

DISCUSSION MEETING SUMMARY

Study Committee A2

Power Transformers and Reactors

25/08/2026

Chair: Pascal MUELLER

Secretary: Marc FOATA

Special Reporters:

PS1, Major challenges to the power transformer industry, Logan ROLLES (US), Khayakazi DIOKA (ZA)

PS2, The transformer digitalization journey, Pedro QUINTANILLA (ES), Deo Nath JAH (IN)

PS3, Failure prevention, detection and investigation, Caleb WALKER (UK), Ralf SCHNEIDER (CH)

1. INTRODUCTION

The Discussion Group Meeting was chaired by the Study Committee Chairperson, Pascal Mueller, with Special Reporters rotating with the preferential subjects and Marc Foata as SC A2 Secretary.



The Chair opened the session by welcoming the audience and presenting them the goals and status of the work of Study Committee A2 Power Transformers and Reactors.

The audience were informed of the format of the General Discussion Meetings that is based on questions from the Special Reporter on the bases of papers for the 2026 Session. Each of the three sessions had an opening report by Special Reporter followed by the prepared contributions presented in 3-4 minute slots.

Spontaneous contributions from the audience where possible at the end of the sessions and was also enabled through use of the Sparkup application to allow questions to be asked and responded to on-line. The Sparkup application and questions were managed by Tara-lee Macarthur and Masayuki Habukawa.

2. RUNNING OF THE MEETING

Several common themes emerged throughout the day, including digital twins, AI, resilience to extreme weather, and the need for continued collaboration. Discussions also highlighted current gaps and the formation of new Working Groups and Task Forces to help the Study Committee and the transformer and reactive plant community prepare for future challenges and opportunities. These insights were captured in the daily summary by Safire Santos da Silva.

The Chair closed the session by thanking the audience for their contributions and presenting the awards given to Study Committee A2 in 2026.

3. CONTRIBUTIONS TO PREFERENTIAL SUBJECT 1

PS1 - Major challenges to the power transformer industry

The subject covers:

- Advances in transformer engineering, including the application of novel materials, advanced insulation systems, and multi-physics modeling to overcome core design limitations. Mitigation of critical dielectric and thermal stresses, resulting in quantifiable improvements in operational efficiency, component reliability, and the accuracy of asset performance characterization.
- Management of aging infrastructure amidst volatile global supply chains. Data-driven methodologies for risk assessment, life extension, and strategic procurement for optimizing capital investment and ensuring long-term grid reliability.
- Environmental performance and climate resilience of power transformers. Methods to quantify and reduce environmental impact through life-cycle assessments, sustainable insulating liquids, recycled materials, and decarbonisation of the manufacturing process. Strategies to improve asset resilience against the physical threats posed by climate change.

9 questions were proposed in the Special Report to which there were 20 prepared contributions.

4. CONTRIBUTIONS TO PREFERENTIAL SUBJECT 2

PS2 - The transformer digitalization journey

The subject covers:

- 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, modeling, designing, manufacturing, testing, maintenance and operation of transformers.

9 questions were asked in the Special Report to which there were 14 prepared contributions.

5. CONTRIBUTIONS TO PREFERENTIAL SUBJECT 2

PS2 - Failure prevention, detection and investigation

The subject covers:

- 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.

10 questions were asked in the Special Report to which there were 29 prepared contributions.

The awards given to Study Committee A2 in 2026 was also presented including the Outstanding Service Award.

The group acknowledged and thanked the outgoing Chair and Secretary for their leadership, commitment, and significant contributions, and wished them all the best in their future roles and retirement.

6. CONCLUSION

The session had a total of 63 contributions addressing the 3 preferential subjects, 20 for PS1, 14 for PS2 and 29 for PS3. Contributions were received from a different countries and backgrounds.

Although the agenda was full and focused on the prepared contributions, there was some opportunity for fruitful discussion.

The Chair thanked the audience for their engagement and recognised the contributions of all those involved in the successful delivery of the 2026 Session.