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**DynaGridCenter: Monitoring and Control of Transient Behavior in the
Transmission Grid**

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Abstract;

In order to reduce carbon emissions, more and more conventional power plants are replaced by renewable generation in many countries. Due to the fact that renewable generation varies spatially and temporally, there is considerable additional need for electrical energy transport over large distances within the AC grid. Typically for this purpose high voltage DC lines are built or planned to be built within the AC grid in order to efficiently transport that energy.

Those enhancements change the behavior of the transmission grid and increase the importance and role of transient phenomena. The research project “DynaGridCenter” that is funded by the German government (department of trade and industry) tackles exactly those questions and explores innovative control and monitoring algorithms on the control center as well as the station level.

The project started in October 2015 and runs for three years. The project partners are three German universities (Ilmenau, Magdeburg, Bochum), two Fraunhofer research centers (Ilmenau, Magdeburg) and Siemens AG (Nürnberg, Erlangen). The four German transmission grid operators (50 Hertz Transmission, Amprion, TenneT TSO, TransnetBW) are associated partners in the project.

Within the project the new algorithms are not only designed and developed, but also tested in a full simulation environment: a simulator of a transmission grid including a physical model of two HVDC lines and the transmission stations is built up in Magdeburg and a Spectrum Power™ 7 based control center for the operation and monitoring of this model is installed in Ilmenau.