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Vortragsankündigung

Seminar Regelungssysteme LV 0430L 654

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Wednesday, August 29th, 2018, 11 am (Part II)
Vortragsort: EN 223

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Frequency Control in Modern Power Grids: New Challenges and Solutions

Frequency control is one of the most important control problems in interconnected power grids design and operation, and is becoming more significant today due to the increasing size, changing structure, emerging microgrids, renewable energy sources (RESs), environmental constraints, and new uncertainties. Several control loops are operating to maintain the system frequency at its nominal setpoint. Each one has its particular specification and relies on a given amount of power reserve that is kept available to cope with power deviations. The majority of supply-demand balancing is achieved by controlling the output of dispatchable generating units. The frequency control in a modern power grid should perform complex multi-objective regulation optimization problems characterized by a high degree of diversification in management policies, and widely distribution in demand and supply sources. Wide-area measurement system, distributed generation (DG), microgrids, and controllable loads (demand response) provides new challenges and opportunities to handle the frequency control in new power grids.

This two parts speech presents a thorough understanding of the frequency control fundamentals in modern power grids (penetrated with distributed DGs/RESs) as well as microgrids. Some new challenges, probable solutions, and new synthesis perspectives will be addressed. The speech is supplemented with the relevant research works and experiences of the speaker in several countries over the last two decades.