Pressinformation

BINE Informationsdienst

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Stable grid despite flexible feed-in

Researchers model electricity grid with 100 per cent renewable energy

Grid frequency and voltage must remain stable for a reliable supply of consumers. However, wind energy and solar power systems provide electrical energy intermittently. How power supply can still function reliably is outlined in the BINE Projektinfo brochure ‘Stable grid with 100 per cent green electricity’ (06/2015).

As part of the research project ‘Combined Power Plant 2’, scientists demonstrated that renewable energy can also offer so-called ancillary services. These services support the grid by ensuring that the energy provided is equal to the energy demanded at all times.

Grid inertia is lowered whenever the power supply is fully covered by renewable energy. Technically, wind turbines and solar power systems are fast enough to compensate for this. The power electronics of PV systems can provide primary balancing power within milliseconds, while wind turbines need approximately five seconds.

Voltage stability is another ancillary service that can be provided by renewable energy in the future. Within a given grid level, the voltage may fluctuate by a maximum of ten per cent. Only then can the system remain stable, avoiding damage to insulators and components. The scientists designed a set of rules for the use of renewables with which they can keep the voltage within a predetermined voltage range regardless of the season.

The research project ‘Combined Power Plant 2’ was carried out under the leadership of the Fraunhofer Institute for Wind Energy and Energy System Technology (IWES).

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 two additional images can be downloaded from this web portal in the press section.

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