

## **Design of Partial Superconducting Motor: Last Brick of a Superconducting and Cryogenic Powertrain**

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***Abstract*** — Cryogenic and superconducting powertrains are investigated seriously for the future electrical aircraft. In a possible scenario of fully electric aircraft, hydrogen is stored in the aircraft in its liquid form and then used to produce electrical energy. The ASCEND project aims to demonstrate the potential and the feasibility of this technology. A ground demonstrator will be manufactured and tested.

This presentation will present the potential performances of partial superconducting motors on the ASCEND project scale (few hundreds of kW) to aircraft application (few MW). This work will also point to the parameters that influence the losses in superconducting tapes used for a stator winding in electrical motors.

***Keywords*** — Superconducting Rotating Machines, Synchronous motor, AC losses, High Temperature Superconductors