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Gastvortrag

Improved Controllers for Microgrids

Professor Ali Mehrizi-Sani (Washington State University, USA)

Donnerstag, 14.11.2013, 15:00 Uhr
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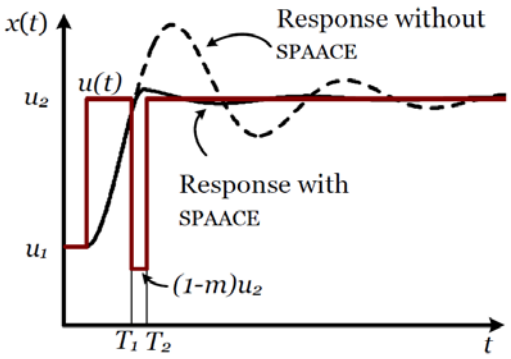

A flexible power system needs to accommodate the unique characteristics of renewable energy resources, such as susceptibility to violation of operational limits. This problem is exacerbated in small scale power systems such as microgrids, in which resources are limited. This talk discusses strategies to address these challenges and focuses on an add-on control strategy for transient response shaping of controllable devices of a microgrid using local measurements. This strategy augments an existing controller and enhances its performance by monitoring the response and temporarily modulating the set point. The salient features of this strategy are (i) robustness with respect to system parameters, (ii) independence of system model, (iii) reliance merely on local signals, and (iv) absence of need to adjust existing controllers. The proposed control strategy and its performance are discussed and evaluated, and its technical feasibility is established through a number of case studies.

Dr. Ali Mehrizi-Sani received the B.Sc. degree from Sharif University of Technology, Tehran, Iran, in 2005, and the Ph.D. degree from the University of Toronto, Toronto, ON, Canada, in 2011, both in electrical engineering. He is currently an Assistant Professor at Washington State University, Pullman, WA, USA. His areas of interest include power system applications of power electronics and integration of renewable energy resources. Dr. Mehrizi-Sani is an editor of the IEEE Transactions on Power Delivery, the chair of the IEEE Task Force on Dynamic System Equivalents, and a contributing member of several other task forces, including Task Force on Microgrid Controls, Task Force on Dynamic Average Modeling, and Task Force on Interfacing Techniques for Simulation Tools. He was a recipient of the NSERC Postdoctoral Fellowship in 2011, a Connaught Scholar at the University of Toronto, and received the Dennis Woodford prize for his M.Sc. thesis.