Rockwell Seminar Series: Hybrid Fuel Cell Power Generation system for Microgrid Applications

Date: Monday, September 28, 2015 - 10:00am to 11:30am
Location: N355-D, Engineering Bldg 1, University of Houston

ROCKWELL SEMINAR SERIES

Monday, September 28, 2015 ? 10 AM ? N355-D

Dr. Kaushik Rajashekara
Professor of Electrical and Mechanical Engineering
Distinguished Chair of Engineering
University of Texas at Dallas

Hybrid Fuel Cell Power Generation system for Microgrid Applications

ABSTRACT: A hybrid power generation system consists of a combination of two or more power generation technologies to best make use of their operating characteristics and to obtain efficiencies higher than that could be obtained from a single power source. Since fuel cells directly convert fuel and an oxidant into electricity through an electrochemical process, they produce very low emissions and have higher operating efficiencies. Hence combining fuel cells with other sources, the efficiency of the combined system can be further increased.

In this presentation, the hybrid power generation based on combined cycle operation of a solid oxide fuel cell (SOFC) and a micro turbine is presented. The advantages of connecting the hybrid systems to the microgrid and the energy management strategy of microgrids will also be discussed. A few of the ongoing projects related to microgrid systems in our UTD Power Electronics & Drives Lab will also be presented.

Bio: Dr. Rajashekara has applied his knowledge of power electronics and technical expertise to create propulsion systems in automobiles, airplanes and industrial applications that run more efficiently, producing fewer emissions and using fewer natural resources.

He joined UT Dallas after several years with companies such as Asea Brown Boveri, General Motors Co. and Rolls-Royce Corp.
He joined Delphi, then a division of General Motors, in 1989 where he worked on propulsion systems for electric, hybrid and fuel cell vehicles. He was the lead engineer on power electronics for the propulsion system for GM EV1, the first electric vehicle that was commercially available in the United States. He then became chief scientist for propulsion, fuel cell, and advanced energy systems. Rajashekara joined Rolls-Royce as the chief technologist for electric power and control systems.

Rajashekara has given more than 100 invited presentations in more than 40 countries.

Rajashekara earned his bachelor’s, master’s and doctoral degrees from the Indian Institute of Science in Bangalore, and an MBA from Indiana Wesleyan University. He was an assistant professor at the Indian Institute of Science and an adjunct professor at the Purdue School of Engineering and Technology.

Dr. Rajashekara is a fellow of the IEEE (Institute of Electrical and Electronics Engineers), and SAE International. His contributions have earned numerous awards, including induction into the Delphi Innovation Hall of Fame, the 2006 Gerald Kliman Innovator Award, 2009 IEEE Industry Applications Society Outstanding Achievement Award and 2013 IEEE Richard Harold Kaufmann Award.

© University of Houston Cullen College of Engineering, Department of Electrical and Computer Engineering