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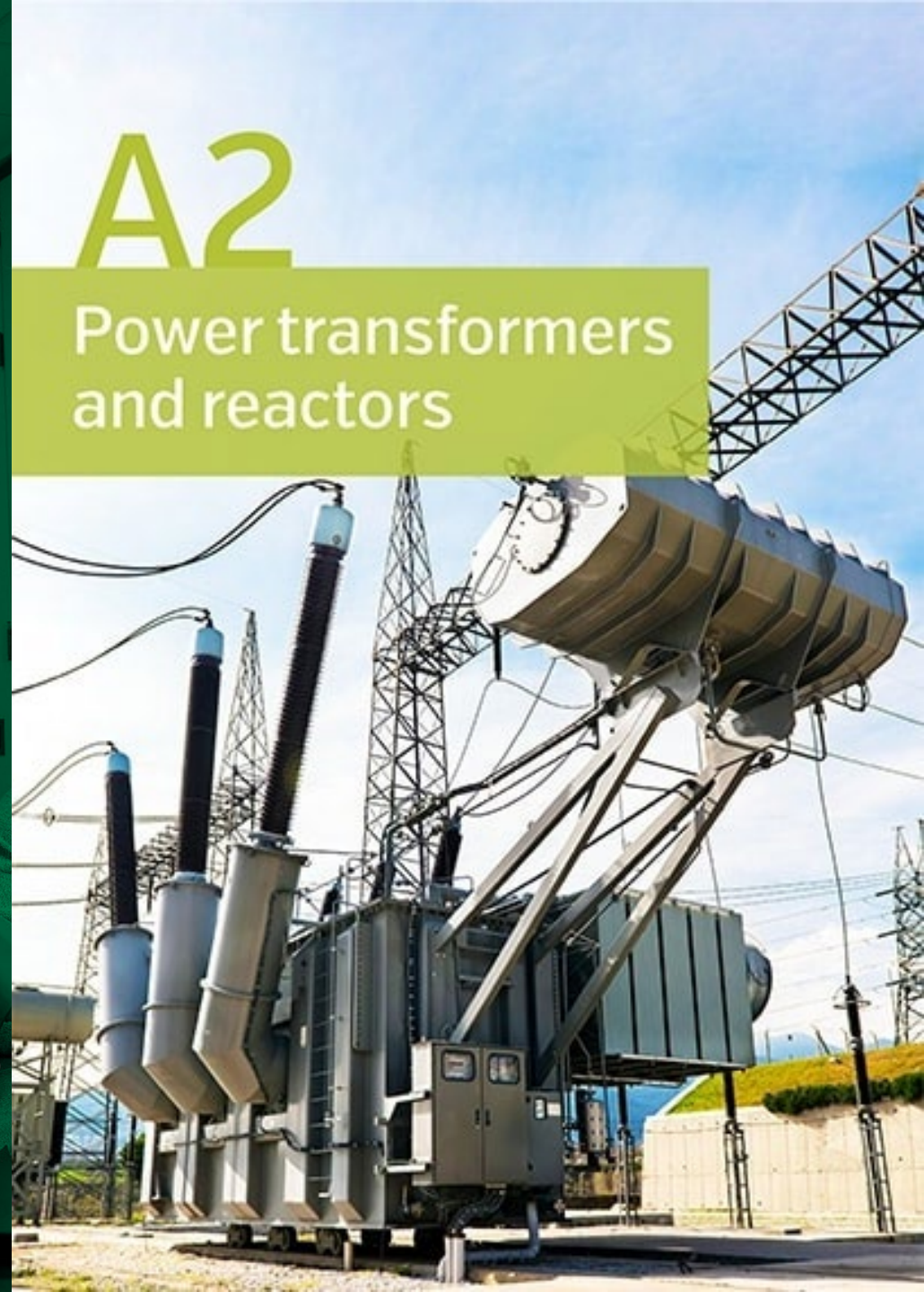


cigre

For power system expertise

A2

Power transformers and reactors



SC A2 Overview

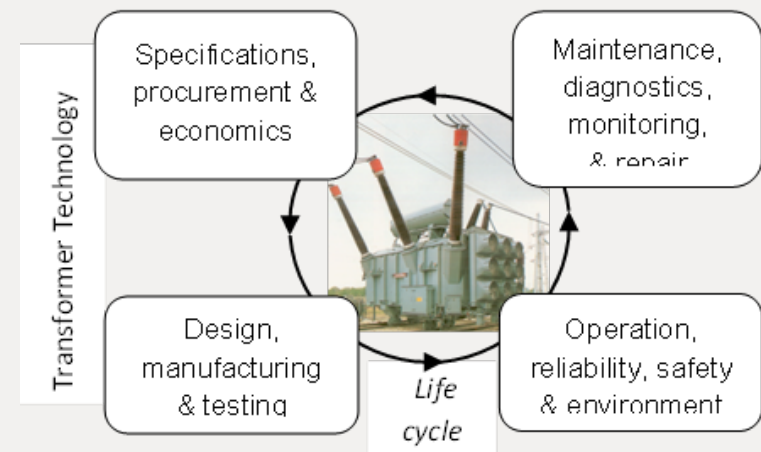
Study Committee Scope

- All kinds of power transformers, including HVDC transformer converter and phase-shifting transformers;
- All kinds of reactors, including shunt reactors, series reactors, and HVDC smoothing reactors;
- All transformer components, including bushings, tapchangers, and other transformer accessories.

Specific Activities of SC A2 :

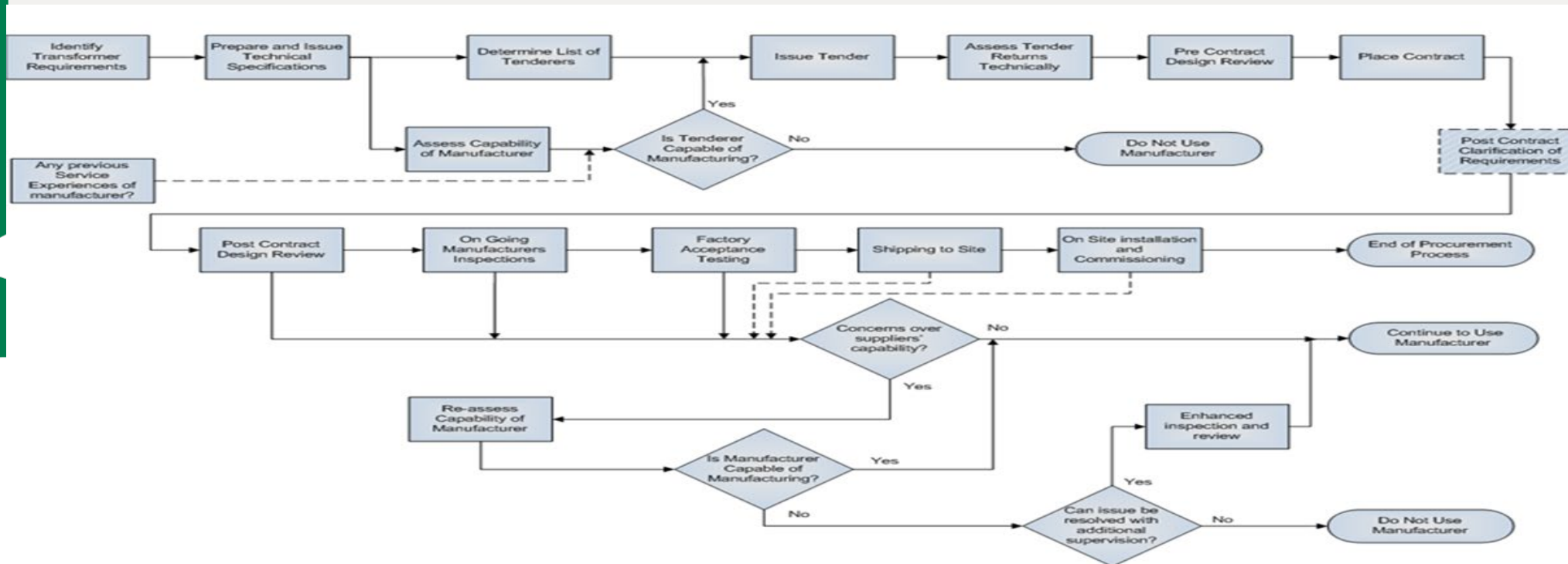
Covers the life cycle of a transformer in 4 key domains:

- Specification, procurement and economics
- Design, manufacturing and testing
- Operation, reliability, safety and environmental impact
- Maintenance, diagnostics, monitoring and repair



SC A2 Green Book in development

- SC A2 has formed new Advisory Group - Green Book on Transformer Procurement
 - The work would amalgamate and develop the existing material used in the trilogy TBs 528-529-530 for procurement process
 - Add the new work of TB 673 Transportation and WG A2.58 Installation, Pre-commissioning & Trial Operation



2019 AU A2 Activities

Cigre Event – 1 Day Workshop

“Transformers – with a Focus on Tapchangers – an interactive workshop” was held on 3 April

- 11 speakers (3 from transformer OEM, 1 test equipment vendor, 4 from OLTC OEM or service, 1 Aust. university, and 3 int’l experts on OLTC, testing and corrosive sulphur)
- 69 delegates
- Expert Panel
- High relevance to Aust on tapchanger failure. Risks and avoidance



Relevance to Australia

- SC A2 has produced a long series of Technical Brochures with very high relevance to the Australian electrical industry.
- TB 445 Guide for transformer maintenance has one of the highest hits on the e-cigre site for TB downloads
- 735 Post-mortem Analysis
- 673 Guide on transformer transportation
- 655 Technology and utilization of oil-immersed shunt reactors
- 642 Transformer reliability survey
- 630 Guide on Transformer intelligent condition monitoring
- 625 Copper sulphide long term mitigation and risk assessment
- 537 Guide for transformer fire safety practices
- 528/529/530 Guides to assess the capability of a transformer manufacturer, design review for power transformers, and preparation of specifications for power transformers

ATC Seminar 2019

There are some major changes coming from IEEE, IEC and CIGRE guides and standards on the interpretation of DGA.

Active Australian participation in A2 WGs – either as regular members, corresponding members or conveners




NGN interest and involvement too

2019 Deliverables

Technical Brochures

- TB 755 – Transformer Bushing Reliability
- TB 761 – Condition Assessment of Power Transformers
- TB 771 – Advances in DGA Interpretation
- TB 783 – DGA Monitoring Systems
- TB 779 – Field Experience with Transformer Solid Insulation Markers

ATC Seminar 2019

TUTORIAL WG A2.49 Transformer Condition Assessment, CIGRE TB 761

- FIVE STEPS REQUIRED TO DEVELOP A TRANSFORMER ASSESSMENT INDEX (TAI):
- Step 1 – Determine the purpose
- Step 2 – Identify the failure modes of the Transformer Assessment Score and Index
- Step 3 – Determine how each failure mode will be assessed
- Step 4 – Design a calibrated system (Scoring Matrix)
- Step 5 – Calculate a TAI score

Diagnostic indication → Failure Mode → Assessment Index

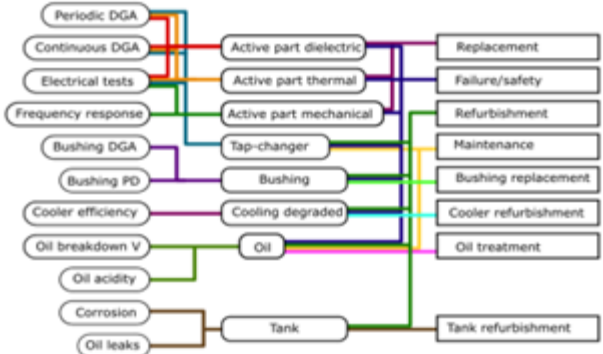


Figure 3 – Relationship of Failure Modes to Assessment Indices and Diagnostic tools. (TB 761, Figure 3-1)

IMPORTANT TO DETERMINE THE PURPOSE OF THE TAI

- Identify the candidates that are in poor condition that **cannot** be easily repaired as these are candidates for replacement.
- To identify candidates in poor condition that **can** be easily repaired or major repair, or refurbishment.

5th International Colloquium Transformer Research and Asset Management
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