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Measurement, Control and Protection in Smart Grid Energy Management Systems for Smart Buildings in a Smart City

by

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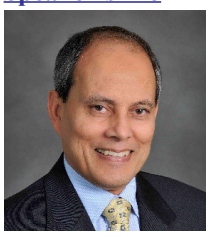
DATE: Thursday, July 30, 2020.
TIME: Webinar: 6:30 p.m. – 7:30 p.m.
PLACE: Online. Free registration is required at: https://events.vtools.ieee.org/m/234586

Abstract

Smart grid is a modern electric system with its architecture, communications, sensors, measurements, automation, computing hardware and software for improvement of the efficiency, reliability, flexibility and security. In particular, the smart grid, when fully deployed, will facilitate the (i) increased use of digital information and measurement, control & protection technologies, (ii) deployment and grid-integration of distributed energy resources (DERs), (iii) operation of demand response and energy efficiency programs, and (iv) integration of consumer-owned smart devices and technologies. Different non-linear controls, such as back-stepping control, feedback linearization, model predictive control, and sliding mode control are applied to control DERs, and their grid integration. Another control technique gaining application in the smart grid space is based on multi-agent systems (MAS) which provide autonomy, reactivity and proactivity. As speedy communication facilities, such as fiber-optics, microwave, GSM/GPRS, 4G/5G are becoming the integral parts of the functioning smart grid, the integration of MAS in smart grid applications is becoming simple and feasible. This lecture focuses on the measurement & control issues of the smart grid and how MAS can provide an efficient tool to address such issues. In addition, an overview of the related challenges and opportunities for energy efficient building operation and management with deployment experience in the US will be provided.

Speaker's Bio



Prof. Saifur Rahman is the founding director of the Advanced Research Institute (www.ari.vt.edu) at Virginia Tech, USA where he is the Joseph R. Loring Professor of Electrical and Computer Engineering. He also directs the Center for Energy and the Global Environment (www.ceage.vt.edu). He is a Life Fellow of the IEEE and an IEEE Millennium Medal winner. He was the founding Editor-in-Chief of the *IEEE Electrification Magazine* and the *IEEE Transactions on Sustainable Energy*. In 2006, he served on the IEEE Board of Directors as the Vice President for Publications. He is a Distinguished Lecturer for the IEEE Power & Energy Society (PES) and has lectured on renewable energy, energy efficiency, smart grid, electric power system operation and planning, etc. in over 30 countries. He was IEEE Power and Energy Society President 2018-2019 and is now a candidate for IEEE President-Elect 2021.

He chaired the US National Science Foundation Advisory Committee for International Science and Engineering, 2010-2013. He conducted several energy efficiency projects for Duke Energy, Tokyo Electric Power Company, US National Science Foundation, US Department of Defense, State of Virginia and US Department of Energy.

Admission: Free. Registration required at: https://events.vtools.ieee.org/m/234586.
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