WHAT YOU WILL GAIN FROM THIS EVENT:

- Discuss and learn the new changes to the AS 2067 standard with experienced electrical engineers
- Update your knowledge on best practice and find practical solutions to your HV design and installations issues
- Hear how to extend the life of your HV equipment through effective condition monitoring, testing and diagnostic techniques
- Learn how to avoid transformer failures with oil and electrical testing
- Understand best practice for life management of power transformers
- Learn how optimal HV design can improve production and reduce costs
- Update your knowledge on best practice and find practical solutions to your HV maintenance issues
- Become aware of arc flash dangers, the arc flash standard and hazard reduction equipment
- Gain an insight into the future trends of HV systems
- Hear relevant local case studies from the Australian HV industry
- Network with specialists in the field and your peers
- No sales pitches – non commercial presentations

WHO SHOULD ATTEND:

- Substation engineers and technicians
- Generation, transmission engineers and technicians
- Electrical engineers, technicians and electricians
- Maintenance engineers and asset managers
- Plant, project and design engineers
- And all other engineering professionals who have an interest in HV design, standards, installations, operations and maintenance.

Industrial organisations with high HV electrical distribution
- Engineering and safety managers
- Government safety regulators/inspectors
- Network, protection and distribution engineers and technicians
- Risk assessors
- Maintenance specialists

Ph: 1300 138 522
idc@idc-online.com
or www.idc-online.com
This conference will cover the AS 2067 HV standard which provides minimum requirements for the design and installation of high voltages above 1kV (ac) so as to provide safe functioning in operation. A new edition of AS 2067 is soon to be released and represents some significant amendments that should be of interest to anyone involved in high voltage substations and installations.

The high voltage installation can range from a substation, auxiliary systems, interconnecting cables/lines and naturally the user’s facilities such a plant, factory, office facility and mine site. Equipment includes switchgear, transformers, converters, cables, lines, batteries, earthing systems, capacitors, reactors, buildings and structures.

In addition to HV design and installation, HV maintenance is a challenging undertaking and the Australian industry needs to have the sustainability and reliability of ageing HV equipment at the forefront of their minds when planning and designing their upcoming projects. The event will discuss problems that arise from HV equipment maintenance and how Industry can overcome these issues through well-planned maintenance programs, adherence to standards/regulations and forward thinking.

### CONFERENCE DAY ONE – 27th July 2016

#### 8.00am
Registration

#### 8.15am
Opening Address

#### 8.30am Substation Installations: Revision of AS 2067 Substations and HV Installations

**Alex Balch** – Principal, BES and Chairman Standards Australia Committee ELO43 High Voltage Installations

Australian Standard AS 2067 on Substation and High Voltage Installations is based on the IEC Standard IEC61936. AS2067 comes under the Wiring Rules (AS/NZS 3000) as the document relevant to high voltage installations. Accordingly, it has wide application and is applicable to all most high voltage installations, be they customer installations, generation facilities or utility owned installations. A new edition of AS 2067 is soon to be released and represents some significant amendments that should be of interest to anyone involved in high voltage substations and installations. Most sections have changes. These include issues associated with developments in the Building Code of Australia, closer alignment with the work of EL23 which deals with Mining Standards, and substation installation earthing. Significant changes are being made to the sections on access areas, protection against fire and explosions and earthing. The earthing section in particular is being considerably expanded and amended to cover all industry sectors, including that of mining.

#### 9.30am High Voltage Equipment: Avoiding Transformer Failures with Oil and Electrical Testing

**Phillip Reilly** – Sales Manager, TxMonitor

Enhanced levels of asset condition awareness and knowledge drive better decisions in the field that improve safety and asset reliability. Oil testing offers a “first” insight into the “health” status of transformers and auxiliary equipment. When combined with other electrical tests and sound engineering knowledge, Oil Analysis can provide a powerful tool to diagnose and assess condition of an asset. This presentation will cover effective oil testing regimes, and recommendations for electrical testing upon early detection of failure modes. Examples of internal inspections and Root Cause Analysis of transformers that have failed will also be presented. And in the age of big data, how the role of asset management software to enhance fleet-wide condition monitoring capabilities to reduce the risk of failure will be addressed.

#### 10.45am Effective Life Management of Power Transformers

**Ken Budin** – Partner, Budin Philipp

Drawing on world’s best practice for transformer life management from published Cigré, IEEE and IEC standards and guidelines, coupled with practical experience, this presentation will include specification, the first year of life, life-time management and end-of-life practices and recommendations for power transformers.

#### 11.30am Operational Prudence of Electricity Networks

**Peter Armstrong** – Engineering/Operational Trainer, High Voltage Training Solutions

This presentation will discuss a maturing understanding in operational prudence of electricity networks. It will also cover how modern design of HV switchgear and consistence in procedures can improve on operational practices and minimise personal exposure when performing operating work. It will include elements for future designers to consider regarding low voltage as part of network operations, emphasising current exposure of operational staff through present design and for development of remote operation and racking of low voltage switchgear.

#### 12.15pm Lunch

#### 12.30pm Will Earthing to AS 2067 be Better? What has Changed and What it Means for You.

**Stephen Palmer** – Sales Manager, TxMonitor

The new revision to AS 2067 has now passed the public draft stage and is expected to be published shortly. This standard will become the primary standard for HV earthing system design and earthing system management. This new standard includes significant changes, particularly the development of more transparent and site-specific risk-based safety criteria, enabling more effective assessment and management of earthing-related risk. This presentation will provide an overview of the changes and key understandings asset owners & designers will need moving forward.

#### 2.00pm Standardising of HV Training throughout Australia

**Patrick Mynett** – Director, HV Training and Consulting

Inappropriate or incorrect high voltage procedures cost millions of dollars per year and cause numerous injuries and occasional fatalities. Training for an electrical worker’s licence is predominately centred on low voltage domestic installations and the main hazard in the domestic industry is that of electric shock. The main hazard associated with high voltage operations is that of explosions, due to enormous amounts of energy being released in a fraction of a second. Most electrical workers do not have an understanding of the amount of energy that can be released during a high voltage incident, nor do they have knowledge about high voltage hazards or how to protect themselves. This paper will cover the idea of creating standard national accredited training across Australia to solve the above issues and save company costs.

#### 3.15pm Recent Changes to Arc Flash Standards and Hazard Reduction Equipment: What Does This Mean for Australian Workplaces?

**Brett Cleaves** – Director/Principal Engineer, Engineering Safety

Electrical safety has two potentially lethal hazards in electrical shock and arc flash burns. The lack of comprehensive or prescriptive Australian arc flash standards has resulted in a relatively slow inclusion of arc flash safety controls in workplace electrical safety programs. Recent standard changes have reinforced the need for arc flash hazard assessments and the development of controls. This presentation will provide an insight into the recent changes to arc flash standards, hazard reduction equipment and what this means for Australian workplaces working in the high voltage industry.

#### 4.00pm High Voltage Power Cable Current Ratings

**Jayson Patrick** – Senior Electrical Engineer, Electrotechnik

Accurate determination of cable ratings is important for providing economical, functional and safe electrical designs. The site specific installation conditions and conductor configurations of high voltage power cables have a most severe impact on their current rating. The required numerical calculations are complicated, thus it is imperative that engineers have access to versatile computer modelling tools so they may perform them with relative ease and confidence. For engineers employing computer modelling tools for these calculations, or even (perhaps especially) if they are not, it is important to understand and in turn be able to effectively manipulate and to even harness the effects of changes of the major factors on the current rating. It is the intention of the author of this paper to provide such a useful reference source on that basis.

#### 4.45pm Closing

### Networking Session – 5.00pm to 6.00pm
An hour dedicated for all attendees to meet and socialise with experts and industry peers at the 5th High Voltage Conference Networking Drinks.
Substation and Transmission Lines Earthing System Design
Under Substation Fault
Mohamad Nassereddine – Senior Electrical Engineer, National Electrical Engineering Consultancy (NEE)
High voltage substations are fed by transmission lines with the earthing system solidly bonded to the substation earth grid. Under substation fault, both the substation earth grid and the pole grid resistance are exposed to voltage rise. This voltage rise could reach unacceptable and dangerous levels. Earthing system design ensures safety compliance for both the substation and transmission lines under fault conditions. This paper analyses the relationship between the substation earth potential rise and the transmission pole earth potential rises (EPR). The analysis shows that the poles located within the finite length from the substation form a solid input to the substation EPR. The paper reviews the existing literature and develops the formulas to assist the designer to compute the substation EPR from the pole EPR and vice versa. The paper proposes modifications to IEEE earthing design block diagram. This modification ensures that the transmission line earthing system is always compliant to allowable safety limits under substation fault. Furthermore, the paper shows the method to estimate the substation earth potential rise by measuring the pole earth potential rise with a case study.

Sponsorship Opportunities
Representing your business at the 5th High Voltage Conference 2016 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 IDC Technologies via email conferences@idc-online.com

### Conference Day Two – 28th July 2016

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KEYNOTE SPEAKER:

PROFESSOR ALEX BAITCH
Principal BES (Aust) Pty Ltd
Chairman Standards Australia Committee EL043 High Voltage Installations
Former National President Engineers Australia (2014)

Professor Alex Baitch is Principal of his electrical engineering consulting practice which he established over 20 years ago and has extensive industry experience. He is a Chartered Professional Engineer, a Fellow of the Australian Academy of Technology and Engineering, an Honorary Fellow of Engineers Australia and Honorary Professorial Fellow of the University of Wollongong.

Alex is Chairman of the Australian Standards Committee EL043 which has produces the Australian Standard AS2067 on Substations and High Voltage installations and its revisions.

He has also been a member of the IEC Maintenance team that has revised the IEC 61936-1 which forms the basis of AS 2067 and a member of the IEC Advisory Committee on Transmission and Distribution. He is active on a number of other Australian Standards and IEC committees such as SC77A on Power Quality, TC8 working groups on Electrical Systems issues and a member of CIGRE as a convenor of a CIGRE Advisory Panel. He was the National President of Engineers Australia in 2014.

REGISTRATION FORM:

5TH HIGH VOLTAGE CONFERENCE
27th & 28th July 2016 – Rydges North Sydney

Simply complete this registration form online or return by email

1. DELEGATE DETAILS

Contact: Company Name: __________________________
Company Address: ________________________________
Suburb: State: Post Code: Phone: __________________
Admin Email: Accounts Payable Email: __________________

1. Mr/Ms: ___________________________ Job Title: ___________________________
   Email: ___________________________

2. Mr/Ms: ___________________________ Job Title: ___________________________
   Email: ___________________________

3. Mr/Ms: ___________________________ Job Title: ___________________________
   Email: ___________________________

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

5TH HIGH VOLTAGE CONFERENCE – 27TH & 28TH JULY 2016

Prices shown are inclusive of GST

TOTAL DUE = $ __________

3 FOR 2 OFFER: Register 3 delegates and only pay for 2
- SAVE UP to $1795

EARLY BIRD OFFER:
10% off the conference fee for registrations received on or before 29th June 2016
- SAVE $179.50

AND
3 FOR 2 OFFER: Register 3 delegates and only pay for 2
- SAVE UP to $1795

OPTION 1: Early Bird Discount 10% OFF
- Book on or before 29th June (SAVE $179.50)
  $1615.50 x ____ delegates = $ __________

OPTION 2: Standard Rate (NO Early Bird Discount)
- Book after 29th June
  $1795.00 x ____ delegates = $ __________

OPTION 3: 3 for 2 Offer AND Early Bird Discount
- Book on or before 29th June (SAVE $1615.50)
  3 delegates: 2 x $1615.50 = $3231.00 = $ __________

OPTION 4: 3 for 2 Offer Standard Rate (NO Early Bird)
- Book after 29th June (SAVE $1795.00)
  3 delegates: 2 x $1795.00 = $3590.00 = $ __________

Corporate Packages available upon request

PLEASE NOTE: Full payment is required prior to the commencement of the conference.

I wish to pay by: ☐ EFT ☐ Direct Deposit ☐ Company Purchase Order Number:

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On the reverse of your card, above the signature, is a security number. In order to authorise your card transaction, we require the last 3 digits: ___________________________

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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% 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 are not refundable, however substitutes are welcome.

VENUE

Rydges North Sydney
54 McLaren Street, North Sydney, NSW, 2060
AUSTRALIA
Phone: 02 9922 1311

ACCOMMODATION

The conference venue has accommodation available. Please contact the Rydges directly on 02 9922 1311 and mention the event name “High Voltage Conference” when booking to receive the discounted conference rate.

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

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