DISCUSSION MEETING

SUMMARY

Study Committee B1

(Insulated Cables)

Date: 31st August 2022

Chairman: Marco Marelli

Secretary: Matthieu Cabau

Special Reporters: Danijela Palmgren, Carla Damasceno, Rusty Bascom and Ying Liu

The 2022 discussion meeting of Study Committee B1 was held on 31st August in Amphitheatre Bleu at the Palais des Congrès in a morning and afternoon session.

2. RUNNING OF THE MEETING

The 2022 Discussion Group Meeting of Study Committee was chaired by the Study Committee Chairman, Marco Marelli with Danijela Palmgreen, Carla Damasceno, Rusty Bascom and Candy Liu as Special Reporters and Matthieu Cabau as SC B1 Secretary. The incoming Study Committee Chairman Geir Clasen was also present.

- Preferential Subject 1 (PS1): Learning from experiences
- Preferential Subject 2 (PS2): Future functionalities and applications
- Preferential Subject 3 (PS3): Towards sustainability

General Statistics:

Participants: over 305 at the peak (during the morning session), averaged more than 240.

All subjects stimulated very active discussions. There was a total of 53 papers with 15 questions, leading to 40 prepared contributions.

Detail of number of prepared contributions for each preferential subject is reported hereafter.

The vivid discussion generated by the prepared contributions had several interventions (questions, answers, comments) that are counted as approx. 80 spontaneous contributions.

Guest Presentation:

A contribution from Denmark was presented – Cable Related Challenges in Relation to Future Energy Islands Poul-Jacob Vilhelmsen

NGN Showcase Engineer Presentation:

A contribution from Canada (PS1) was presented – “Experiences and Insights Rehabilitating a 69 kV SCFF Cable System after Pressure Losses”

3. CONTRIBUTIONS TO PREFERENTIAL SUBJECT 1

PS1 - Learning from experiences

- Design, manufacturing, installation techniques, maintenance, and operation,
- Quality, monitoring, condition assessment, diagnostic testing, fault location, upgrading and uprating methodologies and relevant management,
- Lessons learned from permitting, consent and implementation.

PS1 attracted authors from 23 different countries and generated 35 papers.
The Special Report had 6 questions on PS1, leading to 20 prepared contributions

4. CONTRIBUTIONS TO PREFERENTIAL SUBJECT 2

PS2 - Future functionalities and applications

- Innovative cables and systems, exploring the limits,
- Role and requirements of power cables in tomorrow's grids,
- Prospective impacts from the Internet of Things, Big Data and Industry 4.0 on power cable systems.

PS2 attracted authors from 12 different countries and generated 15 papers
The Special Report had 5 questions on PS2, leading to 11 prepared contributions

5. CONTRIBUTIONS TO PREFERENTIAL SUBJECT 3

PS3 - Towards sustainability

- Environmental challenges impacting current, planned and future cable systems,
- Safety considerations, cyber and physical security, including case studies,
- Projects and initiatives to promote access to affordable, reliable, sustainable distribution and transmission cable lines for all

This preferential subject attracted 3 papers
The Special Report had 4 questions, leading to 9 prepared contributions

6. CONCLUSION

B1-PS1 (Learning from Experiences) - shows a range of technical interest in seeking improvements in expanding accuracy and application of test methods, better accuracy in analytical tools, and general condition assessment. Various types of monitoring including partial discharge testing, fiber-based monitoring and assessment (temperature, vibration, etc) and HVDC cable leakage current assessment are high-interest topics. Quality assurance and dynamic ratings to make cable systems do more are important.

B1-PS2 (Future Functionalities and Applications) - nuances in cable system technologies were the subject of contributions including "learning" vibration monitoring (DAS), pipe-type cable retrofit, statistical variation in parameters and starting points for cable system design. Super conducting cables were also the subject including for HVDC cables and using evaporative cooling

B1-PS3 (Towards Sustainability) - contributors have commented that strategies and technologies to make reusing the cable trench, including future uses, or the cable component materials more viable through better economics and technical modifications would enhance sustainability of cable systems in general, while minimizing environmental impacts. Approaches for optimizing initial manufacturing and recycling of cable materials would provide significant impacts for cable users now and looking forward for the >40-year expected life of cable systems and lifetime impact of greenhouse gases and further assessing impacts of dielectric oil-based cable technologies. Predicting lifetime costs – financial and environmental – and reliability of cable systems is an important consideration.