INDUSTRIAL ELECTRONICS FOR SUSTAINABLE ENERGY SYSTEMS

Guimaraes, Portugal, **21-23 July 2027**

Special Session on

CRYOGENIC AND SUPERCONDUCTING ELECTRICAL MACHINES AND DRIVES

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TECHNICAL OUTLINE OF THE SESSION AND TOPICS

The expanding electrification of the transport, aerospace, marine, and industrial sectors calls for electrical systems that surpass conventional technologies in efficiency and power density. Cryogenic cooling and superconducting materials can help overcome thermal, electromagnetic, and mechanical limitations, enabling next-generation electrical machines, power electronics, drives, and energy systems. This special session brings together researchers and practitioners exploring the modelling, design, control, cooling, and integration of cryogenic and superconducting technologies. Contributions addressing materials, devices, system architectures, and real-world applications are particularly welcome.

TOPICS OF INTEREST INCLUDE, BUT ARE NOT LIMITED TO:

- Superconducting electrical machines;
- Cryogenic electrical machines;
- Cryogenic cooling;
- High specific power electrical machines and drives;
- Cryogenic power electronics converters;
- Transportation systems;
- Superconducting electric generators;
- Superconducting energy conversion;
- Superconducting tapes and wires;
- Superconducting bulks.

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