CROWN PUBLICATIONS

sparks ELECTRICAL NEWS

APRIL 2016

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NEW TESTING LABORATORY TAKES ON FULL AND PARTIAL TESTING

THE SABS' 'internal directive' that effectively halted partial testing at its test facility in Pretoria has had a fortuitous spin-off for the owners of a newly-opened testing laboratory in Wynberg, Sandton.

George Mashinini, managing director at Testing and Conformity Services (TACS) Laboratories says that the stance taken by SABS on partial testing "does not have to be bad news for local manufacturers and importers of electrical products".

"Some of these tests – those that are within the scope of TACS' accreditation from SANAS – can be done locally at our laboratories.

He explains that in April last year, Frederick Nkosi and Khakhane Motaung started putting together a state-of-the-art testing laboratory in Wynberg and that he joined them in July. "In January this year, TACS Laboratories received its accreditation from SANAS (South African National Accreditation System)," says Mashinini, adding that "the accreditation process was extensive but very rewarding".

Frederick Nkosi, TACS' technical manager, says the SABS 'directive' on partial testing forced some local manufacturers to take their products overseas to be tested. "With the exchange rate as it is, testing products overseas is very costly. Now, some of these tests can be done locally and, at TACS, we undertake full and partial testing according to clients' needs."

"Once TACS was granted SANAS accreditation, we began testing products such as switches, socket outlets, cord sets, plugs, adaptors, cable reels, connectors, conductors, ready boards, appliance couplers and terminal blocks. We also began testing all low voltage cables as well as undertaking the physical testing of medium voltage cables," explains Khakhane Motaung, TACS' quality manager.

"TACS has equipment to test fire propagation and smoke density for cable manufacturers, which is an advantage for the mining industry, local authorities and Eskom," he adds.

Nkosi says that TACS can test more than one sample at a time on some of the test equipment. "This shortens the turnaround time for tests and, when time is an issue, this benefits our clients," he says. "We don't just offer explicit results – when required, we also support our clients by clarifying some of the complicated technical terminology that pertains to testing.

"Confidentiality is of paramount importance at TACS Laboratories, which is why we have stringent security measures and access control."

Mashinini, Nkosi and Motaung have more than 60 years of laboratory testing experience between them. Mashinini was a lab technician in charge of the laboratory at Aberdare Cables for 14 years and he worked at the SABS as a test specialist and laboratory manager for 15 years.

Nkosi started as a trainee electrical engineer at ABI and 10 years later, he joined that SABS where he worked for 14 years as a test specialist and laboratory manager. Motaung underwent training at SABS and worked in the SABS test laboratory as a senior technician for eight years before he joined Powertech TIS where he was technical manager for five years. Both Nkosi and Motaung are registered as professional technicians with the Engineering Council of SA (ECSA).

One of TACS' first clients was the SAFEhouse Association. Pierre Nothard, chairman, says he has used TACS twice. "They have delivered as promised and, most satisfyingly, have demonstrated an understanding of SAFEhouse's needs and a willing and flexible attitude towards accommodating them. Their business should do very well," says Nothard.

Mashinini sums up: "We always had this desire to offer an alternative testing facility that would assist manufacturers and importers. The bigger picture is that we want to be a part of the solution to South African's unemployment problem."

Khakhane Motaung (quality manager), George Mashinini (managing director) and Frederick Nkosi (technical manager) from TACS Laboratories (Testing and Conformity Services Laboratories) have installed state-of-the-art testing equipment in their Wynberg laboratories.

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PERSONALITY OF THE MONTH

FILLING BIG SHOES AND MAKING GREAT STRIDES IN THE ELECTRICAL INDUSTRY

Rhodam Evans, the product manager at Major Tech

RHODAM Evans, the product manager at Major Tech for the past eight years, has notched up numerous successes in product development and the launch of a new range of switches and sockets.

Rhodam's late father, David Evans, was well-respected in the electrical industry and he left big shoes for his son to fill. Rhodam has done that with resolute determination and not a small amount of old school integrity along with the good fortune of being mentored by CEO of Major Tech, Pat Shaw.

Sparks: Where were you educated?

RE: I matriculated at St Johns College in Johannesburg and then went to Wits University where I graduated with a B Com in Management and Industrial Psychology.

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

RE: I've been in this industry for 12 years.

Sparks: When and where did you start your career?

RE: I started at Schneider Electric in 2004. I was with Schneider Electric for four years during which time I was most fortunate to be selected for the company's two-year Marco Polo training programme, which was set up to train and develop skills of junior employees.

I spent one year in Paris and one year in Barcelona where I was positioned as country support for the Western European and African divisions, I then spent two years at the Johannesburg office where I was involved in market research for Southern Africa.

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

RE: The greatest – and possibly the scariest – change is the way that the consumers' focus has changed from being quality driven to being purely price orientated. This is fuelling the influx of inferior products, which are potentially dangerous if not lethal, into the South African market.

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

RE: Being in product development has meant that I have been fortunate to be involved in a number of projects. The one I am most proud of is the introduction of Major Tech's range of Veti switches and sockets.

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

RE: My greatest inspiration is my father, David Evans, because knowing where he came from and what he managed to do in his life will always make me want to be better – I don't think I showed it very well when he was around but I will always remember him for it.

My most notable mentor would have to be Pat Shaw who has helped me in my understanding of business from product development to sales and it is due to his guidance and support that I am where I am today

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

RE: Educating the consumer is definitely one of the greatest challenges because the market is only as accessible as the publications they read and the news they hear and see.

Sparks: What do you enjoy most about your job?

RE: I would have to say that dealing with suppliers is very gratifying because I have had so many interesting and eye opening experiences that can only be understood by experiencing them first hand.

Sparks: How do you motivate your staff?

RE: As product manager, the only person I have to motivate is myself ... and because I am passionate about my work, that's very easy to do.

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

RE: I'm happy with my life and so to change anything would be taking an unnecessary risk.

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

RE: Definitely – there are always new and exciting innovations in the electrical industry and if you have the knowledge and drive then there are no boundaries to how successful you can be.

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

RE: Make sure that you listen and learn because you can never know enough and you should never stop learning.

Sparks: What is your favourite quote?

RE: "Believe you can and you're halfway there." - Theodore Roosevelt.

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

RE: Travelling comes first, second and third. Each destination has different experiences and so to prioritise when you have no expectations is very difficult.

NEWS FLASH

NEW MEMBERS FOR SAFEHOUSE ASSOCIATION WELCOMED

Pierre Nothard, the chairman of the SAFEhouse Association, has announced that two new members have joined the Association as from 1 March. This brings the number of members to 35.

STONE STAMCOR

Established in 1942, Stone Stamcor is a locally-owned manufacturer and distributor of cable accessories and allied products, based in Edenvale, Gauteng, with branches in Cape Town and Durban. It also represents a number of international companies, including suppliers of industrial gearboxes, motors and motor control products. SAFEhouse welcomes Willem Ackerman, Mark Talbot and their colleagues.

ABB

ABB, a well-known, international organisation with headquarters in Zurich, Switzerland, supplies an extensive range of electrical engineering and automation products and services. In South Africa the company is based in Longmeadow, Edenvale, with operations throughout the country, including Cape Town, Durban, Port Elizabeth and Richards Bay. SAFEhouse welcomes Leon Viljoen, Graham Abrahams, Paul Louw and their colleagues.

Enquiries: +27 11 396 8140

WORKING KNOWLEDGE BY TERRY MACKENZIE HOY

THE DEVELOPMENT OF MOTOR CONTROL CENTRES

A motor control centre – colloquially known as a MCC – is an electrical switchboard that is divided into a number of separate compartments. Usually, each compartment contains a circuit breaker, an electrical contactor and a control circuit. The control circuit causes the electrical contactor to close either by a remote signal or by a pushbutton mounted on the front door of the compartment. Another signal and another pushbutton cause the electrical contactor to open. The fact that the contactor is open or closed is indicated by indicator lights on the front door of the compartment. Generally, there is also an ammeter that indicates the current that is going through the contactor when closed. The contactor supplies a motor. The collection of all these compartments is the motor control centre.

In a typical MCC, all of the compartments are supplied from a set of busbars which runs either through the top compartment of the MCC or, more commonly, through the bottom compartment. Each set of busbars is supplied from an incoming circuit breaker, which in turn is supplied from a transformer. Sometimes there are two incoming circuit breakers and the MCC has a bus-section switch, which can be open or closed. If open, the left-hand and right-hand side busbars are not connected to each other and each gets a power supply from a different transformer. This is for electrical supply security: if one transformer fails then the associated incomer can be opened and the bus-section closed so that one transformer supplies the whole MCC.

Back in the day, MCCs were very different to what they are today. Firstly, the various supplies to the various motors were not compartmentalised but were all mounted on a long chassis plate and access was gained by doors spaced at intervals. These MCCs were insecure since a fault on a feeder would spread to the MCC switchboard, resulting in the complete failure of the MCC. For this reason compartmentalisation was introduced. Compartments were good at preventing the spread of electrical faults but if there was a fault with the control system, then the electrician had do repair work in a compartment where, despite the incoming circuit breaker being open, the top of the circuit breaker was still connected to the busbars. This made working in the compartment hazardous and difficult.

The next development was to make the compartments 'withdrawable'. Once the circuit breaker was switched off, it was possible to undo toggles and pull the whole compartment free from the board, complete with control circuit, contactor and faceplate. The compartment had electrical pin connectors which would withdraw from the busbar dropper. The compartment could then be taken to a workshop for maintenance.

A modern development is to connect all the MCC compartments to an electronic signalling system that allows the status of the contactors, the current drawn by the motors, the busbar voltage and so on to be transmitted to a computer, which sends signals as necessary to start and stop motors fed from the MCC.

Personally, I'm not in favour of the system. I think that if a MCC has a fault or an unexpected trip, the fault should be sent as a single signal to the control room or electricians' workshop and somebody should go to the MCC room and see what's going on (anyway, every MCC room should be inspected regularly).

A well-designed MCC is a pleasure. And a badly designed one is a nightmare. An overdesigned one is silly.

But there is something of historical interest: in the days of old, buses and trams were electrically powered and supplied from overhead wires strung the length of the street and supported by insulators strung from poles on either side of the street. The wires were known as 'bus wires' and, similarly, the first MCCs had wires strung the length of the switchboard, which became known as bus wires. And, when these became solid bars, the term 'busbars' was invented.

UNIVERSAL DISMANTLING TOOL WITH ERGONOMIC PISTOL GRIP

New from Knipex is the ErgoStrip Universal dismantling tool for the fast and precise dismantling and stripping of all common round and damp-proof installation cables, such as NYM cable 3 x 1.5 mm², data cable (for example, twisted pair) and coax cable. The innovative, ergonomic pistol grip design ensures easy cutting, stripping and longitudinal cutting of sheaths. Knipex has simplified the insertion of single wires for stripping using location ridges and a special opening aid for the insertion of coax cables. The housing of the tool is made from stable glass-fibre reinforced plastic and the multi-component design features a soft plastic zone for comfortable use and a secure grip.

Enquiries: +27 11 396 4065

IGNORANCE CAN BE DEADLY

The scourge of sub-standard electrical products on offer in South Africa and the consequent safety risk to users has prompted the SAFEhouse Association to compile a series of product guides.

These guides are funded by the association's members in the interest of users and are available on the SAFEhouse website.

Download your **FREE** copy of the SAFEhouse guides from **www.safehousesa.co.za**

Guides contain helpful information on:

- Regulatory references & requirements
- Technology
- Indications of risk in using substandard products and services

The SAFEhouse Guide to Electric Cables

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The SAFEhouse Guide to Luminaires

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A SAFEhouse Guide to LED Lighting

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The SAFEhouse Association is a non-profit, industry organisation committed to the fight against sub-standard, unsafe electrical products.

For more information contact:
Pierre Nothard: 083 414 4980 | 011 396 8140
Email: pierren@safehousesa.co.za

www.safehousesa.co.za

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SAFEhouse members have signed a code of conduct: Your assurance of commitment to offer only safe electrical products.

As at 22/02/2016

POWER SURGES – PROTECTING SENSITIVE EQUIPMENT AND ELECTRICAL SYSTEMS

The new GEWISS LST surge protectors feature an extended range and new performance technology.

Atmospheric power surges and spikes are the main cause of failures in electronic equipment and the resultant production downtime.

"The most damaging types of power surges are caused by lightning strikes," explains Nelen Govender, brand manager at ACDC Dynamics. "In fact, direct lightning strikes create current peaks that are lethal to humans and can totally destroy electrical installations and data networks."

He says the new Gewiss LST range of surge protectors (Types 1 and 2) ensures the protection of entire electrical systems and the most sensitive equipment.

"The modern technological solutions embrace photovoltaic 2 SPL and 1 and 2 SPL protection," says Govender.

"The design of the Gewiss LST device allows for quick operational status inspection and maintenance. The optical green indicator changes to red when a plug-in cartridge has expired, and can be exchanged without removing the entire protector from the board," he explains. "Thanks to the integrated auxiliary contact, it is possible to send immediate notification of the device status."

The Gewiss LST surge protectors comply with the CEI 64-8/3 requirements.

For details on this product, contact Nelen Govender at neleng@acdc.co.za

Enquiries: +27 10 202 3300

EQUIPMENT SUPPLIED TO CHROME RECOVERY PLANT

JB Switchgear Solutions was recently awarded a multi-million Rand contract for the design, manufacture and supply of motor control centres and VSD panels destined for Anglo American Platinum's Amandelbult Chrome recovery plant.

The project is located within Rustenburg Platinum Mine's mining right area, 25 km south of the town of Thabazimbi in the Limpopo Province. Each chromite recovery module will comprise feed systems, thickeners, cyclones and spirals.

JB Switchgear is supplying six 'Eagle' series motor control centres, and robust, reliable and user-friendly design well-suited for this application. Starter sizes vary between 1,1 kW and 45 kW.

The operational voltage is 550 V with a prospective fault level of 50 kA. In addition to the MCCs, JB Switchgear also supplied 52 VSD panels ranging from 0,25 kW to 220 kW. The communication protocol for this project is Profibus.

Enquiries: +27 11 027 5804

Customisable super bright lights

SCHNEIDER Electric recently announced that its latest range of industrial grade tower lights, Harmony XVU, is now available to the local market.

The line offers a clean and innovative design that enhances installation safety. The colour-coded display and sound signalling increase visibility of machine alarms, making Harmony XVU the perfect fit for applications in the automotive, food and beverage, and semiconductor industries.

The Harmony XVU tower lights offer high quality, true colour, bright LED light modules that enable users to create a configuration, which is best suited to their requirements: one to five illuminated units (available red, amber, green, blue and clear); or one to four illuminated units plus a sound unit (buzzer or voice).

Additionally, the range includes a special multicolour LED module with a choice of six colours and four light patterns: steady, blinking, flashing, or rotating, which are easily configurable by two dip switches inside the unit.

The range of Harmony XVU tower lights enables quick and flexible installation, either directly on the machine, on a 100 mm pole or an expendable pole (allowing to adjust the height), or by using a three-in-one, adjustable mounting bracket (allowing the tower light to be mounted upright, at an angle, or on the wall).

Enquiries: +27 11 254 6400

BEFORE THE 'POINT OF CONTROL', BEYOND THE 'POINT OF CONSUMPTION' ... AND SOMEWHERE IN BETWEEN

IN my previous column, we looked at the definition 'electrical installation'. And we concluded that it means *"any machinery, in or on any premises, used for the transmission of electricity from a point of control to a point of consumption anywhere on the premises, including any article forming part of such an electrical installation irrespective of whether or not it is part of the electrical circuit, but excluding*

(a) Any machinery of the supplier related to the supply of electricity on the premises;

(b) Any machinery which transmits electrical energy in communication, control circuits, television or radio circuits;

(c) An electrical installation on a vehicle, vessel, train or aircraft; and

(d) Control circuits of 50 V or less between different parts of machinery or system components, forming a unit that are separately installed and derived from an independent source or an isolating transformer ..."

" ... 'electrical tester for single phase' means a person who has been registered as an electrical tester for single phase in terms of regulation 11 (2) for the verification and certification of the construction, testing and inspection of electrical installations supplied by a single-phase electricity supply at the point of control, excluding specialised electrical installations ..."

During our limited 'encounter', however, what we didn't discuss were all the excluded bits and parts – that is, what happens before the 'point of control' and/or beyond the 'point of consumption' ... and sometimes in between.

Let's pause for a while and attempt to figure out how many definitions are actually locked up inside the definition of an electrical installation. And, by this, I mean only the unique definitions mentioned and not the ones that one finds inside those definitions ... I count six unique definitions and another three that are repeated at least once.

You will find these definitions elaborated upon either in the Occupational Health and Safety Act (Act 85 of 1993) (OHS Act) itself, or somewhere in the Regulations. Most of these definitions appear verbatim in SANS 10142-1 or with slightly altered wording to make them more comprehensible.

Can you just imagine how difficult it would be to read the OHS Act and Regulations if those explanations (definitions) had to be written out in full every time? But it also underlines how important it is for those definitions to define exactly what and where certain limits find themselves. This is why I am a big fan of using definitions (including the explanatory paragraphs) of the OHS Act and the Regulations when it comes to settling a difference of opinion. I find that in 99.9% of cases, arguments arise due to blatant ignorance and the incorrect understanding or interpretation of a definition.

Now, if we look at the excluded bits as defined, we see that the 'machinery' (supply cable) from Eskom or local authority to my point of control is excluded. And to prove machinery can be a cable, we will quickly look at the definition from the OHS Act:

"... 'machinery' means any article or combination of articles assembled, arranged or connected and which is used or intended to be used for converting any form of energy to performing work, or which is used or intended to be used, whether incidental thereto or not, for developing, receiving, storing, containing, confining, transforming, transmitting, transferring or controlling any form of energy ..." In short, it's a cable... But what the supplier of electricity can expect from me is that I take custody of the supply cable and treat it as if was part of my installation where the point of supply is not the point of control, whether it is overhead or underground, mainly for the purposes of safety and to prevent abuse – and this goes for the metering equipment, too. You will find there are specific references to earthing of television antennas in SANS 10142-1, for the purpose of lightning protection for instance. The authors of SANS 10142-1 have noted that even though the antenna per definition does not form part of the electrical installation as defined, it does come into contact the normal electrical installation somehow and can allow uninvited 'guests' – such as lightning – to gate-crash my electrical installation and, therefore, special precautions are required.

Then the exclusion of trains and planes ... The exclusion – in a roundabout way – tells me that an electrical installation as defined can only be found in premises that do not move around all the time, thus in a building of sorts.

And, to prove that point from the OHS Act – 'premises' includes any building, vehicle, vessel, train or aircraft: The exclusion of the control circuits of 50 V or less recognises the fact that these circuits are a requirement on intricate manufacturing equipment for instance, but the installation methods differ widely from that of a traditional 230/400 V installation. This is not to be confused with low voltage (12 V) lighting circuits, however...

If you read SANS 10142-1 carefully, you will notice most of the low voltage lighting installation rules revolve around the fact that even though such circuits may not be able to kill you in the event of inadvertent contact, the high currents in those circuits with the resultant high temperatures create the perfect conditions for fires. The balance of the definitions in the above will be addressed as we progress further down the list of definitions.

The next definition... and what have we here?

"Electrical Installation Regulations, 1992' means the Electrical Installation Regulations, 1992, promulgated by Government Notice No. R. 2920 of 23 October 1992 ..."

At last, something that is self-explanatory ... but, what follows next has its own issues, believe me.

" ... 'electrical tester for single phase' means a person who has been registered as an electrical tester for single phase in terms of regulation 11 (2) for the verification and certification of the construction, testing and inspection of electrical installations supplied by a single-phase electricity supply at the point of control, excluding specialised electrical installations ..."

I had a very irate contractor phone me the other day. He was upset because he had lost a contract to a one-man operation for the long-term maintenance of a fairly old block of flats. His argument was that "you must be an installation electrician to work on such an installation". Unfortunately, he is right and he is wrong.

So, as I knew the guy from way back, I contacted him and he told me that this particular block of flats does have a three-phase supply to the meter room but, from there, the units themselves are wired single-phase including the metering. Therefore, technically, because the main switch is in the distribution board inside the individual flats (the point of control), it is considered a single-phase installation and a 'single phase tester' can legally work on it.

When I asked about the three-phase supply side of things, he told me that the meter room is under the control of the supply authority as it holds the keys. And, in the event that the supply authority ever gives up those keys (which is very likely as the block is being sold under sectional title), he will contract a person who can legally work on three-phase installations. There's nothing wrong with that argument.

Until we pick up the 'one and three' debate again, stay safe.

NEWS FLASH

RADIOMETRIC AERIAL THERMOGRAPHY USING REMOTE CONTROL

INFRARED images and videos from the air – recorded by drones, unmanned aerial vehicles (UAVs) and other flying objects – are becoming increasingly important in industrial maintenance. In some cases, the cost savings compared to existing applications could be considerable.

Optris, specialists in non-contact temperature measurement, has just released the only fully radiometric flight thermography available to market – the relaunched Optris PI LightWeight in kit-form, consisting of a weight-reduced infrared camera and an equally light mini PC which ensures even better flight thermography than before.

FULLY RADIOMETRIC INFRARED VIDEO RECORDINGS

The Optris PI LightWeight is still the only system available that produces fully radiometric video recordings. The recordings can be started and stopped via remote control and subsequently edited. The system has a special interface for visual GoPro cameras. USB GPS modules are also supported and the geographical coordinates saved in each single image. The infrared camera and the mini PC have a total weight of only 380 grams.

HIGHER RESOLUTION AND LARGE OPTICAL SELECTION

The new PI LightWeight can be fitted with the camera models Optris PI 450 (382 x 288 px) or the VGA camera Optris PI 640 (640 x 480 px). Video recordings of up to 80 Hz in QVGA resolution and up to 125 Hz in VGA sub-frame mode (640 x 120 px) are possible. The unlicensed analysis software PI Connect can be used to extract and analyse sharp single images from the video data. The cameras are powered via USB from the mini PC and have a spectral range of 7.5 to 13 µm. In addition, four different optics can be selected for each model, depending on requirements.

Enquiries: +27 10 595 1831

WORLD'S FIRST THERMAL IMAGING CLAMP METER LAUNCHED

In the new Flir CM174, the world's first thermal imaging clamp meter with IGM™ (Infrared Guided Measurement), electricians have a highly effective tool for quick and efficient troubleshooting.

For a long time, electricians investigated complex compounded problems by chasing down the cause – one electrical measurement at a time. A lot of the time the true source of the problem was never found, leading to call-backs from customers asking the electrician to fix the same issue over and over again.

Not only did they waste time troubleshooting problems they thought they had resolved, but they also put their safety at risk without knowing what dangers they faced. The Flir CM174 puts an end to any uncertainty.

The Flir CM174 600 A ac/dc clamp meter has a built-in thermal camera that powers the FLIR IGM technology, which visually guides users to temperature differences and pinpoints anomalies, so they can fix the system, not just the fault, to get the equipment up and running and ensure that it won't go down again.

Electricians may even find new issues they didn't expect to see, expanding their scope of work and resulting in more business. For instance, they might have a hunch that a faulty motor controller caused an equipment failure, but after using Flir CM174 they discover that an overheating motor or a loose connection was to blame.

If an electrician is facing cluttered wires or scanning complex panels for hazards, he or she can stay at a safe distance and use IGM to show the anomalies without reaching into the panel. And the narrow-jaw design and built-in work lights make it easier to clamp the meter around wires in tight spaces and in poor lighting conditions.

The Flir CM174 validates findings with advanced measurement features to help solve the most complex electrical issues, and is vital for checking repairs and ensuring problem areas have returned to normal.

Find out more about what CM174 can do at:
www.flir.com/CM174

Enquiries: +27 11 300 5622

INDUSTRY URGED TO MAINTAIN TRANSFORMERS

Andre Mans, COO of WEG Transformers Africa (a division of Zest WEG Manufacturing), says getting optimum performance and a long functional life from transformers is contingent on having a comprehensive preventative maintenance and service strategy in place.

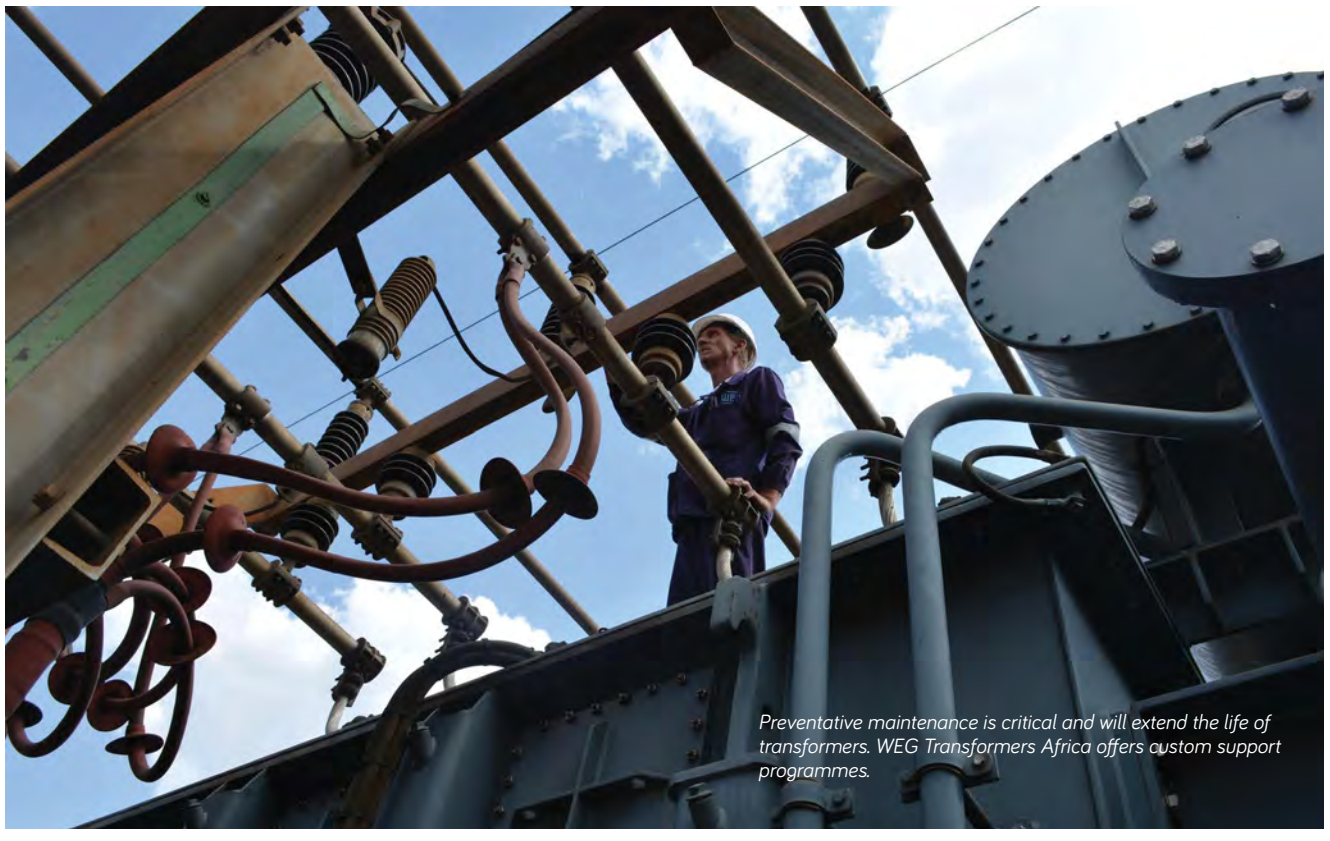
"Preventative maintenance of transformers is critical not only from an operational reliability perspective but also because a well-structured maintenance programme will significantly extend the life of the transformer."

WEG Transformers Africa (WTA) offers a suite of support services for its transformers customer base, including preventative maintenance programmes that can be structured to accommodate customer needs and/or budgets. Mans stresses that it is, however, most important for customers to do an initial assessment of the transformer installation as this will allow a base line to be verified and following any corrective action a customised support programme can be implemented to ensure the optimum reliability of the transformer.

During a preventative maintenance assessment, WTA's team of skilled technicians will rate the transformer according to the application in which it is being used. Following this, a needs-based maintenance strategy is implemented with the objective of reducing the probability of transformer failure.

"We are able to provide verifiable reporting on the condition of the transformer using oil sampling, analysis and thermal graphics surveys, all of which meets international quality standards reporting requirements and are accepted by most insurance," Mans says.

"Our maintenance strategies are customised for each installation to track the asset condition and enable verifiable reporting on performance degradation. Preventative maintenance can provide an early warning mechanism as it provides crucial information that could facilitate an early intervention with major servicing or even component replacement," Mans continues.



Preventative maintenance is critical and will extend the life of transformers. WEG Transformers Africa offers custom support programmes.

On-site preventative maintenance

Transformer oil sampling is carried out by skilled individuals to ensure accuracy and reliability. The manner the sample is taken is critical to the result and sampling tins are only used once to avoid cross contamination.

When drawing the oil sample, the sampling technician will also do a visual external inspection of the transformer against a checklist as this will pick up any physical issues with the transformer. Evidence of leaks or a change in colour of the silica gel will be a clear indication that there is moisture ingress. The general condition will also give an indication of corrosion.

In addition to the visual assessment and oil sampling and analysis, the WTA team undertakes thermal graphic surveys to determine areas where excessive heat may be present in the transformer and other electrical equipment.

All information is accurately documented to ensure it can be compared against new information from subsequent follow-up on-site condition monitoring inspections.

WTA oil sampling laboratory

One of most important differentiators for the WTA customer base is that the operation has a fully-fledged oil sampling laboratory at its facility in Heidelberg. According to Mans, it is considered by industry as the best privately run laboratory in the country.

Samples are brought back to this laboratory where state-of-the-art equipment and international best practice is used to analyse the oil. The oil sample is compared to a base line and this enables the technicians in the laboratory to identify potential problems which cause transformer failure.

The Karl Fischer titration procedure (moisture parts per million (PPM)) is used to determine the moisture content of the oil. High moisture will result in dielectric breakdown .

The oil is analysed to determine where Polychlorinated Biphenyl (PCB) is present because of the high risk factor associated with exposure to this substance and the potential risk should it catch fire. The PCB test is done to identify whether the oil contains PCB, and if so the amount.

Furanic analysis is also done and this determines the cellulous breakdown products in the oil and gives an indication of the life expectancy of the insulation in the transformer.

Other tests include kV or dielectric strength testing to determine the insulating properties and DGA dissolved gas analysis, which provides a clear indication of internal failure conditions. Acid levels are also checked against acceptable standards.

Follow up interventions

Following the comprehensive oil analysis, WTA's mobile field service teams are able to implement interventions to address identified issues. These interventions could include anything as basic as re-torqueing the transformer to replacing gaskets and cone rubbers right up to major on-site repairs including replacing offload tap changers.

Significantly, the WTA field service teams operate from fully equipped vehicles with all the necessary tooling as well as 4 500 litre per hour high vacuum purification unit. These skilled technicians are able to do the most basic physical inspection to full on-site repair work.

"We are one of few OEMs that can offer this level of support to industry and on-going training ensures that our team is kept abreast of technology as well as operational skills such as working at height, fire fighting and HV regulations," Mans says.

"This maintenance of an historical database is essential as it allows the accurate tracking of the condition of an individual transformer and it also allows identification and investigation of trends that may develop in individual transformers ..."

Other maintenance activities done on site deal primarily with the condition of the transformer and could entail purification and regeneration as well as vacuum treatment being done to eliminate entrapped air.

Oil samples are taken after all inventions to gauge the success of the intervention.

Verifiable reporting

All work done by the WTA laboratory is documented and customers receive a before and an after report.

"This maintenance of an historical database is essential as it allows the accurate tracking of the condition of an individual transformer and it also allows identification and investigation of trends that may develop in individual transformers," Mans says.

"By having experienced OEM technicians do regular surveys on transformers to assess their operational health, it is possible to mitigate against any potential risk in terms of asset failure," Mans concludes.

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GENERAL SAFEY PRINCIPLES AND THE CERTIFICATION OF EXISTING INSTALLATIONS

DURING the course of last year, I wrote two columns dealing with the concept of 'reasonably safe' – and this is a subject that needs special consideration and understanding by Registered Persons when dealing with the certification of existing electrical installations.

It is undeniable that there is a need for understanding the methodology behind the Occupational Health and Safety Act 85 of 1993 (the Act), with particular reference to the Electrical Installation Regulations (EIR). The 'safety' concept, as prescribed by the EIR, is entrenched within the Act and has specific reference to the issuing of certificates of compliance (CoCs).

The issue here is two-fold. In reviewing the legal responsibility and regulations, one must firstly refer to the EIR, Regulation 9(2) c (i):

"Issuing of certificate of compliance

9. (2) A registered person may issue a certificate of compliance accompanied by the required test report only after having satisfied himself or herself by means of an inspection and test that

(c) an electrical installation referred to in paragraph (b), to which extensions or alterations have been effected, that

(i) the existing part of the electrical installation complies with the general safety principles of such standard and is reasonably safe ..."

Having discussed the issue of "reasonably safe" in my previous columns, it is also clear that in order to meet the requirement of "reasonably safe", it is also prescribed that the "general safety principles of such standard" must be complied with. The standard, with particular reference to low voltage installations that is the subject of this column, is SANS 10142-1- the Wiring of Premises.

It is indeed these very "general safety principles" that seem to have become inconsequential over the years and to which very little attention is actually given when issuing CoCs. This is the reason that I will spend some time refreshing Registered Persons' understanding of these principles in the context of the declarations signed by such Registered Persons.

"Certificate of Compliance

I, a registered person, declare that I have personally carried out the inspection and testing of the electrical installation described in the attached test report as per the requirements of:

(b) Electrical installation regulations (9(2)(b) (existing electrical installation) and deem the electrical installation to be reasonably safe when properly used..." and

The Test Report

I, being the person responsible for the INSPECTION AND TESTING of the electrical installation, particulars of which are described in section 3 of this form, CERTIFY that the INSPECTION AND TESTING were done in accordance with this part of SANS 10142, that the results obtained and reflected on this report are correct and indicate for an installation that existed before the publication of this part of SANS 10142), that the installation complies with the general safety principles of this Standard and is reasonably safe ..."

In understanding the legal requirements then, what are the "general safety principles" that are referred to? Here one needs to consult with the incorporated standard SANS 10142-1 and, in particular, Clause 5 of the standard. We see here that Clause 5 is titled 'Fundamental Requirements' and contains the "general safety principles applicable to electrical installations" (Note 1). It is appropriate to mention here that these general safety principles apply equally to new, altered or temporary electrical installations.

In reviewing this clause, one sees that there are a number of sub clauses, each dealing with a specific aspect of safety and forming part of the 'general safety principles'.

At this point it should be clear that the legislative requirement for "reasonably safe", as discussed in previous columns, has a very close relationship with the general safety principles contained in the incorporated standard, SANS 10142-1.

Over the next few months, I am going to discuss these 'general safety principles' in some detail in the context of issuing CoCs for existing installations, where legal liability may arise due to the fact that a false declaration was made when attesting to the 'compliance' of an electrical installation where scant regard was given to the 'general safety principles.'

Needle nose combination pliers for easy cutting

KNIPEX has introduced the needle nose combination pliers to its range – small high leverage pliers that can be used for installation and repair work. The pliers are perfect for working in confined areas thanks to its slim head design and anti-twist pointed jaws – and a gripping surface with a special convex contour on one side for secure gripping of flat parts. A unique feature is the milled groove in the gripping area that permits small parts such as nails, pins, bolts and even wire to be pulled without damaging the item being pulled. The cutter makes for easy cutting thanks to a high leverage joint.

Enquiries: +27 11 396 4065

Extra large LCD touchscreen takes infrared cameras to a whole new level

SOMETIMES the most critical infrared images needed are those that are almost impossible to take. With a full 180-degree articulating lens and 14.5 cm touchscreen, the new Fluke TiX560 and TiX520 infrared cameras allow thermographers to easily navigate over, under, and around objects to preview and capture images with ease. The cameras are ideal for predictive maintenance and utility applications where flexibility and higher resolution are essential to the success of the task.

The TiX560 and TiX520 feature a 14.5 cm responsive LCD touchscreen — the largest in its class with 150 percent more viewing area compared to a 9cm screen. The large screen enables thermographers to quickly identify issues while still in the field as well as easily edit images directly on the camera.

SuperResolution mode boosts resolution four times so the normal 320 x 240 (76 800 pixels) resolution of the images captured increases to 640 x 480 (307 200 pixels) revealing even greater detail to better identify problems that may be missed with lower resolution cameras. Optional telephoto and wide-angle lenses add versatility to meet a wide variety of applications.

Out of focus images may produce inaccurate temperature measurements that can be off by as much as 20 °C, making it easy to miss potential problems.

To ensure consistently in-focus images, the cameras feature LaserSharp auto focus, exclusive to Fluke, which uses a built-in laser distance meter to pinpoint the target, and accurately calculate and display the distance.

The cameras also feature Fluke IR-Fusion technology with picture-in-picture, full visible light, and AutoBlend modes for easier identification and reporting of problems. On-board advanced analytics allow users to adjust or enhance images right on the camera without additional software. Also included is Fluke SmartView software, which provides a suite of advanced tools to view, optimise, annotate, and analyse infrared images, and generate fully customisable professional reports.

For more information on Fluke's new TiX560 and TiX520 infrared cameras, or information about seminars, demos or to locate the nearest dealer, please contact Comtest, local distributor of Fluke test and measurement tools at sales@comtest.co.za

Enquiries: +27 10 595 1821

NEWS FLASH

IN SAFE HANDS WITH ARC PROTECTIVE GLOVES

WHEN electrical and mechanical work is carried out, it is crucial that employers not only perform hazard analyses but also ensure that workers have access to international standard protective equipment, including gloves, to protect them against the hazards of arc faults – a high power, high temperature discharge of electricity between conductors.

"The hand and forearm region is particularly at risk of being burnt by arc faults whilst working on an electrical installation, where workers can be exposed to temperatures of more than 10 000 °C," explains Hano Oelofse head of technical division at DEHN AFRICA, the local subsidiary of Germany-based lightning and surge protection, earthing components and safety equipment manufacturer, DEHN + SÖHNE.

DEHNcare arc protective gloves (APG), part of the DEHNcare personal protective equipment (PPE) range, are a necessary shield against second-degree skin burns caused by arc faults. The protective gloves are arc-fault-tested according to Class 2 (IEC 61482-1-2) and certified according to the EEC directive.

Enquiries: +27 11 704 1487

COMPACT HAND-HELD VIBRATION METER

DISTRIBUTOR and manufacturer of a range of process control instrumentation and specialised systems, Instrotech, has launched UK-based Monitran's MTN/VM220, a compact, hand-held meter for measuring vibration levels. It is a rechargeable, portable instrument designed to operate with a constant current accelerometer to provide accurate vibration measurements. Conforming to ISO10816-3, the MTN/VM220 is engineered to detecting the early signs of component wear or failure in pumps, motors, gearboxes and other mechanical assemblies.

Measuring only 130 x 78 x 28 mm, the MTN/VM220 has an easy-grip, rubberised case and a long-life rechargeable battery and had the ability to store up to 100 time-stamped readings, including RMS, peak, peak-peak, crest factor and bearing conditions, all on an easy-to-read, colour LCD display.

The unit is shipped in a foam-lined, durable carry case and includes the MTN/2200, a general purpose sensor probe with a default sensitivity of 100 mV/g, as well as a magnetic base and spike (for use with the probe), a coiled cable with a four-pin Lumberg connector at each end, and a universal battery charger.

Enquiries: +27 10 595 1831

MOTOR PROTECTION RELAYS OFFER ALTERNATIVE MOUNTING PREFERENCES

Within the 5 to 550 Amp range in Amp calibration or any current range in the percentage calibration, the N series motor protection relays from NewElec offer a wide variety of alternative mounting solutions. These are CT module block, chassis or flush door mounting.

N Series relays are designed for simplicity without compromising reliability. The relays offer coordinated tripping on potentially high-energy faults ensuring that the main contactor is not used to clear such faults. A duplication of trip and fault annunciating N.O contacts provides control rooms with a hard-wire solution for information and reset possibilities.

The relays are housed in a versatile enclosure which caters for door mount, chassis mount or C.T. module mounting. Protection features include selectable thermal curves (Class 5 – 32.5) with thermal pre-loading to match the safe hot and cold stall times of the motor during operation. N Series relays are designed to IEC 60255-8 and provide overload protection for cyclic or sustained loads, as well as unbalanced current, single phasing, earth leakage and earth fault protection. The user has the option of transferring the trip to the incoming MCCB to prevent the contactor opening on high energy faults, ensuring Type 2 co-ordination.

Enquiries: +27 12 327 1729

MOTORS & DRIVES

MANUFACTURERS

ABB South Africa
Aberdare Cables
Allbro
Alstom Protection and Control
Alvern Cables
Atlas Group
Brady SA/Grafo
CBI
Eaton Electric
HellermannTyton
Lapp Group SA
Legrand
NewElec
Phambili Interface
Power Process Systems
Radiant Group
Sabelco Electrical Industries
Schneider Electric
Stone Stamcor
Surge Technology
Three-D Agencies
Zest WEG Group Africa

DISTRIBUTORS

ACDC Dynamics
ACTOM Electrical Products
ARB Electrical Wholesalers
Atlas Group
Bellco
Cable Croc
Cabstrut
CBI
Citilec
Crabtree Electrical Accessories
Denver Technical Products
Eaton Electric
Elen Enclosures
HellermannTyton
Invirotel
Jaycor International
JB Switchgear
JDL Electric
Lapp Group SA
Major Tech
MCE Global Suppliers
Phambili Interface
Power Process Systems
Pretoria Motor Control Gear Products (PMCG)
R&C Instrumentation
Radiant Lighting
Stone Stamcor
Three-D Agencies
Voltex
Voltex LSis
Waco

CONTACT

ABB South Africa
Mark Sheldon (drives), Ian Very (soft starters), Guillaume Bester (breakers and switches), Etienne Delport (enclosures and surge protection)
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ACDC Dynamics
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Werner Grobbelaar
NewElec
Sales
Phambili Interface
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Power Process Systems
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Pretoria Motor Control Gear Products (PMCG)
Hannes Swartz/John Vorster
R&C Instrumentation
Johan de Villiers
Radiant Group
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Sabelco Electrical Industries
Ludi Erasmus
Schneider Electric
Sales
Stone Stamcor
Sales
Surge Technology
Paul van As
Three-D Agencies
Mark Jenkins
Versalec
Roland Fry
Voltex
Hugh Ward
Voltex LSis
Gary Paterson
Waco
Jaco Coetzee
Zest WEG Group Africa
Chris Watkins/Stephen Cook

DRIVES/SOFT-STARTERS

ABB South Africa
Full range of low and medium voltage drives and soft-starters
ACDC Dynamics
Vacon range of VSDs and accessories; Aucom range of soft starters and MV soft-starters; Itegra Intelligent energy efficient range of soft starters
Alstom Protection & Control
VSD panels; soft-starters
Bellco
Full range of drives, soft starters
ARB Electrical
Full range of drives/soft starters
CBI
Mitsubishi variable speed drives – 220V AC, 380V AC, 0.1 – 375kW; Mitsubishi Servo amplifiers and motors – 220V AC, 50W - 7kW
Citilec
Full range of drives, soft starters
Eaton Electric
Full range of drives/soft starters
JDL Electric
Full range of drives/soft starters
MCE Global Suppliers
Hyundai N-series variable speed drives
Power Process Systems
Full range of drives and soft-starters
Schneider Electric
Full range of drives/soft starters
Voltex
Full range of drives, soft-starters
Voltex LSis
Full range of drives, soft starters
Zest WEG Group Africa
Full range of drives/soft starters: VSDs – low voltage drives 0 – 2 850 A, single phase and three phase available; medium voltage drives 85 – 2 850 A; soft starters – low voltage soft starter 0 – 2 424 A; medium voltage soft starters 70 – 360 A

ARMOURED/SHIELDED CABLES

Aberdare Cables
Bells and mains cable
ACDC Dynamics
Armoured cable 600 – 1 000 V with temperatures up to 70 °C
Alvern Cables
Full range of armoured and shielded cables
ARB Electrical Wholesalers
Full range of armoured and shielded cables
Atlas Group
Full range of armoured and shielded cables
Bellco
Full range of armoured and shielded cables
Citilec
Full range of armoured/shielded cables
Jaycor International
Armoured, shielded cables
JDL Electric
Full range of armoured, shielded cables
Lapp Group SA
Olflex Servo VSD/VFD cables, Olflex Classic 100CY, Olflex Classic 110CY
Versalec
Full range of armoured, shielded cables
Voltex
Full range of armoured, shielded cables

CABLE SUPPORT SYSTEMS

Aberdare Cables
Cable guard
ACDC Dynamics
Gewiss and Ardic cable support systems: galvanised trays, ladders, wire mesh; tray carriers; hot dip galvanised wire mesh trays and accessories; wall brackets; hanging support tray carriers; heavy load Mavistrut systems; support brackets and accessories; perforated steel racking; vertical couplings and horizontal couplings
ACTOM Electrical Products
Cable support systems to suit all installations
ARB Electrical Wholesalers
Full range of cable support systems
Bellco
Full range of cable support systems
Cable Croc
Anti cable theft
Cabstrut
Full range of cable support systems
Citilec
Full range of cable support systems
Jaycor International
Cable support systems
JDL Electric
Full range of cable support systems
Three-D Agencies
Woven sleeving, PVC slotted trunking, Spirobond grommet strip, floor trunking, solid trunking, Betaflex corregated tubing, Basal end caps, Flexicon tubing and accessories
Voltex
Full range of cable support systems

GEARBOXES FOR MOTOR APPLICATIONS

ARB Electrical
Gearboxes for motor applications
Stone Stamcor
Gearboxes for motor applications

CONTACTORS/BREAKERS/RELAYS

ABB South Africa
Full range of contactors, circuit breakers, relays
Atlas Group
Full range of contactors, breakers, relays
ACDC Dynamics
Gewiss, TC C&S and Terasaki contactors, breakers and relays; contactors in DIN, mini and vacuum; single pole, two-, three and four-pole; seitchgear from 13 mm MCBs to MCCBs and ACBs; MCCBs rated from 20 A to 1 600 A; relays and accessories MCB and MCCBs; TC; The Control Group India; Rele Italiana
ACTOM Electrical Products
Complete range of low voltage circuit breakers, isolators, earth leakage devices and wiring accessories
Alstom Protection & Relay
TAIAN contactors/relays
ARB Electrical Wholesalers
Full range of contactors, breakers, relays
Bellco
Full range of contactors, breakers, relays
CBI
Full range of contactors, breakers, relays
Citilec
Full range of contactors, breakers, relays
Crabtree Electrical Accessories
Schrack Technik range
Denver Technical Products
Hermetically sealed contactors for high current load up to 350A carry
Eaton Electric
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JDL Electric
Full range of contactors, breakers, relays
Legrand
Full range of contactors, breakers, relays
MCE
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Power Process Systems
Full range of contactors, breakers, relays
Pretoria Motor Control Gear Products (PMCG)
Full range of contactors, breakers, relays
R&C Instrumentation
Infrared inspection windows, busbar temperature monitoring
Schneider Electric
Full range of contactors, breakers, relays
Voltex
Full range of contactors, breakers, relays
Voltex LSis
Full range of contactors, breakers, relays
Zest WEG Group Africa
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MOTOR PROTECTION/SURGE PROTECTION

ABB South Africa
Full range of motor protection, surge protection
ACDC Dynamics
Rhomberg and NewElec electronic motor/pump and overload protection; surge protection devices – 15 A voltage protection plugs; one- and three-phase voltage guards and surge limiters; Innovolt Power Manager full power protection management
Alstom Protection & Control
Micom motor protection relays
ARB Electrical Wholesalers
Full range of motor and surge protection
Atlas Group
Full range of motor and surge protection
Bellco

MOTOR PROTECTION/SURGE PROTECTION

Full range of motor and surge protection
CBI
Full range of motor and surge protection
Citilec
Full range of motor and surge protection
Eaton Electric
Full range of motor protection relays
HellermannTyton
Full range of surge protection
JDL Electric
Full range of motor and surge protection
Legrand
Motor protection circuit breakers and surge protection
Major Tech
Surge protector for appliances
MCE
Hyundai electronic motor protection realy; Onesto surge arresters; Schenker mini rail surge arresters
NewElec
Full range of motor, surge protection
Phambili Interface
Full range of motor, surge protection
Power Process Systems
Full range of motor protection
Pretoria Motor Control Gear Products (PMCG)
Full range of motor protection
Schneider Electric
Full range of motor protection
Surge Technology
Lightning and overvoltage protection; surge arrestors
Voltex
Full range of motor and surge protection
Voltex LSis
Full range of motor and surge protection
Zest WEG Group Africa
RW range of thermal overload protection; SRW range of electronic overload protection; FANOX surge arrester range Class C Type II

CABLE MANAGEMENT ACCESSORIES

ACDC Dynamics
Brady labelling solutions; cable tie and cable management systems
ACTOM Electrical Products
Complete range of accessories for all types of installations
Allbro
Full range of cable management accessories
ARB Electrical Wholesalers
Full range of cable management accessories
Bellco
Full range of cable management accessories
Brady SA/Grafo
Cable and wire identification solutions, labels, printers
Cable Croc
Anti cable theft
Cabstrut
Full range of cable management accessories
Citilec
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Elen Enclosures
Grey PVC trunking
HellermannTyton
Full range of cable management accessories
JDL Electric
Full range of cable management accessories
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Full range of cable ties and labeling solutions
Legrand
Full range of cable ties and marking systems
Major Tech
A full range of Plasti-Loc nylon cable ties, 100mm, 150mm, 100mm, 300mm, 400mm, 500mm and 540mm in black and neutral, standard and heavy duty.
Pretoria Motor Control Gear Products (PMCG)
Full range of cable management accessories
Radiant Group
Radiant cable ties – various lengths available
Schneider Electric
Full range of cable management accessories
Three-D Agencies
Cable ties UV stabilised; cable ties UV full protection; label ties; identification ties; stainless steel ties; releasable ties; insulation tape; grommets; dome plugs
Voltex
Full range of cable management accessories

DISPLAYS

ABB South Africa
Displays
ACDC Dynamics
Rhomberg, Entes, Sele, Contrel, Iskra, EziView and Orbis meters and displays; ammeters, volt meters; running hour meters, watt meters, frequency meters, digital and programmable ammeters and voltmeters, and multi-function meters
ARB Electrical
Full range of displays
Bellco
Full range of displays
Eaton Electric
Full range of displays
Invirotel
Full range of displays
JDL Electric
Full range of displays
Legrand
Full range of meters
MCE
MCE panel meters
Power Process Systems
Full range of displays
Pretoria Motor Control Gear Products (PMCG)
Full range of displays

BUYERS' GUIDE

DISPLAYS

Radiant Group
OWL electricity monitor
Schneider Electric
Full range of displays for meter readings
Voltex
Full range of displays
Zest WEG Group Africa
Electronic PF01 range of power factor meters; MMW range of power meters

FANS FOR MOTOR APPLICATIONS

ACDC Dynamics
Various fans and ventilations solutions
ARB Electrical
Full range of fans for motor applications
Bellco
Full range of fans for motor applications
MCE Global Suppliers
MCE panel fans
Schneider Electric
Full range of fans for motor applications
Voltex
Full range of fans for motor applications

WIRING AND WIRING ACCESSORIES FOR MOTOR APPLICATIONS

Aberdare Cables
Housewire, panel flex cable
ACDC Dynamics
Wiring solutions for all applications
Allbro
Full range of wiring and wiring accessories for motor applications
Alstom Protection and Control
Customised enclosures and starters
Alvern Cables
Full range of wiring
ARB Electrical Wholesalers
Full range of wiring and wiring accessories for motor applications
Atlas Group
Full range of wiring and wiring accessories for motor applications
Bellco
Full range of wiring and wiring accessories for motor applications
Citilec
Full range of wiring accessories for motor applications
Eaton Electric
Full range of wiring and wiring accessories for motor applications
HellermannTyton
Full range of wiring and wiring accessories for motor applications
JB Switchgear
Full range of wiring and accessories for motor applications
Lapp Group SA
Lapp single cores
Legrand
Full range of wiring accessories for motor applications
MCE
Onesto industrial plugs, couplers, interlocked sockets IP44 and IP65
R&C Instrumentation
Infrared inspection windows, busbar temperature monitoring
Radiant Group
Click-Duo double 5A luminaire socket
Schneider Electric
Full range of terminal blocks, disconnectors, cable ducting and enclosures
Voltex
Full range of wiring and wiring accessories
Waco
Full range of wiring and wiring accessories

CABLE GLANDS/LUGS/FERRULES

ACDC Dynamics
Cable glands, lugs and ferrules in various materials for all applications
ACTOM Electrical Products
All termination and jointing requirements
ARB Electrical Wholesalers
Full range of cable glands, lugs and ferrules
Atlas Group
Full range of glands, lugs, ferrules

CABLE GLANDS/LUGS/FERRULES

Bellco
Full range of glands, lugs, ferrules
Citilec
Full range of cable glands, lugs, ferrules
Eaton Electric
Full range of cable glands, lugs, ferrules
Elen Enclosures
AGRO Eurotech cable compression glands; polyamide; standard, Exe and EXI
HellermannTyton
Full range of cable glands, lugs, ferrules
JDL Electric
Full range of glands, lugs, ferrules
Lapp Group SA
Skintop MS-SC-M screened compression glands, Epic circular connectors
Legrand
IP68 cable glands, Cabstop cable glands
Phambili Interface
Full range of cable glands, lugs, ferrules
Schneider Electric
Cable ends; cable markers; crimping tools; wiring accessories; trunking
Stone Stamcor
Manufacture of compression lugs and ferrules tested to IEC 6 1238-1 and regulator approved; special connectors to customers' specifications
Three-D Agencies
Compression glands; BW glands; shrouds; lugs and ferrules; XLPE lugs and ferrules; aluminium lugs and ferrules; BI-metal lugs and ferrules
Voltex
Full range of cable glands, lugs and ferrules
Waco
Full range of cable glands, lugs and ferrules

FLAMEPROOF

Aberdare Cables
Flamosafe flame retardant range of cable
ACDC Dynamics
Flameproof lighting and beacons supplier: audible and visual alarms; beacons; industrial lighting; gas sensors; safety sensors, conveyor pull-wire trip switches, lgands, isolators, motor starters, pushbuttons; pilot lights, sirens; LED and energy efficient light solutions for industrial applications
Allbro
Flameproof products
ARB Electrical
Full range of flameproof products
Bellco
Full range of flameproof products
Eaton Electric
Flameproof products
JB Switchgear
Full range of flameproof products
JDL Electric
Full range of flameproof products
MCE Global Suppliers
MCE fireman switches
Phambili Interface
Full range of flameproof products
Voltex
Full range of flameproof products

CONTROLS FOR MOTOR APPLICATIONS

ABB South Africa
Controls for motor applications
Aberdare Cables
Multicore LV cable
ACDC Dynamics
C&S, Gewiss, Compei and Deca ranges of pushbuttons, switches and controls for various applications
Allbro
Full range of controls for motor applications
Alstom Protection and Control
Control desks; control panels; selector switches
ARB Electrical Wholesalers
Full range of controls for motor applications
Bellco
Full range of controls for motor applications

CABINETS FOR MOTOR APPLICATIONS

CBI
Full range of controls for motor applications
Citilec
Full range of controls for motor applications
Eaton Electric
Full range of controls for motor applications
JB Switchgear
Full range of controls for motor applications
JDL Electric
Full range of controls for motor applications
MCE
MCE mini and steel pushbuttons, pilot lights, selector switches, key switches, emergency stops, buzzers, plastic control devices
Phambili Interface
Full range of controls for motor applications
Pretoria Motor Control Gear Products (PMCG)
Full range of controls for motor applications
Schneider Electric
Full range of controls for motor applications
Voltex
Full range of controls for motor applications
Voltex LSis
Full range of controls for motor applications
Waco
Full range of controls for motor applications
Zest WEG Group Africa
Pushbuttons, selector switches and pilot lights; IP 66 protection; high reliability auxiliary contacts lighting block with integrated LED

CABINETS FOR MOTOR APPLICATIONS

ABB South Africa
Full range of cabinets for motor applications
ACDC Dynamics
Ilinox, Quadritalia, Perano, Quadroviseu; Ilatronic; LAP and Gewiss ranges: flush-mounted, wall-mounted, floor standing; plastic, steel, aluminium explosion and fireproof; waterproof and water tight; polyester, mobile and desk solutions
Allbro
Full range of cabinets for motor applications
Alstom Protection & Control
MCCs; special and standard starters
Atlas Group
Full range of cabinets for motor applications
ARB Electrical
Full range of cabinets for motor applications
Bellco
Full range of cabinets for motor applications
Eaton Electric
Full range of cabinets for motor applications
JB Switchgear
Full range of cabinets for motor applications
JDL Electric
Full range of cabinets for motor applications
MCE
Onesto mild steel and stainless steel enclosures, floor standing, mild steel enclosures
Phambili Interface
Full range of cabinets for motor applications
Power Process Systems
Full range of cabinets for motor applications
R&C Instrumentation
Infrared inspection windows, busbar temperature monitoring
Sabelco Electrical Industries
Sabelco-Cubic type tested assemblies complying to IEC 61439, SANS 1973-1, SANS 1973-3, SANS/IEC60439, manufactured in mild steel, 3CR12, 304 stainless and 316 stainless, IP rating up to IP65, form factor up to form 4B, in any colour to client specification.
Schneider Electric
Full range of cabinets for motor applications
Voltex
Full range of cabinets for motor applications
Voltex LSis
Full range of cabinets for motor applications
Voltex MV/LV
Full range of cabinets for motor applications
Waco
Full range of cabinets for motor applications
Zest WEG Group Africa
Full range of cabinets for motor applications

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.

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NEW SYSTEM PRO E-POWER MODULAR SWITCHBOARDS

THE arrival of ABB's innovative main distribution switchboard solution, System pro E Power, in the South African market provides a modular switchboard solution rated up to 6 300 A with short-circuit current up to 120 kA. The modular system provides an industry-leading level of flexibility, combined with simplicity and speed of assembly, to local switchboard manufacturers.

The ABB product development team carefully considered the views and experiences of modular switchboard users world-wide for the design and manufacture of a new, ABB low-voltage equipment focused, switchboard solution. This solution meets all electrical installation requirements with respect to degree of protection, segregation and all electrical characteristics in accordance with the latest international standards (IEC).

System pro E Power concentrates on three key pillars to make the system a key-resource for panel builders; flexibility, speed and simplicity.

In an ever-increasingly competitive environment, the features of ABB's System pro E Power distribution boards make a compelling argument to consider the switchboard for any power distribution application.

Flexibility

Ultra-high technological standards can be achieved thanks to System pro E Power, since the vast array of accessories and configurations available allow tailor-made solutions to be created. The key features include an innovative method of supplying uprights and cross-pieces in kits, with depth and width measurements able to create up to 120 configurations of varying sizes, using common modular components.

This flexibility enables the assembler to provide a wide range of functional dimensions; height options of 1 800 or 2 000 mm, width range from 300 to 1 250 mm and depth from 200 to 900mm.

Furthermore, protection classes are provided for all types of applications; ranging from a basic IP30 to an industry-first IP65 ingress rating.

Speed

System pro E Power reduces the time required for assembly prior to switchboard commissioning. Whatever the configuration may be, each component has been designed for ultra-fast assembly and wiring due to quick and effective techniques for mounting the kits and distribution systems.

Internal segregation Form kits are available, a single basic kit can be used for Form 1 through Form 4b, with the addition of accessories in sequence, both for moulded-case and air circuit-breakers. Additionally, Form 2b with front connections and front access kits are available; another noteworthy innovation.

Simplicity

System pro E Power simplifies assembly operations due to pioneering solutions, both for the circuit- breaker and main distribution busbar installation. To illustrate the simplicity; a common busbar system is employed in all applications up to, with linear and scaled solutions for busbar holders. As a result the busbars may be installed in any position; at the rear or at the side, vertically and under the roof, on the floor and on any horizontal level.

In an ever-increasingly competitive environment, the features of ABB's System pro E Power distribution boards make a compelling argument to consider the switchboard for any power distribution application.

Enquiries: +27 10 202 5916

SEPARATING THE BIG FROM THE SMALL

"It is very costly, but it is absolutely necessary to guarantee quality. There are not that many manufacturers who are able to afford this high capital outlay," Shaw Controls' Johan van Niekerk tells Sparks. "Recent upgrades over the last two years have seen the facility enlarged and modernised, and all MCC panels have been quality and certification verified. This has paid major dividends as we are busy at all four of our factories."

When electricians stand in front of a Motor Control Centre (MCC) panel designed and manufactured by Shaw Controls, a division of Zest WEG Manufacturing, they know they are safe.

The checks and balances the company has in place ensure quality products. Shaw Controls is one of only a handful of manufacturers of IEC 61439 certified MCC panels in South Africa. It is a significant investment for manufacturers who want to prove the integrity of their product.

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While smaller companies have been able to operate without these certifications, Shaw Controls is a major supplier to the African minerals industry, doing business with most of the large blue-chip mining houses. Safety and productivity are key performance parameters for this market, which favours supply chain partners who are aligned to these objectives.

However, the company has gone a step further by adopting Australian quality controls considering its intense involvement in greenfields and brownfields mining projects outside South Africa's borders. Many of these projects are being driven by Australian companies, which work closely with their own project houses and engineering firms.

"Their standards are generally much higher than those in South Africa. We never had to adopt them, but decided to because they would better our performance and overall standing in the industry," says Van Niekerk.

While the lion's share of the company's business is generated from the mining industry, this quality regime is also being transferred to the company's other markets, ranging from large industrial undertakings to small manufacturers. "There is no business too big or too small for us. What the customer wants is exactly what they'll get," says Van Niekerk, adding that some of Shaw Controls' other big customers are involved in the sugar production and water supply sectors.

The company keeps close control over the quality of its product by manufacturing everything in-house. Van Niekerk says there is no other MCC panel manufacturer in the country that can make every component. This has also allowed Shaw Controls to retain a tight grip on costs.

Van Niekerk says that striking the delicate balance that exists between cost and quality is strategically important, especially for its mining customers who are feeling the impact of suppressed commodity prices.

And, while international economic conditions see many foreign investors constrain or even put a hold on investment in the country, Van Niekerk notes that Brazilian parent company, WEG Group, is increasing its investment into South Africa.

This is evident at the company's 12 000 m^2 factory in Robertsham, Gauteng, which is handling an order book that is five times the size it was a year ago.

It houses state-of-the-art equipment needed to manufacture a full range; starting with the processing of 2 mm sheet metal that is needed to make a durable casing. This sheet metal is processed on the company's computer-numerical controlled, punching and bending machines, before being sent to a seven-stage surface preparation which, combined with its powder coating line, improves the longevity of the casings, protecting them from corrosion.

Shaw Controls even has the equipment needed to manufacture its own continuously formed door seals. These complement its metal hinges and welded brackets inside the panels, as well as the way in which the supports for the bus-bars are meticulously spaced and clamped to avoid flexing.

These are all essential requirements for meeting the stringent IEC 61439 requirements. It even dictates the tensile strength of the fasteners used inside the casings, and the way in which they are torqued before they leave the factory. Van Niekerk says the company adds an extra step, torqueing them again when they arrive on site.

However, it is Shaw Controls' attention to the finer detail that is a major differentiator. For example, plinths have been placed in such a way that the MCC panels can be bolted onto the floor. It will soon automate the application of seals onto cabinets to mitigate human error, while bolstering production rates.

Van Niekerk is proud that the return rate of its panels has been kept to a minimum. Customers are welcomed to the facility to do their own inspection of the end product. "It may be an extra step in the process, but it is certainly well worth it. Many of these are destined for remote sites and it is better to receive the customer's approval here," he says.

Enquiries: +27 011 723 6000

The standard dictates the correct spacing and bracing of bus bars to avoid flexing.

Many of Shaw Controls' panels are destined for the mining industry.

MODULAR RANGE OF MCBS OFFER SIMPLE INSTALLATION AND ENERGY SAVINGS

LEGRAND'S extensive portfolio of miniature circuit breakers (MCBs) offers solutions for efficient protection, enhanced safety and continuity of service in commercial, industrial and domestic applications. New to this range is the TX³ series, designed for safe installation and maximum protection of people and property in modern commercial and residential installations. "Legrand's modular products are continually upgraded for improved efficiency and safety, enhanced aesthetics, simple installation and greater energy savings. The TX³ range, which meets stringent quality, safety and environmental specifications, offers protection against short-circuits, overloads and residual current faults," says Marc Naidoo, projects and technical co-ordinator, Legrand SA. "Included in the new TX³ range are thermal magnetic circuit breakers and residual current devices (RCDs)."

TX³ thermal-magnetic circuit breakers have a C curve and are available as single pole, two-pole, three-pole and four-pole configurations. Units from 2 A to 63 A have a breaking capacity of 6 kA. This product is aimed at the mid-range market in its class, with limited cascading for intermediate commercial solutions.

New designs and materials used have been developed to allow air to flow freely between each device to prevent over-heating. For increased safety there is no direct contact with live parts, even with the faceplate open. A wire guide flap avoids connection errors by preventing insertion of the wire behind the terminal.

These circuit breakers, with Class 3 limitation, provide excellent short-circuit protection. Pin type comb busbars guarantee connection quality by eliminating the risk of short-circuits and ensuring a reliable connection via the top or bottom of the device. By limiting the short-circuit energy released in cables, service life of components in the installation is significantly extended.

The TX³ range has special features to save time and ensure safety at each stage of the installation. A bi-stable clip ensures easy positioning or removal of circuit breaker on the DIN rail. Clear marking on the front panel ensures quick visual identification of relevant information - product name, position of contacts (on/off), curve type, rating, breaking capacity and the limitation class.

Ergonomic holders protect customisable labels which are used to identify circuits clearly for rapid intervention in the event of an error. The shape of the screws and terminals ensures excellent mechanical withstand of wires and limits contact impedance, temperature rise and heat loss. Reinforced terminals allow tightening torques higher than in standard devices.

For quick visual identification of the function, the circuit breaker has a black handle and the switch has a grey handle. Residual current devices (RCD) in the TX³ range are available in two-pole and four-pole configurations, from 25 A to 63 A. AC types detect ac component faults and A types detect ac and dc component faults.

Legrand offers a wide range of control and signalling auxiliaries for flexibility in installations. These auxiliaries are used in conjunction with TX³ and DX³ circuit breakers to monitor and control circuits remotely in commercial installations. Components, which are available in 0,5 mm widths or 1 module wide, include auxiliary and fault signal contacts, shunt trips, under voltage releases and motor driven controls.

Signalling auxiliaries (6 A to 250 V~) have a wide range of functions, including an auxiliary changeover switch that indicates the position of the contacts of the MCB and a fault signalling changeover switch which indicates the opening on a fault. An auxiliary changeover switch can be changed to a fault signalling changeover switch and an auxiliary changeover switch and fault signalling changeover switch can be changed to two auxiliary changeover switches. Current shunt trips are used for remote tripping of an MCB at the supply end and under-voltage releases have a time delay adjustable from 0 to 300 ms.

A stand-alone release is used for positive safety tripping on the control circuit via a 'normally closed' (N/C) push button. This facility prevents the device with which it is used from tripping, if there is no supply voltage, yet retains the possibility of tripping via the control circuit for a minimum of 60 hours. This system is not suitable for the supply circuits of moving machinery. Auxiliaries are equipped with retainer clips for quick, tool-free mounting on the left hand side of the MCB. Terminals with visible, accessible screw heads facilitate easy wiring. The arrow on the front of auxiliaries identifies the circuit breaker to which they are linked. Possible configurations are three auxiliaries per device, including one control auxiliary, as well as the insertion of the supply busbar.

Legrand's compact motor-driven controls utilise optimised space on the panel. These devices enable the products with which they are used to be opened and closed remotely. An integrated automatic re-setting facility ensures continuity of service.

The company's comprehensive range of power equipment encompasses miniature circuit breakers (MCBs), moulded case circuit breakers (MCCBs), surge protectors, modular distribution blocks, air circuit breakers, cast resin transformers and capacitors, as well as industrial sockets and wiring accessories.

Enquiries: +27 11 444 7971

SO YOU WOULD LIKE TO WORK ON MOTOR CONTROL CENTRES?

This month's column is directed at young electricians and apprentices who would like to work on motor control centres (MCCs) to give them an overview of what MCCs are all about and to give them an idea of what is required to work in this field.

To begin at the beginning: a MCC is a floor-mounted steel structure made up of one or more enclosed vertical sections, which distributes power via the busbar and/or cable arrangement to the control modules which, in turn, control the power to electric motors.

One vertical section can stand by itself as a complete MCC, or several sections may be bolted and bussed together. Wherever motors are used, they must be controlled by using motor circuits and motor control circuits. This is made up of contactors and overload relays. The contactors are designed to start and to stop the motor. The motor overload relay is designed to disconnect the power to the motor when an overload condition exists. This will also require using stop and start push buttons and other devices in the control circuit to control the operation of motors. In many commercial and industrial applications, quite a few electric motors are required and this is often controlled from a central location and the MCC is designed for this function. So, a MCC is basically a grouping of a combination of starters in one assembly.

The other devices that are usually included in the MCC are circuit breakers or fuses, timers, relays, indicator lights and panel meters. In addition, MCCs can incorporate a variety of other devices such as power meters, programmable logic controllers and so on, depending on the requirements. A main switch and lock-out facilities will always be installed. The locking out of cubicles with the switch in the open position is a critical criteria for safety compliance.

MCCs are different from other distribution devices, such as panel boards and switchboards. MCCs usually contain combinations of motor control units, while panel boards and switchboards contain circuit-protection devices such as circuit breakers and fusible switches.

Circuit breakers are used for overcurrent protection and, in addition to that, a circuit breaker manually energises and de-energises a circuit. The advantage of circuit breakers is that they allow a circuit to be reactivated after a short circuit or overload. Another device that is used for overcurrent protection is a fusible disconnect switch, so when heat is produced by overcurrent, the current-carrying element will cause the element to melt open, disconnecting the load. The electrician should have sound knowledge on protective devices rated for anticipated fault currents. Electrical diagrams are provided, for example reticulation drawings and schematic diagrams.

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While an electrical engineer will be responsible for the designing of the electrical gear that is to be installed in a MCC, a qualified electrician will install, join and terminate low voltage cables and conductors and they would also have to commission the MCC's panel.

The requirements

- Safety comes first so anyone working on a MCC must begin by making sure the MCC is clean.
- The electrician working on the MCC must be able to do a layout, prepare the sub-section cubicles and select and fit the electrical components into the subsection cubicles.
- Working according to instructions, the electrician also has to do the preparation of the cables and wiring.
- The electrician is responsible for the labelling of components such as cables and wires and this has to be accurate. He or she must know how to work in accordance with the electrical regulations and be familiar with cable/wiring sizes and colour coding.
- The electrician must have a sound knowledge of the protective devices rated for anticipated fault currents that are stipulated in the electrical diagrams provided. He or she must be able to read electrical drawings, for example reticulation drawings and schematic diagrams.
- The electrician must know what protection is needed for the main and control circuits and he or she must be able to demonstrate knowledge of legislation and standards relevant to the electrical industry.
- The electrician must also know how to use hand and power tools correctly. This will include – but is not limited to drilling, cutting, filling, measuring and stripping cables and conductors.
- The electrician must be able to work with test instruments and be able to interpret the readings and, if needed, be able to do maintenance.
- The earthing of a MCC is of utmost importance and one would need to understand protective earthing and that all the metal parts of the enclosure that require earthing (such as the earthing of the cabinet and doors) and that they are bonded to earth in accordance with the electrical regulations.
- The electrician must be familiar with the power and hand tools used in the wiring and construction of MCCs, that are used for drilling, cutting, filling (filing?), measuring and for the stripping of cables and conductors.
- Test instruments such as an insulation tester, multimeter, etc, will be used to measure the motor control centre cables/conductors and other relevant devices before any authorised permission is given for commissioning the motor control centre and, if needed, to rectify any fault readings that are displayed on the test instrument.
- The earthing of a MCC is of utmost importance and all metal parts of the enclosure that require earthing – for example, earthing of cabinet and doors – are bonded to earth in accordance with the electrical regulations.
- To work on MCCs, it is necessary to pass the installation rules that cover the legislation and regulations required in this field. This will expand the qualified artisan's expertise and he or she will be able to approach motor control centre companies for employment. He or she can also apply to become an electrical contractor in order to undertake contract work in a company that requires motor control centres.

(Thanks to Paul Sloan, training manager at P & T Technology, for his contribution to this article.)

Easy-to-install cable trays and accessories for commercial and industrial applications

ACDC Dynamics is a distributor of the Mavil range of cable transportation systems, which are designed for use in commercial and industrial environments. The range includes BRN galvanised perforated sheet cable trays; SP cable tray support systems; and BFR steel wire mesh cable trays with the portable Speedy Curva bending machine.

"The Speedy Curva automatic bending machine is a smart solution to bending cable trays to exact requirements on site," explains ACDC's Nordier Smith. "This means that only straight cable trays need to be delivered to site, which results in savings on transport costs," says Smith, adding that "the use of the Speedy Curva bending machine is particularly suited for modifying large quantities of cable ladders".

Smith says the BFR steel wire cable trays are available in six finishes and are suitable for installation in all kinds of environments – from harmless to harsh and corrosive conditions. The tray sizes range from 30 to 110 mm internal height and from 50 to 600 mm internal width and the matching covers allow for small and large cable structures and even greater cable capacity.

"The Speedy Curva automatic bending machine is a smart solution to bending cable trays to exact requirements on site. This means that only straight cable trays need to be delivered to site, which results in savings on transport costs, and the use of the Speedy Curva bending machine is particularly suited for modifying large quantities of cable ladders".

"Installation is quick due to the practical speed-lock coupler and clip system for support systems in horizontal, vertical and multi-level applications – and the BFR cable trays can be customised on site using the Speedy Curva automatic bending machine."

The BRN galvanised perforated cable trays are available in four heights from 30 to 80 mm and in eight widths from 95 to 605 mm and come in Z275 and GAC galvanised finishes with matching snap-on covers.

He says that punched ribs on the bases of the trays permit higher load resistance while reducing the number of supports required.

The range includes junctions, bends and curves with speed-lock couplers that simplify installation in horizontal, vertical and multi-level applications.

The SP cable tray support systems feature 'quick fix' and coupling innovations from a 'family' of four metal support ranges in three finishes, which allow for installation even in corrosive environments.

- The Omega range for light loads, for wall or ceiling mounting.
- The CSU range for medium loads, for wall or ceiling cantilever mounting.
- The C40 Pluriel range for medium loads on specific profiles for surface and suspended mounting.
- The Mavistrut range for heavy loads on mechanically installed brackets to wall, surface or ceiling, with snap-fit systems.

Enquiries: +27 10 202 3300

NEW MULTI-PURPOSE SOLUTION TO CABLE LOCATION

A professional general-purpose cable locator is available from the Comtest Group, Fluke's authorised test and measurement distributor. The Fluke 2042 traces cables in walls and underground, locates fuses and breakers on final circuits and locates interruptions and short circuits in cables and electrical floor heating systems. It can also be used for tracing metal water and heating pipes. The unit is shipped as a complete kit comprising a transmitter and receiver in a purpose-made carry case. The transmitter has a LC-display for level and code receiving, and live voltage indication. The receiver has a backlit LC-display with a torch function for use in dimly lit locations. The digitally-coded sender-signal guarantees clear signal identification. It also features additional transmitters to distinguish between several signals. The Fluke 2042 is rated CATIII/300V and has safety certificate EN 61010-16.

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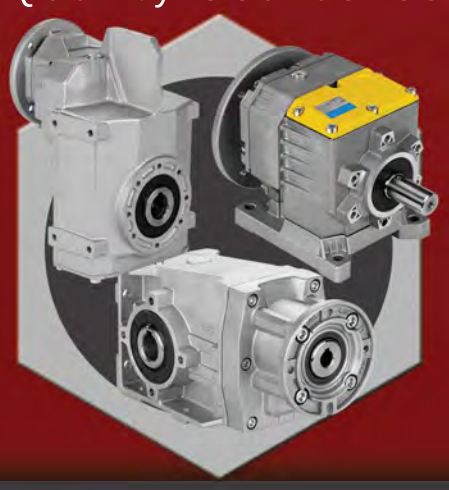

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ABERDARE CABLES

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TIPS ON HOW TO SAFETY CHECK METERS IN THE FIELD TO REDUCE HAZARDS

COMTEST provides test and measurement, communications, process control, equipment, solutions and specialised systems from world leading manufacturers such as Fluke, to the southern African market. Fluke is a world leader in the manufacture, distribution and service of electronic test tools and software.

Safety checking equipment in the field can reduce hazards and ensure that equipment is safely functional. Whether the equipment is a voltage tester or a digital multimeter, users could benefit greatly by carrying out a quick safety scan before commencing work.

How to do a safety-check of your meter in the field

Digital multimeters are designed to assist users to carry out simple to highly complex test and measurement functions on the bench or, increasingly, remotely in the field. From time to time, users should test meters and other equipment in the field and, by paying attention to the following quick steps, this could help to ensure the safety and efficiency of the meter.

Use common sense

Before beginning, take a close look at the equipment and accessories. Do they look shabby and badly worn? If so, the unit could be beyond functional and should not be used.

Inspect leads

Before using test leads, perform an inspection to ensure the leads can safely and accurately conduct electricity for the job at hand. Be sure the leads have:

- Shrouded connectors.
- Finger guards.
- CAT ratings that equal or exceed those of the meter.
- Double insulation.
- Minimum exposed metal on the probe tips.

Continuity testing

Use the meters own continuity testing function to check for internal breaks. Check test lead resistance by:

- Inserting leads in V/Ω and COM inputs.
- Selecting Ω, touching probe tips and being sure the leads are 0.1 – 0.3Ω.

Choose accessories that are suitable for industrial work, and check for abrasions and other damage that eventually occur with use. This way, users will never have to worry about the failure of a test lead or probe—or the consequences thereof.

Inspect test lead insulation

- Check and ensure that the insulation is not nicked or cracked. With age the insulation material—whether PVC or silicone—can become dried out, brittle and susceptible to cracking.
- A visual inspection will often show any part of the leads that has this problem.
- Ensure that there are no signs of gaps or cracks at the junction between the insulated wire and the moulded banana plugs or probes at each end.

CAT ratings can be found between the input jacks on most tools

Verify correct voltage rating

Verify that the meter and accessories are appropriately rated and designed for the system and equipment to which they will be connected.

- Check for the IEC rating (e g CAT III or CAT IV) on the tester, and only purchase leads and other accessories that meet or exceed that rating.

Enquiries: +27 10 595 1821

LABEL PRINTER TO IDENTIFY CABLES AND COMPONENTS

BRADY has launched the new BBP™12 Label Printer, an entry level benchtop label printer for cable and component identification that offers great value for money. The compact BBP12 offers a high print speed of 100 mm/second and can handle a wide range of highly durable and specialised Brady identification labels.

Wide range of quality identification labels

Brady's new and compact BBP12 Label Printer is compatible with a wide range of durable Brady identification labels, developed to perform in challenging conditions and contexts. In electrical, telecom and datacom environments, BBP12 can print cable sleeves, self-laminating labels, flag labels and cable tags, able to resist abrasion, wide temperature ranges and/or UV-exposure.

BBP12 Label Printer features

The compact BBP12 offers high precision printing which enables very accurate image and barcode positioning on small labels from 10 mm up to 112 mm. Combined with a standard 300 dpi print quality, the BBP12 is a great value for money entry level label printer.

The printer's user-friendly LCD display calibration menu supports professionals to print durable labels in just a few steps, and the printer's Ethernet connectivity or standalone capabilities allow for an easy implementation in any work environment.

Printer options

A free label unwinder is included with every BBP12 to increase its already vast choice in label materials. On top of this, several options can be included with the compact BBP12 Label Printer. The printer is optionally available with peel and present, a technology enabling the printer to present a printed and ready-to-apply label without its liner. Also optional is Brady's comprehensive label creation software LabelMark6 PRO.

Enquiries: +27 11 704 3295

ADVERTORIAL

LOCAL CABLE GLAND MANUFACTURER WINS HIGH COURT TRADE MARK INFRINGEMENT CASE

CCG Cable Terminations, the largest manufacturer of Cable Glands in the southern hemisphere and one of the largest cable gland brands worldwide, recently succeeded in winning a trade mark infringement case against a company owned by the Pratley group, Cable Gland Company (CGC).

Cable Gland Company was interdicted and restrained from infringing the registered CCG trade mark by using the mark CGC in relation to its sale of cable glands and shrouds.

"It was brought to the notice of CCG Cable Terminations that substandard copies of CCG's well known BW and A2 industrial glands, with the support of Pratley, were being marketed and distributed by Cable Gland Company under the infringing mark CGC. CCG communicated its concerns to both Cable Gland Company and Pratley, who refused to cease the infringing conduct," explains CCG Cable Terminations' Nicholas Lackinger, managing director. "CCG then approached the Johannesburg High Court for inter alia interdictory relief and, on 6 October, 2015, Judge Sutherland ruled in CCG Cable Terminations' favour."

He found that the infringing marks used by Cable Gland Company were confusingly similar to the CCG trade mark. He interdicted Cable Gland Company from using the infringing marks going forward and to remove and/or destroy all materials and products bearing the infringing marks. He also ordered Cable Gland Company to pay royalties to CCG Cable Terminations and to bear CCG's legal costs.

"This ruling follows a successful case for CCG in Botswana where similar imported copies of CCG's glands were impounded by Interpol," Lackinger says.

He adds that CCG glands are manufactured under the strict ISO 9001, 14001 and 18001 quality, environmental, health and safety schemes and, in addition to holding the SABS mark for the SANS 1213 standard, CCG's industrial glands are the only South African supplied glands certified to the stringent requirements of the IEC 62444 standard.

Lackinger explains that, to bring the company in line with the demands of international standards and norms, CCG is "at the forefront of design, research, third party testing and certification of cable glands in areas such as short circuit withstand tests, extreme high and low temperature tests, low smoke and flammability tests, corrosion resistance tests, accelerated aging and weathering tests, electromagnetic compatibility tests and IP tests up to depths of 100 m".

"Cable glands are a critical safety device and, as such, are required to be tested and certified to various safety performance standards. These imported copies of CCG glands do not carry the SABS mark of approval," he says.

"CCG has, in the interest of safety and to prevent any reputational damage, a duty to take the necessary legal action and also inform the public when uncertified copies with similar sounding names are offered for sale as failure of the copies may have serious consequences in terms of loss of production and/or injury," concludes Lackinger.

Through its 10 overseas branches, CCG sells to over 45 countries and lists amongst its recent major successes multi-billion dollar projects such as the Curtis Island LNG projects in Australia, the Chevron LNG facility in Angola, the Exxon Mobil Gas Plant project in Australia, the Petro Rabigh II project in Saudi Arabia, the Aktogay Copper Mine project in Kazakhstan, the Roy Hill Mining project in Australia, the Husab Uranium Mining project in Namibia and the Eskom Kusile and Medupe Power Station projects.

Enquiries: +27 11 394 2021

By Dr Marthinus Smit, Shuttle Lighting

LED ELECTRO-MAGNETIC INTERFERENCE COMPLIANCE IN PRACTICE

ELECTRO-Magnetic Interference is a commonly used phrase and its legal requirement in the electronics industry causes many problems in the lighting industry through non-compliance. EMI is the disruption of an electrical circuit by a magnetic field, which is often experienced by flickering lights, buzzing radios, cell phones or television sets.

It is, therefore, a requirement that lighting related products including all types of LED lamps, drivers, transformers, dimmers, etc that are sold and installed in South Africa must legally comply with the Emissions and Immunity Standards as per Government Gazette No 30753 of 2008. There is, however, a surprisingly large number of LED lamps sold locally that do not comply with both standards. In many cases, non-compliant lamps have the CE mark, which renders them false by implication (CE is not officially recognised in South Africa).

The important question is: Although it is illegal, does it matter in practice that an LED lamp does not comply?

The majority of compliant LED drivers (integrated or external) consist of the same conceptual building blocks as seen from the mains side. These are: some type of inrush limiting resistor; a passive 'EMI' filter (complexity depends on the power level, ranging from a simple inductor and capacitor (LC) type to complex common and differential mode filters); a full bridge rectifier; a bulk dc storage capacitor to smooth the rectified ac voltage; and, finally, a high frequency dc to dc converter (mostly a current-controlled flyback topology).

Some professional drivers include a power factor correction stage before the bulk storage capacitor. The dc-dc converter operates at a high frequency ranging typically from 40 kHz to 300 kHz, which causes corresponding current pulses in the storage capacitor. The EMI filter smooths these pulses to present a low frequency current requirement to the mains. If an LED lamp or driver does not comply to the emissions standard, its EMI filter is either inadequately designed to filter the high frequency current pulses or, in many cases, there is simply no EMI filter present!

The high frequency current generated in the dc-dc converter is thus directly drawn from the mains as is illustrated in ***Figure 1.***

To illustrate the above, Oscillogram 1 shows the measured lamp voltage (red trace) and current (yellow trace) of a fully compliant 5 W GU10 LED. The current contains only a low frequency component and, when increasing the measurement scale 250 times, a very low amplitude current ripple can be seen in ***Oscillogram 2.***

Oscillogram 3, however, shows the measured results of a non-compliant 5 W GU10 LED. Even at a low frequency measurement scale, the severity of the high frequency current pulses are several times higher than the RMS current of the LED.

When increasing the measurement scale, the switching waveform of the dc-dc converter can be seen as is shown in ***Oscillogram 4 –*** this causes high conducted emissions as well as high radiated emissions. With only one non-compliant LED in circuit, the current in the mains supply is very predictable, it's at the switching frequency of the converter. However, when a number of non-compliant LEDs are in circuit, the mains current is stochastic.

Oscillogram 5 shows the low frequency measured current of four LEDs and the random nature of the current is very evident on a 10us scale (***Oscillogram 6***). Since the individual converters are not internally synchronised, the current waveform changes continuously, as can be seen from a subsequent measurement shown in ***Oscillogram 7.***

These random waveforms cause severe interference with other electrical equipment via the mains as well as with radio type equipment via radiated emissions.

A further significant disadvantage of LEDs that contain no or inadequate EMI filters is evident at initial turn on when there is no impedance to limit the inrush current into the bulk storage capacitor. ***Oscillogram 8*** shows the start-up current of the four non-compliant 5W LEDs: a current pulse of 12 A was measured – 3 A per LED!

This very high electrical stress on the internal components is responsible for premature LED failures. Should a dimmer be present, the very high start-up current as well as high peak currents during operation can cause premature dimmer failure.

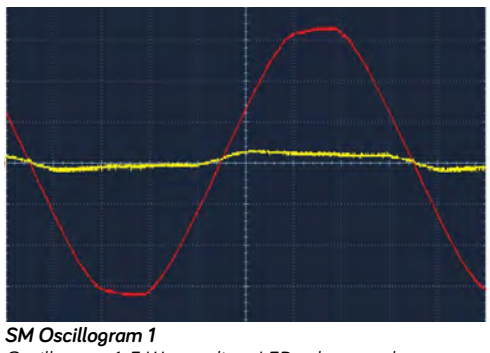
Besides filtering the switching waveform of the LEDs dc-dc converter, the EMI filter performs another important function: it filters or smooths disturbances from the mains.

A LED with an adequate EMI filter will not be very sensitive to disturbances, such as high emissions from non-compliant equipment or voltage spikes, and should pass the Immunity standard requirement. When the filter is inadequate or not present, any disturbance from the mains is directly imposed on the driver's bulk capacitor and high frequency converter. Besides not meeting the requirements, premature LED failure can be expected.

Very often, if there are a number of non-compliant LEDs on the same circuit, one LED can react negatively to the high emissions from a neighbouring LED. This becomes very evident when dimming these LEDs as random flickering at lower intensities can be expected.

There are many practical reasons why EMI compliance is important for LED lamps and drivers … besides being a legal requirement.

Enquiries: +27 82 465 2299



SM Oscillogram 1
Oscillogram 1. 5 W compliant LED voltage and current – direct mains (no dimmer). Horizontal: 2.5 ms/div. LED voltage (red – 100 V/div), LED current (yellow – 0.05 A/div).

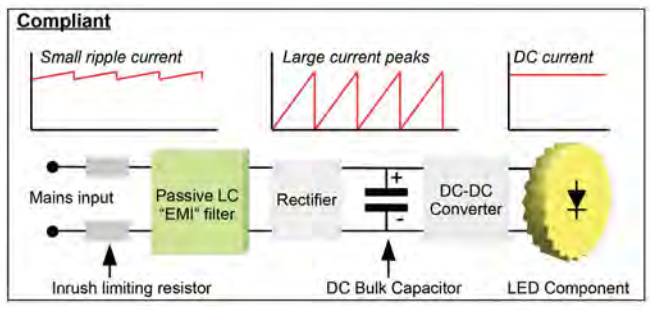
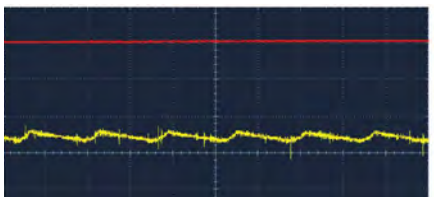
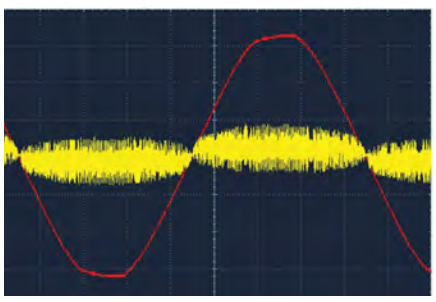


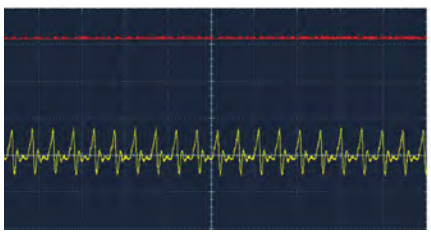
Figure 1.



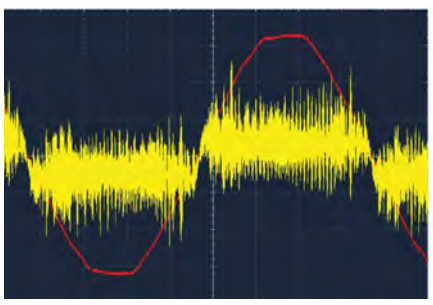
SM Oscillogram 2
Oscillogram 2. 5 W compliant LED voltage and current – direct mains (no dimmer). Horizontal: 10 us/div. LED voltage (red – 100 V/div). LED current (yellow – 0.05 A/div).



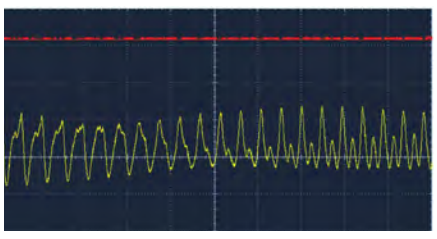
SM Oscillogram 3
Oscillogram 3. 5 W non-compliant LED Voltage and current – direct mains (no dimmer). Horizontal: 2.5 ms/div. LED voltage (red – 100 V/div), LED current (Yellow – 0.2 A/div).



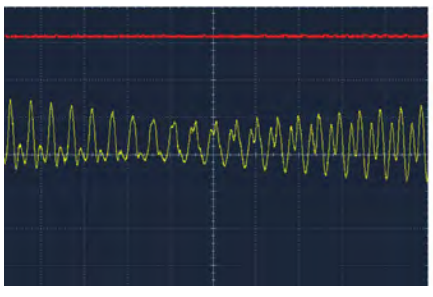
SM Oscillogram 4
Oscillogram 4. 5 W non-compliant LED voltage and current – direct mains (no dimmer). Horizontal: 10 us/div. LED voltage (red – 100 V/div), LED current (yellow – 0.2 A/div).



SM Oscillogram 5
Oscillogram 5. 4 x 5 W non compliant LEDs voltage and current – direct mains (no dimmer). Horizontal: 2.5 ms/div. LED voltage (red – 100 V/div), LED current (yellow – 0.2 A/div).



SM Oscillogram 6
Oscillogram 6. 4 x 5 W non compliant LEDs voltage and current – direct mains (no dimmer). Horizontal: 10 us/div. LED voltage (red – 100 V/div), LED current (yellow – 0.2 A/div).



SM Oscillogram 7
Oscillogram 7. 4 x 5 W non-compliant LEDs voltage and current – direct mains (no dimmer). Horizontal: 10 us/div. LED voltage (red – 100 V/div), LED current (yellow – 0.2 A/div).

SM Oscillogram 8
Oscillogram 8. 4 x 5 W non-compliant LEDs voltage and current – startup (no dimmer). Horizontal: 10 us/div. LED voltage (red – 100 V/div), LED current (yellow – 1 A/div).

Introducing the uber cool CARBON FILAMENT LAMP

THERE is no denying that carbon filament lamps are the latest hip-happening in the decorative lighting world. Whether in trendy hang-outs, tapping into the popular Victorian industrial look, or seeking to enhance the ambiance of elegant rooms, carbon filament lamps have become an essential for restaurant and retail designers as well as for discerning home owners who are looking to utilise the warm light and 'uber cool' look .

Eurolux now stocks a range of stylish carbon filament lamps in a variety of shapes and filament designs – and they're proving to be immensely popular says Shaun Bouchier, director at Eurolux.

"Today's carbon filament lamps offer a rich warm hue that create a unique ambience in homes, restaurants, hotels and even in upmarket retail outlets," Bouchier explains. "The exposed globes – with their glowing, yet low light output filaments – can also serve as a central design feature within any room."

The carbon filaments lamps currently available from Eurolux come in 40 W and 60 W options – both of which are dimmable – and in a variety of shapes and sizes. These come standard with E27 bases, however, there are two models that are available with a B22 base.

The lamps typically have a 3 000 hour lamp life, which is somewhat shorter than some other modern lamps on the market, but, as Bouchier points out, there really is no substitute for the beautiful lighting effect that carbon filament lamps produce – and this is why they are becoming very popular.

"These lamps are not really intended to be used as the sole light source within a room and they can easily be used with a dimmer, which reduces electricity usage," adds Bouchier.

The Eurolux range of carbon filament lamp shapes includes the pear, tubular, candle and maxi-globe. However, that's not where the options end.

These lamps also come in a variety of filament designs, such as the squirrel cage, hair clip, strand and zig-zag options.

Bouchier says there's no need to hide this globe under a great big lampshade. "Use it without a lampshade so that it's entirely visible, or pair it with a shade that will allow the filament effect to be seen."

Bouchier points out that these lamps look best in any exposed light sockets such as chandeliers, sconces or socket pendants. He adds that more modern lighting fixtures are being designed to showcase the popular vintage-look lamps.

All of Eurolux's carbon filament lamps offer a colour temperature of 2 700 K, a voltage of 230 V and range in lumens from 160 to 280.

The range can be viewed on the Eurolux website: www.eurolux.co.za.

Enquiries: +27 21 528 8400

NEWS FLASH

NEW OPERATIONS MANAGER

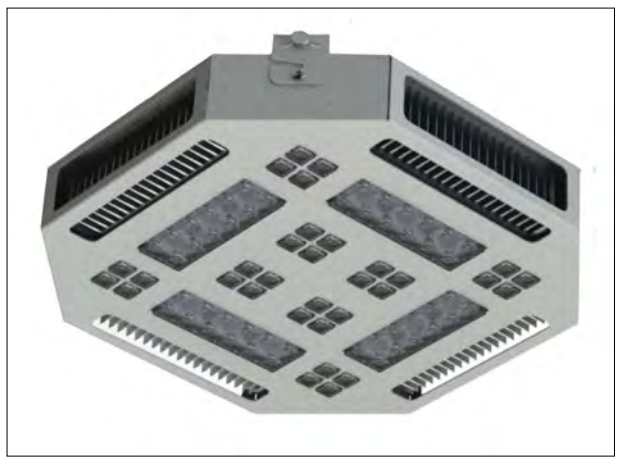
Steven Kuyper

BEKA Schréder, Africa's leading manufacturer of luminaires and glass fibre reinforced polyester poles, has appointed Steven Kuyper as its new operations manager, effective 1 February 2016.

"I am excited to be a part of the BEKA Schréder team, and look forward to driving operations while streamlining our manufacturing processes, in order to match the increasing output of LED luminaires on our manufacturing lines. This will of course assist us to increase our production capacity. I will also be focusing on the continuous improvement of our quality processes to ensure that superior product quality is supplied to customers," he says.

Enquiries: +27 11 238 0000

RENEWABLE ENERGY READY LED HIGH BAY LIGHTING



Genlux Lighting's new Aether LED Hi-bay has been designed to meet international standards in safety, durability and performance and even light distribution. Now available, the Aether LED Hibay easily replaces existing metal halide, mercury vapour and high pressure sodium high bays. The Aether LED high bay is locally developed and manufactured from stainless steel and anodised aluminium and features market-leading Osram LED technology and optics. This high bay is renewable energy ready and, by replacing a single component the Aether high bay can run off renewable sources without any inverters, making the entire range future-proof and ready to run 'green' energy. The Aether LED Hibay produces up to 128 lm/W with a performance level of L90 B10 as verified by the LED manufacturer and is available from 30 W to 240 W. For more information on Genlux Lighting's new product range, visit www.genluxlighting.co.za

Enquiries: +27 11 825 3144

INNOVATIVE RANGE OF LEDS DESIGNED FOR MAXIMUM PERFORMANCE

MAJOR Tech's lighting specialist, Adrian Craddock, says the company's "innovative range of LED lighting opens up a world of bright new possibilities".

"Because lighting is such a crucial element in design and décor, its functionality together with its contribution to the overall look and feel of an installation should never be underestimated," he says "Whether lighting your business or your home, the perfect solution for your application can be found in Major Tech's range of energy efficient LED lighting – lighting has never been this easy and effortless."

He explains that Major Tech's range of LED lighting delivers excellent performance – reliability, long life, exceptional efficacy and excellent colour rendering.

He highlights Major Tech's C1 LED downlight is a cost-effective, environmentally friendly lighting solution that has been designed for "maximum performance".

"The 120° beam angle with tilt and swivel capabilities makes this a versatile downlight with directional and ambient lighting possibilities to suit any application.

Features include:

- Easy-to-install with two spring clips.
- Three high quality Epistar LED chips.
- Recessed and swivel LED ceiling light.

- Available in two finishes – white painted aluminium frame or polished aluminium frame, both with a swivel ring.
- Integrated design with LED and housing combined.
- Generates medium beam with a glare cut-off angle of 120°.
- Available in dimmable and non-dimmable versions.
- Available in warm white 3 000 k and cool white 6 500 k.
- Remote driver included.

"Major Tech's LED fittings are ideal for hotels, retail outlets, hospitals and many commercial lighting applications as well as domestic applications – living rooms, kitchens, bathrooms, bedrooms and passages," says Craddock.

Enquiries: +27 11 872 5500

ULTRA SLIM LED DOWNLIGHTS ARE THE ULTIMATE SPACE-SAVER

Warwick Webber, Aurora's technical director, explains how the Enlite Slim-Fit energy saving range delivers superior LED light output from an ultra-slim 25 mm profile.

WHEN installing downlighting into ceilings, one often comes across several obstacles and mechanical services that create a great deal of clutter in the ceiling void, leaving very little space and making what should be a relatively simple installation much more difficult for the installer.

Up until now, the necessity for other mechanical, electrical and building services to be housed in the ceiling void has created obstructions – and installation nightmares – when using recessed light fittings but now there's an ideal – and aesthetic – solution.

The LED downlight comprises an ideal solution in situations where ceiling voids are limited but high lumen output is required.

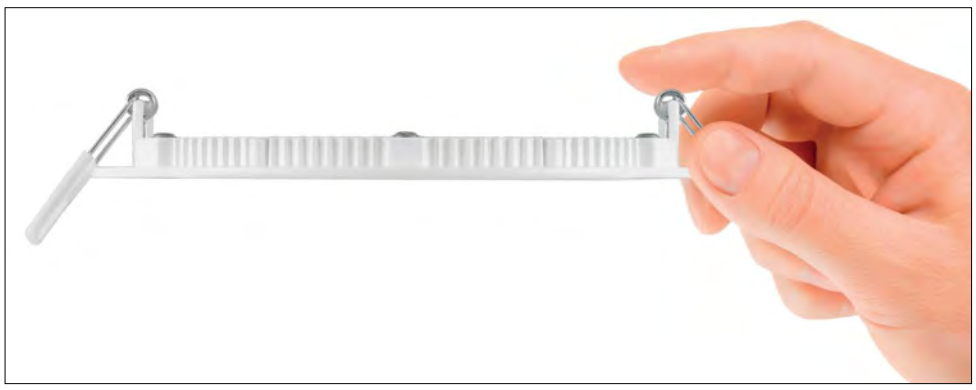
The Enlite range of Slim-Fit low profile downlights enables significant space saving. Slim-Fit can be recessed because the fitting is only 25 mm deep, including the bracket.

Engineered by the award-winning Aurora Group, Slim-Fit is available in five options from 6 W to 24 W. There's a plug-and-play remote driver for easy installation (40 mm space required) and a separate Triac dimmable driver is also available.

These downlights come with a three-year warranty and are engineered to deliver superior light output and uniformity utilising the latest edge-lit LED technology. They offer 1.5 kV surge protection to help mitigate the problems experienced from power surges or fluctuation in quality of power supply.

With up to 1 600 lumens and an impressive power factor of 0.9*, Slim-Fit is a low cost, energy saving alternative to compact fluorescent fittings. Additionally, the life of the downlight is not affected by frequent switching, for example, when used with occupancy controls.

Version 4 of the Enlite catalogue for 2016 will soon be available. It offers more than 250 new products across the global range. Engineered by the Aurora Group, which was voted 'Manufacturer of the Year' at the 2015 Lux Awards, Enlite is a brand of value-driven LED lamps and luminaires offering the perfect solution for any project, large or small.



*Power factor is the ratio of the real power to apparent power and represents how much real power electrical equipment utilises. It is a measure of how effectively electrical power is being used. It is always between 0.0 and 1.0 and commercial installations with a low power factor, which are on a kVA tariff, will have greater energy consumption than a similar installation with a high power factor.

Enquiries: +27 11 234 4878

LED NIGHT LIGHT WITH SENSOR

INCLUDED in Legrand's range of 'special' plugs are night lights with a light sensitive sensor for automatic lighting control.

"These 230 V devices have been designed using the latest LED technology and a light sensitive sensor that automatically controls lighting levels according to pre-set light level thresholds," explains Johan Bosch, general manager, Legrand SA. "These chic night lights ensure there is exactly the right amount of light when it is needed and are perfect for use in hotels, hospitals and frail care establishments.

Legrand's night light units are especially fashionable in children's bedrooms and are supplied with four solid coloured labels and a customisable paper label so that children can create their own design.

Enquiries: +27 11 444 7971

SOLAR POWERED STREET LIGHTING FOR RURAL TOWNSHIPS

The communities in the Muyexe, Dingamanzi and Gonono townships in the Giyani district of Limpopo have, for many years, struggled without basic services such as water, electricity and proper roads. Therefore, the Department of Rural Development and Land Reform undertook to increase basic service delivery for these areas. This included providing street lighting to improve residents' safety and security.

BEKA Schréder 's Johan van Deventer explains that, because these townships are not yet connected to the electricity grid, the only immediate solution was to install solar-powered streetlights.

"To promote job creation in the area, members of the Muyexe, Dingamanzi and Gonono communities were employed to provide the physical labour for the installation. In addition, members of the communities were trained to maintain the solar units and, once they had completed the training, they were issued with certificates," says Van Deventer.

The LEDlume-midi 24 LED 41 W luminaire was selected for this project. Mounted at 6 m above road level, the solar panels and battery boxes are secured by tamper-proof screws to prevent theft. "Furthermore, this BEKA Schréder solar module has been engineered for all geographical locations in Africa and has been designed to operate reliably at a high light output over a 12 to 14-hour period. And, in order to continue reliable night time operation, it has sufficient autonomy to cater for up to two continuous overcast or rainy days."

Van Deventer says the LEDlume-midi is "the LED luminaire of choice" since it is designed and manufactured in South Africa and takes Africa's environments and conditions into account.

Solar-powered street lighting in Gonono.

"This is evident in the luminaire's design: a unique thermal sensor technique monitors the temperature of the LEDs on the printed circuit boards (PCBs). Once a critical temperature is reached – which could harm the lifetime of the LEDs – the current is reduced to ensure the safe operating temperatures of the LEDs. This safeguards the LEDs and ensures that a long lifetime of up to 100 000 hours (L70) is achieved," explains Van Deventer, adding that the "slim, aesthetic design is optimised for LED characteristics".

"We are proud to be associated with RHDHV and Brightside Electrical in providing a successful lighting solution for this project," concludes Van Deventer.

Enquiries: +27 11 238 0056

LINEAR LIGHTING – COST EFFICIENT, LONG LASTING, SIMPLE TO INSTALL

PrevaLED Linear FIT D and OPTOTRONIC FIT D – the first-level system which efficiently supports the selection of cost-optimised LED luminaires

The PrevaLED Linear FIT D from OSRAM is a first-level segment for linear lighting applications, providing an efficiency of up to 157 lm/W and a service life of up to 50 000 hours.

OSRAM's Eric Hall says the LED module can be combined with non-insulated Optotronic drivers and operated as a non-insulated system. "The PrevaLED Linear FIT D modules are perfectly attuned to the Optotronic FIT D LED drivers and is available in lengths of 560 mm (2 ft), 860 mm (3 ft), and 1 120 mm (4 ft)," he explains, adding that the fixing hole distances comply with Zhaga Book 7 L56W2.

"The PrevaLED Linear FIT D system simplifies the fitting of the luminaire thanks to the module lengths of 1 120 mm (1 200 mm fitting) and 860 mm + 560 mm (1 500 mm fitting) and the adapted current rates," he says, adding that the "design-in of the OT FIT D drivers is very simple".

The 1 200 mm (4 ft) fitting can be equipped with a single module (nominal lumen package 4 400 lm), which only needs to be connected to the selected Optotronic ballast (for example: OT FIT 50/220...240/250 D L). Additional cabling for connecting shorter LED modules with each other is no longer required. "This has a positive effect on the bill of materials and also reduces the time required for fitting construction," says Hall.

The 1 500 mm (5 ft) fitting can be equipped with two modules, that is, one module each in the lengths 860 mm and 560 mm. By connecting the two modules and then connecting an Optotronic ballast (for example OT FIT 50/220...240/250 D L), a homogeneous light source is achieved with a rated luminous flux of 5 500 lm. "HO operation on the 350 mA LED driver is not possible because the rated power would be exceeded," he adds.

"The modules are designed in such a way that the 860 mm and the 560 mm modules can be connected to each other by simply using a straight cable bridge."

Enquiries: +27 11 207 5600

Combining design and performance ... perfectly

Energy-efficient and suitable for prestigious area street lighting of Group A and B roads, the Yoa from BEKA Schréder offers flexible combinations of LED modules, driving currents and dimming options to provide the most cost-effective lighting solution whilst improving the well-being and safety of residents. Round, slim and decorative, Yoa introduces a subtle and refined presence in the urban space. The luminaire offers an outstanding finish, particularly noticeable due to its elaborated crown and its patterned glass protector associated with an embellishment plate for a detailed aesthetic finish. The photometric engine offers a high-performance photometry optimised for each specific application with minimum energy consumption. The Yoa offers an optional downward facing daylight switch, pre-set stand-alone dimming profile or Owlet remote management module.

Enquiries: +27 11 238 0056

ACDC

Allister Vivier
category manager: mass retail.

MAGNET

Paul Linnets,
business development manager : retail lighting, KwaZulu-Natal.

BEKA

Ria van der Walt
IT manager.

SUBMIT
Submit your photos of people on the move to sparks@crown.co.za. All photos must be in jpeg format and high resolution.

A HAIRY SITUATION

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

"Don't be silly!" said her brother, Gary. "The less hair you have, the more likely it is that someone has the same number. If you were completely bald, you would have the same number of hairs on your head as millions of other completely bald people. But I bet there isn't anyone with the same number of hairs on their head as I have," and he shook his thick hair from side to side.

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

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

Uncle Jack just smiled.

Why was Uncle Jack so confident?

MARCH SOLUTION

GOING UP

Mary is a small girl going to school and back. When she enters the lift in the morning she can reach the bottom marked 'GROUND' but, on returning, she cannot reach any button higher than '5th'. Only if an adult is getting into the lift at the same time can she ask them to press '16th' for her, and go all the way up.

MAY FEATURES

- Distribution boards, switches and sockets
- Energy efficiency
- Lighting

Buyers' guide
- Energy efficiency

Deadlines
- Advertising booking: 24 March 2016
- Editorial: 29 March 2016
- Advertising material: 4 April 2016

Editor:
Erika van Zyl

Advertising:
Carin Hannay

Design:
Anoonashe Shumba,
B.Tech Hons Creative Art & Design (CUT) Zim

Consultant:
Ian Jandrell PrEng,
BSc(Eng), GDE, PhD, FSAIEE, MIEEE

Director:
Jenny Warwick

Publisher:
Karen Grant

Published monthly by:
Crown Publications cc
P O Box 140
Bedfordview, 2008
Tel: (011) 622-4770
Fax: (011) 615-6108
e-mail: sparks@crown.co.za
Website: www.crown.co.za

Printed by:
Tandym Print

The views expressed in this publication are not necessarily those of the editor or the publisher.

This publication is distributed to electrical contractors, wholesalers, distributors, OEMs, panel builders, Eskom, mining electricians and consulting engineers (electrical) as well as libraries, members of IESSA and public utilities.

abc Total 6 779 per month.