

Call for Papers for the Special Session on

Key Reliability Considerations and Advancements in Solid-State Transformers

Organized and co-chaired by

Vítor Monteiro, University of Minho, Portugal

vmonteiro@dei.uminho.pt

Mattia Ricco, University of Bologna, Italy

mattia.ricco@unibo.it

Ariya Sangwongwanich, Aalborg University, Danmark

ars@energy.aau.dk

Levy Costa, Eindhoven University of Technology, Netherlands

l.costa@tue.nl

Technical Outline of the Session and Topics

The solid-state transformer (SST) is a leading-edge technology based on power electronics that can integrate advanced features when compared with the traditional transformers. Depending on the architecture, in addition to the AC power interfaces, DC power interfaces are also viable, positioning the SST as an intermediary for supporting AC-DC hybrid power grids. Additionally, attractive features arise in terms of power management, offering enhanced reliability, flexibility, controllability, protection, power quality. By combining both topics, make the SST suitable for modern power grids, while ensuring higher efficiency, compactness, and faster response times.

Topics of the session include, but are not limited to:

- Reliability of power electronics converters and power devices
- Failure detection and corrective actions in power electronics systems
- Thermal management of power electronics converters
- Impact of environmental factors on power electronics reliability
- Project design for reliability in power electronics
- Effects of aging and degradation evaluation of power devices on reliability
- Electromagnetic Interference (EMI) and reliability
- WBG semiconductors for enhancing efficiency and reliability
- Preventive and predictive maintenance on reliability
- AC/DC, DC/DC and DC/AC power converter topologies and control for SST
- SST design consideration under grid fault scenarios

Timeline for Authors

All the instructions for paper submission are available on the conference website. Please visit www.iecon2026.org or scan the QR code for the timeline.

