

# High Temperature Superconductors (HTS) as Enabling Technology for Sustainable Mobility and Energy Efficiency

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***Abstract***— The use of HTS in Mobility and in Power Technology is not a goal by itself. We will consider general and fundamental aspects and correlations in the respective field and enlighten the basic relations - not requiring the audience to be deep dive experts in the field but aiming to provide some new insights for everyone. HTS in general is a quite well-known phenomenon to many potential end users; some of them have been in touch with HTS during the bloom of 1G-HTS already. Due to the fact that the HTS materials and wires have made extremely good progress in the last years, it is important to educate the engineers active in the field and in conventional business on changed and actual boundary conditions and chances. Depending on the specific application in Mobility and Power Technology, the key success properties of HTS and device will vary a lot, and we will try to provide some take-aways to sharpen the awareness and provide some clues to assess the wisdom of a HTS based device. Despite the progress in HTS performance, there are still white spots needing development efforts. These needs are in even more improved performance and/or in research for new solutions. So, we will try to sketch some ideas for future optimized devices.

***Keywords (Index Terms)***— HTS, mobility, power technology, efficiency, generator, wind power, motor, SFCL, cable, transformer, car, truck, ship, train, traction, aircraft, cooling, ac-loss, current leads, transients, part load.

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