

Editorial Foreword

(E50 P1) This year's virtual CEC-ICMC-2021 conference arranged attractive sessions dedicated to superconductivity for transportation, which we thought most appropriate for our first "focused" issue of SNF. With support from Timothy Haugan and Michael Sumption of ICMC, SNF encouraged select authors to submit their contributions.

In a plenary, Ludovic Ybanez outlines the potential and feasibility of a fully electrified propulsion system for aircraft, whereas Parag Kshirsagar, in a detailed risk assessment, highlights the metrics of a superconducting electric drive train for aircraft propulsion, by additionally pointing out the difficulties to beat existing technologies. Phillip Ansell, set forth in his contribution "Sustainability through Cryogenic Hydrogen-Electric Aviation: Research of the Center for High-Efficiency Electrical Technologies for Aircraft (CHEETA)," outlines the development of fully renewable variants of commercial aircraft by employing liquid hydrogen as a lightweight energy storage medium, alongside with the high-power capabilities of superconducting power systems. Furthermore, Min Zhang critically addresses the enabling concept of a superconducting propulsion system for a hydrogen-based aircraft.

To cut the world's greenhouse gas emission, Rod Badcock introduces New Zealand's challenging effort to electrify aviation and heavy transportation: via rail, shipping or heavy loads, by additionally promoting the design of superconducting machines for aircraft.

These presentations are complemented by essential simulations for the essential components (Meaghan Podlaski: "Electro-Thermal Modeling of HTS Power Lines for Cryogenically-Cooled Electric Aircraft Design"), as well as supporting technologies or novel materials developments, like a "... Deployable Liquid Hydrogen Production and Fueling System for Unmanned Aerial Systems" (Ian Richardson) and "Polymer Matrix Composites for Light-weighting of Cryogenic Electric Propulsion System" (Sreenivasa Voleti et al.).

We do hope that this comprises significant contributions to a current and ongoing vital discussion.

Herbert C. Freyhardt and Kazuhiko Hayashi for the SNF Editorial Team