



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 2<sup>nd</sup> 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 CBI<sup>3</sup> 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 CBI<sup>3</sup> web-based design tool replaces the popular CBI<sup>2</sup>.

Osborne adds that CBI<sup>3</sup> 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 CBI<sup>2</sup> was introduced and distributed on stiffy/floppy disk with a CD version of CBI<sup>2</sup> introduced in 1999.

"CBI<sup>3</sup> 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.

CBI<sup>3</sup> 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, CBI<sup>3</sup> 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 Lalulimi (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.

CBI<sup>3</sup> has a product search capability via the product number

or via a general technical search utilising voltage, current, short circuit and phases. CBI<sup>3</sup> 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. CBI<sup>3</sup> 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 m<sup>2</sup> 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 CO<sub>2</sub> 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.