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Utilising more green electricity for rail travel

Deutsche Bahn pursuing development strategy

With 12 billion kilowatt-hours per year, the German railway company Deutsche Bahn is one of the largest electricity consumers in Germany. What possibilities does rail transport therefore have for using more green electricity in future? A study from the Fraunhofer Institute for Wind Energy and Energy System Technology (IWES) has investigated the technical and economic options for this. The BINE Projektinfo brochure "Rail travel with water and wind" (01/2012) presents the main findings.

Compared with Germany's national electricity grid, which has a frequency of 50 hertz (Hz), the German rail network is distinguished by several unique features. For example, the 15,000-volt traction power systems are supplied from the rail company's own overhead power line network that works with 110,000 volts and a frequency of 16.7 Hz. Two possibilities were investigated for making increased use of electricity from renewable energies: firstly, by feeding electricity directly into the 16.7-Hz network and, secondly, by drawing electricity from the 50-Hz network via the existing connection points. The study investigated the scenario years 2012, 2020 and 2050 in order to enable medium- and long-term decisions to be made, whereby the focus was on the economic aspects.

The integration of green electricity via the 50-Hz network is advantageous in the short- and medium terms but direct feeding appears to be more economic in the long term. Deutsche Bahn is looking to increase the proportion of green electricity to 35% by 2020.

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