contract period.

"A large number of the system's components are manufactured in South Africa or have the potential to be manufactured in-country," says Kobus Morgan, executive for Strategic Projects at PTSI.

"This is a local, viable solution for South Africa's large energy users who are subject to high electricity tariffs that are increasingly pushing up operating costs and impacting the bottom line. In fact, solar PV has become one of the fastest growing sources of energy in the world, with the local commercial rooftop industry (excluding the Renewable Energy Independent Power Producer Procurement, REIPPP programme) generating about 15 MW in 2014; a figure which is set to increase in the coming years."

Rooftop PV can also form part of a smart or micro grid where electricity usage automatically switches between power sources (diesel or gas generators and batteries) as and when needed; ensuring a consistent supply of energy during outages.

Enquiries: +27 12 426 7200

Stellenbosch winery powered by clean solar solution



SITUATED on the gentle slopes of the magnificent Simonsberg Mountain, Quoin Rock Farm and Winery in Stellenbosch has gone mostly off the grid and invested in a renewable energy solution by Schneider Electric, to produce its complex and full-bodied wines.

The solar solution was deployed by Emergent Energy, a Schneider Electric alliance partner, offering state-of-the-art solutions in grid-tied and off-grid renewable energy systems. "Schneider Electric's 103 kW peak system was installed on a single north-facing rooftop together with five 20 kW peak Schneider Electric inverters and Trina Solar 300 W solar photovoltaic modules," says Leon Hailstones, transactional products channel manager for Schneider Electric's Solar Business in southern Africa.

According to Yoann Joyeux, managing director at Emergent Energy, Quoin Rock Wine Farm and Winery opted for the solution in a bid to save up to 50% of its total electricity consumption, for the next 25 years at least and hedge its operating costs. In addition, the project fitted into Quoin Rock's sustainability ethos, as it is critically

aware of the sensitivity of the environment and special efforts are made to use environmentally responsible farming methods to encourage and preserve the rich biodiversity of local fauna and flora.

"In our opinion, the Schneider Electric brand is one that clients can relate to – from its industrial automation products to its solar solutions and more – all-encompassing an energy efficient principle," adds Joyeux.

Schneider Electric offers a complete solution for photovoltaic integration and connection including power conversion (inverters, transformers and switchgear), electrical distribution, monitoring, supervision and technical support.

"Emergent Energy received incredible support from Schneider Electric throughout this project – from business development to installation.

"We were also very pleased to offer our client a full electrical solution – starting with the inverter to the final electrical output – from one single manufacturer, resulting in easier procurement and risk reduction," concludes Joyeux.

Enquiries: +27 11 254 6400



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NovoPress





Don't be caught in the dark – get a cordless LED flashlight



THE Makita DML801 18V Lithium-Ion LED Flashlight is already proving to be real winner, having entered the South African market when the demand for an alternative reliable light source has once again become a sought-after commodity, says Makita's Jean-Pierre du Plessis.

"The first thing that most people want to know is how long the battery will last; in this case the answer is a favourable one. The DM801, when used with a fully charged Makita 18V 3.0Ah rechargeable battery, will provide nine hours on full brightness (all 12 LEDs on) and 22 hours on half brightness (six LEDs on), providing long and continuous illumination," he explains.

This flashlight has 12 LEDs that provide a wide and brightly illuminated area as well as the versatility of various positioning options. The light head rotates from left and right providing a variety of lightening directions and has seven different stops from upright through to 180°.

"It can also be used as a compact lamp when the light head is swivelled and fully folded. The DML801 has a convenient metal hook (swivels a full 360°) providing the option to hang the flashlight to illuminate dark areas such as under the bonnet of a car. With the use of an automotive battery charger, this flashlight can even be used for extended trips to remote

locations where a power source may not be available," adds Du Plessis.

The DM801 is compatible with the Makita 5.0Ah (45 minutes charge time), 4.0Ah (36 minutes charge time), 3.0Ah (22 minutes charge time), 1.5Ah and 1.3Ah (15 minutes charge time) batteries.

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

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

Enquiries: +27 11 878 2600



18V LITHIUM-ION

LXT LITHIUM-ION

Don't Be Caught In The Dark

Stay productive with Makita's extensive range of 18V Lithium-Ion Cordless Power Tools.

DML801 - 18V Cordless LED Job Site Light

The DML801 has a versatile selection of rotatable and foldable light head positions for wide and bright illumination with a 2-stage push button switch.

9¹/₂₂² hours

Lengthy continuous illumination

On a single full battery charger

*1 : Full Brightness (12- LEDs on) / with 18V – 3.0Ah battery

*2 : Half Brightness (6- LEDs on) / with 18V – 3.0Ah battery

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

Outstanding Performance and Compact Design.



18V + 18V → 36V

- Powered by two 18V Li-ion batteries in series.
- LED job light.
- 3 mode operation - rotation only, hammering with rotation and hammering only.
- Compatible with 1.5Ah, 3.0Ah and 4.0Ah batteries.

Capacity: - Concrete:	26mm
- Steel:	13mm
- Wood:	32mm

Blows per min (b/min): 0 - 4,800

No load speed (r/min): 0 - 1,200

XPT

Enhanced protection from dust & dripping water, when using it in outdoor applications or harsh environments.

18V Battery Charge Times using the Makita DC18RC Fast Charger:
 1.3Ah – 15 minutes, 3.0Ah – 22 minutes, 4.0Ah – 36 minutes





MakitaPowerToolsSA

MakitaToolsSA

For more info. contact Rutherford:

• JHB: 011 878-2600 • CT: 021 932-0568

• DBN: 031 717-6400



www.makita.co.za

Digital multimeter designed for electrical contractors



THE Megger AVO410 digital multimeter has been designed for contracting electricians and offers a comprehensive list of features, which make it suitable for use on a wide range of applications. The AVO410 offers ac and dc voltage and current measurements along with frequency, resistance and capacitance ranges.

The AVO410 multimeter has the added accuracy of True RMS readings on the ac functions and a CAT IV 600 V safety rating, meaning that it is suitable for industrial applications. The slim, compact case has a tough rubberised holster that provides an extra degree of protection from the extreme conditions of industrial environments. The Megger AVO 410 is perfect for single-handed use and the simplified functions allow for straightforward and efficient operation.

When each function is first selected it is auto-ranging, however the AVO410 multimeter allows multiple, manual range selections to be made on each available function.

This digital multimeter has a MIN MAX function that allows users to switch between minimum and maximum measurements with the added option of a data hold function.

True RMS ac and dc voltage measurements up to 750 V and 1 000 V respectively can be made by the AVO 410 multimeter.

For current measurements up to 10 A, a separate fused terminal is provided for added safety.

The continuity function of this AVO multimeter provides the user with both optical and audible indication of continuity between two points and the same function allows forward and reverse bias testing of diode and semiconductor junctions.

Megger is represented locally by Surgetek. All content courtesy of Megger.

Enquiries: +27 11 792 1303

Safety – does your meter measure up?

KNOWLEDGE, as the saying goes, is power. However, when electrical power poses a hazard, knowledge is survival, says Werner Grobbelaar, sales manager at Major Tech. “While multimeters have inherent safety features, you still need to know the limitations of those features and how to apply that knowledge to your electrical work,” he advises.

“Do you work on three-phase motors, motor controls, soft-starters or variable speed drives? Do you work on 277 V single-phase lighting circuits and on distribution panel boards?” he asks. “If you answered ‘yes’ to any of these questions, you’re in a CAT III environment. These kinds of circuits could have enough energy to cause meters to explode, causing personal injury and equipment damage,” warns Grobbelaar.

“Major Tech offers a range of industrial digital

multimeters that comply with IEC61010:2001 CAT III 1000 V and CAT IV 600 V safety standards that are perfect for technicians working in maintenance, facility maintenance, installation and production equipment maintenance,” says Grobbelaar.

“This range of new digital multimeters from Major Tech has a special safety feature: If a rotary switch has been turned in either direction whilst signals of less than 1 000 V ac/dc have been input into the multimeter, they will not be damaged. Even if the knob is accidentally set on the ohms range, the instrument is still protected against measuring voltage,” explains Grobbelaar.

The multimeter range offers features such as ‘data hold’, ‘relative mode’, ‘frequency measurement with duty cycle’ and ‘capacitance’. The ‘capacitance’ range allows the user to carry out capacitance measure-

ments conveniently without having to carry a separate instrument.

“These meters offer all measurements of ac and dc voltage up to 1 000 V and current up to 10 A, resistance, a diode test function and a continuity buzzer. A new feature is ‘NCV’ where, if an ac voltage above 110 V is detected, a red LCD backlight will be illuminated,” he says, adding that the MT1879, MT1882, MT1885 and MT1887 industrial multimeters offer temperature measurements in various ranges.

When buying an accessory, there is an important consideration that is often overlooked.

Grobbelaar asks: “Have you ever used taped test leads? Or used a connector to hold the broken sections of leads together? Or used test leads and probes that have no voltage rating marked on them? Or how about using some number 12 wire clipped to a probe as a test lead extension? Well, if you have, that’s exactly like having a new car equipped with the latest safety gear but fitted with



bald tyres,” he says, adding, “The probes and leads can be seen as where the rubber meets the road.”

A system is only as strong as its weakest link, and the weakest link is often not the meter itself but the test leads. “Poor test leads will compound an already bad situation in the case of improper fusing,” explains Grobbelaar.

“When considering the safety ratings of meters, keep in mind the same ratings apply to test leads, probes, clips and even clamp-on accessories.”

Enquiries: +27 11 872 5500

New laser finder makes transferring measurement data so easy

THE new Bosch GLM 100 C Professional data transfer laser finder simplifies and speeds up workflow processes by enabling the direct transfer of measurements straight to a digital device. Thanks to its integrated Bluetooth and a micro USB port, all measurements captured with the Bosch GLM 100 C Professional can be sent in real-time to another compatible digital device, such as a smartphone or tablet.

Bosch Power Tools SA senior brand manager, Juergen Lauer, says that all measurements that have been stored on the device can be exported to a Windows PC, via Bluetooth or the micro USB port, in table format, which can then be processed on a computer.

“The measurements include the time and date for easy identification, and the data can be stored as a Microsoft Excel or Editor file, allowing for further processing,” he explains.

“Measurement functions of the GLM 100 C Professional include the calculation of length, surface and volume and the tool features a timer function that can be combined with other device functions. The time function assists the user when movements between measurements are to be excluded from the measurements. Measurement takes place automatically after the set time period has passed. The time period can be set between 1 and 60 seconds,” explains Lauer.

Other functions of the Bosch GLM 100 C Professional include distance and area measurements, as well as continuous measurement, incline measurement, and minimum and

maximum measurements.

Lauer says this handy tool can also carry out addition and subtraction functions, along with indirect height and distance measurements, and double indirect height measurement. “It has an integrated 1.25 Ah Lithium-Ion battery, which can easily be charged via the micro USB adapter, and an operational lifespan five times that of two standard AAA alkaline batteries.”

He adds that this device memory can store up to 50 measurements as well as one constant value. “The GLM 100 C Professional has a measuring distance of up to 100 m. It is small and compact, weighing only 0.14 kg, and is suitable for use in a variety of work environments as it is protected against dust and water and is drop-resistant up to 1 m,” concludes Lauer.



Enquiries: +27 11 651 9600

Look no further for real quality portable LED lights

UNILITE, the ultimate in quality portable LED lighting for industry, is now available from Garry Lumpe Imports. Perfect for electrical contractors who sometimes have to work in dark places, these high powered, premium quality LED lamps and flashlights help electricians and technicians to complete their tasks safely and quickly. The range, imported by Garry Lumpe Imports is waterproof and impact resistant. Although Unilite lamps are compact and easy to handle, they have incredibly high lumen outputs.

The range includes LED inspection lamps from 220 to 750 lumen; convenient headlamps from 80 to 350 lumen for workers who need hands-free lighting; durable – almost indestructible – flashlights with 500 lumen; and extreme power flashlights from 120 to 900 lumen. In addition, Unilite offers a range of intrinsically safe IP67 LED lamps that are ideal for the mining and petrochemical industries.

Enquiries: +27 11 396 4065



Rugged clamp meter – for small spaces



THE Fluke 325 clamp meter is specifically designed for commercial, light industrial, HVAC, residential and DIY applications. Its rugged casing is tough enough to withstand a one-metre drop. The ergonomic design features a smaller, tapered jaw, for cramped situations. The 325 is also Category IV 300V/CAT safety rated and has a two-year warranty. The 320 Series clamp meters measure:

- 400 A ac and dc current.
- 600 V ac and dc voltage.
- Resistance up to 40 kΩ with continuity detection.
- True-rms ac voltage and current on non-linear signals.
- Temperature.

Enquiries: +27 10 595 1821

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Changes to labour legislation take labour relations practices to new levels of fairness

THE trade union movement has made significant ground in the advancement of workers' rights in the workplace. This is clearly evidenced by the recent comprehensive amendments to labour legislation set out in The Employment Equity Act, The Labour Relations Act and The Basic Conditions of Employment Act as well as the passing of The Employment Services Act, which is still to be promulgated.

These changes will improve job security for 'vulnerable employees' and penalise the businesses that derive their profit out of trading people. The way we conduct our business and manage our human resources will be affected by these far-reaching changes to labour legisla-

tion. Employers will be obliged to ensure that they and HR staff are up-to-date and understand all the legal implications of the amendments. Ignorance of the law and/or failure to implement the required changes will result in unpleasant consequences, which can be avoided.

'Temporary employment services' and the employers that use them have been identified as the primary exploiters of vulnerable employees who are paid less and do not receive the social benefits due to them.

The amendments to legislation have succeeded in curtailing the operations of 'temporary employment services' and those who use their services. The self-serving practises of 'client

contractors', labour brokers and 'labour only sub-contractors' have been exposed for what they are. For instance, labour brokers have been identified as individuals who 'sell' the labour of other people to do the same (or similar) work done by permanent employees of 'client contractors' at a lower cost to the client and with even less reward going to the vulnerable employees.

The Labour Relations Amendment Act's main objective is, therefore, to limit the space and scope available for the exploitation of vulnerable labour. It is important for any business using labour brokers to be aware that under certain specified circumstances, *the employee of a labour broker can be deemed as the employee of the client of the labour broker.*

Once the deeming provision has been sustained, all due obligations of the employer towards the employee will be the obligations of the client of the labour broker. Therefore, the dismissal of such deemed employee will be a dismissal by the client of the labour broker.

The risk is huge and the usage of these 'temporary employment services' must be carefully considered by employers to ensure that such risk cannot be transferred back to the client who may be unwilling to have surprise employees who are deemed to be his.

Fixed term contract employees

The other group of vulnerable employees is the 'fixed term contract employees'. That era, where these vulnerable employees would have their contracts repeatedly renewed without being changed to indefinite term contracts, is over. Employers who attempt to circumvent the objectives of the amendment will find that the lawmakers will close the gap. I wouldn't advise anyone to go

that route.

We need to accept that the business of employing others has changed in South Africa. No employer will be allowed to continually avoid permanent employment where the businesses actually have vacant permanent positions available.

When I was studying towards my law degree, I encountered many arguments against fixed term contracts and the manner in which business avoided permanent employment; and I knew it was just a matter of time before the lawmakers intervened. We cannot have 'permanent temporary employees' any more. There is a way to employ 'fixed term contract' employees that is legal and genuine and is allowed for in the amendments.

The ECA(SA) recognises that these amendments are a game changer for electrical contractors in particular.

Therefore, seminars will be held from 12 May to 4 July to teach and train practitioners in the industry to ensure that ECA(SA) members are made aware of the implications of these amendments. More importantly, we have developed a tailor-made training manual to help contractors navigate through the changes.

Details of the seminars are listed separately.

I urge ECA(SA) members to make every effort to attend these seminars, the details of which are listed below.

Contact Florence Mabena at the ECA(SA) national office on (011) 392-0000 to secure a seat or contact the nearest ECA(SA) regional office for information.

In conclusion: These changes to labour legislation cannot be ignored and ignorance of the law is not a valid excuse.

New variable frequency drive for industrial applications up to 160 kW



With PowerXL DG1 Eaton is offering variable frequency drives for the most demanding industrial and building automation applications for ratings from 0.55 to 160 kW

POWER management company Eaton is offering its new PowerXL DG1 variable frequency drive series as a solution for demanding industrial and building automation applications for ratings from 0.55 to 160 kW. With features such as an optimised energy algorithm, robust design, extreme short-circuit current capability, extensive and integrated functionality as well as being extremely user-friendly, these devices enable users to implement electrical equipment, systems and machinery with greater efficiency, safety and reliability.

The DG1 variable frequency drives stand out on account of their versatile communication. All models come with standard interfaces for Ethernet IP, Modbus TCP, Modbus RTU as well as BACnet MS/TP. Plug-in cards can also be used for connecting to Profibus DP, CANopen, DeviceNet, ProfiNet and LonWorks as well as Eaton's innovative SmartWire-DT lean panel wiring and communication system. Additionally, the devices provide several digital and analogue inputs and outputs as well as three relays, thus offering more connection options than many other devices of this class on the market today. Furthermore, different add-on cards also make it possible to further expand the DG1 simply and flexibly.

Handling is based on the same well-known and proven concept of other PowerXL variable frequency drives (DC1 or DA1). For many applications, the installer can thus commission the device in the field directly out of the box, without any extensive parameter setting needed. Their clearly designed menu guidance on the five-line LCD display, self-explanatory type codes, as well as only 14 standard parameters further simplify commissioning of the drives in demanding applications. The

membrane keyboard has two freely configurable keys as well as three LEDs for indicating at a glance the status of the device. The operating elements can either be installed locally on the device or remotely, such as in the switch cabinet door in order to easily control several devices. Alternatively, Eaton offers an ergonomic configuration option using the innovative InControl software that is also suitable for monitoring and data logging.

The drive software installed on all DG1 variable speed drives offers outstanding features such as active power consumption optimisation, dynamic power management in the event of feedback, a quickstart wizard, different standard application function blocks (multi-pump system, fan control, multi-PID, multi-purpose use), safety functions, as well as Safe Torque Off (STO) and real-time clock. In terms of power consumption, Eaton has succeeded in reducing the power required for driving motors by 2 to 10%, compared to other variable frequency drives on the market without any additional optimisation.

The DG1 offers an overload withstand capability of 110% for variable torques and 150% for constant torques. Thanks to an integrated dc link choke, the variable frequency drive only has a very small harmonic component, so that the user does not require additional external components. EMC filters (C2) are likewise standard for all devices.

The variable frequency drive series comes in six sizes with protection class IP21 for all housings. A special coating protects the electronic boards from dust, humidity and chemicals. For harsher environmental conditions or remote operation, the housing can be retrofitted to IP54 with a conversion kit.

Enquiries: +27 11 874 4315



Courses to update contractors on new labour law in South Africa

The ECA(SA) invites members and interested persons to tailor-made workshops that will clarify the important recent changes to labour law.

Topics that will be discussed include:

- Fixed term contract employees can be employed permanently – legally.
- Employers can be found vicariously liable for the employees of a sub-contractor.

- The employees of a sub-contractor can be deemed as the contractor's employees.
- Contractors are liable for the underpayment of labour brokers and sub-contractors' employees.

ECA(SA) members will receive preferential rates. All attendees will receive a copy of the Labour Relations Amendment Act and course material.

Date	City	Venue	Time
12 May	Pretoria	Nederduitsch Hervormde Kerk, Wonderboom	10 am – 3 pm
13 May	Nelspruit	Bundu Country Lodge	
20 May	Polokwane	Round Table Clubhouse	
14 May	Meadowdale (JHB)	ECA National office	1 pm – 5pm
15 May	Meadowdale (JHB)	ECA National office	
19 May	Vaal	Old Vaaltonian	
21 July	Ermelo	Ermelo Country Club	
28 July	Klerksdorp	Klerksdorp Country Club	
28 May	Western Cape	ECA Cape Town	8 am – 2 pm
4 June	South Cape	George	9.30 am – 2.30 pm
11 June	East London	Beacon Bay Country Club	9.30 am – 2 pm
18 June	Port Elizabeth	Crusaders Club, Mill Park	9 am – 2 pm
6 June	Durban	Jewish Club	8.30 am – 2 pm
27 June	Pietermaritzburg	Collegian Club	
3 June	Upington	Lions Club, Showgrounds	11 am – 5 pm
4 June	Kuruman	Rose Court; Kuruman	
17 June	Kimberley	Hoffe Park, Kimberley	
1 July	Bloemfontein	ECA Bloemfontein office	
2 July	Welkom	Bundu Game Lodge	

Touch-screen time switch for diverse applications

CBI-electric: low voltage's newly launched touch-screen programmable QAT-TRDM electronic time switch can be used in residential, commercial and industrial applications to automatically control geysers, lights, air conditioners, pool pumps etc.

The new touch-screen timer fulfils

the need for a reliable time switch that is quickly installed and simple to set up, all within a compact form factor.

"The current trend for energy and cost savings, as well as a reduced carbon footprint, calls for load control," says Manuel Ribeiro, product manager at CBI-electric. "In addition, the

consumer wants a 'set-and-forget' experience."

Consumers can realise energy and cost savings by installing the timer on geysers. Business owners can use the device to automatically switch billboard or storefront signage off after midnight to save costs and energy. The

time switch is perfect for automating lights at home or the office as well as ensuring that driveway or security lights are activated at night. The touch-screen timer is also perfect for automating pool pumps and water features.

The unit has a LCD touch-screen that enables the simple setting of time and programs. It allows for multiple on/off programs and has improved 15-minute segments with a graphical display on the home screen showing the 24-hour program schedule.

The time switch also has a manual by-pass facility with on/off control. The time switch is compact in size with both DIN and mini rail-mount options. During a power outage, the backup power displays time for 12 hours and keeps time for at least 24 hours with the programmed schedule always being retained. The rechargeable reserve power feature is particularly useful in South Africa with the frequent load shedding and power outages that we are experiencing countrywide.

To assist users there is a QR code inside the lid of the timer that if scanned takes the user to the CBI-electric website where the installation and programming guide is available.

"This is a very useful feature, as often the box containing the instruc-



tion guide is thrown away after installation.

Now users simply have to scan the code or visit our website, www.cbi-lowvoltage.co.za/QAT and they will be able to download the guide," explains Ribeiro.

The time switch is rated for single-phase 50 Hz at 230 V with a maximum resistive load of 21 A for geysers, underfloor heating and lights; and a maximum inductive load of 10 A for pool pumps and air conditioners. It can be combined with a contactor to switch higher currents or three phase loads, if required.

Enquiries: +27 11 928 2000

Appliance testing key to safety



JUST as car manufacturers often have to recall certain models because of faulty parts that pose a danger to drivers and need to be replaced, the same applies to the household appliances that we purchase for our homes.

In the UK recently, appliance brand, Beko, which isn't available locally, announced that several of its 6 kg and 7 kg condenser tumble dryers may be affected by a faulty third-party capacitor that could fail, overheat and pose a potential fire risk.

According to the manufacturer, the warning applies to around 51 000 appliances – 30 000 of which are in consumers' homes – that were manufactured between May and October of 2013.

This type of occurrence highlights the need for testing electrical equipment thoroughly to prevent injuries, save lives and especially to avoid fires in the workplace or home, the results of which can be catastrophic for households and businesses (which often struggle or fail to recover after a major fire caused by an electrical fault).

Portable appliance test instrumentation specialist, Seaward, represented in South Africa by Test Instruments Africa (TIA), manufactures a comprehensive range of PAT testing equipment (portable appliance testers) and accessories that are used widely in electrical equipment preventative maintenance programmes and enable users to verify the electrical safety of all types of appliances quickly and effectively.

Beko has put a voluntary corrective action programme into place, including national and regional press advertising to make consumers aware of the problem and to get them to check their tumble dryers to see if they own any of the models affected.

Enquiries: +27 11 608 8541

Isolation amplifiers with explosion protection for maximum safety



THE MACX Analogue Ex-i isolation amplifiers from Phoenix Contact have successfully passed type testing in accordance with NAMUR NA 95. This means the devices meet the requirements of the Industrial Practices Interest Group (IGR), an association of the chemical and pharmaceutical industry.

Isolation amplifiers are single- and dual-channel signal isolators for intrinsically safe circuits in potentially explosive areas. These products deliver maximum system safety and explosion protection

with minimal space requirements. The slim 12.5 mm modules offer a wide range of features, ATEX and IECEx approval, and full SIL certification.

NAMUR NE 95 encompasses both the testing of technical properties and the analysis of aspects such as explosion protection, maintenance and repairs, installation, and device documentation. The test reports certify that the devices deliver excellent technical properties in terms of precision and ambient temperature influence, offer electromagnetic compatibility as per NAMUR NE 21, are fully compatible with Ex-i field devices, have clear and easy-to-understand documentation, and make good use of space thanks to their compact design.

IGR is the knowledge platform of the chemical and pharmaceutical industry. The Industrial Practices Interest Group, which currently has 31 member companies ranging from AkzoNobel to Weylchemie, defines and represents the interests of users. As a knowledge platform, it promotes the exchange of information and experience regarding the complete lifecycle of plants and systems. IGR also provides services such as the monitoring of relevant regulations and the assurance of quality standards.

Enquiries: +27 11 801 8200

Free training for electricians

MAJOR Tech provides free training at its Johannesburg branch for electrical contractors and sales people.

The training takes place from noon to 3pm and classes are limited to 20 attendees; anyone wishing to undergo training should register on Major Tech's website: www.major-tech.co.za or call Werner Grobbelaar at (011) 872 5500.

The courses for the rest of 2015 are:

- Major Tech: Power recorders and analysers **22 May**
- Major Tech: Thermal imaging **12 June**
- Major Tech: Instrument selection **26 June**

- VETI: Circuit breakers and enclosures **10 July**
- Major Tech: New product introduction **24 July**
- VETI: VETI Evolution **14 August**
- Major Tech: Power recorders and analysers **11 September**
- VETI: SANS and new sockets **25 September**
- Major Tech: LED lighting and technology **9 October**
- VETI: Circuit breakers and enclosures **23 October**
- Major Tech: New product information **13 November**

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Purposefully Differentiated

Enhancing electrical power dependability

SCHNEIDER Electric's RM6 is a compact ring main unit that combines all medium voltage functional units to enable connection, supply and protection of transformers on an open ring or radial network.

The unit, now available locally, can be adapted to meet all medium voltage power distribution needs up to 24 kV and comprises:

- A stainless steel, gas-tight metal enclosure, sealed for life, which groups together the live parts, switch-disconnector, earthing switch, fuse switch or the circuit breaker;
- One to four cable compartments with interfaces for connection to the network or to the transformer;
- A low voltage cabinet;
- An electrical operating mechanism cabinet; and
- A fuse chamber compartment for fused switch-disconnectors or fuse switches.

According to Francis Madyegasva, utilities manager at Schneider Electric South Africa, the performance characteristics obtained by the RM6 meet the definition of a 'sealed pressure system' laid down in the IEC recommendations.

"The switch-disconnector and the earthing

switch offer the operator all necessary usage guarantees. The enclosure is filled with SF6 at a 0.2 bar gauge pressure. It is sealed for life after filling. Its tightness, which is systematically checked at the factory, gives the switchgear an expected lifetime of 30 years," he says.

"No maintenance of live parts is necessary with the RM6. Electrical arc extinction is obtained using the rotating arc technique plus SF6 auto-expansion, allowing breaking of all currents up to the short-circuit current."

When harsh climatic conditions or environmental restrictions make it necessary to use compact switchgear, but the foreseeable evolution of the power distribution network makes it necessary to provide for future changes, RM6 offers a range of extensible switchgear. The addition of one or more functional units can be carried out by simply adding modules that are connected to each other at busbar level by directed field bushings.

This very simple operation can be carried out on-site without handling any gas, any special tooling and any particular preparation of the floor.

"The only technical limitation to the

evolution of an extensible RM6 switch-board is therefore the rated current acceptable by the busbar: 630A at 40°C," says Madyegasva.

RM6 offers complete insulation. A metal enclosure made of stainless steel, which is unpainted and gas-tight contains the live parts of the switchgear and the busbars. Three sealed fuse chambers, which are disconnectable and metalised on the outside, insulate the fuses from dust, extreme humidity, temporary soaking and more. Metallisation of the fuse chambers and directed field terminal connectors confines the electrical field in the solid insulation.

"Taken together, the above elements provide the RM6 with genuine total insulation, which makes the switchgear completely insensitive to environmental conditions," says Madyegasva.

He adds that the switch-disconnectors and circuit breakers have similar architecture. A moving contact assembly with three stable positions (closed, open and earthed) moves vertically. Its design makes simultaneous closing of the switch or circuit breaker and the earthing switch impossible. The earthing switch has a short-circuit-making capacity, as required by the standards and the RM6 combines both the isolating and interrupting function. Additionally, the earth collector has the correct dimensions for the network and access to the cable compartment can be interlocked with the earthing switch and/or the switch or circuit breaker.

"The robust, reliable and environmentally insensitive design of the RM6 makes it highly improbable that a fault will appear inside the switchgear. Nevertheless, in order to ensure maximum personal safety, the RM6 is designed to withstand an internal arc supplied by a rated short-circuit current for one second, without any



danger to the operator," says Madyegasva.

Accidental overpressure due to an internal arc is limited by the opening of the safety valve, at the bottom of the metal enclosure. The internal arc withstand of the tank is of 20 kA 1s.

In order to test cable insulation or look for faults, it is possible to inject a direct current of up to 42 kV dc for 15 minutes through the cables via the RM6, without disconnecting the connecting devices.

Schneider Electric is committed to a long-term environmental approach. "As part of this, the RM6 range has been designed to be environmentally friendly, notably in terms of the product's recyclability," says Madyegasva. "The materials used, both conductors and insulators, are identified and easily separable. At the end of its life, RM6 can be processed, recycled and its materials recovered in conformity with the draft European regulations on the end-of-life of electronic and electrical products, and in particular without any gas being released to the atmosphere nor any polluting fluids being discharged."

Enquiries: +27 11 254 6400

An energy saving solution



SOUTH Africa's cost of power is increasing at an alarming rate and users of power are being asked to save energy wherever possible to help prevent future power cuts. Industry and facilities alike are looking for ways to conserve energy in order to reduce ever-escalating energy bills.

Fluke, represented in southern Africa by the Comtest Group, has come up with a solution for this crisis where their offering gives the best in power quality analysis and has the ability to clearly quantify energy losses in Rands and cents. Their answer is the newly launched Fluke 430 Series II power quality and energy analysers, which replaces the current Fluke 430 series. The energy analysis capabilities of the 430 Series II gives electricians the ability to determine how much power is being wasted and calculate exactly what the extra consumption costs. The technology behind this monetisation capability can only be found with the Fluke 430 Series II.

The new Fluke 434, 435 and 437 Series II

models help locate, predict, prevent, and troubleshoot power quality problems in three-phase and single-phase power distribution systems.

Additionally, the Fluke-patented energy loss algorithm, unified power measurement, measures and quantifies energy losses due to poor power quality such as harmonics and unbalance issues, allowing users to pinpoint the origin of energy waste within a system and make the necessary repairs.

The 434 Series II energy analyser is specifically designed for facilities engineers, building managers (energy costs), residential and commercial electricians and basic power quality users and delivers power and energy analysis using patented algorithms – energy loss calculator monetises cost of poor power quality.

Enquiries: +27 11 608 8520

No quick fix to power crisis

While stakeholders scramble to 'put out fires' and keep the lights on, SAAEA has warned that there can be no quick fix to South Africa's power crisis.

Speaking ahead of the POWER-GEN Africa and DistribuTECH Africa power generation and distribution conferences to be held in Cape Town later this year, Alwyn Smith, spokesman for the South African Alternative Energy Association (SAAEA), says any fix will take "years".

"We have left it too late. There are few, if any, solutions that could be put in place to turn the situation around in the short term. To be fair, this is not just the fault of Eskom. Eskom has been warning for years that this would happen unless more budget was allocated for maintenance," says Smith.

In the longer term, he says, energy sources such as nuclear, solar and wind power have the potential to deliver cost-effective power on a large scale. But currently, independent power producers and alternative energy plants deliver too little total capacity to significantly improve the power situation. A nuclear reactor that could generate a significant amount of power could take nearly a decade to build.

The region has an abundance of gas which could cost-effectively run turbines, he says, but this too would take time to implement. "There is no quick fix. The best we can do right now is to bite the bullet and try to catch up on overdue maintenance on our generators."

However, he believes that widespread net metering could alleviate the load shedding headaches facing businesses and citizens, and could go some way toward easing pressure on the national grid. Net metering allows residential customers and businesses to install solar panels at their premises and store excess power within the grid, in return for 'power credits' when needed. South Africa has been slow to move on creating an environment that allows for widespread net metering, says Smith. He speculates that this is partly due to municipalities' reluctance to give up the profits they make on reselling Eskom power. "Net metering would relieve plenty of the current issues, but now the question is – how to implement it quickly? This is not the sort of thing you can implement overnight. You need the right policies

and systems in place," says Smith.

Smith foresees residents and businesses taking the initiative to go off the grid as the impact of load shedding is felt. However, while solar panels are within reach of ordinary citizens, the challenge lies in storing the solar power.

"The batteries are costly. And currently, there are no systems and framework in place for feeding excess power back into the grid." He says the NERSA call for input on a regulatory framework on small-scale renewable embedded generation is a step in the right direction, however.

"With the right framework in place, net metering could be widely adopted quite quickly, and it wouldn't cost the government a cent. And an independent 50 MW solar farm could be put in place in as little as eight or nine months," he points out.

Nigel Blackaby, director of global power conferences and chair of the POWER-GEN Africa conference, agrees. "We have seen in Europe how net metering has encouraged significant domestic solar rooftop generation, so the potential for this to make an impact in the much sunnier climate of South Africa is great."

The South African and African power sector and the role of alternative energy in South Africa will be among the issues under discussion at the upcoming POWER-GEN Africa and DistribuTECH Africa conference and expo at the Cape Town International Conference Centre from 15 – 17 July this year.

For more information, go to www.powergenafrika.com and www.distributechafrica.com

Enquiries: +27 11 869 9153



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A beacon of hope for Sowetan school

BEKA Schröder is proud to have sponsored the upgrade of Daliwonga Secondary School's Science Laboratory, which was opened on 27 February in Dube, Soweto, says the company's Enock Zikalala.

"The Daliwonga Secondary School was built in 1974 and had not been upgraded since. The vision of the principal and his maths and science team is to make this school a leading achiever in maths and science in the Gauteng District Circuit," says Zikalala. "And, as testimony of their dedication to this vision, they achieved a 98.5% matric pass rate prior to this refurbishment in 2014."

He explains that BEKA Schröder saw "great potential in the Daliwonga Secondary School", and this led to the decision to contribute to the community by refurbishing this school's science laboratory, which was in desperate need of an upgrade.

"It is now a state-of-the-art science laboratory, with new furniture, laboratory cabinets, and apparatus," he says, adding that this has had a positive impact on everyone involved.

BEKA Schröder's Socio-Economic Development (SED) vision and strategy is to invest in community development initiatives that have integrity and are able to sustain themselves for years to come with positive outcomes.

This SED project focuses on education, its aim being to afford both learners and educators an enabling environment in which they can deliver optimum performance and understanding in science.

"We are proud to have helped the Daliwonga Secondary School with the sponsorship of this laboratory and we hope this will create a better learning environment and motivate students to excel in their studies; and assist the school to achieve its vision of a 100% pass rate," says Zikalala.

According to the principal of the school, T M Godzwana, BEKA Schröder "is providing the learners with a beacon of hope".

"The Daliwonga Secondary School looks forward to a long-term partnership with BEKA Schröder," he says.

For more information, or to submit any projects that may fit this criteria, email Enock Zikalala at e.zikalala@beka-schreder.co.za

Enquiries: +27 11 238 0165



The laboratory before the upgrade.



The laboratory after the upgrade.

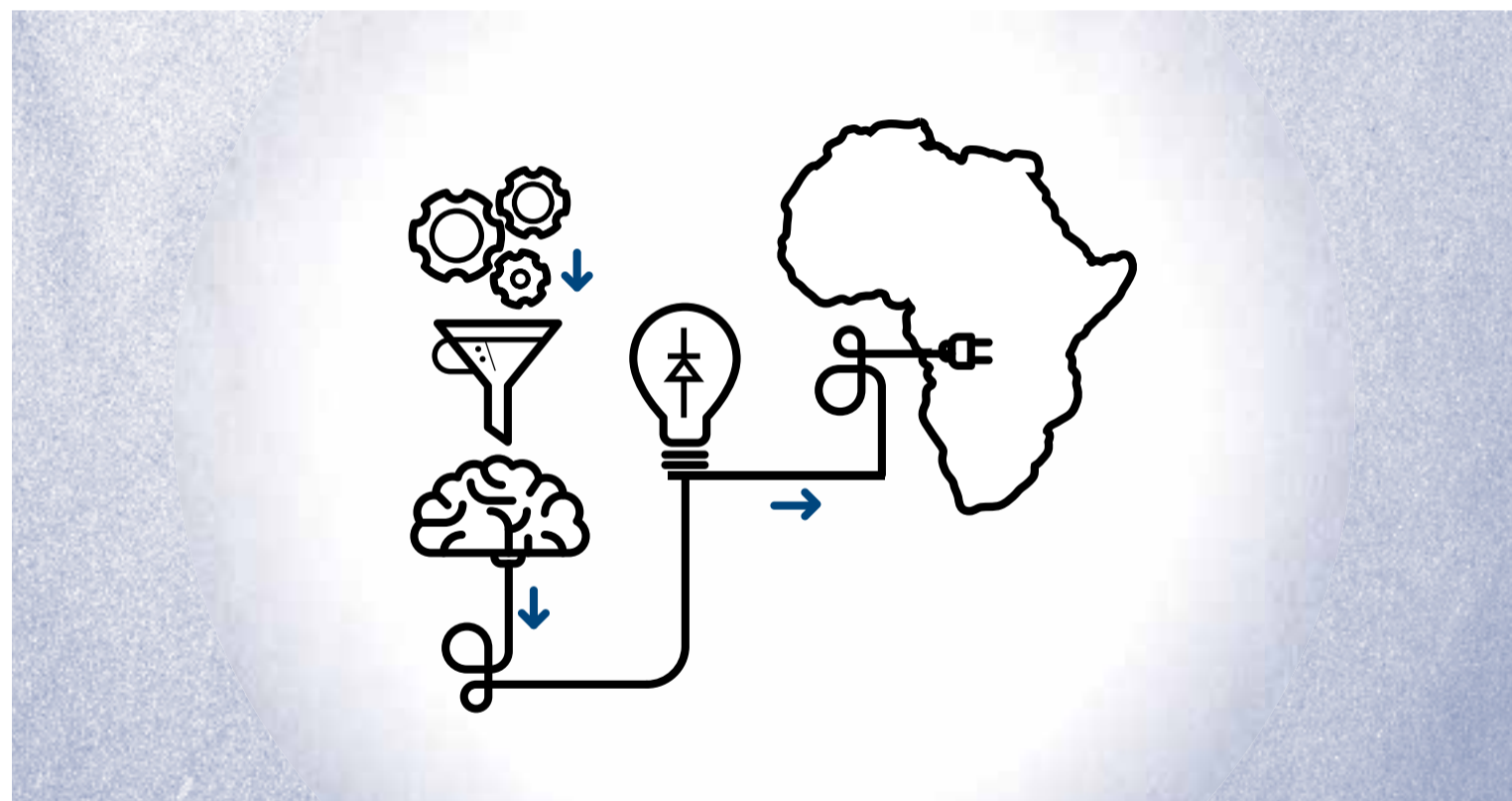
Eco-friendly LED PIR floodlights



Major Tech offers a range of high power LED passive infrared floodlights in three different sizes: The SLF10CW, which is capable of producing 900 Lm; the SLF20CW with 1 800 Lm and the SLF50CW that produces 4 500 Lm. The glass cover is 4 mm thick strengthened clear glass, which is completely waterproof and weather-resistant and these versatile LED lights are perfect for indoor and outdoor use. Major Tech's Werner Grobbelaar says the lights' brackets can be mounted vertically or horizontally. "The adjustable stand means that the light can be directed as required, making these floodlights perfect for garden and swimming pool areas." These eco-friendly lights contain no mercury and are supplied with a 50 cm cable and feature a 120° PIR sensor that detects movement within an 8 to 12 m radius. The casing is die-cast aluminium, and with IP65 protection these LED floodlights have a lifespan of 30 000 hours.

Enquiries: +27 11 872 5500

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State-of-the-art laboratory for comprehensive testing of light sources and luminaires

IN co-operation with Magnet, Energywise Systems recently established a specialist lighting service laboratory in Riverhorse Valley, Durban, offering complete photometric, electric and thermal testing of light sources and luminaires.

"The lighting laboratory team is committed to achieving the highest levels of accuracy in every aspect of lighting, including design and manufacture," says Andrea Barausse, managing director, Energywise Systems.

"Precise analysis and defined performance parameters during laboratory testing ensure absolute efficiency and project optimisation. Our highly skilled technicians are also involved in research into the latest light sources and reflective and diffusion materials. The new laboratory, with a tunnel length in excess of 12 m, is equipped with the latest photometric equipment and electrical instrumentation, including two goniometers, three spectrometers, a 2.4 m integrating sphere, a digitally controlled thermal incubator oven for thermal endurance and efficiency tests with a 450 litre capacity, a scotopic/photopic light meter and a thermal imaging camera,"



Energywise lab technician, Nathi Msweli, using state-of-art computer software that aids in evaluating performance of existing luminaires, as well as the development of new luminaires.



Thermal analysis of a luminaire using an infra-red camera imaging to measure temperature and record heat gradient/transfer for assessing thermal management properties.

explains Barausse. With the addition of portable goniometers and spectrometers to the range of laboratory equipment, The company can now offer remote testing services.

Portable goniometers are housed inside standard sized, impact resistant pressure equalising briefcases for offsite luminaire testing. These instruments, which are calibrated with an integrated spectrometer, have a range of 10 to 10 000 lumens from light sources up to 80 mm in diameter. Mini goniometers measure lumen, beam angle, CRI, colour temperature, power factor and peak candle, in less than five minutes. Results are compiled in a comprehensive report, which can be printed, saved in PDF format or emailed instantly.

The briefcase automatically factors in ambient background light during testing procedures, enabling the accurate measurement of light sources in virtually any environment.

Energywise is also the local distributor of portable mini spectrometers, which are



Portable mini-goniometers are used for testing small scale light sources to produce a comprehensive report, including complete photometric and electrical analysis.

smaller than a smart phone. These user-friendly measurement tools are designed to take readings in spaces which would normally be difficult to reach, including offices, warehouses and construction sites.

These state of the art devices, which are controlled by smartphones or tablet software, have the same functionality as larger devices, to measure colour temperature, CRI, illuminance, CIE, SP radio and spectrum.

The mini spectrometers have full graphic capability and are interfaceable to a PC, with the power to apply multiple filters and display illustrative comparisons, identifying irregularities through numerous filtered measurements.

With the investment in the latest photometric equipment and ongoing technical training for the laboratory team, Energywise now offers industry a comprehensive testing service for locally devel-



Energywise lab technicians, Daniel Zuczek and Nathi Msweli, using a power analyser and mini-goniometer to measure and record photometric and electrical performance of a light source.

oped and imported light fittings. The company offers the full set of IES and LTD photometric files for lighting computer simulation and thermal analysis, with relative performance for those products exposed to challenging temperature conditions.

Lab service and equipment is available from Energywise for hire or purchase.

Enquiries: +27 31 764 2345

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Africa LED Expo launches – a 'must see' show of lighting

THE Africa LED expo is a focused International exhibition for professionals to see the latest developments and innovations in the LED lighting industry. The expo will take place from 22 to 24 July in Hall 1 at the Gallagher Convention Centre, Johannesburg.

Exhibitors will have an opportunity to share knowledge and products so that best practices can be communicated to stakeholders and visitors can attend lighting lectures at the conference hosted at the exhibition.

The event will focus on:

- Architectural lighting;
- Decorative lighting;

- Commercial lighting;
- Entertainment/gaming lighting; and
- Industrial lighting.

Visitors to the expo will include architects; lighting designers; commercial property owners; electrical engineers; ad agencies; the hospitality industry; casino/gaming industry; and illumination professionals.

The LED expo will be co-located with Sign Africa with its own dedicated area and as a distinct synergy with the various applications of products such as printed wall coverings, printed window graphics, way finding signage, Plexiglass, Perspex



and other composite materials used with signage and building design.

Entry to the show is free. Visit www.africalexpo.com to register online or email info@africalexpo.com

Enquiries: +27 11 025 9890

Greater energy efficiency with new solar options

RAND-Air has extended its portfolio with a range of new solar powered lighting solutions, suitable for a number of industries and applications. Its solar light towers from parent company, Atlas Copco, offer customers an efficient, portable, green lighting solution that is powered by the sun and is not dependent on the national grid says general manager of Rand-Air, Louwrens Erasmus.

Rand-Air currently has six of the QLT4 solar light set model available, which will offer customers "numerous benefits" and, according to Louwrens, the towers require no fuel, no oil and no coolant.

"They have no rotating parts, meaning no wear and

are essentially maintenance-free."

The QLTs solar light towers are charged during the day and the energy is captured by highly efficient solar panels and then stored in heavy duty batteries.

"For many applications, regions and seasons, no extra charging is needed.

"During the shorter winter days and 24/7 operations with shorter daylight hours, an external charge connection is provided. When light is required, the high efficiency LED lights switch on and off instantly," says Erasmus.

Enquiries: +27 11 345 0700



LEDs with surge protection for new and retrofit installations

MANAGING lamp lifetime to combat South Africa's power spikes represents a significant challenge to any lighting manufacturer.

Aurora has launched two new product ranges under its Enlite brand, both offering 1.5 kV surge protection and great value for money, even in cost-sensitive installations.

Enlite ICE range

Enlite's ICE range of 5 W GU10 lamps with 1.5 kV surge protection is ideal for use in both new and retrofit installations. Lamps deliver up to 104 lumens per watt and are direct replacements for halogen. ICE lamps deliver 520 lumens and are available in both dimmable and non-dimmable versions – a 40% increase in light output, and a 90% reduction in energy consumption.

ICE also incorporates ThermoTec technology, which optimises thermal management for longer life and consistent performance. ICE lamps give a low glare, halogen-like appearance, thanks to EnFiniti edge-to-edge multifaceted polycarbonate lenses.

Enlite Uni-Fit high power commercial downlights

The 1.5 V surge protected, Uni-Fit range of

commercial downlights delivers longer life and serious lumen performance. Featuring ThermoTec technology (comprising integrated driver and high-quality LED chips) the Uni-Fit range is an ideal cost-effective solution where traditional compact fluorescent downlights need upgrading to more efficient LED technology. Luminaires come in multiple sizes and wattages to cater for new or existing installations. Pre-wired with 500 mm two-core cable, a compact integrated driver allows for easy installation.

New for 2015

Aurora has added many new products to its Enlite brand of LED lamps and luminaires. Enlite lighting essentials are manufactured to Aurora's high-quality standards, and there is no need to sacrifice safety and quality.

The range – including GU10/MR16 ICE lamps, Uni-Fit commercial and low profile downlights, flat panels, T8 tubes, floodlights, bulkheads and more – is featured in the second edition of the Enlite catalogue.

Enquiries: +27 11) 234 4878



Save energy with new universal dimmers



LEGRAND'S range of Arteor wiring devices encompasses universal dimmers which optimise, potential energy savings of modern lighting techniques, by enabling the dimming of all types of lamps.

These universal push button dimmers are suitable for the control of light emitting diodes (LEDs) and compact fluorescent lamps (CFLs), as well as halogen and incandescent lamps.

"One of the characteristic design features of the Arteor range – with the latest electronics technology and stylish aesthetics – is the optimisation of energy consumption," says Luk Ivens, general manager, Legrand SA. "The versatility of Arteor dimmers enables users to create their own lighting scenarios, whether it is low illumination, bright lighting, or a cinema setting."

"Like the entire Arteor range, the universal dimmer is fully modular for quick and easy installation in new buildings and in renovations. This two wire universal push button dimmer system, which can be installed without a neutral wire, also accommodates easy replacement of a traditional switch."

This system can have one or several push buttons without neon, for on/off dimming control. Lights are programmed to come on again at the same lighting level as before they were last switched off.

With a nightlight function, this device is also suitable for bedrooms, particularly children's rooms. Once switched on at a pre-set level (for example, 33%) the light will fade gradually for one hour, until it turns off completely.

All mechanical control devices are available in round or square rocker mechanisms, in a white or magnesium finish. There is wide choice of cover plates in different finishes, such as tattoo, mirror white, light oak, stainless steel and woven metal. Universal icons ensure easy recognition and instinctive hand-eye control.

Enquiries: +27 11 444 7971



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ALT 7W V3 GU10 LED
Warm White
30 000 Hours

40W LED Wall Washer
RGB DMX
30 000 hours



ALT 38W Growlight
Red & Blue
50 000 hours

Hadar Hazardous Area Fluorescent Luminaire
100 000 hours

Hadar Hazardous Area Floodlight
Cool and Warm White
100 000 hours

EUROLUX PROJECT SOLUTIONS

Enhance your commercial and industrial environments

Eurolux Project Solutions offers a variety of energy efficient lighting solutions. Recent projects include Caxton Publishing House; Windhoek Breweries; the renowned Hotel Verde: The greenest hotel in Africa; as well as the Agulhas Marine research vessel.

Eurolux offers a comprehensive lighting design and specification solution to its customers – all completed by a qualified lighting engineer.

- A project begins with the initial site inspection and customer briefings.
- A detailed lighting design, with full 3D simulation and energy efficiency report, to comply with SANS and OHS, is then presented to the client.
- Detailed cost-of-ownership and lifecycle cost analysis is presented to the client, thus allowing for informed easy decision making.

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Bright Spark

Long distance travel

Harry Hoppit, the famous solo airman, was in his London penthouse suite planning his next flight. "Maybe I'll go over the North Pole," he said out loud, looking out of the window towards the hills of Hampstead. "On the other hand, I could go via America," he muttered to himself, looking out towards Westminster Abbey and the Thames Valley beyond.

"Why don't you just take the quickest route?" asked his girlfriend, Persephone.

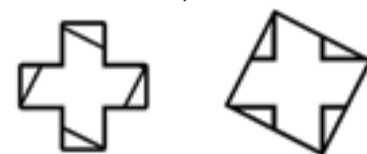
"It makes no difference," he replied. "What's a few miles here or there, when I'm going so far?" and he continued muttering to himself, "Perhaps I should fly over India ..."

What was Hoppit's destination?

May solution

The Greek Cross

Peter went round the edge of the cross, cutting off these four small triangles, which fit into the remaining edge to form the square.



Jane wanted to make two cuts parallel to Peter's cuts – straight through the middle, like this:



It is a curious fact that you can make two cuts parallel to Jane's through any point inside the central square of the cross, and you will get a dissection into the same square.

JULY 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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