

# 4<sup>TH</sup> LOW VOLTAGE CONFERENCE

COVERING DESIGN, INSTALLATION, MAINTENANCE AND THE RELEASE OF AS/NZS 3000:2018

## Speakers Include:

### GARY BUSBRIDGE

Chairman of the EL001 Wiring Rules standards committee  
Standardisation Manager – Clipsal by Schneider Electric



### ROGER ROYAL

Low Voltage Specialist – IDC Technologies



### CHRIS HALLIDAY

Director – PowerLogic Electrical Consulting & Training



## WHAT YOU WILL GAIN FROM ATTENDING THIS CONFERENCE:

- Learn how to meet the requirements of the new AS/NZS 3000 Wiring Rules: 2018
- Update your knowledge on best practice and find practical solutions to your low voltage design and maintenance issues
- Delve into the revisions to AS/NZS 3000: 2018 and how they will affect your business
- Gain current information on low voltage earthing and substation design
- Discuss your protection issues and find out how to be compliance with the Wiring Rules
- Find out what's new with switchboard standard AS 61439?
- Learn about the application of AS/NZS 3000 in the mining industry
- Hear case studies from the local low voltage industry
- Network with specialists in the field and your peers
- No sales pitches – non commercial presentations

## WHO SHOULD ATTEND:

- Chief Electrical Engineers
- Compliance Engineers
- Maintenance Engineers and Technicians
- Consulting Engineers
- Design and Project Engineers
- Control Systems and Instrumentation Engineers
- Electrical Draftsman and Project Supervisors
- Electrical Superintendents
- Electricians and Electrical Technicians
- Engineering and Safety Managers
- Field Engineers
- Process Control Engineers
- Maintenance Supervisors and Specialists
- Government Safety Regulators and Inspectors

And anyone involved in the design and maintenance of low voltage electrical systems that need to comply with AS/NZS 3000.

3<sup>rd</sup> & 4<sup>th</sup>  
July 2018

Novotel Sydney on  
Darling Harbour  
Sydney, AUSTRALIA

**DISCOUNTS**  
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8.00am	<b>Registration</b>	
8.20am	<b>Opening Address</b>	
8.30am	<b>The Wiring Rules 2018</b>	
Session 1	<b>Gary Busbridge</b> – Standardisation Manager for Clipsal by Schneider Electric and Chairman of the EL001 Wiring Rules Standards Committee	
<b>KEY NOTE</b>	What are the major changes? What is required for compliance? This is an opportunity to find out what the major changes to AS/NZS 3000 are all about. This will provide only a snippet but should whet your appetites to know more. The electrical industry is involved in design, installation and maintenance of an electrical installation and this seminar will provide an insight. The 2018 Wiring Rules will be around for up to 10 years and need to take the industry into the future.	
9.30am	<b>Protection Issues – Compliance with the Wiring Rules</b>	
Session 2	<b>Chris Halliday</b> – Director, PowerLogic	
<b>CASE STUDY</b>	Installing circuit breakers, residual current device and/or combination of both which are correctly rated and graded will ensure automatic disconnection of the supply, and without disruption to other parts of the installation, if something goes wrong. This will help ensure safety and compliance with the essential requirements of AS/NZS3000. This session will look at the essential requirements of Part 1 of AS/NZS3000 and the means of achieving this using Part 2 for overcurrent, earth fault, overvoltage/undervoltage and surge protection looking at consumer mains, main switchboards, submains, distribution boards and final sub-circuits. Case studies of grading will also be examined to increase the learning.	
	<b>Morning Tea – 10.15am</b>	
10.45am	<b>Cudal Quarry Electrical Fatality – Case study of the incident, its precursors, cause, outcomes and results for the landmark legal case</b>	
Session 3	<b>Matthew Bale</b> – Principal Engineer, Consulting Manager – Safeearth Consulting	
<b>CASE STUDY</b>	In 2014 a resident was electrocuted in the shower at their home, a caretaker cottage near a small country NSW quarry operation. Safeearth was selected by the NSW Mines Safety Regulator to perform a forensic engineering investigation into the nature and cause of the fatality. The findings were staggering with a number of contributing breakdowns, including incompetent electrical work, defeated safety controls and poor electrical maintenance. Ensuing from the fatality was a recently concluded landmark legal case including the first prosecution for a Category 1 offence under NSW WHS law. This case study presents a summary of the incident and investigation, mechanisms that led to the lethal scenario and lessons learned.	
11.30am	<b>The Application of AS/NZS 3000 “Wiring Rules” to mining and its’ interaction with Mining Legislation and the Resources Regulator in NSW</b>	
Session 4	<b>Phillip Morton</b> – Principal Inspector of Electrical Engineering, NSW Department of Planning and Environment, Resources Regulator	
	The application of the Wiring Rules, as we know, is to ensure the safety of personnel, livestock and property against electric shock and fire. In mining hazards exist that are not commonly seen in other environments. These include explosive atmospheres, environmental conditions that limit traditional earthing arrangements, explosives and detonators, and harsh abrasive work places. Additionally, the mining legislation imposes responsibilities on electricians and engineers to ensure that the hazards associated with use of electricity over the full lifecycle of plant and equipment are identified, and the controls for those hazards are implemented and maintained. This presentation will delve into the practicalities of designing, installing and maintaining electrical plant at a mine.	
	<b>Lunch – 12.15pm</b>	
1.15pm	<b>What's New with Switchboard Standard AS 61439?</b>	
Session 5	<b>Boris Fuchs</b> – System and Architecture Engineer - Schneider Electric	
	The AS/NZS61439 series, based on IEC61439 edition 2.0 (2011), was released in May 2016, with the aim to replace AS/NZS 3439.1 in May 2021. This new standard is intended to provide improved level of switchboard safety by ensuring each and every configuration is exposed to a detailed design verification process. The presentation is intended to provide the audience with sufficient knowledge to understand the philosophy of the new standard, and to brief consultant engineers, switchboard manufacturers, electrical contractors and end users on how the new standard is likely to affect their business.	

2.00pm	<b>Earthing Essentials - Electro Magnetic Compatibility in Variable Speed Drives</b>	
Session 6	<b>Nick Hughes</b> – Manager, Power Electronics Australia	
	This paper we will cover the basics of Electro Magnetic Compatibility (EMC) inside a Variable Speed Drive (VSD), explaining the generation of common mode currents and the paths that follow outside a VSD. Within the VSD, the speed of change of electric fields is very high compared with the speed of change of magnetic fields. The electric field interaction is called capacitive coupling whereas magnetic field interaction is called inductive coupling. Here we will discuss the effects related with the change over time of electric and magnetic fields external to the VSD on the cabling and in particular the motor.	
	<b>Afternoon Tea – 2.45pm</b>	
3.15pm	<b>Permanently Connected Machines and the AS/NZS 3000 Conundrum</b>	
Session 7	<b>Roger Royal</b> – Low Voltage Specialist, Snowy Technical Services & IDC Technologies	
	It is often required in industry and large commercial sites to connect large machines/equipment to the power system. Such equipment may or may not have been built in Australia and before this equipment can be connected it has to be inspected and tested for compliance – but compliance to what is the question. The equipment needs to meet AS/NZS 3000 Part 1 (for safety) but not necessarily Part 2. If the equipment meets AS 60204 compliance it will be in compliance to the former. This session will look at some of the major differences between the standards and the point at which they meet. In some connections there may be special instructions from the manufacturers that may seem at odds with AS/NZS 3000. Just because there is a difference between the Standards it does not mean the equipment fails compliance and has to be ‘reworked’.	
	Topic covered:	
	<ul style="list-style-type: none"> <li>• Competence to inspect</li> <li>• The existence of the two standards and the scope of each</li> <li>• What equipment is not covered by the Standards</li> <li>• What is covered by the Standard</li> <li>• Wiring colours that are allowed</li> <li>• Colours and circumstances not allowed</li> <li>• Types of wiring and equipment specs (insulation, voltage, temperature)</li> <li>• Earthing variations</li> <li>• Specific earthing requirements</li> <li>• Internal IP factors – touch finger considerations</li> <li>• Field wiring concerns</li> </ul>	
4.00pm	<b>Legally Electric</b>	
Session 8	<b>Chris Halliday</b> – Director, PowerLogic	
<b>CASE STUDY</b>	This presentation will look at legal issues, from a non-legal presenter, that affect the electrical industry including things like compliance, helping prevent litigation, wiring rules, working safely, testing and incident management in the low voltage sector. Electrical testing is required to ensure compliance with the Wiring Rules and safety for electrical installation work, proving de-energised, fault finding, preventative maintenance and ‘live’ work may be required but Workplace Health and Safety requirements must be complied. Case studies will be discussed where electrical work has gone wrong and most importantly how to stay out of court.	
	<b>Closing – 4.45pm</b>	



**NETWORKING SESSION:**  
**Cocktail Hour – 5.00pm to 6.00pm**

An hour dedicated for all attendees to meet and socialise with experts and industry peers at the 4th Low Voltage Conference Cocktail Hour.

All conference papers are reviewed and selected for their high quality and technical value by our panel of specialists experienced in the theory and practice of low voltage.

## ABOUT THE CONFERENCE

This conference aims to review the application and best practice in the requirements laid down in the standard AS/NZS 3000:2018, commonly known as Australia-New Zealand Wiring Rules. The new Wiring Rules 2018 are due for release in early-mid 2018 and this event will cover all the amendments and how they will affect industry.

The primary purpose of the AS/NZS 3000 standard, like many of its various other equivalent national standards, is to ensure the safety of

personnel, livestock and property against the dangers (e.g. electric shock and fire) arising from the use and handling of electrical equipment and appliances. For those installations covered in the scope of this standard, its provisions are mandatory and must be followed. Any engineer involved in planning and design of electrical systems, installation or maintenance must have a clear idea about the various requirements contained in the standard.

### CONFERENCE DAY TWO – 4<sup>th</sup> July 2018

8.30am **FULL DAY WORKSHOP**

Session  
9

WORK  
SHOP

#### Presented by:

**Roger Royal** – Low Voltage Specialist – IDC Technologies

#### AS/NZS 3000 - Explanations for Engineers and Technicians

In this one day workshop we will look at the AS/NZS 3000 from the viewpoint of engineers and technicians. We start by asking 'Why do we follow the Wiring Rules?' and how do they sit within the structure of other mandatory rules such as NWO service rules and state regulatory rules. Other aspects of this section include the responsibilities and qualifications of people involved in the industry.

As we look at Part 1 of the Wiring Rules we will introduce the principle of how we can design good circuits based on sound engineering principles, materials and equipment. Such principles will be discussed in relation to the Rules requirements in this Part 1 and some definitions will be explained including essential definitions not in the Rules.

Since the Rules are best explained by examples we will outline a 'typical' installation schematic and include all the essential parts with explanations. This same example will be used to demonstrate the essential operation and safety measures that have to be incorporated in every design. Included in this example will be the 'standard' requirement for earthing. This is then an appropriate point to discuss 'overcurrent' protection and discrimination as every installation must have a protection co-ordination plan. Following on in this example we will see how bonding can give absolute 'shock' protection to personnel and that additional design can provide transient protection to the installation.

Part 2 of the Rules is that part 'deemed to comply'. We will look at aspects of each section as they provide the basis of compliance if correctly followed. It has to be understood that the Rules are not a design manual – but that following the Rules will 'generally' result in compliance. Some of the Rules are for very specific situations and have to be followed. In other areas no rules are given but the designer must expect or specify the correct installation 'practice'. Some of the groups of the Rules do actually 'channel' the designer into a specific design as we see in areas such as earthing and bonding.

The 'Appendices' in the Rules are not just add-ons but an integral part of the Wiring Rules. All designers must be familiar with appendices A, B, C at the very minimum. The other and new appendices are going to be vital information for designers.

**Includes Morning Tea, Lunch and Afternoon Tea**

#### Topics covered in this workshop will include:

- Introduction to the Wiring Rules – old and new
- The collection of documents that impact on the rules
- The historical setting of the rules in Australia and New Zealand
- The scope of the rules
- The structure of the rules – an overview
- Part 1. Principles of electrical safety
- Part 2. Specific installation notes
- Specific technical safety principles of installation
- The understanding of the purpose and load
- The understanding of design – operation, safety and control
- The understanding of the materials
- The understanding of the installation techniques
- The understanding of the inspection and test processes

### WORKSHOP PRESENTER

#### ROGER ROYAL

Low Voltage Specialist, Snowy Technical  
Services & IDC Technologies



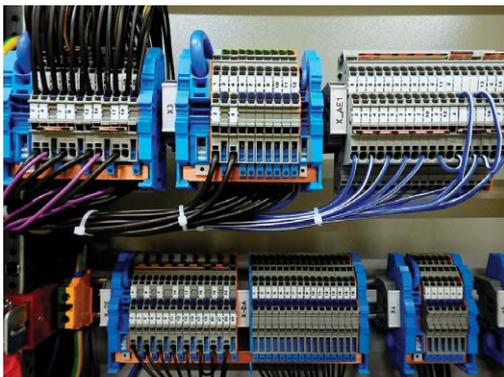
Roger has built up a solid 40 years of hard won experience in the electrical power industry and this is apparent in his instructing. He has a passion for teaching and has achieved outstanding results over the past ten years with his courses on circuit breakers and switchgear, earthing, bonding, lightning, surge protection, power systems protection and transformers throughout the world.

Roger has carefully prepared for the presentation of this workshop, to ensure that you will walk away with the skills you can immediately apply to your work. He is looking forward to meeting all participants and being able to pass on his experience and knowledge.

**Closing – 4.30pm**

### Sponsorship Opportunities

Representing your business at the 4th Low Voltage Conference in 2018 will provide you the opportunity to reach key decision makers from a multitude of industries. For more information on sponsorship and exhibition opportunities please contact Sarah Montgomery via email [conferences@idc-online.com](mailto:conferences@idc-online.com)



**FOR FURTHER  
INFORMATION:**

**Phone:  
1300 138 522**

# CONFERENCE PRESENTERS:

## GARY BUSBRIDGE

Chairman of the EL001 Wiring Rules standards committee  
Standardisation Manager – Clipsal by Schneider Electric



Gary has been in Clipsal's employ for over 40 years working predominantly as design manager for all Australian electrical accessories. Inevitably, this led to involvement with the Standards Association of Australia and membership of committees and working groups from 1998.

His new role of standardisation manager is to ensure global and regional standards are aligned to the electrical contracting business and electrical accessories manufacture. This also includes relevant IEC standards and applications. In November 2011 he was made chairman of the EL001 Wiring Rules standards committee.

## CHRIS HALLIDAY

Director – PowerLogic Electrical Consulting & Training



Chris specialises in electric shock incidents/electrical safety, electrical test instrumentation and power quality. He completed a Masters in Electrical Power Engineering with Wollongong University in 2014 and has qualifications in management, WH&S and training and assessing. Chris has over 40 years in the electrical industry and his practical experience includes having started in the electrical industry as an apprentice electrician at the age of 16 and still assists his son carrying out electrical contracting on occasions. Chris has presented at numerous conferences and has written trade articles and papers that are too numerous to mention. He is passionate about electrical safety and the prevention of electrical incidents.

## ROGER ROYAL

Low Voltage Specialist – IDC Technologies



Roger has built up a solid 40 years of practical experience in the electrical power industry and this is apparent in his instructing. He has a passion for teaching and has achieved outstanding results over the past ten years with his courses on circuit breakers and switchgear, earthing, bonding, lightning, surge protection, power systems protection and transformers throughout the world.

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### REGISTRATION FORM:

## 4TH LOW VOLTAGE CONFERENCE

3rd & 4th July 2018 – Novotel Sydney on Darling Harbour, Sydney, Australia

Simply complete this registration form online or return by email

### 1. DELEGATE DETAILS

Contact: \_\_\_\_\_ Company Name: \_\_\_\_\_

Company Address: \_\_\_\_\_

Suburb: \_\_\_\_\_ State: \_\_\_\_\_ Post Code: \_\_\_\_\_ Phone: \_\_\_\_\_

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ATTENDEES:	Mr/Ms:	Job Title:
1	_____	_____
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### 2. HOW DID YOU HEAR ABOUT THIS EVENT?

- Received an email from IDC     
  Received a brochure in the mail     
  Searched online (Google, Yahoo etc)  
 Recommended by a friend/colleague     
  Magazine advertisement/insert (please specify which magazine below)  
 Other (please specify) \_\_\_\_\_

### 3. REGISTRATION & PAYMENT DETAILS

Prices shown are inclusive of GST

#### 4TH LOW VOLTAGE CONFERENCE – 3<sup>rd</sup> & 4<sup>th</sup> July 2018

- OPTION 1: Early Bird Discount – 10% OFF**  
 – Book on or before 5th June (SAVE \$179.50)      \$1615.50 x \_\_\_\_\_ delegates = \$ \_\_\_\_\_  
 **OPTION 2: Standard Rate (NO Early Bird)**  
 – Book after 5th June      \$1795.00 x \_\_\_\_\_ delegates = \$ \_\_\_\_\_  
 **OPTION 3: 3 for 2 Offer AND Early Bird 10% OFF**  
 – Book on or before 5th June (SAVE \$1615.50)      3 delegates: 2 x \$1615.50 = \$3231.00 = \$ \_\_\_\_\_  
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**PLEASE NOTE: Full payment is required prior to the commencement of the conference.**      **TOTAL DUE = \$ \_\_\_\_\_**

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**AND /OR**

### 3 FOR 2 OFFER:

Register 3 delegates and only pay for 2  
– SAVE UP TO \$1795.<sup>00</sup>

### GENERAL INFORMATION

#### Confirmation Details

A confirmation email and invoice will be sent to delegates within 3 days of receiving the registration.

#### Cancellation Policy

A fee of 20% cancellation will apply for cancellations received 7 – 14 days prior to the start date of the conference. Cancellations received less than 7 days prior to the start date of the conference are not refundable, however substitutes are welcome.

#### Venue

Novotel Sydney on Darling Harbour  
70–100 Murray Street,  
Pyrmont, NSW, 2009 AUSTRALIA  
Phone: (02) 9288 7180

#### Accommodation

The conference venue has accommodation available. Please contact them directly on (02) 9288 7180 and quote IDC010718 to receive 10% discount off the best available unrestricted rate of the day.

#### Food and Beverages

All lunches, morning and afternoon refreshments are included.

#### Unable to Attend

If you are unable to attend the full conference program, contact us for details to attend individual sessions or to purchase the Conference Resource Kit.

#### Enquiries

1300 138 522 or conferences@idc-online.com

### REGISTRATIONS

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