



FEATURES

- Earthing, lightning and surge protection 16
- Cables and cable accessories 17-18

REGULARS

- Contractors' corner 2-11, 14-15
- Buyers' guide 12-13
- Lighting 19-23
- People on the move 24

New ECA(SA) president takes the reins



Michael Straton (right), the ECA(SA)'s past president, handed over the chain of office to the new president, Johnny Cunniff (second from left), at a function held at the ECA(SA)'s national office on 26 November. The ECA(SA)'s new second vice-president is Giel Labuschagne (left) and the first vice-president is Thursdon Duncan (second from right).

THE Electrical Contractors' Association's redesigned logo and its new slogan, 'Your trusted electrical contractor' were launched at the Annual Presidential Excellence Awards. The new slogan reflects the ECA(SA)'s objective to inspire a 'culture of excellence' amongst its members.

In the same week, the National Executive Committee met for the annual general meeting at the Association's head office in Edenvale. Michael Straton, who served a two year tenure as president, stepped down and handed the chain of office to Johnny Cunniff, the new president. Thursdon Duncan takes the first vice-president's position and Giel Labuschagne takes on the job of second vice-president.

In his new role as president of the ECA(SA), Cunniff said that the Association's successes of the past year were achieved through "teamwork" and that he looked forward to the opportunity to serve the ECA(SA) during his term of office.

"I wish all the members of the ECA family a happy, healthy and prosperous New Year," said Cunniff.

Mark Mfikoe, national director of the ECA said that "2016 will build on the foundation laid by the ECA(SA) in 2015".

He added: "We are on a path towards establishing and registering professional recognition for various careers in the electrical field. We remain committed to assisting Eskom in whatever way we can to save the country from the energy crisis and our partnership in this regard will be cemented and put into practice in the New Year."

Holiday gifts ... closing date extended

THE new year starts with some good news for our readers ... The closing date for the Sparks Happy Holidays promotion has been extended to noon on 19 January. It's so easy to be in line to win one of 29 fantastic prizes donated by our advertisers – simply send an email to sparks@crown.co.za with your name, postal address and daytime contact number or, alternatively, you can fax your details to (011) 615 6108.

Only one entry per person, please. The winners' names will be drawn on 20 January and these will be announced in the February issue of Sparks Electrical News.

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Personality of the Month

Knowing is not enough; we must apply. Willing is not enough; we must do.



Shantonette Pillay.

SHANTONETTE Pillay, the Electrical Contractors' Associations' regional director for the KwaZulu-Natal region is a woman of the 21st Century who effectively juggles a demanding career and an active young family – without dropping any balls. Warm-hearted and kind, she is an ally to the ECA(SA)'s members but when it comes to protecting those members' rights in legal matters, she is a formidable opponent who goes all out to ensure a win for the members she serves.

Sparks: Where were you educated?

SP: I matriculated from Trenance Park Secondary School in 1997 and then went to the University of Natal in Durban – now the University of KwaZulu-Natal (UKZN) – where I graduated with a Bachelor of Law degree.

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

SP: I've been in this industry for about five-and-a-half years.

Sparks: When and where did you start your career?

SP: I started my career in 2004 serving my articles at a firm called Pather & Pather Attorneys in Durban.

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

SP: As a country, we have made remarkable progress in dismantling the oppressive apartheid system and creating a thriving

constitutional democracy. The other change that is meaningful to me is that women's rights have been recognised and, as a result, women are now able to progress in fields that were traditionally only open to men.

Some other noticeable changes have been in communication and technology; and the impact of social media has been huge. And then there's global warming ...

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

SP: The regional directors of the ECA(SA) are constantly being tasked with major projects and, under the dynamic leadership of our national director, Mark Mfikoe, we often achieve our objectives.

One of my greatest accomplishments was when I received the ECA(SA)'s Regional Excellence Award in 2013 and another is when the ECA(SA) hosted a most successful charity golf day to help raise funds for the East Coast Radio Toy Story and Game Corporate Challenge.

The money that was raised went to feeding needy families. Along with these career accomplishments are my personal accomplishments: making my parents proud when I received my legal degree; and being able to work at my job while simultaneously managing a family.

Sparks: Have you won any awards?

SP: Yes, I won awards at school, during my university years and recently at the ECA(SA).

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

SP: I draw my inspiration from my mother (my 'Oprah') and my father (my 'good Samaritan'); I am blessed and fortunate to have them.

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

SP: I believe that training is a major challenge as there are not enough electricians in our country.

Today, in South Africa, the average electrician is about 55 years old so it is most important that we actively encourage youngsters to become electricians.

Sparks: What do you enjoy most about your job?

SP: I enjoy empowering ECA(SA) members and sharing my knowledge with them.

Sparks: How do you motivate your staff?

SP: Communication is key. If an employee is nothing more than a name on an email or a

face in a newsletter, what would motivate those employees to meet their employers' goals? It is important for me to lead by example but it is also important to empower ECA(SA) members by providing opportunities for advancement when they arise and sometimes to even provide incentives.

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

SP: We've all said or done something that we later regret but I still wouldn't change anything. I am who I am because of the pain, the struggles, and the failures I have experienced. It is only by going through such difficulties that I have become a better person; and, to go back and change those things would mean that I am not happy with who I am today. I am happy with my progress and believe that we shouldn't pray for an easy life but instead we should pray for the strength to endure a difficult one.

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

SP: Yes, I definitely see the electrical industry as a good career choice. Currently, there are not enough young electricians to carry this country into the future so we should be encouraging them because this is a very important trade.

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

SP: In my personal experience, I have encountered many situations where members have not been paid for projects they have completed. In several of these situations, our members failed to enter into written contracts and this did not help their cases at all. If there is one message that I would like to get across, it is the importance of signing and reading contracts.

Sparks: What is your favourite quote?

SP: "Knowing is not enough; we must apply. Willing is not enough; we must

do." - Johann Wolfgang von Goethe.

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

SP: I would like to learn to play the violin; to master a strategic game such as chess; and to travel the world.

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UP Dean of Engineering wins engineering excellence award

The president of the South African Institute of Electrical Engineers, André Hoffmann (left) presents the South African Institute of Electrical Engineers (SAIEE) 2015 Engineering Excellence Award to Professor Sunil Maharaj, Dean of the Faculty of Engineering, Built Environment and IT at the University of Pretoria (UP) at the institute's annual SAIEE banquet and awards function. This is the first time that such an award has been bestowed on a university academic. This award, sponsored by Doble Engineering, is awarded to an electrical or electronic engineer who is a member of the SAIEE and who excelled in electrical engineering.



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Working knowledge by Terry McKenzie-Hoy

Cash flow – keeping the wolf from the door

CASH flow is one of the biggest problems experienced by small electrical businesses. While you are, to some extent just selling material and labour, there is a big difference between the two. You buy material on account; labour you have to pay for every month.

I am not encouraging you to not pay your monthly material bill, and you and I know that labour payments cannot be delayed ... The problem is that invariably you are working for a main contractor. Some main contractors make a policy of paying the subcontractors in 60 days. This is

brutally unfair. But what is the small contractor to do? Work is work.

Apart from the hellish cash flow, the small contractor is meant to keep up with VAT, PAYE, workmen's compensation, Seta payments and all the other rubbish the government heaps on them. Thus, it comes as no surprise to me that many small contractors are 'flying under the radar'.

They work for cash, are paid promptly, and they don't bother about VAT, PAYE and so on. This is yet another obstacle for the small compliant, legitimate contractor – he's not competing with other

contractors who are legitimate.

What to do? First of all, structure your offer to the main contractor in such a way that there is a hefty sum allocated for preliminary and general (P and G) costs and site establishment.

I'm sure you all know what P and G costs are but, just to make sure we are on the same wavelength, these are the costs that are meant to cover insurances, transport costs, safety, and so on, for the duration of the contract. Site establishment costs are the expenses for the site hut, the store, toilet, etc.

Now, you don't have to justify these expenses. When putting in your offer, all you need to do is to state that you require these expenses to be paid on appointment and that, in particular, the P and G costs would have to be adjusted if the contract duration should increase or if the contract costs increase. If you work it right, you should get a sum of money that will compensate for the main contractor's tardy payments.

For the duration of the contract it is important to know whether you're making a loss or a profit. One way of doing this is to keep a close check on people's time; get someone to allocate sums for this and add it all up.

A simpler way is this: After you have paid salaries, PAYE, VAT, and so on, make a note of your bank balance. Then total up all the invoices that you have to pay and total up all the invoices due to you. Add the bank balance and the invoices due and take away the amount of the invoices you have to pay. Write down the total. The next month, you do the same. If the total of the next month is less than the total of the previous month, you're losing money. If you bought capital equipment, such as a vehicle, this will have come off your bank balance; so, to get an accurate picture, add it back into the bank balance when doing the total.

Another big cash flow destroyer is theft on site. It is true that 50% of theft on site is by the employees of the person who owns the goods that are being stolen. You can't be everywhere but what you can do is issue your staff with tools and equipment and tell them that if anything goes missing you will take it off their pay. This greatly reduces theft.

Theft out of the store is another thing. Here's a tip: if your store is secured with a padlock, when you open it, lock the padlock closed onto the bolt even if the door is open. This means that in order to re-lock your store you have to close the door, unlock the padlock and lock it onto the bolt again. So what?

If you leave the padlock unlocked once the store is open, someone can easily take your padlock off the bolt and substitute your original padlock with another one that looks just the same ... but for which they have the key.

Think about it ...

Power Ex now at Electra Mining

ELECTRA Mining Africa is the best attended trade show in Southern Africa and is ranked as one of the world's largest mining shows. "Although the mining industry is currently facing tough challenges and general industry remains under tight economic pressure, there is still a need for trade exhibitions," says Gary Corin, MD of Specialised Exhibitions Montgomery, organisers of the show.

"An exciting innovation for 2016 is the launch of Power Ex, an electric power and energy showcase which will run alongside Electra Mining Africa," says Corin. "The show will focus on power generation, transmission and distribution, application and renewable energy."

Power Ex exhibitors will be leading manufacturers and suppliers showcasing the latest products, technologies, services and solutions across a broad range including biofuels; boilers, heat exchangers, combustion systems; cable and wire; diesel and gas engines, equipment and services; energy technology; generators and all accessories; hydropower; lighting; metering and related components; renewable energy, equipment and services; sensors; solar power; switchgear and other related equipment; transformers; wind and gas turbines.

Electra Mining Africa will be supported by a programme of content-rich conferences and workshops running alongside the co-located exhibitions. They will provide a platform for industry leaders to discuss issues and challenges they are currently facing.

For further information contact Leatitia van Straten at email leatitiavans@specialised.com or visit www.electramining.co.za.

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Brendan Ambrosius (Crabtree external sales); Jacques Scheepers (Voltex Midrand internal sales); Andrew Subramoney (branch manager, Voltex Midrand); the winner of the bakkie in the Crabtree Clique Bakkie competition, Alex Reintjies (Mideast Electrical); and Andre le Roux (Crabtree regional sales manager for Gauteng and Free State).



Chad Andrews; Nadine Combrinck; Martie Spagenberg; Warren Fairlie; Kathleen Lopes; Riaan van Wieringen; Godfrey Mgwanya; Beverley Cronje; Anthony Mukhram; and James Calmeyer (CEO Crabtree).



Handing over the keys to the happy winner of the Crabtree Clique Bakkie competition, Alex Reintjies (centre) of Mideast Electrical, are (left) Chad Andrews (GM sales and marketing, Crabtree) and (right) James Calmeyer (CEO Crabtree).



Chad Andrews (GM sales and marketing, Crabtree); the Cape Town winner of the Crabtree Clique Bakkie competition Ricardo Elias; and James Calmeyer CEO Crabtree.



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Customer service – how much do you care?

I RECENTLY went into one of this country's larger retailers to purchase an item and left the store feeling disappointed at the lacklustre customer service I had received from an indifferent employee. Unfortunately, bad service has become commonplace and, even sadder, is that customers have come to accept the unacceptable.

The employee in question was seated behind the counter and, even though she could see me approaching, remained seated. I stood at the counter and waited for her to attend to me.

Reluctantly, as if I was disturbing her, she slowly stood up and approached me. I greeted her but she did not return the greeting. I let that go by and enquired about the product but all I got was a mumbled response. To cut a long story short, I eventually received and paid for my purchase, took my change and thanked her, although unsurprisingly, she didn't respond. I left wondering whether I would ever spend my money at that retailer again ... probably not.

Perhaps the beginning of a year is a good time

to think about how we can improve our sales in 2016, refocus on our organisation's customer service policy and see how our staff can actively improve customer relations with an attitude that will invite customers back rather than chase them away.

In my boardroom, I have a poster with a quote that is attributed to Mahatma Gandhi:

"A customer is the most important visitor on our premises. He is not dependent on us. We are dependent on him. He is not an interruption in our

work. He is the purpose of it. He is not an outsider in our business. He is part of it. We are not doing him a favour by serving him. He is doing us a favour by giving us an opportunity to do so."

I believe it is true to say that not all our employees fully understand how their attitude towards customers can affect future sales or that something as simple as eye contact and a friendly disposition can ensure customer retention.

The receptionist is usually the first person to make contact with the client and he or she should make eye contact with the client, be friendly and welcome the client.

It is also important that he or she must be familiar with the products or services that are offered and be able to provide the customer with advice or information about those products – and that, if they are not able to do this, they know who in the organisation can assist the customer with relevant information.

Any other members of staff who pass by and see the client, should also extend a welcome to the client even if in passing or merely verifying that the client has been assisted. These small gestures may not earn any money but they will contribute towards making the client believe they are important to the business and make them feel welcome.

I believe that clients should feel that they are appreciated – and this, in turn, will ensure their future business.

Employees need to recognise that the entire company is dependent on the customers who come through the door and that it is those customers who ensure a pay cheque at the end of every month.

Remember: Your customer doesn't care how much you know until they know how much you care.



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Online data centre training course with certification exam

ACCORDING to industry analysts, 451 Research, "prefabricated modular data centres are evolving rapidly" and beginning to win mainstream support, stating that "prefabrication is ready to transform the data centre world".

This is more than likely due to today's new generation of cloud computing

solutions, which demands that data centres are more flexible and scalable, with an emphasis on deployment speed. Prefabricated data centre modules enable data centre- and facilities managers with the means to incrementally boost capacity to meet today's ever-changing business needs

and requirements. This prefabricated approach with its flexible capacity inherently increases the predictability of the build process, since most of the construction occurs in a factory instead of in the field.

Keeping abreast of this rapidly evolving sector, Schneider Electric, as part of its Energy University programmes, now offers the Data Center University (DCU). With over 90 courses, this online data centre training, along with its certification exam, helps demonstrate

professional competency, and also offers a course on "Types of Prefabricated Modular Data Centers." Data centre systems or subsystems that are pre-assembled in a factory are often described with terms like prefabricated, containerised, modular, skid-based, pod-based, mobile, portable, self-contained, all-in-one, and more. This course proposes standard terminology for categorising the types of prefabricated modular data centres, defines and compares their key attributes, and provides a framework for

choosing the best approach based on business requirements," elaborates Bruce Grobler, director of the IT Business Unit at Schneider Electric South Africa.

The online course can be accessed through the Energy University programme at www.MyEnergyUniversity.com and, like all of Schneider Electric's data centre courses, it is free of charge.

Interested parties can contact EnergyUniversity@schneider-electric.com for additional information.

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Switchgear for Pilanesberg Platinum



JB Switchgear Solutions was recently awarded a contract for the design, manufacturing and supply of low voltage switchgear and associated equipment destined for Pilanesberg Platinum, through DRA in Sunninghill, Johannesburg. The scope will include motor control centres, variable speed drive panels and soft starter panels. Starter sizes are between 0.37 kW and 380 kW. The PPM plant expansion and re-processing of the existing tailings storage facility is located within the existing PPM infrastructure, which lies west and north-west of the Pilanesberg National Park in the North West Province. The project allows expansion of the existing PPM processing

facility and will incorporate: A second UG2 milling and flotation circuit to re-process the existing TSF; two tailings re-treatment plants for the extraction of PGM's from the existing TSF; a chrome recovery facility to extract chrome from the existing TSF; a hydrometallurgical processing facility for the treatment of flotation concentrate; and additional support and services infrastructure and a number of community based initiatives. In this instance, JBSS will supply its 'Eagle series' motor control centres, which feature a robust, reliable and user-friendly design, supported by comprehensive type-test certification.

Enquiries: +27 11 027 5804



Lynne Pretorius – the newly appointed president of Consulting Engineers South Africa (CESA).

New CESA president 'vehemently opposes corruption'

for 22 years. In her inaugural speech, Pretorius said that South Africa is on "a dynamic trajectory that requires visionary leadership and flexibility from all stakeholders and role players to adapt to the changing and challenging environment currently prevailing". Her key objectives as CESA president are to "get the CESA house in order, encourage members to submit quality bids and to be open and honest about corruption".

She said a "concerted effort is required from all of us to address the imbalances of the past thus creating a South Africa that everyone is proud of".

"Government requires us to transform our industry. We realise that this is a long-term process but we have to align

ourselves to leverage business opportunities."

She is passionate about the growth of small businesses as well as the development of young engineers. She vehemently opposes corruption and said she "sees it as one of the biggest threat to service delivery and our industry".

Pretorius began her career at Aurecon (then Van Wyk & Louw) in 1994 and moved to the City of Cape Town in 2000. She started a transportation engineering consultancy practice in 2004, which was incorporated into ITS Engineers in 2012. She is currently a director of ITS Engineers.

Pretorius joined CESA Board in 2013 as the organisation's deputy president.

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Rabro & Sturdy's Monty Druck receives a gold award from Ian Greyling, chairman of Electrobase.



Major Tech's Pat Shaw accepts a gold award from Ian Greyling, chairman of Electrobase.



Chad Andrews receives a gold award for Crabtree from Ian Greyling (Electrobase chairman).



Jaco Coetzee (Waco) receives a gold award from Ian Greyling, chairman of Electrobase.



HellermannTyton's Claude Middleton accepts a gold award from Electrobase's chairman, Ian Greyling.



Donné van Eeden of Enerji accepts a gold award from Ian Greyling.



HellermannTyton's Claude Middleton accepts the prestigious 'Supplier of the Year' award from Electrobase chairman, Ian Greyling.



Accepting the 'Most Improved Supplier' award from Ian Greyling is Rabro & Sturdy's Sybie Oelofs.



Eurolux's Neville Pillay accepts a gold award from Ian Greyling.

Electrobase Supplier of the Year awards 2015

By Donn  van Eeden, CEO, Electrobase

ELECTROBASE once again had an outstanding Annual Supplier of the Year Awards dinner at the Balalaika Hotel in Sandton on Friday, 20 November. Despite all odds – a year filled with load shedding, financial and political instability in the country and a crippling drought – Electrobase continues to go from strength to strength.

Electrobase, which is made up of a group of independent electrical wholesalers located across Southern Africa, evaluates suppliers on a national basis and based on the products and services they provide to the Electrobase group.

This year's silver certificates were awarded to Bright Star Lighting, Kwikot, Stone Stamcor and Strutfast. The gold certificates were awarded to Enerji Electrical, HellermanTyton, Crabtree, Eurolux,

Major Tech, Rabro & Sturdy and Waco Industries. 2015's 'Most Improved Supplier' was awarded to Rabro & Sturdy and the prestigious 'Supplier of the Year' award was once again awarded to HellermanTyton.

Excellent food, great live entertainment and music made for an exceptional and enjoyable evening.

Fanie de Villiers, also known as *Vinnige Fanie*, the well-known South African medium fast bowler, businessman and motivational speaker, entertained the guests with stories of past cricket matches. At times he had his captive audience in stitches of laughter. His motivational message about how successful individuals and the world of excellence operate outside the boundaries of

reasonability by pushing themselves to higher limits of excellence – yet stay within the boundaries of the law – gave insight into the dedication and hard work of top achievers.

The 'balloon raffle' and generous contributions from suppliers and service providers was a great success, raising R21 490, which was donated to the Johannesburg Children's Home and 4 Paws Animal Shelter.

Congratulations to the 'Supplier of the Year', HellermanTyton and the 'Most Improved Supplier', Rabro and Sturdy. We thank all our suppliers for their ongoing support.

2016 will definitely be a year to see Electrobase expand its horizons even more.

Enquiries: +27 11 023 0314



Getting to grips with SANS 10142-1 by Hannes Baard

Let's start the New Year with the electrical installation regulations

WELCOME back everybody. I trust you all had a relaxing break, or at least some quality time with friends and family. There are always 'New Year's resolutions in my family as the old year draws to a close but I only ever make one resolution – one that I have managed to keep for a decade or so – and that is that I don't make New Year's resolutions. This way I do not feel guilty on the 2nd of January or for the rest of the year, either, for that matter.

There is something new in this first column of 2016 – we finally start with the Regulations of the Occupational Health and Safety Act (Act 85 of 1993). I sincerely hope these 'new beginnings' are also a positive start to the year that will carry goodwill and prosperity through the rest of the year for everyone. Last year, we discovered over the course of a number of columns that the Occupational Health and Safety Act is more than just the Act itself; it also has some 'how to manuals' attached in the form of regulations. These regulations cover a very wide area in terms of our working lives but, for the moment, I will only discuss regulations from the OHS Act that have a

bearing on our 'electrical lives'.

These regulations are: the Electrical Installation Regulations, the Electrical Machinery Regulations, the General Machinery Regulations and maybe a couple of others.

So, let's get the ball rolling and look at the Electrical Installation Regulations as communicated to us in Government Gazette No. 31975 dated 6 March 2009, with the publication of Government Notice R242 in this particular Government Gazette.

I must point out that these regulations must **not** be confused with SANS 10142-1, 'The Installation Rules for the Wiring of Premises', which some people also call 'the wiring regulations' or just 'regulations'.

The format in which these regulations are published is called a 'schedule'. Therefore, the heading of the Electrical Installation Regulations reads as follows:

"Occupational Health and Safety Act, 1993 Electrical Installation Regulations" and the opening paragraph continues: "The Minister of Labour has, under Section 43 of the Occupational Health and

Safety Act, 1993 (Act No. 85 of 1993), after consultation with the Advisory Council for Occupational Health and Safety and the Minister of Finance, made the regulations in the Schedule."

The body of the document contains a section covering 'Definitions'; and a section covering the actual 'Regulations', which are further subdivided into 'subregulations'. The sections referred to above are, in actual fact, already the regulations. Let me explain with a quick look at the regulation titles.

Regulations

Regulation 1: Definitions.

This, in my humble opinion, is possibly the most important part of the document. This is the part of the document where the author tries to explain what he or she means regarding the use of a particular word in the context of this document and not what it might mean for someone else under different circumstances.

Regulation 2: Responsibility for Electrical Installations.

This regulation is often misinterpreted and it would be interesting to find out who is actually

ultimately responsible for an electrical installation. **Regulation 3: Approved Inspection Authorities for Electrical Installations.**

An AIA is a legal entity that can carry out certain tasks on behalf of the Department of Labour. Other industries also have Authorised Inspection Authorities, but we will cover that when we get there.

Regulation 4: Functions of Approved Inspection Authorities for Electrical Installations.

The title says it all – this regulation spells out the what, where and how of AIAs.

Regulation 5: Design and Construction.

When we discuss this regulation, it will ruffle some feathers.

Regulation 6: The Electrical Contractor.

I am sure this regulation will also result in some healthy debate when it's time to discuss it.

Regulation 7: Certificate of Compliance.

This regulation is definitely going to be the subject of some robust discussion when the time comes.

Regulation 8: Commencement and Permission to Connect Installation Work.

This regulation does not exist in the vocabulary of certain contractors and even some supply authorities. We will discuss why this document is so important ...

Regulation 9: Issuing of Certificates of Compliance.

This regulation will also elicit some healthy debate.

Regulation 10: Disputes.

Eish!

Regulation 11: Application for Registration as a Registered Person.

You want to do inspections and issue Certificates of Compliance? Let's find out if you are eligible for registration.

Regulation 12: Withdrawal of Registration and Approval.

You duffed it? You will have to face the consequences, my friend.

Regulation 13: Substitution of Lost, Damaged or Destroyed Certificates.

Even in the best families things land up in the washing machine; or a wallet that has been stolen is thrown into some bushes ... Here we will find out how to replace that one document that tells the world who you really are.

Regulation 14: Fees Payable.

#feesmustfall

Regulation 15: Offences and Penalties.

If you do not listen, you must feel ...

Regulation 16: Repeal of Regulations.

This happens in the normal evolution of things when a particular regulation no longer serves its intended purpose and has to be replaced with another or when an amended version of a regulation needs to be recognised.

Regulation 17: Short Title and Commencement.

This should not pose any huge problems.

Annexures

Then follows a section for 'Annexures' – a total of six, in fact, which are:

Annexure 1: Certificate of Compliance.

The Annexures are, in fact, forms that we have to fill in or complete for various purposes. And the example included in the Regulations is actually the real McCoy.

Annexure 2: Application for Approval as Approved Inspection Authority for Electrical Installations.

This is the form to complete when applying to register as an AIA.

Annexure 3: Application for Registration as an Electrical Contractor.

This one is self-explanatory.

Annexure 4: Notice of Commencement of Installation Work.

I wonder how many of you actually know that this very important document exists and what its purpose is.

Annexure 5: Application for Registration as a Registered Person.

This is the form you fill in after all your hard work getting your qualifications in order to get to this point.

Annexure 6: Application for Duplicate Certificate issued in terms of the Electrical Installation Regulations 2009.

This is the form you have to fill in when your one-day-old 'wireman's license' lands up in the drink ...

Till our next regular encounter ...

Innovative design tool for consultants launched

IN a series of countrywide presentations, CBI-electric: low voltage launched its new innovative and completely web-enabled CBI design tool to complement its comprehensive range of products.

Charl Osborne explains that the CBI³ was developed as an advanced web-based design tool with consulting engineers in mind but is also ideally suited for use by distributors when assisting their clients in finding the correct product for their application. The new CBI³ web-based design tool replaces the popular CBI².

Osborne adds that CBI³ has taken two years to develop at a cost of close to R2-million and that he believes "it is well worth the investment".

CBI-electric has been assisting clients with power system design since 1988 when their first DOS-based version was introduced. In 1993 CBI² was introduced and distributed on stiffy/floppy disk with a CD version of CBI² introduced in 1999.

"CBI³ is a real time online web-based tool that provides workflow integration, design verification, design to quote and value-add, product search and configuration control capabilities. It is an intelligent electrical systems design software tool that is web-based requiring no software installation. The new design tool provides improved user interface as well as improved system analysis functionality. It has been designed to run on Chrome, Internet Explorer, Firefox, Safari and Opera and is suitable for both desktop and mobile smart devices," explains Osborne.

CBI³ workflow integration provides topological verification of circuit breakers versus switch disconnectors. The tool provides system compliance for application specific load conditions. It provides design verification in accordance with SANS 10142-1. Design deviations are communicated and it provides component ratings that are automatically allocated based on design application and load profiles. From design to quotation, CBI³ reduces time and provides cost savings. It is congruent with design houses and increases service capacity. Via



Customers participated in a technical question and answer session and were rewarded by winning official South African cricket support jerseys. Seen at the event are: Jaco Viljoen (CBI-electric: low voltage national sales manager); Tyler Roberts (JDL Electric); Doris Ralulimi (Azali Engineering Projects); Jeff Forman (Citilec); and Charl Osborne (CBI-electric: commercial executive).

simple input through the system schematic it provides established circuit theory and exports designs from workflow stages. Design / schematic are captured and a costed bill of materials is automatically generated from schematic. An important feature is that the output documents can be customised and user branded.

CBI³ has a product search capability via the product number

or via a general technical search utilising voltage, current, short circuit and phases. CBI³ automatically filters by requirements. Configuration control is instantaneous with changes to documentation. The tool provides continuous software modifications and upgrades as well as instantaneous pricing updates. CBI³ will provide continuous software development and the popular 'Cable Wizard' will be

included with standard load profile; new motor load application; data input with various options; a cascade tool developed to give direct cost saving solutions due to the active pricing capabilities; and a template design database.

It will also include a data pack with relevant data to be directly available for the chosen product with full specifications.

Enquiries: +27 11 928 2000

Solar-diesel microgrid provides clean back-up power

ABB, a leading power and automation technology group, announced recently that an integrated solar-diesel microgrid will be installed at its Longmeadow premises in Johannesburg.

The 96 000 m² facility houses the company's country headquarters as well as medium voltage switchgear manufacturing and protection panel assembly facilities, with around 1 000 employees. The innovative solution includes a rooftop solar photovoltaic (PV) field and a PowerStore grid stabiliser that will help maximise the use of clean solar energy and ensure an uninterrupted power supply in the event of a power outage on the main grid supply.

A 750 kW rooftop PV plant and a 1 MVA/380 kWh battery-based PowerStore will be added to the existing back-up diesel generators. This will enhance the use of renewable energy and provide continuity of supply when power supply is disrupted and during transitions from grid to island operation.

Power shortages, availability of renewable

energy sources like wind and solar, fossil fuel price volatility and environmental concerns are leading to the search for sustainable solutions and there are thousands of facilities across South Africa and the continent that could leverage microgrid technologies to address these challenges.

South Africa has the highest electricity consumption in the sub-Saharan region and demand continues to outpace supply.

ABB has a broad range of microgrid solutions including automation and intelligent control and stabilisation systems. They enable very high levels of wind and solar power penetration in diesel-powered grids, reducing dependency on fossil fuel supplies and curtailing CO₂ emissions.

ABB's comprehensive microgrid offering includes a range of technologies for off-grid applications like islands, isolated grids, remote communities as well as commercial and industrial facilities, ensuring utility-grade power quality and grid stability.



ECA(SA) PRESIDENTIAL
EXCELLENCE AWARDS

The ECA(SA) held its annual Presidential Excellence Awards at Emperors Palace on 19 November when awards were conferred in 10 categories, honouring the top achievers in the electrical industry.

The judges were unanimous in saying that this year's entries were of high quality and that the standard of excellence had definitely been raised.

The association's new logo and slogan – Your Trusted Electrical Contractor – were introduced.

Installation of the Year Award - Industrial



Awarded to Besamandla for the ILB Helios Manufacturing Plant

ECA(SA) past president, Dirk Engelbrecht; Levine Warries (Copper Development Association Africa); Ghamiet Aysen (Cato Ridge Electrical Contractors); Kobus Labuschagne (Besamandla); and Kyle van Tonder (Milne Electrical).

Finalists: Besamandla (ILB Helios Manufacturing Plant); Cato Ridge Electrical Contractors KwaZulu-Natal (Umgeni Water); Milne Electrical South East Cape (Transformer Installation)

Sponsor: Copper Development Association Africa

Installation of the Year Award – Retail



Awarded to Brand Engineering for the Gateway Mall Installation, Malawi

Avesh Mohanlall (Edison Power Johannesburg); Herman Kriel (Brand Engineering); Derrick Trend (Edison Power KwaZulu-Natal); and Pierre Foot (ECA national executive committee).

Finalists: Edison Power Johannesburg ; Terayne Electrical (Audi and VW – Light Fitting); Edison Power KwaZulu-Natal (HVL D Sandton City); Brand Engineering (Gateway Mall Installation, Malawi)

Sponsor: Momentum

Installation of the Year Award – Office Blocks and Hotels



Awarded to Edison Power KwaZulu-Natal for the G J Crookes Hospital

Dave Alcock (Alcock Services Group); Derrick Trend (Edison Power); and James Calmeyer (CEO Crabtree Electrical Products).

Finalists: Nick's Electrical; Edison Power KwaZulu-Natal, Besamandla
Sponsor: Crabtree Electrical Products

Installation of the Year Award Residential Properties



Awarded to: Elektro Trust Bloemfontein for the Uniloft Student Accommodation

Danie Esterhuizen (Dan Electrical); Willem Ackerman (Electro Trust, Bloemfontein); and Adrian Engelbrecht (Blits Electrical).

Finalists: Dan Electrical; Blits Electrical; Electro Trust
Sponsor: Crabtree Electrical Products

Installation of the Year Award – Special Innovative Projects Award



Awarded to GPA Pools Electrical for the 94.7 Cycle Challenge and 702 Walk the Talk

Anthony Lloyd (Eurolux); Cor Niehof (Cor Niehof Electrical); Andre Wagener (GPA Pools); and Danie Esterhuizen (Dan Electrical).

Finalists: Dan Electrical Bosveld Region (Optron – Standby Generators); Cor Niehof Electrical Bosveld Region (Electrical Installation in Timber Frame Homes); GPA Pools Electrical 94.7 Cycle Challenge and 702 Walk the Talk).

Sponsor: Eurolux

National Safety Award



Awarded to Edison Power Johannesburg for Multi Choice City

Shantonette Pillay (Regional Director, KwaZulu-Natal); Samkelo Mthembu (Nestlife); Suren Naidoo (Edison Power Johannesburg).

Finalists: Edison Power Johannesburg; Cato Ridge Electrical Contractors; Brand Engineering
Sponsor: Nestlife

CROWN
PUBLICATIONS

sparks
electrical news

HOME OF
ECA
ELECTRICAL CONTRACTORS' ASSOCIATION (SA)
YOUR TRUSTED ELECTRICAL CONTRACTORS

Manufacturers

ABB South Africa
Aberdare Cables
AC/DC Dynamics
Bellco
Brady SA
CBI-electric : low voltage
Crabtree Electrical Accessories
Eaton Electric SA
HellermannTyton
Legrand
Newelec
Radiant Group
Schneider Electric
South Ocean Electrical Wire Co
Stone Stamcor
Tulisa Cables
Versalec
Voltex
Voltex LSis
Waco
Shuttle Lighting

Distributors

AC/DC Dynamics
ACTOM Electrical Products
ARB Electrical Wholesalers
Atlas Group
Bellco
Brady SA
Cable Croc
Citilec
Crabtree Electrical Accessories
Eaton Electric SA
HellermannTyton
Innopro
Magnet Electrical Supplies
Major Tech
MCE Global Suppliers
Newelec
Pretoria Motor Control Gear Products (PMCG)
Schneider Electric
Surge Technology
Stone Stamcor
Versalec
Voltex
Voltex LSis
Waco

Isolation transformers

AC/DC Dynamics
 Full range of isolation transformers
ARB Electrical Wholesalers
 Full range of isolation transformers
Atlas Group
 Full range available on request
Bellco
 Full range available on request
Magnet Electrical Supplies
 Full range of isolation transformers
Voltex
 Full range available on request
Voltex LSis
 Full range available on request
Waco
 Full range available on request

Contacts

ABB South Africa
 Dudley Bath
Aberdare Cables
 Annelene Sivalingum
AC/DC Dynamics
 Sales
ACTOM Electrical Products
 Russel Ramsden
ARB Electrical Wholesalers
 Arvi Ramdass
Atlas Group
 Annie Storar/Imran Gaffoor
Bellco
 Fred Wilson
Brady SA
 Morné Louw
Cable Croc
 Lex Harvey
CBI-electric : low voltage
 Sales
Citilec
 Jeff Forman
Crabtree Electrical Accessories
 Sales
Eaton Electric SA
 Marlene Coetzee
HellermannTyton
 Sales
Innopro
 Ian McKechnie
Legrand
 Johan Bosch
Magnet Electrical Supplies
 Kevin Govender
Major Tech
 Werner Grobbelaar
MCE Global Suppliers
 Sales
Newelec
 Luc Dutrieux
Pretoria Motor Control Gear Products (PMCG)
 Hannes Swartz/John Vorster
Radiant Group
 Ashveer Lalla
Schneider Electric
 Sales
South Ocean Electrical Wire Co.
 Yasmin Mahomed
Stone Stamcor
 Sales
Surge Technology
 Paul van As
Tulisa Cables
 David Macfadyen
Versalec
 Roland Fry
Voltex
 Hugh Ward
Voltex LSis
 Gary Paterson
Waco Industries
 Jaco Coetzee

Constant V transformers

Atlas Group
 Full range available on request
Bellco
 Full range available on request
Magnet Electrical Supplies
 Full range of constant V transformers
Voltex
 Full range available on request

Other

Brady SA
 Cable and wire marking solutions, labels, printers
Cable Croc
 Anti-cable theft systems
Citilec
 Vision lighting – energy saving and LED
Stone Stamcor
 Connectors for earthing

Emergency lighting

ACDC Dynamics
 Full range of emergency lighting: wall mount, double-sided, legends, bulkhead and Eco Lights ranging from IP42 to IP65
ARB Electrical Wholesalers
 Full range of emergency lighting
Atlas Group
 Distributors of Voltex lighting: emergency and other signs; emergency control gear for fluorescent lights as specified in the OHS Act
Aurora Lighting
 Full range of emergency lighting
BEKA Schröder
 Full range of emergency lighting
Bellco
 Distributors of Voltex lighting: emergency and other signs; emergency control gear for fluorescent lights as specified in the OHS Act
Citilec
 Full range of Vision emergency lighting
Denver Technical Products
 Mains fail safety lighting; track mounted lights
Eaton Electric
 Full range of emergency lighting
Genlux Lighting
 Full range of emergency lighting
Legrand
 Full range of emergency lighting units ranging from fluorescent to LED including maintained and non-maintained
Magnitech
 Emergency lighting; battery backup and battery cycling units; Maglite 22 and Maglite 40 – 45 bulkheads and lamps; Floodmaster HP10 and HP15 floodlight fittings and lamps
Major Tech
 Full range of portable lighting – in LED and fluorescent – ideal for power outages, camping, fishing, hiking, hotel, office and warehouse applications
Mantech Electronics
 Power supplies
MCE Global Suppliers
 O-lite LED emergency tubes with back-up battery; O-lite LED rechargeable and portable work light
Nordland
 Full range of emergency lighting
Radiant Group
 Full range of emergency lighting
Shuttle Lighting
 Control systems especially to provide dimming of LED, halogen and incandescent lamps
Voltex
 Distributors of Voltex lighting: emergency and other signs; emergency control gear for fluorescent lights as specified in the OHS Act
Voltex Lighting
 Distributors of Voltex lighting: emergency and other signs; emergency control gear for fluorescent lights as specified in the OHS Act
Waco Industries
 Distributors of Voltex lighting: emergency and other signs; emergency control gear for fluorescent lights as specified in the OHS Act

Air termination systems / down conductor systems

ARB Electrical Wholesalers
 Full range of air termination systems/down conductor systems
Atlas Group
 Available on request
Bellco
 Available on request
Innopro
 Full range of air termination and down conductor systems
Voltex
 Available on request
Waco
 Available on request

Telecoms/data protection

ACDC Dynamics
 Telecoms/data protection
Eaton Electric SA
 Full range of protection devices for telecoms and data protection
Innopro
 Full range of telecom and data protection units
Legrand
 Full range of telecom and data protection units
MCE Global Suppliers
 Onesto dedicated socket data protection; Onesto circuit breakers and isolators; Schenker circuit breakers and isolators; Hyundai MCCBs and ACBs
Surge Technology
 Dehn, Saltek and Copa ranges of surge arresters

Exothermic welding

ACTOM Electrical Products
 Full range of equipment for exothermic welding
ARB Electrical Wholesalers
 Full range of exothermic welding equipment
Atlas Group
 Full range available on request
Bellco
 Full range available on request
Voltex
 Full range available on request

Earth electrode / earth rods

AC/DC Dynamics
 Earth rods and accessories
ACTOM Electrical Products
 Full range of earth electrode, earth rods
ARB Electrical Wholesalers
 Full range of earth electrodes, earth rods
Atlas Group
 Full range available on request
Bellco
 Full range available on request
Citilec
 Full range of earth electrodes, earth rods
Innopro
 Full range of earth electrodes
Voltex
 Full range available on request
Waco
 Full range available on request

Conductors (aluminium and/or copper)

Aberdare Cables
 Bare earth copper conductors
AC/DC Dynamics
 Full range of conductors
ACTOM Electrical Products
 Bare copper earth wires
ARB Electrical Wholesalers
 Full range of conductors
Atlas Group
 Full range available on request
Bellco
 Full range available on request
Magnet Electrical Supplies
 Full range of conductors
South Ocean Electrical Wire Co
 Full range of aluminium and/or copper conductors
Tulisa Cables
 Low voltage electrical power cables
Versalec
 Full range of conductors
Voltex
 Full range available on request

Earth leakage

ABB South Africa
Full range of domestic and industrial earth leakage protection devices

AC/DC Dynamics
Earth leakage

ACTOM Electrical Products
Full range of earth leakage protection devices

ARB Electrical Wholesalers
Full range of earth leakage protection products

Atlas Group
Various brands available on request

Bellco
Full range of earth leakage devices

Crabtree Electrical Accessories
Crabtree RCCB

Eaton Electric SA
Full range of earth leakage devices

HellermannTyton
Full range of quality earth leakage test instruments

Innopro
Full range of earth leakage protection

Legrand
Lexic DPX; Lexic 4ELCB

Magnet Electrical Supplies
Full range of earth leakage protection

Major Tech
25 A, 40 A and 63 A double pole earth leakage (no overload protection); 25 A, 40 A and 63 A four pole earth leakage (no overload protection)

MCE Global Suppliers
Onesto earth leakages; Schenker earth leakages

Pretoria Motor Control Gear Products (PMCG)
Full range of earth leakage devices

Schneider Electric
Full range of earth leakage devices

Voltex
Full range of earth leakage products

Voltex LSis
Full range of earth leakage devices

Waco
Full range of earth leakage devices

Mains protection

ABB South Africa
Full range of mains protection devices

AC/DC Dynamics
Mains Protection

ACTOM Electrical Products
Full range of surge protection products

ARB Electrical Wholesalers
Full range of mains protection products

Atlas Group
Full range available on request

Bellco
Full range available on request

CBI-electric : low voltage
Full range of mains protection devices

Innopro
Full range of mains protection units

Legrand
Full range of mains protection units

Magnet Electrical Supplies
Full range of mains protection units

MCE Global Suppliers
Onesto dedicated socket mains protection; Onesto circuit breakers and isolators; Schenker circuit breakers, 12 mm circuit breakers; Hyundai MCCBs and ACBs

Schneider Electric
Full range of mains protection devices

Surge Technology
Dehn & Saltek complete range of power protection Class 1 and Class 2

Voltex
Full range available on request

Voltex LSis
Full range available on request

Waco
Full range available on request

Power supply filtering

AC/DC Dynamics
Power supply filtering

ARB Electrical Wholesalers
Full range of power supply filtering

Bellco
Power supply filtering

Voltex
Power supply filtering

Voltex LSis
Power supply filtering

Waco
Power supply filtering

Masts/power supply filtering

AC/DC Dynamics
Mains filter, single-phase 250V up to 30A, three-phase 400V up to 30A

ARB Electrical Wholesalers
Full range of masts/power supply filtering

Atlas Group
Available on request

Bellco
Full range available on request

Innopro
Full range of masts and power supply filtering

Lighting Structures
Full range available on request

Voltex
Full range available on request

MV surge protection

AC/DC Dynamics
Plug-in types for homes and small businesses; plug-in tops with surge protection; Soule lightning and surge protection

ACTOM Electrical Products
Full range of surge protection devices

ARB Electrical Wholesalers
Full range of surge protection devices

Atlas Group
Full range available on request

Bellco
Full range available on request

Eaton Electric SA
Full range of surge protection devices

HellermannTyton
Full range of surge protection devices

Legrand
Lexic surge protection devices

Magnet Electrical Supplies
Full range of MV surge protection devices

MCE Global Suppliers
Onesto surge arresters; Schenker surge arresters

Surge Technology
Tridelta surge arresters

Voltex
Full range available on request



+27 11 444 7971



+27 11 879 6600



+27 11 396 8000



+27 11 704 3295



08 61 62 5678



+27 11 452 1415



+27 11 683 0641

Clamps and saddles

ARB Electrical Wholesalers
Full range of clamps and saddles

Atlas Group
PVC, steel and copper in various sizes

Bellco
PVC, steel and copper in various sizes

Citilec
Full range of clamps and saddles

HellermannTyton
Full range of clamps and saddles

Magnet Electrical Supplies
Full range of clamps and saddles

Radiant Group
Full range of clamps and saddles

Voltex
PVC, steel and copper in various sizes

Waco
PVC, steel and copper in various sizes



+27 11 874 7600



+27 10 202 5000

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.

The Electrical Contractors' Association of South Africa Presidential Excellence Awards 2015

Life Membership Award



Awarded to Dawie Cronje (DC Electrical)

Frans Cronje of DC Electrical Africa receives the Lifetime Membership Award on behalf of Dawie Cronje (DC Electrical Africa), with Michael Straton, the outgoing ECA(SA) president, and Cali Pieterse (Edison Power), last year's recipient of this award.

ECA(SA) Regional Office of the Year Award



Awarded to Bosveld Region

The Bosveld Region (Pretoria) took the Regional Office of the Year Award. Cecil Lancaster (regional director, ECA(SA) Bosveld) is congratulated by the ECA(SA)'s national director, Mark Mfikoe as he accepts the award from outgoing president, Michael Straton (centre).

Best Contributor to Energy Efficiency Award



Awarded to Besamandla for Cape Quarter

*Lucas Bowles (ECA Eastern Cape); Gail Silkstone (Besamandla); and Theo Kleyhans (Schneider Electric).
Finalists: Brand Engineering; Ellies; Besamandla
Sponsor: Schneider Electric*

Male Apprentice of the Year Award



Awarded to Corné Jansen (Blits Electrical)

Claude Middleton (sales director HellermannTyton) with Corné Janse (Blits Electrical); Gaborone Motloba (Siluma Electrical); and Given Mafikeng (Isaac & Sons Electrical).

*Finalists: Corné Jansen (Blits Electrical); Gaborone Motloba (Siluma Electrical); Given Mafikeng (Isaac & Sons Electrical)
Sponsor: HellermannTyton*

Female Apprentice of the Year Award



Awarded to Nomakazi Mntunu (Edison Power)

Karen Stretch (Kemtek); Fezeka Bani (Brother); Mark Broude (Kemtek); Sibongile Ramatso (Edison Power); Gugulethu Maseko (Edison Power); Nomakazi Mntunu (Edison Power); and Louis Pretorius (ECA Highveld Region).

*Finalists: Gugulethu Maseko (Edison Power); Nomakazi Mntunu (Edison Power); Sibongile Ramatso (Edison Power)
Sponsor: Brother*

ECA Overall Apprentice of the Year Award



Awarded to Nomakazi Mntunu

Brendan Pandaram (Edison Power); Nomakazi Mntunu (Edison Power) with Michael Straton (ECA(SA) outgoing president).

Best Woman-Owned Business Award



Awarded to Katshesa Engineering

Vivan Madiba (Katshesa Engineering) and Nicole Wuest (Group business development, Voltex).

*Finalists: Kaelo MBW; Katshesa Engineering
Sponsor: Voltex*

Reticulation Contractor of the Year Award



Awarded to Brand Engineering for the Somerton Estate

Chris Yelland (EE Publishers) and Hermann Kriel (Brand Engineering).

*Finalists: Arcon; TriLectro Electrical Contractors; Brand Engineering
Sponsor: EE Publishers*

Copper Development Africa and ECA(SA) Bursary Awards



Neal Denton; Khushelo Mhlauli; Teboho Sekhoto; Levine Warries (Copper Development Association Africa); Suzan Radipabe; Glyn Manley; and Stephen Khola (ECA).

Generous donation goes to Tshwane North TVET College

ZEST WEG Group believes that it has a fundamental responsibility to assist in improving the lives of disadvantaged individuals in South Africa by providing access to education and skills development opportunities within the engineering industry. The CSI policy underpins the group's strategic intent and aligns with relevant mining legislation, including the Mining Charter.

This philosophy is evident in the recent donation of a substantial quantity of electrical equipment to the Tshwane North Technical and Vocational Education and Training (TVET) College. Zest WEG Group's relationship with TVET colleges (previously known as FET Colleges) dates back to 2011, when the group committed to help address the shortage of technical skilled trades through equipment donations to a number of colleges.

This initiative supports the South African Department of Labour's identification of skills shortfalls as being particularly high in terms of engineers, technicians, artisans and skilled labourers. Zest WEG Group believes that higher education and training is a priority towards building a sustainable economy.

Tshwane North Technical and Vocational Education and Training College is one of the 50 public TVET colleges in South Africa. It is geared towards ensuring that those skills that are needed to drive the regional economic growth and social development of South Africa are delivered in all its campuses to enhance both government investment and broad service delivery.

The equipment donated by Zest WEG Group, which includes motors, contactors, relays, starters, circuit

breakers, fuses and other accessories, will be utilised in the workshop of Tshwane North's Rosslyn, Tembisa, Soshanguve North and Mamelodi campuses, where electrical engineering courses are offered.

The equipment will aid lecturers at the facilities in demonstrating actual scenarios and will also provide electrical engineering learners with a more enriched understanding of the electrical aspects of running electric motors and electrical accessories. The learners will become well versed in the correct selection and application of cutting edge international technology and new product lines.

Zest WEG Group provided training for the facilitators on variable speed drives, soft starters, smart relays, motors and PLC for WLP. The purpose of this training was to provide the facilitators with a detailed understanding on the daily use and maintenance of the products.

In addition to the TVET donations,



Veronica Ramashala, Level 3 electrical infrastructure learners at Tshwane North TVET College during a practical lecture demonstrating the WG MDWH miniature circuit breaker.

Zest WEG Group's CSI education programme also includes a number of learnership programmes that entail developing select unemployed youth by qualifying them in electrical engineering, with a subsequent trade test.

Experiential opportunities are offered to students to complete their National Diplomas and, on a yearly basis, the organisation funds one electrical engineering university student.

Enquiries: +27 11 723 6000

Affordable protection

POWER management company Eaton has launched a new range of uninterruptible power supplies (UPSs) that gives users access to comprehensive online double-conversion power protection at an affordable price.

Models in the new 9E range combine exceptional versatility with compact yet robust construction, making them an ideal choice for industrial, medical and information technology (IT) applications and telecommunications.

"The double-conversion technology used in these units offers effective protection against all nine commonly encountered types of power problems and, because their design is based on Eaton's decades of experience, users can be certain that the units will combine exceptional reliability with long working lives."

Eaton's new 9E UPSs have a power factor of 0.8, which means that they can power more equipment than most similar products with the same nominal

rating. In addition, they are easy to manage, thanks to an intuitive user interface with an LCD panel that provides, on a single screen, clear information about UPS status as well as real-time information about load level, battery charge level, input/output voltage and frequency. To facilitate remote monitoring and management, 9E UPSs feature integrated USB and RS232 communications ports. Optional network, relay and ModBus interface cards are available to further extend the communication capabilities of the units.

Full integration with all software environments can be readily achieved using Eaton's Intelligent Power Software, which is supplied with all 9E UPSs. This powerful yet easy-to-use software is compatible with all major operating systems and offers advanced integration with the VMware VCenter and Microsoft Hyper-V virtualisation management packages.

Enquiries: +27 11 824 7400

Simplified installation for small spaces



OSI of the USA now offer Rogowski-based high current ac measurement systems, available locally from Denver Technical Products. The CTRS family is capable of measuring from 1 kA up to 40 kA utilising a Rogowski head, which will fit busbars/bus-tubes from 165 mm up to 540 mm Ø. The signal from the Rogowski head is processed by an integrator and industry standard outputs are available, for example, 0 – 5 V dc; 0 – 10 V dc; 0 – 1 mA dc or 4 – 20 mA dc. Instrument power of 115/230 V ac is required. Accuracy is ±1% with a linearity of ±0.25%. As there is no iron core, installation is simplified where space is at a premium.

Enquiries: +27 11 626 2023

Accurate loop/PSC testers for high quality results

MAJOR Tech's K4140 rugged loop and PSC tester with extra functionality and speed has been designed to meet the industry's need for a more productive test tool.

"The K4140 loop/PSC tester is designed to save time and produce high-quality results," says Major Tech's Werner Grobbelaar. "This meter offers anti-trip technology for complete trip-free loop testing on all residual-current devices (RCDs) rated 30 mA and above. The dual display and two-wire connection allows for simultaneous measurements such as loop and prospective short-circuit current (PSC) / prospective fault current (PFC) testing and measures phase rotation as well as voltage and frequency," he explains. This meter comes with a lock-down test button for 'hands free' testing with auto-start operation; and a two-wire connection for Loop L-L, L-N and PSC.

The K4118 is a custom microprocessor controlled for highly accuracy and reliability. The instrument has three LEDs for checking correct wiring status and features 25 A loop measurements at 20 Ω and loop impedance ranges of 20/200/2000 Ω. The K4118 performs a direct readout of PSC testing and is supplied with distribution leads," says Grobbelaar.

The K4118 comes with an automatic lock-out test button if test resistor overheats. The K4140 meter features an easy-to-read LCD display and front panel keyboard with backlight for visibility in dark places. These instruments have IP54 water and dustproof rating, a lifetime warranty and carry the IEC61010-1 CAT III 300 V standard of approval.

The K4140 comes standard with a set of fused safety test leads and additional

crocodile clips, a soft carry case with shoulder strap and a quick reference guide.

Major Tech is currently running a special deal on these testers and anyone who places an order before April 2016 will receive a free watch with the order. The watch promotion details are available on www.major-tech.com

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Awards for local partners

Andrew Economou, Pontins (Innovative Design Award); Matthew Shuttleworth, Universal Lightning Protection Services (Most Innovative Project); Trevor Manas, Pontins (Best Marketing Strategy); Alexis Barwise (MD, DEHN Africa); Paul Van As, Surgetek (Best Overall Achiever); Kirk Risch (sales and marketing director, DEHN Africa); Richard Nobbs, ElectroMechanica (Fastest Growing Partner); Don Perumal, Down to Earth (Most Up-and-Coming Partner); and Helmut Pusch (managing director sales and marketing, DEHN + SÖHNE).

DEHN Africa, the local subsidiary of Germany-based lightning and surge protection, earthing components and safety equipment manufacturer, DEHN + SÖHNE, recently lauded local partners in its second official South African partner awards event.

Kirk Risch, sales and marketing director of DEHN Africa, presented the awards to attending partners, with Surgetek being named for the second consecutive year as the 'Best Overall Achiever'. Universal Lightning Protection Services (ULPS) received the award for the 'Most Innovative Project'; ElectroMechanica (EM) was identified as the 'Fastest Growing Partner'; Down to Earth (DTE) won the title of 'Most Up-and-Coming Partner'; and Pontins was named as 'The Partner with the Best Marketing Strategy' and also received the 'Innovative Design Award'.

Risch thanked the partners for their hard work over the past year. "There is so much scope for us across the African continent and we look forward to engaging with our partners into the future to broaden our horizons further."

Enquiries: +27 11 704 1487



DEHN protects Africa

Concepts and designs for lightning and surge protection systems.

Developed concepts for lightning protection systems of complex installations in line with the IEC 62305 standard (SANS 62305) include drawings, mounting details, bills of material, specification texts (tender texts), concept descriptions and material offers.



DEHN AFRICA (Pty) Ltd

+27 (0)11 704 1487 | info@dehn-africa.com

www.dehn-africa.com

Lightning and surge protection for security systems



TOO many people wait until they have suffered extensive damage to their security equipment before considering installing some form of surge and lightning protection. It is a known fact, that in South Africa, lightning is generally seasonal, and some storms are worse than others. One thing that you can be sure of is that at some stage your equipment will definitely be exposed to surge and lightning induced voltages and currents. Adequate protection is therefore essential. Seeking expert advice can save a lot of money in preventing damage to electronic equipment, as well as coping with hassles such as electric gates not functioning, or the house alarm system out of action. With all the electronic and electrical equipment used in our day-to-day lives we only realise how much we rely on these systems when they suddenly are not working. This always seems to happen at the most inconvenient time and it is normally at this time that we discover those safety measures we put in place did not work.

Surgetek offers a range of products to protect power, CCTV, data networks, access control systems, alarms systems, in fact, almost all components used in any security or safety system.

Enquiries: +27 11 792 1303

SPD for telecoms cabling

IN today's modern world, the uninterrupted use of information technology and automation equipment is taken for granted. Lightning discharges, surges and over voltages can be extremely harmful to equipment, resulting in physical damage, data loss and the associated cost of lost production.

Today's businesses constantly depend on reliable communication systems to operate effectively. Multi-pair incoming communication cables that are often terminated on lightning current and surge arrester (LSA) strips can easily be protected with the DEHNrapid LSA, as they enter the building.

The 10-way plug in DEHNrapid SPD block simply plugs into the existing LSA strips on site and immediately provides Type 1 lightning protection for up to ten pairs of cables. The universal lightning protection base is further expandable with individual fine surge protection modules, which coordinates with the upstream Type 1 protection and fits directly into the Type 1 SPD. They are available from 5 V to 180 V and various signal protocols.

"The EM 2 DRL earthing plug has the advantage that the earthing plugs can be easily replaced by DRL protective plugs if measuring and control signals are applied to the relevant lines at a later date. If, in comparison, an EL2 38EA LSA earthing module was used for earthing unused lines, extensive re-wiring work would be required," says DEHN Protection SA MD, Alexis Barwise.

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Driven by Powertech 

New label printer to identify cables, components, products and laboratory samples



BRADY has launched the new BBP12 label printer, an entry level benchtop label printer for cable, component, product and laboratory sample 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.

A 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.

In Laboratories, the compact BBP12 prints Brady's specialised labels for slides, straws, tubes, conicals and bottles, which are able to resist liquid nitrogen, freezer, hot water bath or autoclave temperatures and/or a range of typical lab chemicals. In electronics, the BBP12 can be part of a low volume traceability automation solution and prints a wide range of product identification labels.

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.

Visit www.bradyeurope.com/cableid or contact Brady at emea_request@bradycorp.com to discover a dozen good reasons to consider the new BBP12 label printer.

Enquiries: +27 11 704 3295

Quality control assures excellence



STAINLESS steel strapping products from Banding & Identification (ID) Solutions Africa undergo stringent quality controls so that customers can be assured that they're buying a genuine, reliable product.

The stainless steel strapping and buckles, which are made locally under license from USA-based Band-It-Idex, are used extensively in the electrical, mining, construction, municipal and other industries.

With an influx of cheap and inferior products, imported mainly from Asia, quality guarantees are becoming increasingly important says the company's business manager, Rosa Remendos.

"The company's quality control system includes comprehensive documentation with a test certificate indicating the grade, technical data and the date of manufacture from the supplier.

"Every roll processed in-house is quality checked and can be traced back to when the steel was received from our supplier, Columbus Stainless. A job card number is allocated to every coil and the boxes are clearly marked with this job card number," she explains.

Banding & ID Solutions Africa only uses graded stainless steel. The grade 201 and 316 stainless steel strapping is imported from Band-It's manufacturing plant in the UK, while the grade 304 stainless steel coils are bought from Columbus Stainless. These coils are run through a processing machine, which smooths the edges, embosses the trade name BAND-IT on the strapping and cuts it into rolls, which we pack into cardboard boxes," she adds.

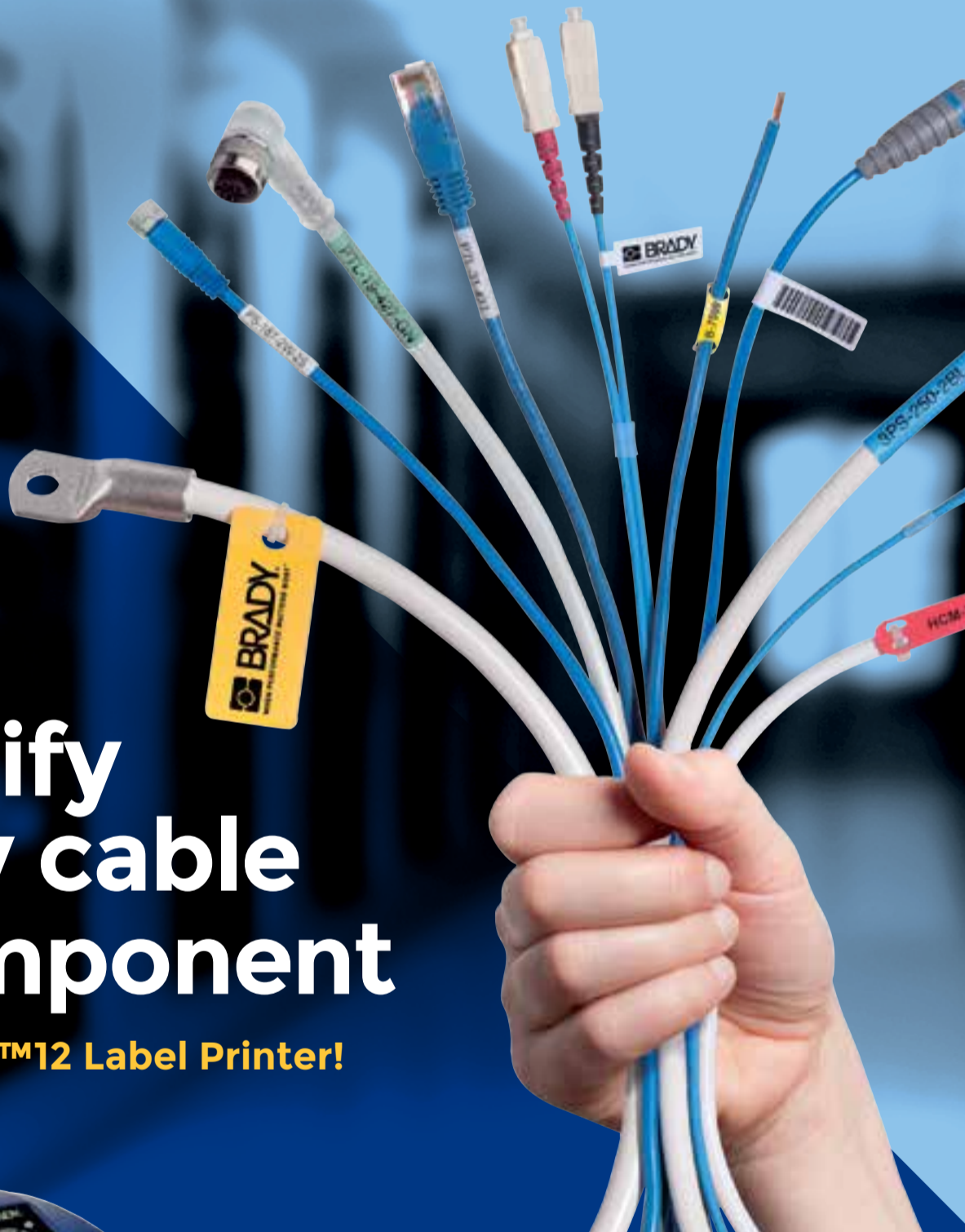
As a certified member of the South African Stainless Steel Development Association (SASSDA), Banding & ID Solutions Africa products carry a 'Cross and Balls' trademark, confirming the company's adherence to SASSDA's code of conduct.

All Banding and ID Solutions products are available the company's new premises in Jet Park.

Enquiries: +27 11 974 0424

Identify every cable & component

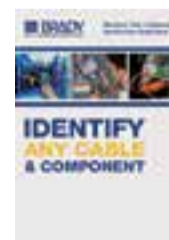
with the BBP™12 Label Printer!



Brady's new BBP™12 Label Printer prints durable self-laminating labels, wrap-around labels, sleeves, cable flags & tags, terminal block, breaker box and patch panel labels.

Find out 12 reasons to choose the BBP12 label printer and watch the BBP12 video on-line. Don't miss your chance to get the free guide "Identify any Cable or Component"!

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Can you dim 100 x 5W LEDs with a 500W dimmer?

By Dr M C Smit, Shuttle Lighting

LED lighting technology provides numerous advantages for the end-user compared to older incandescent and halogen technologies. But, to the installer or specifier, the practical implementation of this new technology often creates headaches.

A problem that is often encountered is the question of how many LEDs can be dimmed with one dimmer.

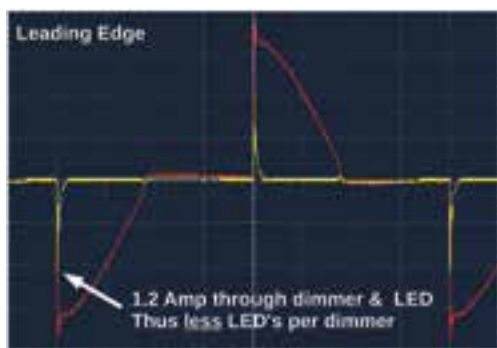
Surely a 100 W dimmer, for example, should be able to dim 10 x 10 W LEDs, since it is able to dim 2 x 50 W halogen lamps? However, when implemented, premature dimmer failure is experienced or the dimmer gets extremely hot, if it works at all. Unfortunately, it is an exception rather than the rule that a dimmer can dim up to its full wattage rating of LED load for two reasons: the definition of a dimmer rating; and the dynamic characteristics of a dimmable LED.

Phase cut leading or trailing edge dimmers are historically rated for watts, which is strictly speaking incorrect; a dimmer should be rated for its VA capabilities. However, since halogen and incandescent (resistive) lamps have a unity power factor, which implies that their Wattage and VA are the same, it was logical to specify the dimmer rating in watts.

Historically, only wire-wound transformers had a power factor of less than unity, which required a dimmer de-rating. A dimmer was thus typically specified, for example, as 500 W resistive and 400 W inductive loads. Importantly, the resistive type loads do not change characteristics when dimmed; the current always follows the voltage envelope and there are no significant current spikes or other non-linear characteristics.

Dimmable LEDs behave differently: Firstly, the power factor can vary from 55% to 95% and secondly, the driver (internal or external) characteristics change when dimming and are different for leading and trailing edge dimmers, often changing dynamically according to a specific intensity settings. The current 'footprint' of a particular LED

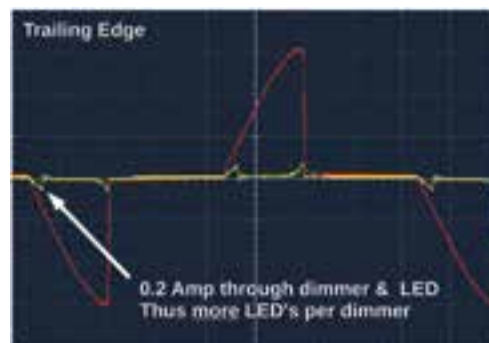
can be very different at, for example, 30% and 80% light output.



Oscilloscope 1: Leading edge dimmer with 1 x 9 W LED load (LED dims well, but large current spikes). Horizontal: 5 ms/div. Vertical: Lamp voltage (red 100 V/div). Lamp current (yellow 0.5A/div).

Oscilloscope 1 shows an example of a 9 W LED (65% power factor) being dimmed with a leading edge dimmer. The single LED has a measured inrush current spike (yellow trace) of 1.2 A every mains half-cycle (100 times a second). One can intuitively sense that it would be damaging to the dimmer to dim, for example, 10 of these lamps with a 100 W dimmer, although the total LED wattage is only 90 W. Oscilloscope 2 shows the same LED being dimmed with a trailing edge dimmer. In this instance, the single LED has a corresponding measured peak current of only 0.2 A, which is clearly better for the dimmer, resulting in a larger number of LEDs per dimmer compared to the leading edge version.

Both these measured examples illustrate the unique characteristic behaviour of dimmable LEDs, which have a different power factor (mostly much lower) when being dimmed than that in its non-dimmed state. The LED rated power factor cannot be used in isolation to determine



Oscilloscope 2: Trailing edge dimmer with 1 x 9 W LED load (LED dims well, no current spikes). Horizontal: 5 ms/div. Vertical: Lamp voltage (red 100V/div). Lamp current (yellow 0.5A/div)

the dimmer rating. Thus, the only way to accurately determine the dimmer LED rating is to measure the particular LED's current waveform at all intensities and match the results to the safe operating area of the power processing components (Triac, Mosfet, IGBT, SCR, etc) of the dimmer as well as the EMI filter components and the complete dimmer thermal solution.

Since the above process is extremely time-consuming and requires intimate knowledge of a dimmer's design to calculate the correct dimmer

LED rating, LED suppliers do not usually provide the maximum number of LEDs per dimmer.

There are, however, some rule of thumb guidelines. For example, LEDs are marketed and purchased in Europe, not according to wattage but rather according to replacement of halogen or incandescent wattage. Leading European LED manufacturers often print the replacement wattage on the LED packaging and recommend that the replacement wattage be used to calculate the maximum dimmer load. Thus, if a 5 W LED, for example, replaces a 50 W lamp, the rule of thumb is that a maximum of 10 x 5 W LEDs per 500 W dimmer can be installed. On the other hand, leading European dimmer manufacturers often recommend that their dimmers' LED rating be about 10% of its resistive rating. Following this guideline, for example, a 500 W dimmer can dim a maximum of 10 x 5 W LEDs.

If the above guidelines are too limiting, it would be advisable to obtain a list of the maximum LED load per dimmer from the dimmer manufacturer. An example of a comprehensive list can be found on Shuttle Lighting's home page under the resources tab: 'Dimmer LED maximum load'.

Enquiries: +27 82 465 2299

South Africa's oldest sea-faring monuments seen in new light



The Clock Tower, Port Captain's building and the Swing Bridge with spectacular digital LED illumination.

PHILIPS Lighting used the occasion of its 'Cape Town to Cairo roadshow' earlier this year to light up the iconic Clock Tower, the Port Captain's building and the Swing Bridge, at the popular V&A Waterfront in Cape Town, South Africa. The theme of the roadshow, 'Sustainability through Innovation' highlights Philips' smart lighting solutions designed to spearhead the LED lighting revolution in Africa.

As a contribution to enhancing the attractiveness of iconic monuments across Africa while reducing energy consumption – a project started during last year's roadshow – Philips installed its latest Vaya LED lighting solutions around the Clock Tower, the Port Captain's building and the Swing Bridge that bring history to life.

The LED lighting installed at the V&A Waterfront has a lifetime of up to 50 000 hours. Each luminaire has its own IP address – a precursor to the future of connected lighting in an environment steeped in history.

The Clock Tower

The stately octagonal Victorian, Gothic-style Clock Tower was built in 1883 and was the Port Captain's first office in the newly constructed Cape Town harbour. It housed the tide gauge mechanism – a shaft connected to the sea – as well as all the instruments that the Port Captain needed, such as a clock, signal flags, Morse lamps and a telescope.

The Port Captain's building

With the rapid growth of the harbour, a beautiful gabled building was constructed in 1904 to house the Port Captain who, until then, had operated from the Clock Tower.

Thierry Boulanger, vice-president and general manager, Philips Lighting Africa, says,

"The spectacular lighting of the Clock Tower, the Port Captain's building and the Swing Bridge demonstrates the incredible advances that are being made in the efficiency and beauty of LED illumination. LED lighting innovations provide completely new opportunities to policy makers and governments to enhance city beautification and at the same time contribute to energy saving. We are extremely proud to see how Philips' lighting solutions are contributing to improving the attractiveness of these iconic monuments on the V&A waterfront while reducing energy consumption".

The advantages of the Philips Vaya LED lighting solutions provided at these monuments include:

- Dynamic lighting that makes it possible to adjust the atmosphere of the site (change of intensity and colour).
- A longer lifespan of the installation: around 50 000 hours compared to 12 000 hours with conventional lighting.
- A reduction in maintenance costs: LED luminaires require little maintenance, while at the same time they cut energy consumption by 80% compared to conventional lighting.

"The lighting of the Port Captain's building, the historic Clock Tower and the Swing Bridge goes a long way in beautifying aspects of the V&A Waterfront," says Colin Devinish, executive for Operations, V&A Waterfront. "As a destination popular with international visitors and frequented by locals we are constantly striving to improve and enhance this important part of South African history," he says, adding that the collaboration with Philips was a "win-win".

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Energy efficient LED lighting solution for waste management facility

THE City of Cape Town's Solid Waste Department has erected a new Refuse Transfer Station adjacent to the existing waste management facility in Bellville, Cape Town – and the comprehensive LED lighting solution for this project was supplied by BEKA Schröder.

"Energy-efficient lighting in buildings, site lighting and security lighting of the boundary fence were a high priority," explains BEKA's Riaan Bubb. "At design stage, traditional light sources were used in the lighting designs since LED technology was still new. However, at tender stage, LED technology had advanced so rapidly, that energy-efficient LED lighting solutions became feasible. The design team then changed the lighting design and used LED technology to make the facility energy efficient and economical to maintain."

Bubb says that the LED solution provided many more benefits when compared with traditional light sources, the most important being significant energy savings. Other benefits of LED technology include even lighting; unobtrusive lighting with substantially lower glare and spill light; less light pollution; lower maintenance costs; and good colour rendering.

Situated on a 120 000 m² site, the new facility comprises various buildings, including an administration office, a waste handling department and a workshop with a total covered area of 8 630 m².

LEDlume-midi 60 W high-performance LED luminaires, and LEDflood 136 W floodlights were used for the site and security lighting while the interior lighting for the buildings were fitted with LEDflare and LEDtec 108 W luminaires. BEKABULK LED 18 W and SERIES LED 10 W bulkheads were installed around the exterior of the buildings.

Bubb says, "With the aid of BEKA Schröder's applications' department, all the necessary specified exterior lighting level requirements were achieved."

BEKA LED lighting products, designed specifically for harsh African conditions are developed and manufactured locally by BEKA Schröder.

"We are proud to be associated with the City of Cape Town and Mott MacDonald PDNA in providing a successful lighting solution for this significant project," concludes Bubb.

Enquiries: +27 21 510 8900



SERIES LED bulkheads were installed around the exterior of the buildings.



The LEDflare highbay provides uniform lighting that is energy-efficient.

Competition winner drives off in a new bakkie



FORDSBURG resident, Mohamed Ebrahim Moolla, has won the first of four Chevrolet Utes from the Philips Lighting 'Win a Bakkie' promotion. The Philips Lighting staff hands over the prize, which also includes electrical contractor equipment valued at R8 000.

From left to right: Abdur Rahmaan; Charles Mdwaba; Paul Fawcett; Mohammed Moolla; Noor Brown; and Shahed Essack. The 'Win a Bakkie' promotion will run until March 2016. To enter and stand a chance to win, visit www.philipslightingcompetition.co.za.

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Illuminating surge protection concept for LED street lights



The retrofitting of street lights in communities and municipalities with LEDs is on the rise, due to energy efficiency, the removal of certain lamp technologies from the market, and the long lifetime of LED technology.

A well-conceived surge protection concept for LED lights should be incorporated at the design stage, where the foundations for an efficient protection concept should be laid to ensure longevity and availability and to avoid unnecessary maintenance. Although LED technology has many advantages, a shortcoming over older luminaire technologies is that replacement costs for equipment are higher, and also that LEDs are more susceptible to surges.

Surges can be caused by:

- Direct lightning strike to the luminaire, supply line or periphery of the street light; or
- Indirect lightning strike which causes conducted interference in the supply line as a result of capacitive or inductive coupling; or
- Surges resulting from switching operations, earth faults /short-circuits

or tripping of fuses.

An analysis of surge damage to LED street lights has shown that, in the majority of cases, several LED lights are affected, not just the one that has been struck.

Luminaire manufacturers and users, such as municipal utility companies, frequently cannot find the cause of damage, with the consequences of the damage only becoming evident in the partial or complete failure of the LED modules, destruction of the LED drivers, reduced brightness or failure of electronic control systems.

Even if the LED light is still operational, surges normally affect its lifetime negatively. Consequently, the predicted lifetime cannot be ensured in practice and the LED light must be replaced sooner. These unscheduled costs lead to additional expenses and are usually not considered in the amortisation of the project.

Laboratory tests undertaken by DEHN + SÖHNE, in co-operation with LED light manufacturers, and the practice-oriented system test of a complete

LED system, in conjunction with practical experience have aided the company in designing an efficient protection concept for LED street lighting systems. A well-founded protection concept can only be implemented by means of a complete system, consisting of cascaded surge protective devices in the cable distribution cabinet and the cable junction box or in the LED light.

The cable junction box is ideally suited for integrating surge protective devices. On one hand, all protective paths can be protected by a surge protective device even if a lighting fixture with double or reinforced insulation is used, ensuring maximum protection against transient overvoltages. On the other hand, this area is more easily accessible for retrofitting and maintenance purposes. Moreover, the earth potential of the steel mast can be connected to the cable junction box on the earth side to create a common reference potential.

Depending on the design, different Type 2 surge protective devices, such as the compact DEHNcord arrester or DIN rail-mounted devices such as DEHN-guard, can be installed.

To ensure protection against transient overvoltages resulting from indirect lightning effects or switching operations, which are relatively common in the vicinity of the transformer, and against direct lightning effects from the distribution network, it is advisable to install Type 1 and Type 2 combined arresters in the cable distribution cabinets. Depending on the requirements concerning the lightning current to be discharged, DEHNventil or DEHNshield arresters can be used.

Finally, a coherent earthing concept, where all metal masts must be connected to the protective conductor of the surge protective devices used, should be considered. This allows safe control of potential differences and ensures the availability of the LED street lighting system also in case of surges. This is the only way to ensure that an investment for retrofitting street lighting systems with the new LED technology achieves the predicted lifetime and uncalculated follow-up costs are prevented.

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New service department opens



Collen Mashwana has been appointed as service technician to head up the team within the newly opened service department at BEKA Schröder's head office in Olifantsfontein. This new department will assist customers with the commissioning of projects, provide technical on-site support, and upgrade and service luminaires.

Enquiries: +27 11 238 0078



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Congratulations to Mahomed Ebrahim Moola, winner of the 1st bakkie!

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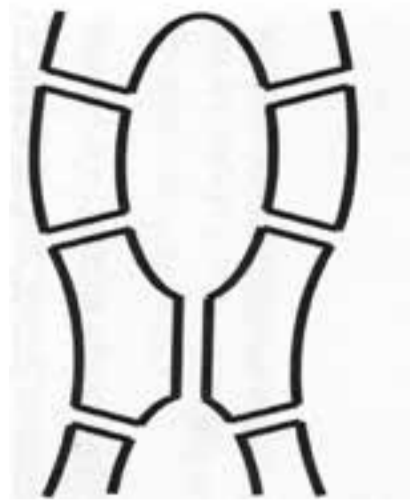
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product portfolio.

Bright Spark

Island hopping



THE picture above shows the River Pregel as it flowed through the town of Konigsberg in the 18th century. As you can see, there was an island in the middle and seven bridges crossing the river. The citizens of Konigsberg used to enjoy strolling across the river via one of its many bridges and one of them posed this puzzle to the great mathematician, Leonard Euler: "Is it possible to start from a point of your own choice, and cross each of the bridges without going over any bridge twice?" What do you think Euler's answer was?

FEBRUARY FEATURES

ENERGY EFFICIENCY

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Earthing, lightning and surge protection, earthing systems, surge protective devices, fuses, protection of structures and electronic equipment against lightning and surge, internal and external lightning protection systems, correct cabling strategies, earth electrode testing, impedance measurement and insurance.

Editor:

Erika van Zyl

Advertising:

Carin Hannay

Production & layout:

Colin Mazibuko

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@crowns.co.za
Website: www.crowns.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.

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