Presented by Crina Costan - Convener

Brisbane – 21/11/2019

B3 Substations and

electrical installations



SC B3 Overview

Our Mission

 SC B3 aims to facilitate and promote the progress of engineering and exchange of information and knowledge in the field of substations and electrical installations. SC B3 acts to add value to this information and knowledge by means of synthesizing state-of-the-art practices, developing recommendations and providing best practice.

Scope SC B3

- The activities cover the design, construction, maintenance and ongoing management of substations and the electrical installation in power stations excluding generators.
- SC B3 serves a wide range of target groups in the Electric Power Industry whose needs include the technical, economic, environmental and social aspects in varying degrees.
- Major objectives include increased reliability and availability, cost effective engineering solutions, managed environmental impact, effective asset management and the adoption of appropriate technological advances in equipment and systems to achieve these objectives.



2019 Chengdu Symposium

CIGRE Symposium - CHENGDU, CHINA- 21-26 SEPTEMBER 2019

SC B3 POPULAR REPORT 2019 ANNUAL MEETING & SYMPOSIUM

PERRY TONKING (AU) Study Committee B3 – Substations and electrical installations





Chengdu Event Summary

Symposium and Annual Meeting SC B3

- 6 Study Committees B3, B5, C1, C3, C6, D2 (Led by B3 and C6);
- 193 abstracts submitted;
- 72 presented papers from 19 countries;
- 336 registered delegates;
- 15 oral sessions;
- 8 tutorials;
- Various workgroup meetings;
- 3 SC annual meetings (B3, C1 and C6); and
- Launch of the Chinese Translated Substation Green Book.

Thanks to our Hosts:

- State Grid Sichuan Electric Power Company;
- Sichuan University; and
- Sichuan Energy Internet Research Institute of Tsinghua University.

and the Sponsors:

- CIGRE;
- CIGRE Chinese National Committee; and
- Chinese Society for Electrical Engineering.









B3 – Highlights / Awards

- Launch of the Substations Green Book Chinese Version:
 - Dr. Jianbin Fan (CN), Terry Krieg (AU) and Koji Kowakita (JP).

• SCB3 Annual Awards:



- Mark Osborne (GB):
 - WG member: B3.11, B3.26, B3.36; Editor: TB740;
 - Substation Greenbook leader of part I "Future developments";
 - B3 AA1 Area Advisor (2007 present);
 - SAG member (2007 present);
 - Special reporter Paris Session (2014 present).



- John Nixon (US):
 - WG member: B3.21, B3.23, B3.31, B3.32, B3.38, B3.46, B3.53 (2006 present);
 - WG secretary: B3.31, B3.46;
 - Substation Greenbook leader of part B "Air Insulated Substations", chapter 12 "Specification and selection of main components for Air Insulated Substations";
 - Workshop chair at 2018 CIGRE Paris Session.





B3 Current and Future Meetings and Events

AP. B3 Substation Conference – Hunter Valley Nov-Dec 2019

Chairing IEEE Power and Energy Society in Victoria

Contribution to IEEE standards

Future B3 meetings:

- 2019 Symposium in Chengdu, China with C6; and also B5, C1, C3, and D2
- 2021 Symposium in Bucharest, Romania with A2
- 2023 New Delhi, India or Cairns, Australia?

Other Future events:

- IEC Conference on UHV AC/DC Trends Hakodate, Japan April 23-26, 2019
- Conference on Condition Monitoring Bucharest, Romania Sept 7-13, 2019



B3 Deliverables

B3 has 26 active WG's, 3 recent Technical Brochures, with the Substation Green Book now published and available for sale or download:

- ✓ TB 723 "SF₆ Measurement Guide" WG 40
- ✓ TB 734 "Management of Risk in Substations " WG 38
- ✓ TB 740 "Contemporary Design of Low Cost Substations in Developing Countries" WG 43





AP.B3 Substations 2019 Conference

1 Building substations for a sustainable green grid:

- Evolution of design, operations and maintenance skills with the connection of renewables to existing infrastructure
- Environmental, safety and fire protection changes with the connection of renewables to existing infrastructure
- Integration of renewables and storage technologies to existing substations challenges and opportunities
- 2. Challenges and opportunities of substation digitalisation:
- Transition from traditional substation design to digitalised substation
- Substation digitalisation contribution to increased substation resilience
- Digital information storage platforms and usage
- 3. Managing ageing substation assets in an era of digital substations:
- Integration of new technologies (hardware and software) into existing substations
- Making economic and risk-based decisions supporting asset management
- Experience with life extension methods in substations



AP.B3 Substations 2019 Conference

ATC Seminar 2019

SUBSTATIONS 2019



Renewables and digitalisation driving future direction

Hobart Tasmania, 7 - 8 November 2019

Conference Registration 0745 - 0830 Welcome & Introduction to Conference. 0830 - 0843 Welcome from Bess Clark, General Manager Project Marinus, TasNetworks 0845 - 0850 Welcome from Steve Davy, Chief Executive Officer, Hydro Tasmania 0850 - 0853 Introduction to Guest Speaker 0855 - 0900 Key Note Address: Hon. Guy Barnett - Minister for Primary Industries & Water, 0900 - 0920 Key Note Address: Grid Collection Substations Anurag Gupta GHD 0920 - 0940 Integrating Synchronous Condensers into Renewable Generator and Grid Peter Berry CPP 0940 - 1000 Connecting Renewable Generation Sources – Now a Network Issue George Bergholcs ElectraNet 1000 - 1021 Questions and Answers 1020 – 103 Morning Tea	-			
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Modernising Substation Delivery through the use of BIM John Fallow Beca (NZ) 1520 - 153 Questions and Answers 1535 - 154 Afternoon Tea 1540 - 155 Performance and Operational Experiences of High Voltage GIS with clean air insulation and digital features Chris Gonzalez Siemens 1550 - 161 Point on Wave Switching of Power Transformers Alan Crombie UGL 1610 - 163 End of Life Strategies for Substation Gantry Steelwork and Foundations Evan Lamplough TransGrid 1630 - 165 Developments in the use of non-SF ₆ gases and gas mixtures for a more sustainable grid Terry Krieg Power Network Consulting 1650 - 171	Experiences with TransGrid's Journey to Substation Digitisation	Mark Jones	TransGrid	1440 - 150
Questions and Answers 1535 - 154 Afternoon Tea 1540 - 155 Performance and Operational Experiences of High Voltage GIS with clean air insulation and digital features Chris Gonzalez Siemens 1550 - 161 Point on Wave Switching of Power Transformers Alan Crombie UGL 1610 - 163 End of Life Strategies for Substation Gantry Steelwork and Foundations Evan Lamplough TransGrid 1630 - 165 Developments in the use of non-SF ₆ gases and gas mixtures for a more sustainable grid Terry Krieg Power Network Consulting 1650 - 171	Earthing Systems and Substation Digitisation-issues, investigations and solutions	Stephen Palmer	Safearth	1500 - 152
Afternoon Tea 1540 - 155 Performance and Operational Experiences of High Voltage GIS with clean air insulation and digital features Chris Gonzalez Siemens 1550 - 161 Point on Wave Switching of Power Transformers Alan Crombie UGL 1610 - 163 End of Life Strategies for Substation Gantry Steelwork and Foundations Evan Lamplough TransGrid 1630 - 165 Developments in the use of non-SF ₈ gases and gas mixtures for a more Terry Krieg Power Network Consulting 1650 - 171	Modernising Substation Delivery through the use of BIM	John Fallow	Beca (NZ)	1520 - 153
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insulation and digital features 2500 - 161 Point on Wave Switching of Power Transformers Alan Crombie UGL 1610 - 163 End of Life Strategies for Substation Gantry Steelwork and Foundations Evan Lamplough TransGrid 1630 - 165 Developments in the use of non-SF ₈ gases and gas mixtures for a more Terry Krieg Power Network sustainable grid Consulting 1650 - 171	Afternoon Tea			1540 - 155
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Developments in the use of non-SF ₈ gases and gas mixtures for a more Terry Krieg Power Network 1650 - 171 sustainable grid	Point on Wave Switching of Power Transformers	Alan Crombie	UGL	1610 - 163
sustainable grid Terry Kneg Consulting 1650 - 1/1	End of Life Strategies for Substation Gantry Steelwork and Foundations	Evan Lamplough	TransGrid	1630 - 165
Questions and Answers 1710 - 172		Terry Krieg		1650 - 171
	Questions and Answers			1710 - 172



Cocktail Reception & Networking Function - Trade display area, Wrest Point Casino

1730 - 2030

AP.B3 Substations 2019 Conference







MEDIA RELEASE – TASNETWORKS SUPPORTS CIGRE SUBSTATION 2019 CONFERENCE

BY PROJECT MARINUS NOVEMBER 7TH, 2019

From Bess Clark, General Manager Project Marinus – TasNetworks

TasNetworks is very pleased to support the CIGRE Substations 2019 conference held at the iconic Wrest Point Casino in Hobart on November 7-8. CIGRE and its members around Australia, New Zealand, and the world, undertake important work in considering the technical and economic aspects of the end to end power system.

The conference gathers together experts in the industry to discuss solutions to address some of the challenges facing the rapidly transforming power system including the influx of variable renewable generation.

Bess Clark, General Manager of Project Marinus at TasNetworks, opened the conference, and spoke about the important relationship TasNetworks has with CIGRE.

Ms Clark demonstrated the evolution of the power system in Tasmania over the decades by looking at the Emu Bay Substation in Burnie, featured in a Advocate News clipping from 1939.



AP.B3 New WG Members

WG B3.52 Neutral Grounding Method Selection and Fault Handling for Substations in the Distribution Grid

- Bill Carman as Correspondent Member
- WG.B3.53 (new): Guidelines for fire risk assessment and mitigation in substations
 - Michael Verrier, Terry Lee as Members and Derek Perkins as Correspondent Member
- WG.B3.54 Earthing System Testing Methods
 - Stephen Palmer WG Convener
- WG B3.55 Design guidelines for substations connecting battery energy storage solutions (BESS)
 - Crina Costan: as Correspondent Member
- WG B3.56 Application of 3D Technologies in Substation Engineering Works
 - Todd Margitich: Member
- WG.B3.46: Guidelines for Safe Work Methods in Substations
 - Perry Tonking as Correspondent Member and Kerry Williams as Member



AP.B3 Panel Members

		Name	Company	
	1.	Alan Crombie	UGL	
2	2.	Alan Goodridge	Peracon	
1	3.	Andy McMahon	Transpower	
4	4.	Andreas Laubi	Jacobs	
-	5.	George Bergholcs	ElectraNet	
4	6.	Colin Crisafulli	Endeavour	
7	7.	Doug Ray	Vector	
8	8.	Mark Hibbert	Aurecon	
9	9.	Michael Verrier	TasNetworks	
	10. Ping S Wang		GE Grid	
	11.	Simon Hickey	Energy Queensland	
	12.	Stephen Palmer	Safearth	
	13.	Peregrine Tonking	Horizon Power	
1	14.	Terry Krieg	Powernetwork Consulting	
	15.	Chris Gonzalez	Siemens	
1	16.	Wu Hang	Aecom	
	17.	Jeremy Kearney	Entura	
	18.	Mark Pritchard	SA Power Networks	
	19.	Evan Lamplough	Transgrid	
	20.	Dasgupta Raj	NT Water & Power	
	21.	Malcolm Busby	WSP	
	22.	Anurag Gupta	GHD	
	23.	Mark Burns	Office of Technical Regulator	
2	24.	Marco Surace	Western Power	
2	25.	John Szmalko	Jacobs	
то	26.	Joseph Pinheiro	Powerlink	
	27.	Hao Tian	ABB	
	28.	Chris Grinter	AusNet	
2	29.	Crina-Miana Costan	TS Consulting	
(30.	Robert Scott	NGN - TasNetworks	

