

Report to the CIGRE Australian Technical Council

Study Committee SC A2 Transformers and Reactors, and Australian Panel AU A2 Activities



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AU A2 Report 2025
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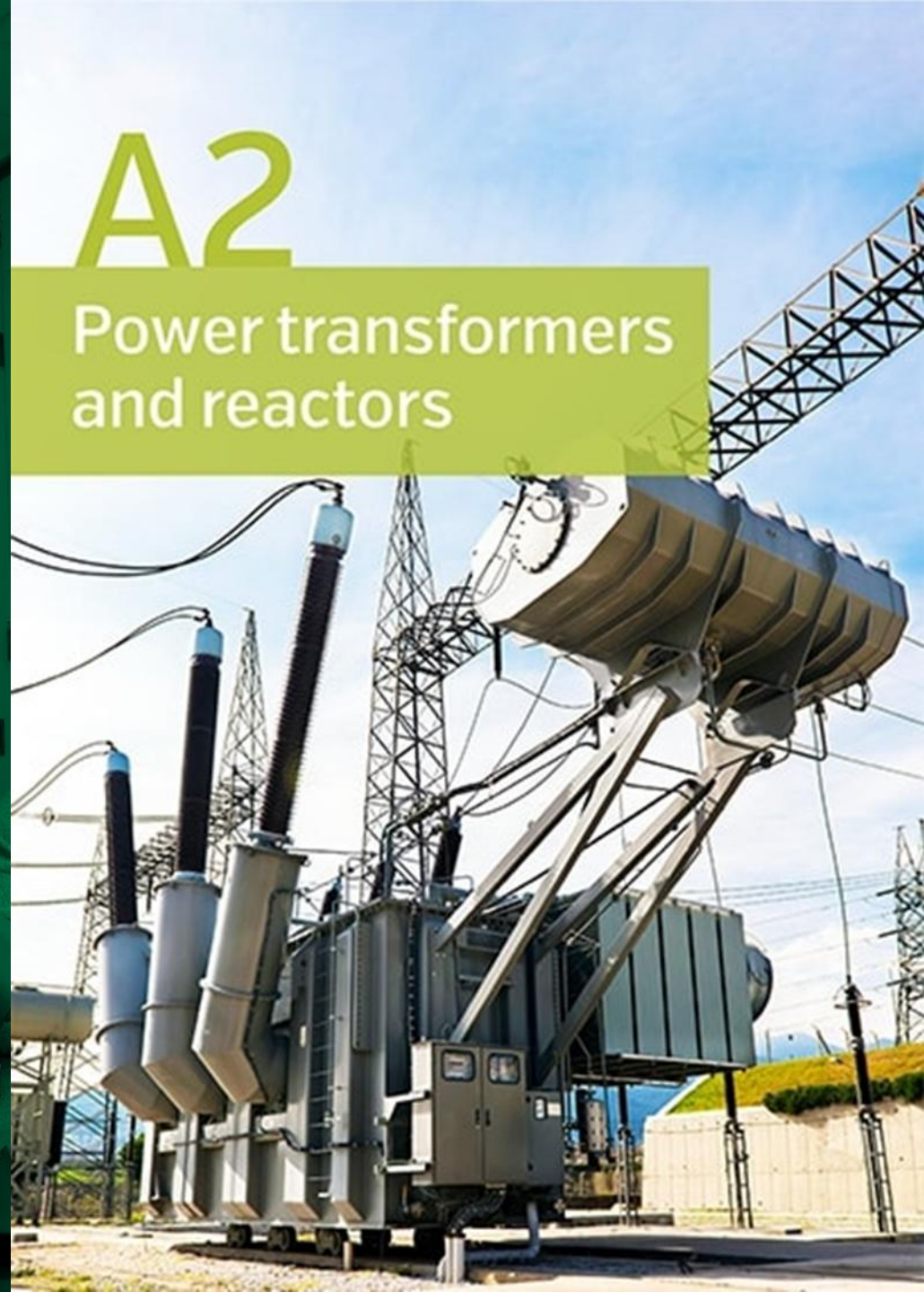


cigre

For power system expertise

A2

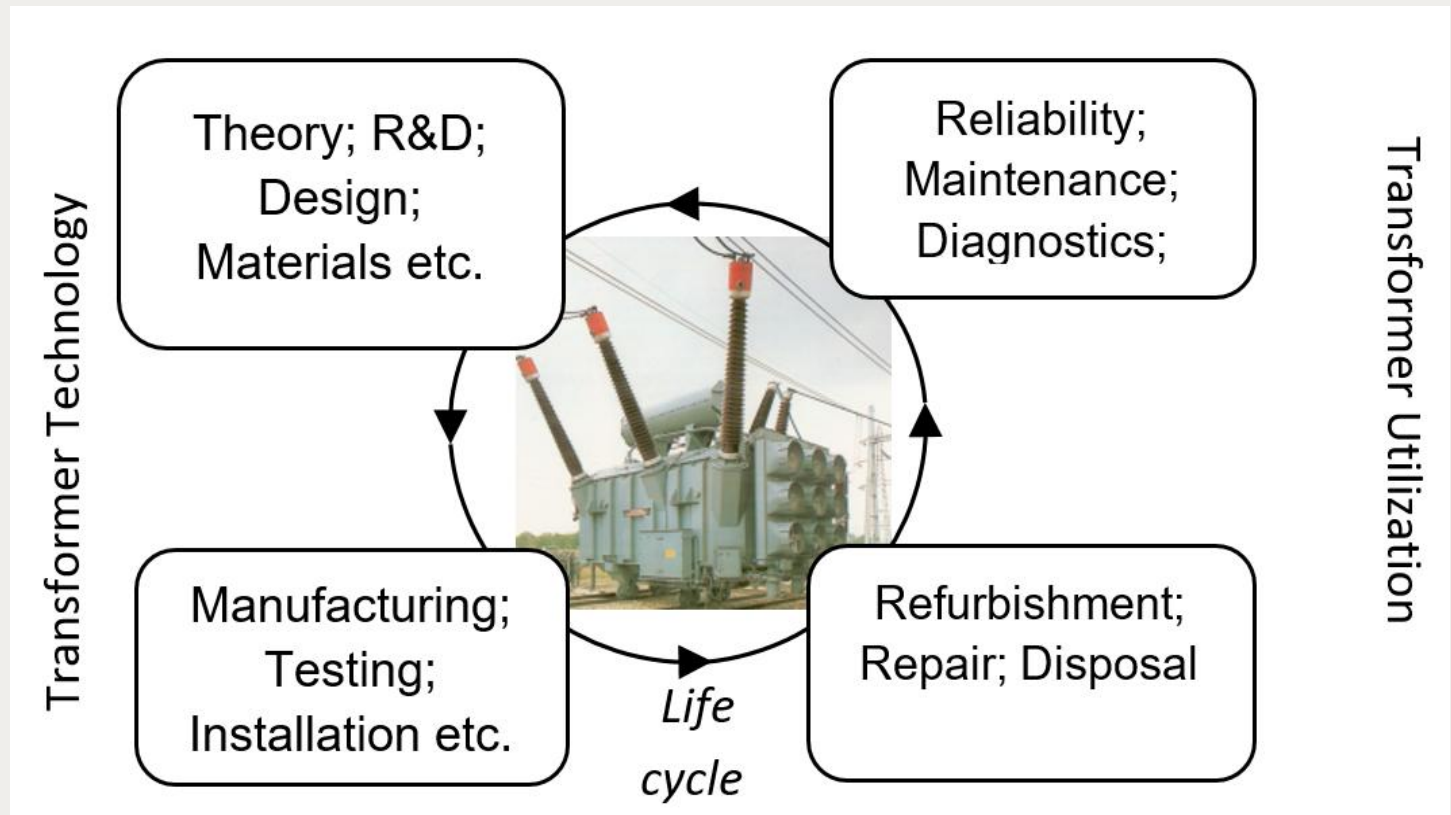
Power transformers
and reactors



SC A2 OVERVIEW

- Power **transformers**, including, industrial, DC converter, phase-shifting and distributed energy resource (DER) transformers
- **Reactors**, including shunt, series, saturated and smoothing;
- All transformer **components**, including **bushings, tap-changers**, and accessories.

Specific Activities of SC A2



Goals of the Transformers Study Committee



To monitor current trends in transformer technology



To facilitate the integration of transformers in networks and in the environment



To maintain its leading position in the field of transformers by providing unbiased and neutral information on all essential transformer aspects



To be recognized by the industry as a leading and reliable partner with competence in all engineering issues related to power transformers



To encourage young experts to participate in the work of Study Committee A2



To encourage the participation of experts from emerging market and developing countries in the activities of Study Committee A2

Working Groups

Technical Brochure Coming soon



Site Installation &
Pre-
commissioning

Dynamic Thermal
Behaviour

Impulse Testing

Insulating Fluids

Digital Twin

Failure Survey of
Lower Voltage
Generator Step Up
Tx

Breathing Systems

Online DGA

Life Cycle
Assessment (LCA

Insulating liquids
for bushings,
OLTC &
accessories

Retrofilling

Dynamic
Behaviour of
Winding Insulating
Materials

Non-metallic solid
materials and
compatibility with
insulating liquids

Digitalisation

Online Moisture
Assessment for
Ageing

KEY FOCUS AREAS

Nominate now!

For more info:
a2.cigre.org



WG number	Title
A2.75	Tap Changer Specification, Condition Assessment, Testing and Maintenance Guidelines
A2.76	Power transformer passive protection against internal arcing faults
A2/C4/D1.77	Design of transformers for very fast transient overvoltages
A2.78	Bushing Diagnostics Off-Line Testing and On-Line Monitoring Systems
A2/C3.79	Power Transformers and Reactors Sound Levels On Site
A2.80	Guide to Transformer Supplier Qualification and Development
A2.81	Guide for power transformer design review

- Surveys
 - WGA2.68 Failure survey of lower voltage GSUs

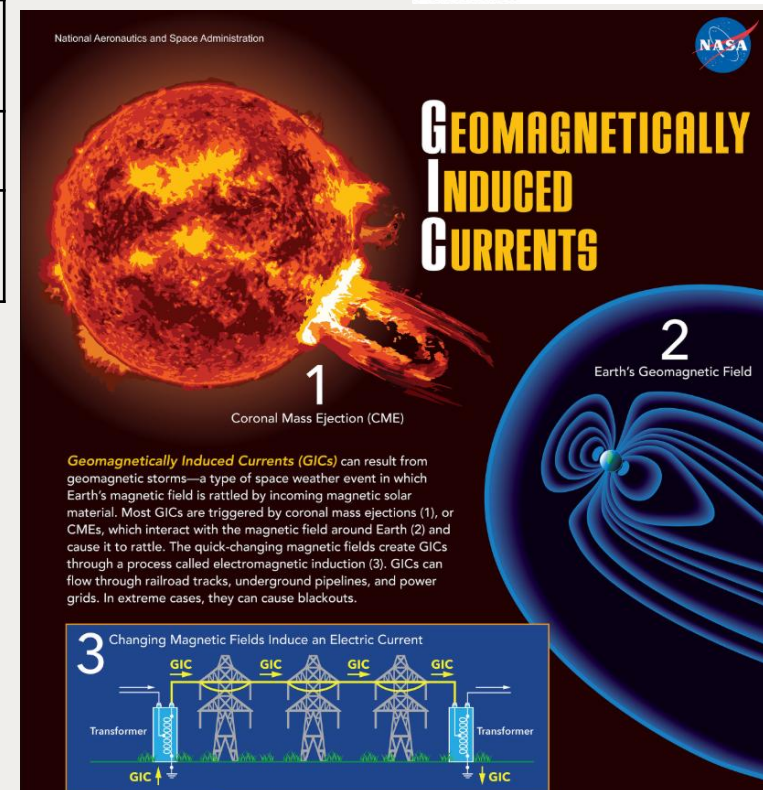
If you or your organisation have a topic, please let us know.

PUBLICATIONS

Download at
e-cigre.org

WG	Brochure	Publication
A2.54	TB 940 Power Transformer Audible Sound Requirements	September 2024
A2.57	TB 944 Effect of DC Bias on Power Transformers	November 2024
A2.69	TB 962 Guide for Transformer Maintenance	May 2025
A2.56	TB 971 Transformer Efficiency	September 2025

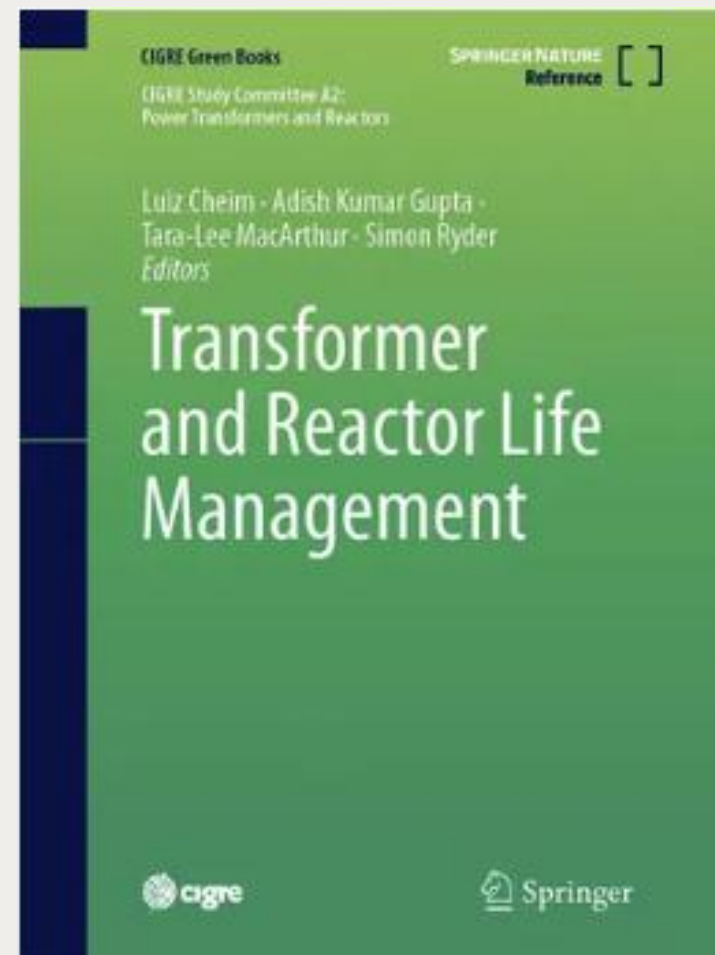
- Tutorials/Webinars:
 - **DC Bias** => May 2025 webinar and Oct 2025 Seoul Colloquium, Dejan Susa
 - **Transformer Maintenance** => Sep 2025 Montreal Symposium, Claude Rajotte



Source: NASA website

GREEN BOOK

- Comprehensive guide to life management, from procurement to disposal
 - Operation, maintenance, testing, diagnosing and resolving problems, repair
 - Covers oil, ester, silicone, gas-insulated and dry-type



Future Topics



PREFERENTIAL SUBJECTS

Major challenges to the power transformer industry

- Impact of **ageing fleet**, new operating requirements and climate changes on the design, maintenance and reliability.
- Strategies to mitigate **supply chain disruptions** and skilled labor shortages.
- **Sustainability** (with C3) and **Life Management**: Transformer economics, Life Cycle Costing, Asset management practices, Eco-design. **Life Cycle Assessment**, circular economy. etc

Power transformer digitalisation journey

- User experiences, challenges and solutions with transformer data management: **data collection, processing, exchange** with different stakeholders/systems, confidentiality, and security.
- Innovative **digital solutions** for monitoring, diagnostics, modelling, designing, manufacturing, testing, maintenance and operation of transformers.

Failure prevention, detection and investigation

- **Detailed case histories** of failures including examples such as component issues, short-circuits, moisture, dielectric breakdowns, paper degradation, material compatibility problems, etc.
- **Guidelines** for conducting investigations: **Root Cause Analysis** (RCA) including testing and troubleshooting procedures.
- Predictive maintenance: Best practices for **monitoring, diagnostics, and prognostics**.

Australian A2 Panel Meeting 2025

- Adelaide – September 1st
 - 33 members
- Presentations & discussion topics
 - Effect of renewables on transformer performance
 - Health condition assessment using data analytics - brochure
 - Silver sulphide
 - Renewable projects
 - Global equipment supply & lead times



LOCAL EVENTS 2025

- Transformer workshop – Prof. Stefan Tenbohlen
 - Analysis of AC transformer reliability (Tutorial of Cigre WG A2.62 which was given this year in Paris)
 - Interpretation of FRA measurements
 - Online partial discharge measurement
- Joint AU/NZ webinar – hosted by NGN



Challenges and solutions for connecting solar farms to the utility network

Speakers (3)



Gurjeet Malhi
Design & Engineering Manager



Dan Martin
Senior Engineer – Zone Substati...



Dr. Bhaba Das
Regional Manager (APAC)

- Harmonic headroom limits in allocations to individual solar farms
- Planning / rating capacity limits
- Legacy assets and new stresses
- Monitoring of solar GSU transformers

A2 Study Committee Meeting 2025 & A2/D1 Seoul Colloquium



- Joint A2/D1 Colloquium in Seoul, South Korea – 27th Oct to 1st Nov
 - 4 tutorials
 - 36 presentations & 52 posters
 - Technical tour – KEPCO Gochang Power Testing Centre
 - 4 Australian contributions
- Annual study committee meeting





Bound together!
By our history

- **1904 – International Electrical Congress in St. Louis**, there it was recommended
 - "that steps should be taken to secure the cooperation of the technical societies of the world by the appointment of a representative Commission to consider the question of standardization of the Nomenclature and Ratings of Electrical Apparatus and Machinery"
- **1906 – IEC founded in London**
 - Lord Kelvin, was elected the first President of the Commission and Charles Le Maistre became acting Secretary, a position Le Maistre retained until his death in 1953
- **1921 – CIGRE founded in Paris on initiative of IEC**
 - IEC President Mailloux and Secretary Le Maistre together with the Secretary General of French Union des Syndicats de l'Électricité (USE), Jean Tribot Laspiere organized an International Conference for electrical networks, held Nov 21-26 in Paris.
 - IEC recommended the Conference to deal with the issue of transmission of high voltages and should have a scientific-technical and useful character. At that time, the highest voltage in the world, was 110 kV and only some experiments took place with 220 kV.

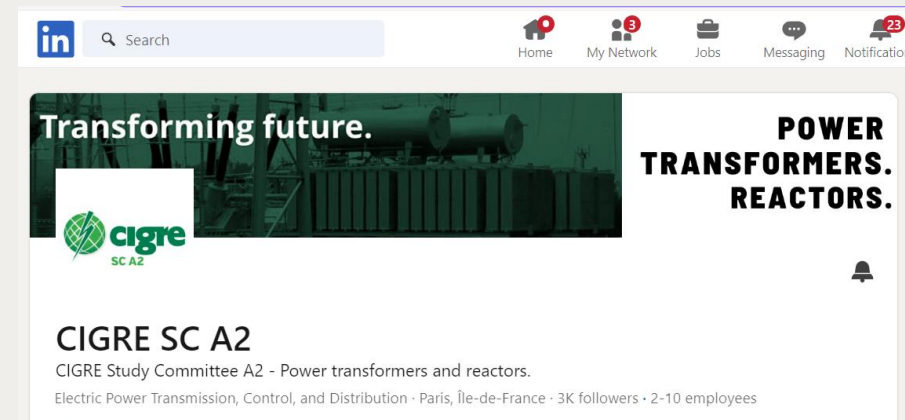
UPCOMING EVENTS

2026

- Transformer Workshop – 2 days, Melbourne, date TBC
- 7th ICTRAM – May 6th to 9th, Cavtat, Croatia
- Paris Session - Aug 23rd to 29th

2027

- Symposium – Apr 26th to 30th, Heidelberg, Germany
- Symposium – Nov 22nd to 26, Bangkok, Thailand



LinkedIn Pages:

CIGRE Australia

CIGRE SC A2

THANK YOU

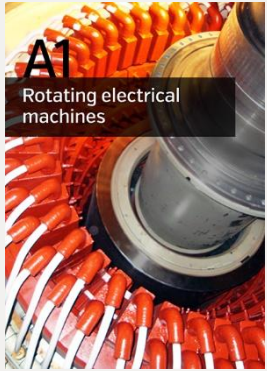


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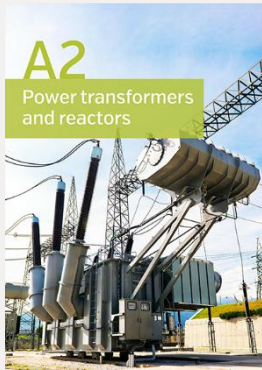
For power system expertise

APPENDIX

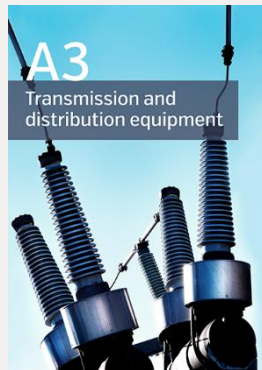
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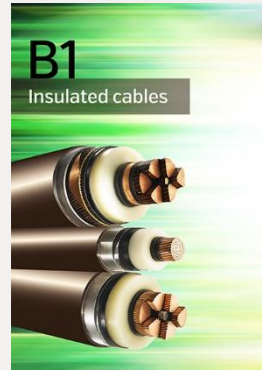
A1
Rotating electrical machines



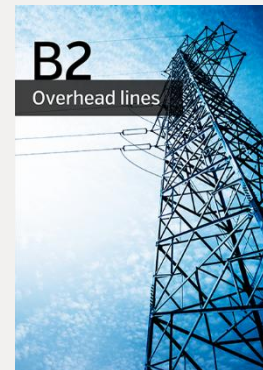
A2
Power transformers and reactors



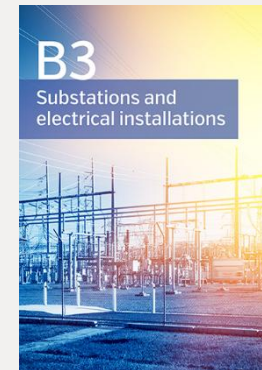
A3
Transmission and distribution equipment



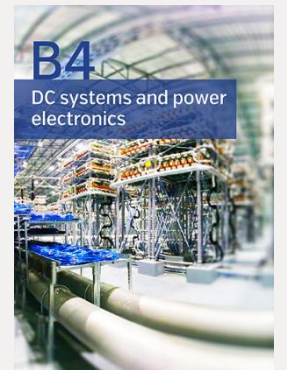
B1
Insulated cables



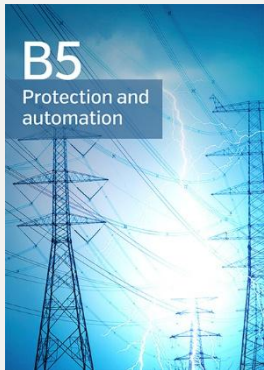
B2
Overhead lines



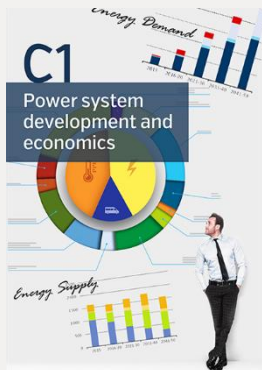
B3
Substations and electrical installations



B4
DC systems and power electronics



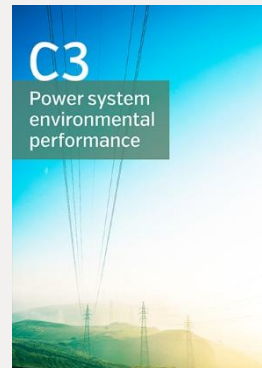
B5
Protection and automation



C1
Power system development and economics



C2
Power system operation and control



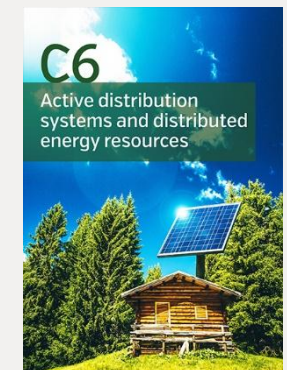
C3
Power system environmental performance



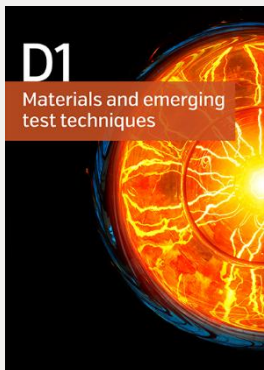
C4
Power system technical performance



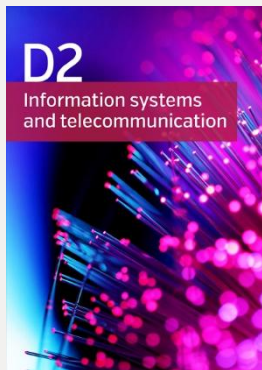
C5
Electricity markets and regulation



C6
Active distribution systems and distributed energy resources



D1
Materials and emerging test techniques



D2
Information systems and telecommunication