

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**

**DISCOUNTS
EARLY BIRD OFFER!
10% OFF
BOOK BEFORE SEPTEMBER 19TH
3 FOR 2 OFFER!
Save \$1795
See back page for details**

**FOR MORE
INFORMATION:**

1300 138 522

**idc@idc-online.com or
www.idc-online.com**

Presented by:



Technology Training that Works

AUSTRALIA • CANADA • INDIA • IRELAND • MALAYSIA
NEW ZEALAND • POLAND • SINGAPORE • SOUTH AFRICA
UNITED KINGDOM • UNITED STATES • VIETNAM

Proudly Sponsored by:



Government of **Western Australia**
Department of Mines and Petroleum
Resources Safety



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	Registration	2.15pm	Starting of Large HV Motors on a Weak Power System – A Case Study
8.15am	Opening Address	Session	Michael Hamilton
8.30am	WORKSHOP Includes: Morning Tea - 10.30am High Voltage Assessment & Monitoring of Transformers, Oil, Cables & Switchgear	3	Senior Electrical/Controls Engineer – Elinco Engineering
Session	Selwyn Braver	CASE STUDY	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		
KEY NOTE	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:		Afternoon Tea - 3.00pm
	<ul style="list-style-type: none"> Transformer monitoring and control, temperature, cooling, bushing, OLTC's, conservators, Transformer Management Systems and Smart Asset Management Systems Introduction to oil testing dissolved gas analysis Online condition assessment of cables and associated assets, terminations, splices, switchgear, motors and transformers Partial discharge monitoring, electrical and acoustic, for indoor and outdoor assets, from cables, to switchgear, transformers, to lines. Testing, assessing and monitoring of MV and HV electrical equipment Online thermal monitoring of cables and overhead lines and real time rating Good record keeping on the tests conducted Role of standards on testing, test basis and interpretation of results. 		
	Lunch 12.30pm	3.30pm	Bunbury Hospital Case Study - 22kV Failure
1.30pm	Substation Installations - Current developments associated with the AS2067 and IEC61936-1 Standards	Session	Justin Shute
Session	Professor Alex Baitch	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	CASE STUDY	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"> Hospital feeder fails and causes site wide power outage Due to switchgear equipment failure, modifications to existing installed switch gear are undertaken under emergency conditions Cause of failure was attributed to pollution contaminates and lighting surge Failure of hospital switchgear also caused city wide outage of power for many hours Identification of failure and urgency of fault repair required actions that are not orthodox Modification of the HV switch gear and outlying feeder system carried out Inspection and testing of cleaned switch gear provided the un-orthodox approach to re-instate supply in 24 hours
	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	Obtaining Value from On-Line Condition Monitoring of High Voltage Assets
		Session	Terry Krieg
		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.
			Closing - 5.00pm
			NETWORKING SESSION: Cocktail Hour - 5pm to 6pm 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:
1300 138 533

Mail: PO Box 1093,
West Perth, WA 6872

E-mail:
idc@idc-online.com

Web Site:
www.idc-online.com

FORUM DAY 2 - 18th October 2012

8.30am Session 6 KEY NOTE	Earthing of HV Electrical Installations Professor Alex Baitch Principal BES (Aust) Pty Ltd, Chairman Standards Australia Committee EL43 High Voltage Installations, Honorary Professorial Fellow University of Wollongong The fundamental purpose of earthing of electrical installations is to provide a "safe" environment in the proximity of electrical infrastructure. What is considered to be safe is subject to a range of perspectives and currently there is no consistent or coherent framework to follow. This paper will explore the requirements of the current standards available both nationally and internationally, many of which result in conflicting requirements. Developments in Australia are leading to consideration of a coherent framework where risks and costs could be assessed. This would provide a consistent platform that could be applied across all sectors. This paper will provide an insight into these developments and the work that is proposed to be undertaken.	Lunch - 12.15pm
9.30am Session 7	Front-End Design - What are your Client's Requirements? David Lewis Senior Engineer, Formerly DL Power Services It is common for a client to have a sizable set of specifications for switchgear, transformers and cable installation. However, it is not so common to have a precursor to these specifications such as a "design criteria" document for a project. The outcome for the electrical system designers is often confusion which results in questioning and reworking which costs time and money. Instead of attempting to "work back" from standard specifications, a clear document on the design parameters should be utilised by all parties. This paper will set forth a typical set of design criteria in the form of a check list. David will show you how this check list can be used to ensure effective engineering design and will include some local industry examples.	1.15pm Session 10
10.45am Session 8	Morning Tea - 10.15am High Voltage Installations in the WA Mining Industry – Inspecting for Compliance OFFICIAL LAUNCH: "High Voltage Submission Policy" Andrew Martin Inspector of Mines/Electrical Group Coordinator - Department of Mines and Petroleum High Voltage Submissions have been part of WA electrical engineering practice since at least the 1960's. However the requirement for submission to the mines safety regulator has often caused significant confusion. So as part of the Reform and Development at Resources Safety initiative, industry consultation has been undertaken and an updated policy developed for implementation. This presentation will therefore coincide with the official launch and mandatory implementation of the finalised policy. Andrew will include a summary of the strategy, an AS 2067:2008 overview and will provide examples (without identifying individual sites) of compliance and non-compliance with AS 2067:2008 and of recent High Voltage Submissions which have required further work. Also explored will be possible areas of improvement for AS 2067:201X and the implications of departmental representation on Standards Australia committee EL-43 High Voltage Installations.	2.00pm Session 11 CASE STUDY
11.30am Session 9	Combining Standardisation with Innovation in High Voltage Infrastructure Design Terry Krieg Senior Executive Engineer - Power Networks, Sinclair Knight Merz The electricity industry is facing a number of challenges related to the growth in consumer demand and aging assets in many countries has required investment in new substations and infrastructure. This increased rate of project delivery has presented challenges for developers and suppliers in delivering electrical infrastructure projects faster, in isolated locations and at reasonable cost. Some organisations have adopted standardised designs to reduce design time and maximise the productivity of design teams. One of the criticisms of using standardised designs is that the approach may stifle design creativity and innovation. This presentation discusses the approach used by one utility to implement standardised design as a case study.	3.15pm Session 12
		4.00pm Session 13
		Afternoon Tea - 2.45pm
		3.15pm Session 12
		4.00pm Session 13
		Closing - 4.45pm

