

*Oberseminar*

***Research on internationally developed electrical distribution grid automation and intelligent metering: Describing solutions for the energy transition in the Distribution Grid***

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Although the increase of distributed and often renewable energy sources makes sense from an environmental perspective, this new paradigm poses significant challenges to the electrical distribution grids, which were not initially designed for bidirectional power flow and the increased utilisation caused by new assets such as electric vehicles, solar panels, heat pumps, etc. The distribution system operators must expand their grids or develop intelligent control algorithms using various automation measures. Another factor to consider is the digitalisation of the distribution grids with the advancements in information and communication infrastructure, examples being intelligent measurement systems (also known as Smart Meter) or Digital Local Substations. Due to the complex nature of grid operation management in the electrical grids of today, a large number of components have to communicate with each other. Thus, the distribution grids of today have attained extreme levels of complexity, so that extensive assistance systems, measurement equipment and automation functions are needed to master the grid operation effectively. When active grid management is becoming increasingly necessary to control the DERs and other controllable flexibilities dynamically, grid state monitoring and demand-oriented automation is specifically required, considering the vast number of components in the distribution grids.

The seminar includes the following work packages:

- The analysis and elaboration of the developments of electrical distribution grid automation and intelligent measurement systems in specified countries.
- Comparison with the existing standards and state of practice in Germany
- The results are to be presented in an oral presentation

**Deadline**

The scope of this Oberseminar is designed for a number of participants of 4-8 persons. In order to allow for a non-discriminatory allocation of places, an application by email is possible until **15.04.2023**, providing the following information:

1. Name
2. Matriculation Number
3. Number of semesters
4. Has an Oberseminar already been failed?

Following the application phase, a joint discussion with the supervisors takes place to specify the main topics.

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