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Technical practices and the international standardization activities of grid integration of RE generation

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Abstract

The rapid deployment of RE generation has made grid integration and operational issues focal points in industry discussions and research. In this paper, some related technical challenges are figured out regarding the grid integration of large scale RE generation, such as how to cope with the issue of power balancing, how to keep the system stability under control and how to equipped the RE units with the FRT capability for preventing from outage in case of grid emergency, etc.

From the technology perspective, studies and practices about the grid integration of large scale RE generation have been undertaken and a lot of efforts have been done globally concerning modeling and analysis, active/reactive power coordinated control, RE power forecast, testing and certification as well as the optimal power dispatching, to deal with these emerging challenges and problems. Grid requirements for RE generation are also needed to be clearly and effectively defined so that it can lead the grid performance of the RE power plant to the grid-friendly way. In order to guarantee the safety and stability of power system incorporating with large scale RE generation, the interaction between large scale RE generation and power system need to be further studied and the impact on system stability and dispatching of RE integration should also be fully understood.

Also in this paper, the standardization activities regarding the grid integration of RE generation are addressed, especially the efforts of IEC SC 8A – Grid integration of RE generation are illustrated.