

Report to the CIGRE Australian Technical Committee 2023

Australian Panel AU C6 Activities

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cigre

For power system expertise

C6

Active distribution
systems and distributed
energy resources



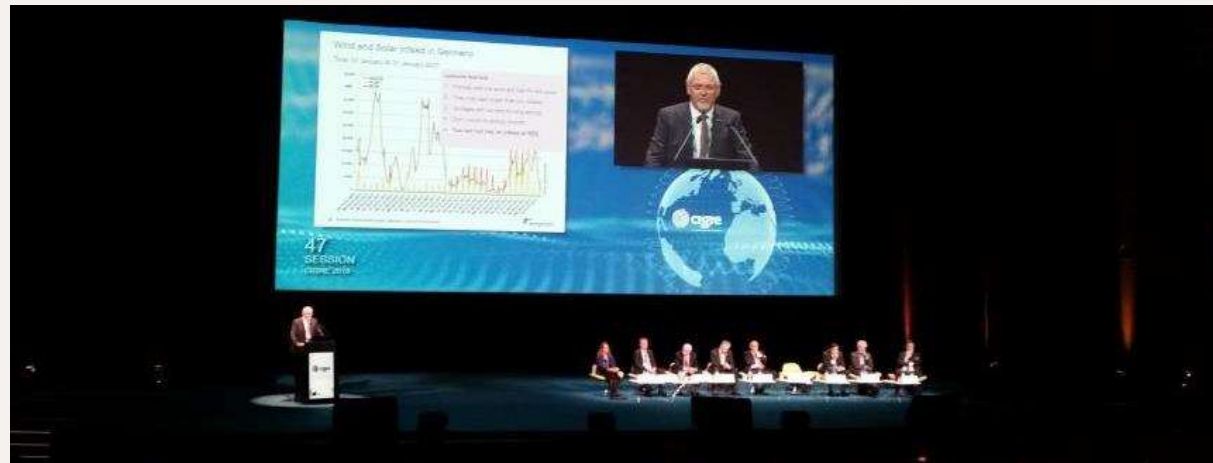
SC C6 Overview

Principal Areas of Interest

- Assessment of the technical impacts which a more widespread adoption of DER could impose on the whole energy system and of enabling technologies and innovative solutions for DER integration in active distribution networks

Main Areas of Attention

- Enabling technologies
- Innovative solutions for DER
- Storage technologies
- New approaches to configure distribution systems
- Consumer integration & empowerment
- Smart cities
- Rural electrification



2023 SC C6 International Activities

Muscat Symposium - March 2023

- C6 and B4 Lead Study Committees
- 473 Participants from 25 countries
- 12 SC C6 Papers presented
- Four NGN papers presented
- C6 Tutorial on *Rural Electrification*



ATC Seminar 2023

2023 SC C6 International Activities

Cairns Symposium - September 2023

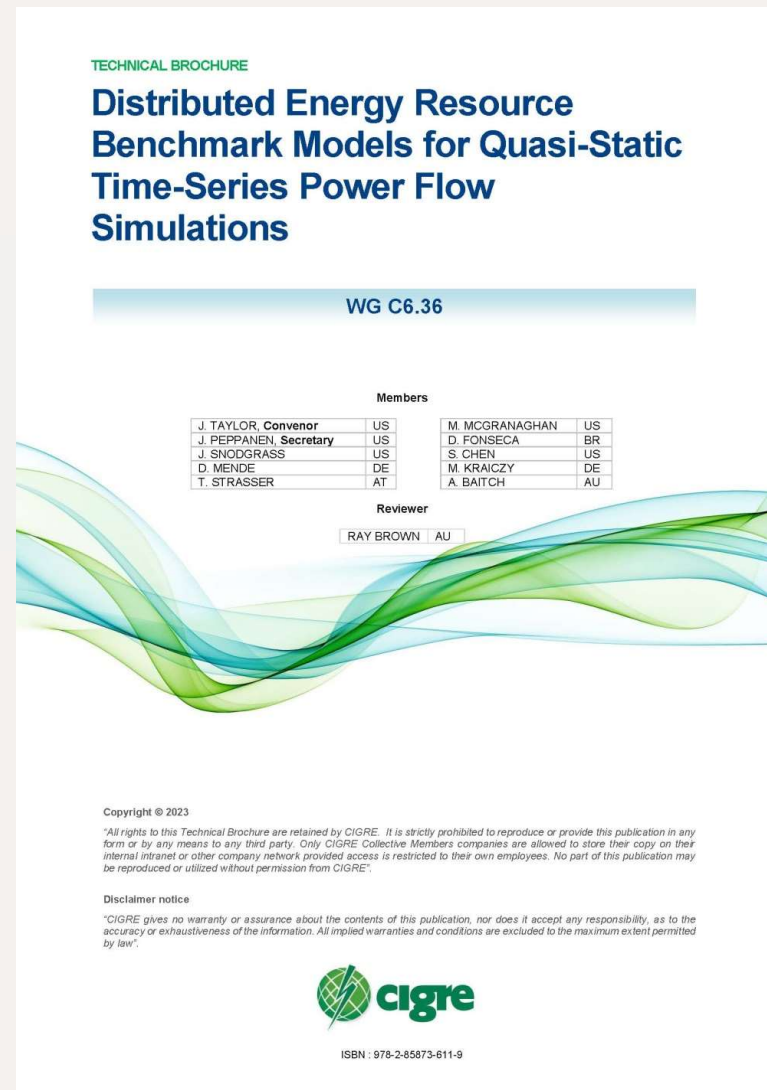
- **CIDER 2023**
- **C6 Papers**
 - 11 papers presented in CIDER (Monday & Tuesday)
 - 19 papers presented in C6 Session (Wednesday)
 - Session chairs and special reporters from Australia
 - Alex Baitch
 - Jenny Gannon
 - Sera Tarpis
- **SC C6 Meeting (Thursday)**



2023 SC C6 Deliverables

Technical Brochures

- TB 906 - Distributed Energy Resource Benchmark Models for Quasi-Static Time-Series Power Flow Simulations



2023 SC C6 International Activities

New Working Groups

- **C6.46 Energy Efficiency in Distribution Systems**
- **C6.47 DSO-Customer Interfaces for Efficient System Operation**

2023 AU C6 Activities - CIDER 2023

Conference on Integration of Distributed Energy Resources

- 4 & 5 September 2023
- Cairns Convention Centre
- In conjunction with CIGRE Cairns 2023 Symposium
- Keynote - Peter Price (EQL)
- Two extended presentations - Jenny Riesz (AEMO) and Jenny Gannon (EQL)
- 30 General presentations on wide range of topics
- 11 SC C6 papers from Symposium presented in CIDER
- NGN panel
- Best ever attendance



Themes and Issues

Dynamic Operating Envelopes

Distribution State Estimation

Inverter Performance & Communications

Community Energy Storage

Minimum Loads and Curtailment

Customer Engagement

Grid Shrinkage



Themes and Issues

Integration of Small-scale DER in Australia

- **Many previous concerns have not eventuated**
 - Power quality
 - Number tap-changes at zone substation transformers
 - Unintentional islanding
- **Voltage in LV networks remain an issue**
 - CIGRE AU C6 mini-survey on voltage issues by Peter Kilby
- **Increased range of tools to deal with voltage issues**
 - LV STATCOMs
 - Voltage-regulating distribution transformers (VRDT)
 - Dynamic voltage management system
 - Response modes of inverters - P(U), Q(U)
- **Standardisation of inverter settings**
- **Tension between anti-islanding protection and system performance**
 - ROCOF and vector shift, under-frequency and under-voltage