Pressinformation

BINE Informationsdienst

Bonn, 20 December 2016

Superconductors through the inner city of Essen

The world's longest superconducting cable renders substation obsolete

To date, copper and aluminium cables carry the current into the city centres. Large substations lower the voltage to 10,000 volts and feed electricity into the distribution network. With compact high-temperature superconducting cables, this structure can be simplified. The BINE Projektinfo brochure "Superconductors for the medium-voltage network" (1/2017) describes a successful field test in Essen.

The new cable, one kilometre long, connects two substations across the city centre. It replaces a conventional 110 kV line and renders one substation in the inner city obsolete. In a test phase of the "AmpaCity" project, taking over two and a half years, it was shown that the technology is on the threshold of market maturity. The superconducting cable and the superconducting fault current limiter installed as a short-circuit protection measure work reliably. The test route has already transmitted more than 200 million kilowatt-hours.

Since superconductivity only works at very low temperatures, the cables in the Essen facility are being constantly cooled with liquid nitrogen. At the cable inlet, it has a temperature of minus 206 °C, at the cable outlet of minus 201 °C. A subcooler cools it back to the required inlet temperature via a heat exchanger. Despite the high effort involved in cooling, preliminary investigations have shown that superconducting cables are the only sensible way of avoiding high-voltage cables as well as resource and space-consuming substations in inner city areas.

The AmpaCity project is conducted under the direction of the energy suppliers innogy SE and carried out jointly with their project partners.

The BINE Projektinfo brochure, which can be obtained free of charge from the BINE Information Service at FIZ Karlsruhe, is available online at www.bine.info or by calling +49 (0)228 92379-0. The brochure cover and an additional image can also be downloaded from the press section in this web portal.

Contact
Uwe Milles
presse@bine.info

BINE information service
Kaiserstraße 185-197
53113 Bonn
www.bine.info

BINE is an information service by FIZ Karlsruhe
www.fiz-karlsruhe.de and supported by
Federal Ministry for Economic Affairs and Energy
on the basis of a decision
by the German Bundestag