

SUPERCONDUCTOR CURRENT LIMITERS FOR HIGH-VOLTAGE DC GRIDS

THEVA works as a partner in the EU project FastGrid on the fundamentals for the energy transition

Ismaning, 11 April 2017 – Superconductors can smooth the way for the energy transition. The key is the availability of sufficient high-performance material at competitive prices. This is the goal of the FastGrid project, which is supported by the EU and was officially started in January. In it, a consortium of 12 partners will work for 42 months on modules for cost-efficient superconducting current limiters, for use in high voltage DC grids. THEVA's contribution is to supply the high temperature superconductor (HTS) wire for the first module.

A transnational high voltage network that can transfer high amounts of renewably sourced energy over long distances – that is the goal of the so called supergrids, which currently remain just a concept. The hope is to change that. But before the vision can become reality, current limiters need to be developed that can limit high current peaks to prevent short circuit and thus current interruptions. Only then will it be possible to transport current from photovoltaic and wind systems over long distances, for example from Africa to Europe or from the North Sea to Italy.

Conventional switches and current limiters are not up to the demands of supergrids with their extremely high electrical loads. In addition, the electrical resistance of these components causes transmission losses. It can also negatively impact grid stability.

The challenge for THEVA is now to series-manufacture superconductors that meet the highest demands in terms of economy, performance, and safety. In particular, the length of the material used in the current limiter must be reduced to a quarter. THEVA hopes to halve the amount needed by doubling the critical current, from the present 500 to 1000 amperes. The company plans to achieve further savings by reducing the silver layer while simultaneously improving the homogeneity of the superconductor, in turn raising the voltage limit. The resulting performance increase will – in the considered opinion of the developers – lead to a further reduction in length. This will also mean a reduction in cost for the entire component.

The FastGrid project, which is part of the EU Horizon 2020 research and development programme, involves the following companies and institutions: Centre national de la recherche scientifique, Supergrid Institute, Agencia Estatal Consejo Superior de Investigaciones Cientificas, Oxolutia sl, THEVA Dünnschichttechnik, Ricerca sul Sistema Energetico, Corporation de l'École Polytechnique de Montréal Association, Tel Aviv University, Karlsruher Institut für Technologie, Institute of Electrical Engineering Slovak Academy of Sciences, École polytechnique fédérale de Lausanne, Slovenská technická univerzita v Bratislave. Overall volume is 9 million euros, of which the EU will finance 7.25 million. The partner companies contribute the rest. THEVA CEO Dr. Werner Prusseit said: "We are very glad to be again working on a project that we consider extremely important for the future, and so contributing further to the fundamentals for the energy transition."

(3.039 Zeichen)

THEVA at the Hannover Fair from 24 to 28 April 2017:
SuperConductingCity/IV Supra joint booth, Hall 13, Stand C47



About THEVA

With 20 years' experience in coating technology and equipment engineering, THEVA manufactures high-temperature superconductors (HTS) for loss-free transmission of extremely high electric current. With its patented production technology, the company has a unique approach to superconductor manufacture.

The company has invested over fifteen years in development, and built Germany's first commercial HTS production plant. Thanks to its very high energy density, THEVA Pro-Line superconductor cable can replace conventional copper cable in high-performance applications, and opens up entirely new possibilities for the construction of electrical components. Manufactures of cables, power switches, large electric drives and power rails can rely on the high quality standard and performance of the material. THEVA stands for high-end solutions in coating technology and equipment engineering.

THEVA Dünnschichttechnik GmbH was founded in 1996 and today has around 50 employees. Headquartered in Germany, and with representatives in Asia, the USA and Russia, the company has a global presence for its customers.

In 2012, with Target Partners and the Bayerische Beteiligungsgesellschaft two powerful VC partners came on board. Since 2016 eCapital and Bayern Kapital are additionally supporting the growth of the company.

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