Pressinformation

BINE Informationsdienst

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Transporting more electricity through new lines

Greater utilisation of existing transmission lines

The volume of electricity generated by wind energy and photovoltaic systems is increasing in the German power grid. This electricity has to be transported over long distances to urban areas and industrial centres. Newly developed high-temperature conductors now offer a way of increasing the maximum power capacity that can be transmitted through existing power lines. The BINE Projektinfo brochure entitled "The hotline in the grid" (13/2016) presents the new transmission lines. With a comparable conductor cross-section, these can almost double the transport capability of existing transmission lines.

With an increasing current flow, overhead lines heat up as a result of the electrical resistance. Current transmission lines limit the long-range transport of short-term, regional electricity surpluses in the grid, as they are only designed for a maximum temperature of 80 °C. The newly developed high-temperature conductor cables, on the other hand, can withstand temperatures of up to 210 °C. This makes it possible to transport greater amounts of electricity, thus preventing network congestion. Inside the conductors, composite materials are used based on carbon fibres and aluminium ceramic as well as special aluminium and steel alloys. This has therefore solved the problem of greater sagging at higher temperatures, since the new transmission lines sag less than the previous ones.

The new high-temperature conductors can also increase the flexibility in the grid for short-term power peaks. By default, overhead lines are operated in Germany below the maximum possible capacity. The Institute for High Voltage Technology at RWTH Aachen University has conducted the research together with industrial 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.

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