

New German Project on Inductive Fault Current Limiter

December 3, 2010 (HE55). We received yesterday a press release from the Bruker Energy & Supercon Technologies (BEST). Below we publish edited major excerpts from that press release.

Bruker Advanced Supercon GmbH and Bruker HTS GmbH (both subsidiaries of Bruker Energy & Supercon Technologies, Inc, or BEST), AREVA Energietechnik GmbH (now a subsidiary of Schneider Electric/Alstom Grid) and Stadtwerke Augsburg Energie GmbH (a utility of the city of Augsburg, Germany,¹) announced they have jointly received a new project approval from the German Federal Ministry of Economics and Technology (Bundesministerium für Wirtschaft und Technologie, or BMWi) for the further development and demonstration of a novel shielded inductive superconducting fault current limiter (iSFCL). The demonstration should occur in the electrical grid of Stadtwerke Augsburg.

The three-year iSFCL demonstration project had its kick-off meeting in Augsburg in October 2010. The total project budget is 7.7 million Euro (approximately \$10 million USD), of which the BMWi will contribute approximately 50%.

Fault current limiters are devices that protect electrical equipment in the distribution infrastructure from damaging power surges caused by fault currents that may arise from short circuits, power generation disturbances or lightning strikes. Based on their intellectual property and design expertise, the industrial partners have been developing a proprietary concept and a pre-prototype functional module of an iSFCL device for energy infrastructure applications, including the smart grid.

The medium-voltage shielded iSFCL to be demonstrated under this BMWi project is based on the collaboration partners' competencies, including BEST's YBCO high-temperature superconductor (HTS) tapes and know-how in superconducting devices, as well as Schneider Electric/Alstom Grid's experience in designing transformers and their in-depth knowledge of the electric transmission and distribution market. An announcement of the successful test results of the pre-prototype functional module for this iSFCL was released in November 2009 (ESNF did not publish it).

The iSFCL is a fast, self-activating current limiting device that can recover automatically after each fault current event. Novel iSFCL devices are expected to enable energy efficient connections of distributed power sources to the grid, fast and reliable grid protection and future smart grid designs. The potential benefits of

¹ Stadtwerke Augsburg - fully owned by the city of Augsburg - is the third largest municipal utility in Bavaria, Germany, supplying water and energy, as well as providing transportation services, to more than 350,000 people in the greater Augsburg region.

introducing iSFCL devices range from enhancing the capacity of substations, increasing safety by making use of the iSFCL's fast response and self-recovery behavior, and exploiting its lower operational power losses compared to conventional grid breaker systems and other superconducting fault current limiter designs and concepts.

The first two years of the BMWi demonstrator project call for the development, engineering and production of the 3-phase full-scale iSFCL device. This device will then undergo extensive power testing prior to the Stadtwerke Augsburg initiating a nine-month field trial intending to demonstrate the reliability of this new technology.

Dr. Hans-Udo Klein, Vice President of Business Development for BEST, explained: "We expect that this iSFCL design will be able to meet the requirements of critical power customers for high performance, reliability and durability in electrical distribution applications. The iSFCL has the potential to be a true 'smart grid' device with its ability to rapidly react, protect the electrical distribution network against damages, and then to recover quickly without external triggering or service calls."

Dr. Uwe Kaltenborn, Corporate Senior Fellow and R&D Director at Schneider Electric, added: "We believe superconductivity-based devices are moving beyond the hype. We believe that this new iSFCL concept, with its attractive switching properties and low cooling requirements, can become a reality in the grid."

Mr. Jürgen Völkel, Managing Director of Stadtwerke Augsburg Netze GmbH, and Mr. Thomas Janetschek, Project Leader of Stadtwerke Augsburg Energie GmbH, jointly emphasized: "High-power renewable energy facilities can only be connected to the grid when being protected by an effective fault current limiter. Once fully engineered and thoroughly tested, the novel iSFCL is expected to be implemented as a protection device in a growing number of such grid configurations."

For more company information on the three industrial project participants, please visit: <http://www.brucker-est.com>, <http://www.schneider-electric.com> and <http://www.alstom.com>