

Press release

Type testing of the recently developed superconductor cable for the “AmpaCity” project successfully completed

In March, production will start for the space-saving and energy-efficient HTS cable system that will replace a high-voltage cable in the city of Essen.

Hanover/Essen, 11 March 2013 – Over one hundred years after the discovery of the superconductor effect, people are now realising what generations of scientists were enthusing about – the almost loss-free transportation of electricity. With the handover of the test certificate for a high-temperature superconductor (HTS) cable system, Nexans Deutschland GmbH and RWE Deutschland AG will mark the completion of the 18-month development phase in the “AmpaCity” project on 11 March 2013. Following the successful test series of the prototype in the Nexans’ Hanover plant’s high-voltage laboratory, production of the 10 kV HTS system, which is 1 kilometre in length, will now start. It is set to replace a 110 kV copper cable in the RWE-operated distribution network in the city of Essen at the end of the year, and transport the same power of up to 40 MW.

Its suitability was proven by the prototype of the HTS cable in a lightning impulse voltage test at roughly seven times the nominal voltage as well as during continuous loading at three times the operating voltage. During the tests, the connection joint belonging to the system and the specially developed, particularly compact cable terminators were also tested. The terminators are used to create the transition from the cryogenic superconductor system to the conventional copper network.

Twofold world premiere in Essen’s city centre

The three-phase, concentric 10 kV cable from the AmpaCity project will now be the longest installation of a superconductor cable in the world. The combination of a superconductor cable with a superconducting fault current limiter also constitutes a premiere. This device is produced at Nexans SuperConductors GmbH in Hürth and protects the grid and the cable from overloading caused by short circuit currents, preventing them from spreading to other network parts.

Superconductor cables are a solution for avoiding further expansion of city networks with high-voltage cables; their use would mean that resource- and land-intensive transformer stations could be demolished. Although copper or aluminium medium-voltage cables could also be used in inner-city areas to transmit high power, the cost

efficiency of this solution would be cancelled out by the much higher losses during electricity transportation.

“The superconductor cable being laid in Essen city centre runs between two transformer stations and is the first to have a length of one kilometre. It will facilitate a discernible increase in the power density and efficiency of the city centre power supply,” says Dr Andreas Breuer, Head of the New Technologies / Projects division at RWE Deutschland AG. Christof Barklage, CEO of Nexans Deutschland stated that “this project could revolutionise the power networks. We are happy to be among the pioneers in this fascinating, trend-setting technology.”

Technical superiority of ice-cold conductors

The technical superiority of the superconductor cable system can be attributed to the material properties of the conductor material. At temperatures of around -200°C , it is transformed into an almost perfect electrical conductor that can transport at least 100 times more electricity than copper. The required operating temperature can be created without considerable effort using liquid nitrogen, which is also used as a coolant for many other industrial purposes. Despite the essential heat insulation of the superconductor cable, it succeeds in transporting five times the electricity as a copper cable with the same outer diameter – and with much fewer losses compared to copper.

Efficiency technology to soon compete with conventional solutions

High-temperature superconductors as used here in AmpaCity in the cable system and the fault current limiter have been ready for deployment in energy-related applications for some years now. Experts anticipate that these innovative cable systems will soon be in a position to compete with copper solutions in energy-intensive applications, from a cost-effective perspective as well. They are of interest wherever a high level of electrical power must be transported where space is restricted. Thanks to these special properties and minimised electricity losses, superconducting power equipment is regarded as a major element in the energy supply of the future by the German Federal Ministry of Economics and Technology (BMWi) and in the consortium led by RWE Deutschland AG, and is therefore promoted as part of the AmpaCity project.

Project Partner:

Gefördert durch:



Image NXS_Prototypen_AmpaCity_HTS-Kabelsysteme_Blitzstossspannungspruefung.jpg
Image NXS_Prototyp_Muffe_AmpaCity_HTS-Kabelsysteme.jpg



This prototype of a superconductive cable system for Essen city centre was put through its paces in the high-voltage laboratory in Nexans' Hanover plant.

Nexans Germany

Nexans Germany is one of the leading cable manufacturers in Europa. The company is offering an extensive range of high performance cables, systems, and components for the telecommunications and energy sectors, rounded off by superconducting materials and components, Cryoflex transfer systems and special machinery for the cable industry. Producing at manufacturing plants with 8.560 employees in Germany and abroad, the sales in 2011 amounts to approx. 940 Mio Euro. The full integration into the Nexans Group Nexans Germany also benefits from excellent opportunities to use the available synergies in all corporate fields, which not only applies to worldwide projects but also to research and development, the exchange of know-how, and to other areas. More information on www.nexans.de

RWE Deutschland AG

RWE Deutschland AG, which is headquartered in Essen, is responsible for the German activities of the RWE Group in the network, sales and energy efficiency areas and also manages the German regional companies. The company owns legally independent subsidiaries for sales, distribution network operation, metering and sales of technical services. Further subsidiaries are responsible for energy efficiency activities, including electromobility, as well as for gas storage devices. It has interests in some 70 regional and municipal utilities and employs more than 21,000 people.

Additional information can be found at www.rwe.com.

Further information / press contact

Nexans Deutschland GmbH Jutta van Bühl
Bonnenbroicher Strasse 2-14
D-41238 Monchengladbach
Telephone: +49 (0)2166 27-2495
Fax: +49 (0)2166 27-2497
E-mail: Jutta.van_Buehl@nexans.com
Internet: www.nexans.de

Press'n'Relations II GmbH

Ralf Dunker
Gräfstrasse 66
D-81241 Munich
Telephone: +49 (0)89 5404722-11
Fax: +49 (0)89 5404722-29
E-mail: du@press-n-relations.de
Internet: www.press-n-relations.de

RWE Deutschland AG
Eva Wagner
Kruppstrasse 5
D-45128 Essen
Telephone: +49 (0)201 12 23803
Fax: +49 (0)201 12-23805
E-mail: Eva.Wagner@rwe.com
Internet: www.rwe.com