

# HIGH VOLTAGE DESIGN & INSTALLATIONS FORUM

**OFFICIAL  
LAUNCH**

**“High Voltage  
Submissions  
Policy”**

Department of  
Mines and Petroleum

*Featuring Keynote Speakers:*

**ALEX BAITCH**

Chairman of Standards  
Committee EL043  
Currently working on revision  
of AS 2067 standard



**SELWYN BRAVER**

Managing Director of Martec  
Asset Solutions  
Condition Monitoring  
Specialist



## WHAT YOU WILL GAIN FROM THIS FORUM:

- Update your knowledge on best practice and find practical solutions to your HV design and installations issues
- Network with industry experts and your peers
- Discuss compliance to the AS 2067-2008 standard with experienced electrical engineers
- Learn how optimal high voltage design can improve production and reduce costs
- Unashamedly non-commercial presentations - No sales pitches
- Improve the level of safety in your workplace, plant or mine site
- Learn about new industry equipment e.g. switchgear, transformers, cables, converters
- Hear case studies from the local electrical industry

## WHO SHOULD ATTEND:

- Electrical engineers and technicians
  - Engineering managers
  - Project and design engineers
  - Instrumentation and control technicians and engineers
  - Plant operators
  - Safety facilitators
  - Process safety managers
  - Government safety regulators/inspectors
  - Marine & mine safety engineers
  - Risk assessors
- And all other Engineering Professionals who have an interest in high voltage design, standards and installations

**17th & 18th  
October 2012**

**Mercure Hotel  
Perth, Australia**

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# INTRODUCTION TO HIGH VOLTAGE DESIGN & INSTALLATIONS

This topic will be of special interest to the electrical engineering community of Australia, as regulators are demanding continual improvement in safety outcomes in this area. For example in early 2012 the WA Department of Mines and Petroleum undertook industry consultation on a proposed revised HV submission policy, which would apply to all mine sites in WA.

This forum is based around the AS 2067-2008 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. 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. Although not necessarily explicitly part of the standard, users of equipment from a marine environment (ships/offshore installations) and equipment covered by other Australian (or IEC) standards will find the forum of use.

This forum aims to provide you with hard-hitting useful electrical engineering know-how which you can apply directly in your workplace. We have selected speakers who can present technical papers on a wide variety of industry topics to ensure that you return to your workplaces with the skills needed to apply best practice when dealing with your next electrical installation.

## FORUM DAY 1 - 17th October 2012

8.00am	<b>Registration</b>	2.15pm	<b>Starting of Large HV Motors on a Weak Power System – A Case Study</b>
8.15am	<b>Opening Address</b>	Session	<b>Michael Hamilton</b>
8.30am	<b>WORKSHOP</b> <b>Includes: Morning Tea - 10.30am</b> <b>High Voltage Assessment &amp; Monitoring of Transformers, Oil, Cables &amp; Switchgear</b>	3	Senior Electrical/Controls Engineer – Elinco Engineering
Session	<b>Selwyn Braver</b>	<b>CASE STUDY</b>	This paper will serve as a guide for those that plan to use the method of “capacitor assist” for starting of large high voltage motors on weak independent power system networks. A case study from the Western Australian mining environment will show how this uncommon motor starting method was adopted and put to use to reduce costs while maintaining suitable system conditions. The concepts and methods employed are given and the outcomes of commissioning the system are summarised. Additionally general information on motor starting methods is provided for reference.
1	Managing Director – Martec Asset Solutions		
<b>KEY NOTE</b>	Whatever your role in industry – electrical engineer, technician, designer, purchase engineer, manufacturer, installation contractor or maintenance engineer, a solid knowledge of electrical surveillance tests and monitoring possibilities to be carried out on a given piece of HV and MV electrical equipment and interpretation of results obtained, is a necessity.		
	This workshop will familiarise you with some of the key tests you will undertake and will cover:		<b>Afternoon Tea - 3.00pm</b>
	<ul style="list-style-type: none"> <li>Transformer monitoring and control, temperature, cooling, bushing, OLTC's, conservators, Transformer Management Systems and Smart Asset Management Systems</li> <li>Introduction to oil testing dissolved gas analysis</li> <li>Online condition assessment of cables and associated assets, terminations, splices, switchgear, motors and transformers</li> <li>Partial discharge monitoring, electrical and acoustic, for indoor and outdoor assets, from cables, to switchgear, transformers, to lines.</li> <li>Testing, assessing and monitoring of MV and HV electrical equipment</li> <li>Online thermal monitoring of cables and overhead lines and real time rating</li> <li>Good record keeping on the tests conducted</li> <li>Role of standards on testing, test basis and interpretation of results.</li> </ul>		
	<b>Lunch 12.30pm</b>	3.30pm	<b>Bunbury Hospital Case Study - 22kV Failure</b>
1.30pm	<b>Substation Installations - Current developments associated with the AS2067 and IEC61936-1 Standards</b>	Session	<b>Justin Shute</b>
Session	<b>Professor Alex Baitch</b>	4	Electrical Engineering Consultant, Justin Shute Engineering
2	Principal BES (Aust) Pty Ltd, Chairman Standards Australia Committee EL43 High Voltage Installations, Honorary Professorial Fellow University of Wollongong	<b>CASE STUDY</b>	On 28 July 2011 at approximately 3:16am, the high voltage circuit breaker that supplies the St John of God hospital in Bunbury failed which resulted in an interruption of power from Synergy for 36 hours. This case study will cover what happened and how a solution was found: <ul style="list-style-type: none"> <li>Hospital feeder fails and causes site wide power outage</li> <li>Due to switchgear equipment failure, modifications to existing installed switch gear are undertaken under emergency conditions</li> <li>Cause of failure was attributed to pollution contaminates and lighting surge</li> <li>Failure of hospital switchgear also caused city wide outage of power for many hours</li> <li>Identification of failure and urgency of fault repair required actions that are not orthodox</li> <li>Modification of the HV switch gear and outlying feeder system carried out</li> <li>Inspection and testing of cleaned switch gear provided the un-orthodox approach to re-instate supply in 24 hours</li> </ul>
	The Australian Standard AS 2067-2008 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. It has wide application and is especially relevant to most high voltage installations, be they customer installations, generation facilities or utility owned installations. This paper will outline the key requirements of substations installations and will provide an insight into the developments that are presently under way at the international level with respect to the amendment and revision of IEC 61936 through a Maintenance Team of TC99. Also covered will be the issues that have arisen since the initial release of the standard; for example, issues associated with developments in the Building Code of Australia, closer alignment with the work of EL23 which deals with Mining Standards, arc flash hazards and substation installation earthing.		
		4.15pm	<b>Obtaining Value from On-Line Condition Monitoring of High Voltage Assets</b>
		Session	<b>Terry Krieg</b>
		5	Senior Executive Engineer - Power Networks, Sinclair Knight Merz
			Monitoring the performance and condition of HV equipment by various means has become an integral part of the asset management strategies for many organisations in Australia and world-wide. The approaches used to implement effective condition monitoring programs with advantages, issues and implementation risks will be highlighted. Case studies related to successful implementation will be described plus approaches used to economically justify expenditure in pilot on-line monitoring programs. The paper presents some of the work of an international CIGRE working group B3-12 and will provide advice on improving knowledge of high voltage asset condition, performance and implementing an on-line condition monitoring program.
			<b>Closing - 5.00pm</b>
			<b>NETWORKING SESSION: Cocktail Hour - 5pm to 6pm</b> An hour dedicated for all attendees to meet and socialise with experts and industry peers at the HV Design & Installations Forum Cocktail Hour.

**REGISTER NOW:**

**Fax:**  
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West Perth, WA 6872

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All forum papers are reviewed and selected for their high quality and technical value by our panel of specialists experienced in the theory and practice of electrical engineering.

**REGISTRATION FORM: HIGH VOLTAGE DESIGN & INSTALLATIONS FORUM**

17th & 18th OCTOBER 2012, Mercure Hotel, Perth

Simply complete this registration form online or return by fax, email or mail.

**1. CONTACT DETAILS**

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COMPANY NAME: \_\_\_\_\_

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PHONE: \_\_\_\_\_ FAX: \_\_\_\_\_

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ATTENDEE 1	MR/MS: _____ FIRST NAME: _____ SURNAME: _____
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ATTENDEE 3	MR/MS: _____ FIRST NAME: _____ SURNAME: _____
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	E-MAIL: _____

**2. HOW DID YOU HEAR ABOUT THIS EVENT?**

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

**EARLY BIRD OFFER:** 10% off the forum fee for registrations received before September 19th 2012  
**3 FOR 2 OFFER:** Register 3 delegates and only pay for 2 - SAVE \$1795

**3. REGISTRATION & DELEGATE DETAILS**

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

**HV DESIGN & INSTALLATIONS FORUM - 17th & 18th October 2012**

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An confirmation email will be send to delegates within 2-3 days of receiving the registration. This will include your invoice to attend the forum.

**Cancellation Policy**

Full reimbursement will be accepted if written notification of cancellation is received by IDC Technologies on or before 1st October 2012. A fee of 20% will apply to any cancellations received between 2nd October and 11th October 2012. No cancellation requests can be accepted after 12th October 2012 however from this date substitute delegates are welcome.

**Venue**

Mercure Hotel Perth  
 10 Irwin Street, Perth, 6000  
 AUSTRALIA  
 Phone: (08) 9326 7000

**Accommodation**

The conference venue has accommodation available. Contact directly on (08) 9326 7000 and mention IDC Technologies when booking and receive 10% off the best room rate.

**Food and Beverages**

All lunches, morning and afternoon refreshments are included.

**Unable to Attend**

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

**Enquiries**

1300 138 522

**REGISTRATIONS**

We encourage you to register early, as spaces are limited. Your payment must accompany the registration form in order for it to be processed and confirmed.

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