

DISCUSSION MEETING SUMMARY

Study Committee D1

(Materials and Emerging Test Techniques)

26/08/26

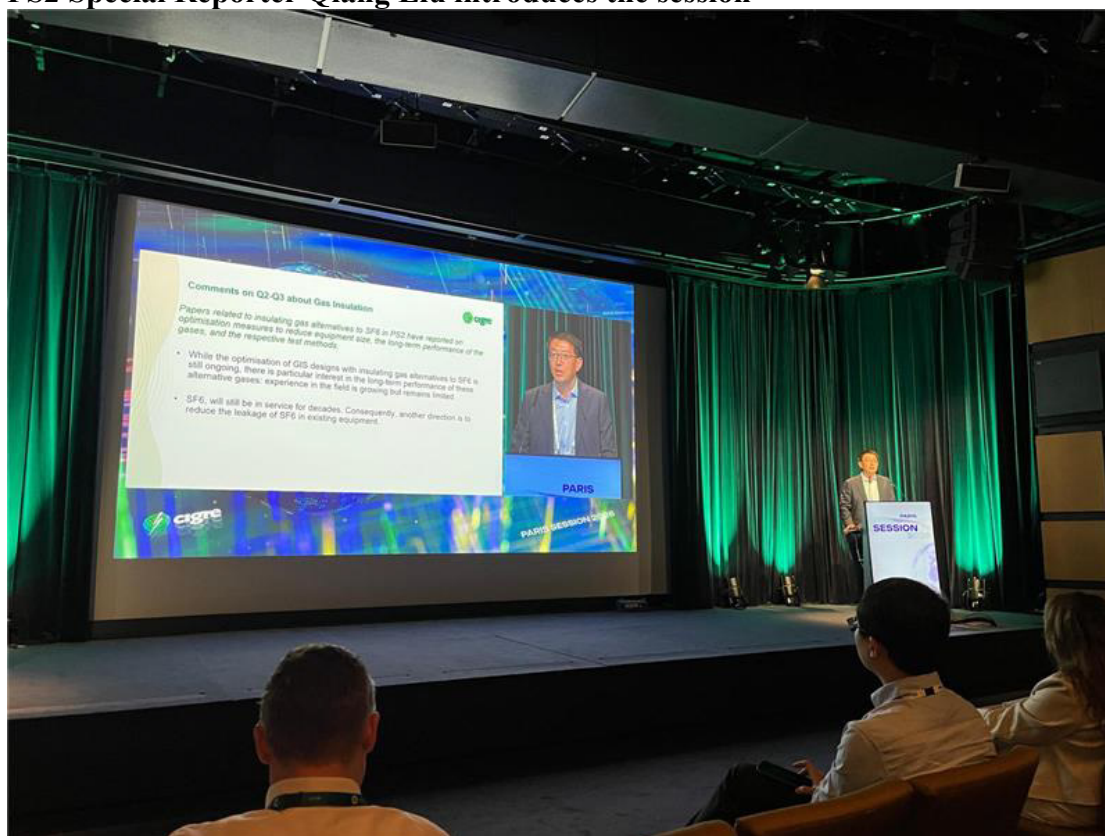
Chair: Simon Sutton

Secretary: Gordon Wilson

Special Reporters: Uwe Riechert, Gordon Wilson, Qiang Liu, Thomas Andritsch, Karsten Juhre

1. INTRODUCTION

PS2 Special Reporter Qiang Liu introduces the session



2. RUNNING OF THE MEETING

The Discussion Group Meeting was chaired by the Study Committee Chairperson, Simon Sutton, with Special Reporters listed above and Gordon Wilson as SC D1 Secretary.

The Chair opened the session by welcoming the audience and presenting them the status of the work of Study Committee Materials and Emerging Test Techniques.

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 a Special Reporter followed by the prepared contributions where presenters were given 3 minute slots.

Prepared contributions were grouped and the audience was asked to participate in the discussion through comments and questions to the presenters or to the audience as a whole. Spontaneous contributions from the audience were invited throughout, in particular to questions where no prepared responses were received.

The Chair closed the session by thanking the audience for their contributions.

3. CONTRIBUTIONS TO PREFERENTIAL SUBJECT 1

PS1: Testing, monitoring and diagnostics

- Testing and condition monitoring for reliability in conventional high voltage systems
- and power electronics applications.
- Assessment of diagnostics for equipment in remote or inaccessible locations.

35 papers were accepted for PS1. 22 contributions were submitted before the meeting addressing the 12 questions that were made in the Special Report.

The questions were grouped into the following topics:

- PD diagnostics (1-3)
- Machine Learning or AI (4/5)
- Asset Management (6-9)
- HVDC Systems and Renewables (10-12)

22 comments and questions were raised on the day, with the topic of partial discharge being particularly popular. One spontaneous contribution was raised in this section.

4. CONTRIBUTIONS TO PREFERENTIAL SUBJECT 2

PS2: Materials for electrotechnical purposes and modelling

- Ageing of materials under electrical, mechanical or thermal stresses and associated ageing markers.
- Modelling materials and field simulations under AC, DC and composite voltages.
- Application of novel materials and processes; eco-friendly and recycled materials, materials to enable energy storage or cryogenic systems, additive manufacturing etc.

34 papers received. 21 prepared contributions to the 9 questions raised in the special report.

The questions were grouped into the following topics:

- Gas Insulation (Q1-3)
- Solid Insulation (Q4-7)
- Liquid Insulation (Q8/9)

The first contribution to this session was an NGN presentation on bio-derived epoxies. This triggered discussions around the ongoing development of these materials regarding applications and long term performance.

26 comments and questions were raised on the day. Recycling of materials and moisture were well discussed in the meeting.

5. CONTRIBUTIONS TO PREFERENTIAL SUBJECT 3

PS3: Measurements and modelling of interfaces

- Understanding interfacial behaviour through experiments at any scale between the nano- and macro-scale.
- Modelling electric field, magnetic field, or charge dynamics at interfaces.

- Assessing material compatibility of used and unaged materials.

6 papers were received for this PS. 14 prepared contributions to the 6 questions raised in the special report.

The questions were grouped into the following topics:

- Standardization of material compatibility (Q1)
- Modelling (Q2/3)
- Representative testing & compatibility testing (Q3/4)
- Surface charge & SF6 alternatives (Q6 unanswered)

The first contribution was an NGN presentation on modelling interfaces, specifically oil/cellulose interfaces. The presentation generated several questions around the way that the simulation methods had been applied in more detail.

21 comments and questions were raised on the day. Compatibility was a hot topic throughout the PS3 session and was raised in response to different questions from the Special Report.

6. CONCLUSION

The session had a total of 58 prepared and spontaneous contributions addressing the 3 preferential subjects, and 69 comments and questions were raised from the floor – in practice there were many more but each questioner was only recorded once even if they made more than one point and the presenters of the prepared contributions were also not separately recorded when they responded to questions – overall it was a very inclusive and engaging day. Contributions were received from 20 different countries.

The Chair closed the session by thanking the audience for their contributions, thanking the Special Reporters and SC D1 secretary for their excellent work. A CIGRE grant given to Study Committee D1 member in 2026 was also presented.