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Master Thesis, Hauptseminar, Forschungspraxis

Inertia emulation control methods for DFIG-based wind turbines

Due to less inertia (rotating masses) in future grids, the focus of current research is on inertia emulation control methods for renewable energy systems to ensure grid frequency stability. In particular, advanced control of doubly-fed induction generators (DFIGs) is of interest which are widely used in wind energy conversion systems (WECS). The work is needed for the HM-project *Ganzheitliche Zwillinge für die elektrischen Subsysteme und die Netzanbindung* (HM-GZESN) which is part of the joint project *e-TWINS − Ganzheitliche digitale Zwillingstechnologie für das Energiesystem* and supported by the *Bundesministerium für Wirtschaft und Energie* (BMWi).
The work packages are:

- Literature research on inertia emulation methods for doubly-fed induction generator (DFIG) based wind turbines

- Identification of quality criteria

- Definition of suitable simulation scenarios (e.g. system split scenario)

- Comparison of different inertia emulations methods

- Implementation (Matlab Simulink, dSPACE) and validation at our machine laboratory

Please send your application with CV and transcript to Andre Thommessen `andre.thommessen@hm.edu`