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Institute of Electrical Power Systems

Bachelor Thesis

Evaluation of the installed capacity of conventional to renewable power generation plants in Europe

Motivation

Due to the energy sector's transition from conventional to renewable generation technologies, synchronous (thermal power plants) are gradually being replaced by non-synchronous power generation plants (e.g. PV, wind). In addition to other influences, this has a significant impact on the stability reserves of the grid. At numerous meetings and conferences, attempts are made to find a minimum ratio of grid-forming to grid-following power generation systems to avoid unstable grid behavior due to transient changes. These two forms of control are the main types of control for non-synchronous power generation systems. The only thing forgotten is that synchronous power generation plants (e.g. hydropower plants) will continue to exist in the existing grid.

Research Topics

- What is the synchronous to non-synchronous power generation plant ratio according to the country-specific expansion plans?

Procedure/Methodology/Task definition

- Literature research on the current installed capacity of different power generation technologies
- Evaluation of the ratio of synchronous to non-synchronous power generation plants
- Visualisation of the ratios using a European map
- Documentation

Organisational Issues

Begin immediately

There is the possibility of further consideration of the results in a Master's thesis!

Contact Person/Supervisor

DI Dominik Grall (dominik.grall@tugraz.at)

DI Darko Brankovic (darko.brankovic@tugraz.at)

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TU GRAZ