

Presented by Crina Costan - Convener

Brisbane – 21/11/2019



cigre

For power system expertise

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



ATC Seminar 2019

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.

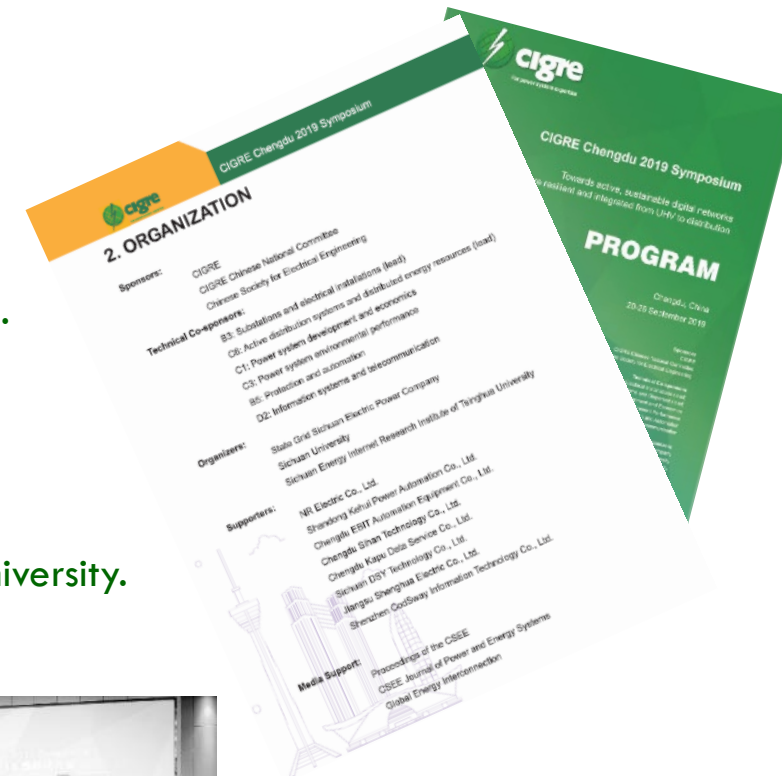


Thanks to our Hosts:

- 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

SUBSTATIONS 2019 <i>Renewables and digitalisation driving future direction</i> Hobart Tasmania, 7 - 8 November 2019			
DAY 1 – Thursday, 7 November 2019		Presenter	Company
Conference Registration			0745 - 0830
Welcome & Introduction to Conference.			0830 - 0845
Welcome from Bess Clark, General Manager Project Marinus, TasNetworks			0845 - 0850
Welcome from Steve Davy, Chief Executive Officer, Hydro Tasmania			0850 - 0855
Introduction to Guest Speaker			0855 - 0900
Key Note Address: Hon. Guy Barnett - Minister for Primary Industries & Water, Minister for Resources, Minister for Energy			0900 - 0920
Futuristic Networks: Grid Collection Substations	Anurag Gupta	GHD	0920 - 0940
Integrating Synchronous Condensers into Renewable Generator and Grid Substations	Peter Berry	CPP	0940 - 1000
Connecting Renewable Generation Sources – Now a Network Issue	George Bergholcs	ElectraNet	1000 - 1020
Questions and Answers			1020 - 1030
Morning Tea			1030 - 1050
DERMS – The Future of DER Operation in Microgrids	Lee Ulich Perry Tonking	Horizon Power	1050 - 1110
Introduction to Seminars of Day 2			1110 - 1115
- Low Cost Substation Design Solutions (for Developing Countries)		Perry Tonking	CIGRE
- Current Interruption in Atmospheric Air ¹		David Peelo	IEEE
- Substation Earthing System Design Optimisation Through the Application of Quantified Risk Analysis (QRA)		Steve Palmer	Safearth
- Workshop – High Power, Grid Forming Inverters enabling tomorrow's high renewables NEM		Stephen Sproul	ABB
The possibilities of hydrogen technologies in direct network support applications	Mark Jackson	Mark G Jackson Consulting	1115 - 1135
Integration of a Large BESS to a Brownfield Substation	Dorin Costan	ElectraNet	1135 - 1155
Isolation techniques and guarding against the risks of back feeding	Faraz Mirzaagha	DNV GL	1155 - 1215
Questions and Answers			1215 - 1230
Lunch			1230 - 1300
Panel Discussion: Challenges Associated with the Connection of Renewables to Existing Substations	John Szmalko	Jacobs Engineering	1300 - 1400
Paradigm Shift in Power Transformer Asset Management by "Digitizing" & "Digitalizing" Temperature Measurements	Bhaba Das, Naser Hashemnia	ABB	1400 - 1420
Managing technical and non-technical challenges in the transition to a digitalised substation	Lara Kruk	Jacobs Engineering	1420 - 1440
Experiences with TransGrid's Journey to Substation Digitisation	Mark Jones	TransGrid	1440 - 1500
Earthing Systems and Substation Digitisation-issues, investigations and solutions	Stephen Palmer	Safearth	1500 - 1520
Modernising Substation Delivery through the use of BIM	John Fallow	Beca (NZ)	1520 - 1535
Questions and Answers			1535 - 1540
Afternoon Tea			1540 - 1550
Performance and Operational Experiences of High Voltage GIS with clean air insulation and digital features	Chris Gonzalez	Siemens	1550 - 1610
Point on Wave Switching of Power Transformers	Alan Crombie	UGL	1610 - 1630
End of Life Strategies for Substation Gantry Steelwork and Foundations	Evan Lamplough	TransGrid	1630 - 1650
Developments in the use of non-SF ₆ gases and gas mixtures for a more sustainable grid	Terry Krieg	Power Network Consulting	1650 - 1710
Questions and Answers			1710 - 1720
Close of Day 1			
Cocktail Reception & Networking Function – Trade display area, Wrest Point Casino			1730 - 2030

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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.

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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.	Alan Goodridge	Peracon
3.	Andy McMahon	Transpower
4.	Andreas Laubi	Jacobs
5.	George Bergholcs	ElectraNet
6.	Colin Crisafulli	Endeavour
7.	Doug Ray	Vector
8.	Mark Hibbert	Aurecon
9.	Michael Verrier	TasNetworks
10.	Ping S Wang	GE Grid
11.	Simon Hickey	Energy Queensland
12.	Stephen Palmer	Safearth
13.	Peregrine Tonking	Horizon Power
14.	Terry Krieg	Powernetwork Consulting
15.	Chris Gonzalez	Siemens
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
24.	Marco Surace	Western Power
25.	John Szmalko	Jacobs
26.	Joseph Pinheiro	Powerlink
27.	Hao Tian	ABB
28.	Chris Grinter	AusNet
29.	Crina-Miana Costan	TS Consulting
30.	Robert Scott	NGN - TasNetworks

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