TECHNICAL MEETING OF IEEE IAS/PELS BENELUX CHAPTER

Delft University of Technology is hosting the next technical meeting of the joint Industry Applications/Power Systems/Power Electronics Society chapter of the IEEE Benelux Section. IEEE members of these societies and interested members and non-members are cordially invited to attend this meeting.

Dr. Kaushik Rajashekara

will give a presentation about

HYBRID AND FUEL CELL VEHICLES

Date: May 23, 2005
Time: 14h00 – 17h00
Place: Delft University of Technology
EWI Faculty
Snijderszaal: room 1.010
Mekelweg 4, 2628 CD Delft

If you which to attend this event, please send an email with your name and address to h.polinder@ewi.tudelft.nl, so we can estimate how many people will attend this event.

Further information on the chapter is posted on our homepage: http://www.esat.kuleuven.ac.be/~ieeeip

Abstract:
The automotive companies are developing electric, hybrid, and fuel cell vehicles for reducing the emissions and for improving the fuel economy. Some of these vehicles are already in commercial stage. In this seminar, different types of hybrid vehicle strategies and their operation are described. The operating strategies of hybrid and fuel cell vehicles with the associated power electronics and control architectures will be explained. The use of fuel cells for propulsion and for on-board power generation will also be presented. The topics to be discussed are:
Classification of hybrid vehicle systems; Propulsion Requirements; APUs and APU control strategies for hybrid vehicles; 42 V Systems; Operation and types of fuel cells; Fuel Cell vehicle systems; Fuel cells for propulsion and for APUs in Automobiles; Power Conversion and Control Strategies for Hybrid and Fuel Cell vehicles; Hybrid and Fuel Cell Systems for Heavy Duty applications.

Resume:

Dr. Kaushik Rajashekara ("RAJA") received his B.Sc. degree from Bangalore University, India in 1971; B.Eng., M.Eng, and Ph.D. degrees from the Indian Institute of Science, Bangalore, India in 1974, 1977, and 1983, respectively. From 1977 to 1985, he worked as an Asst. Professor/ Senior Scientific Officer in Indian Institute of Science. In 1978 and 1984-85, he worked at Asea Brown Boveri, Switzerland, on power electronics systems. In 1982, he was a visiting scientist at the Technical University of Dresden, Germany. From 1985 to 1987, he was a visiting Associate Professor at the University of Quebec, Canada, working on Photovoltaic utility interactive systems. From 1987 to 1989, he worked at Viteq Corporation, USA, in the area of uninterrupted power supplies for computers. In July 1989, he joined the Delco Remy division of General Motors, and presently he is the Chief Scientist for Propulsion, Fuel Cell & Energy Systems at Delphi Corporation. He is working on the development of fuel cell based systems for Automotive, Stationary Power, and Aerospace applications.

Dr. Rajashekara has done extensive research in the area of power conversion for Transportation, Propulsion Systems for Electric, Hybrid, and Fuel cell vehicles, and Fuel Cells for Transportation and power generation applications. He has published more than 70 papers in international journals and conferences in the areas of power electronics, energy conversion, electric, hybrid, and fuel cell vehicles, motor drives, and global warming. He currently has 18 patents and 10 more that are pending. In 1999, Dr. Rajashekara was elected to the Fellow of IEEE for his contributions to the advancement of propulsion systems for electric and hybrid vehicles. He was also inducted into the Delphi Innovation Hall of Fame in 1999.

Dr. Rajashekara has worked on several federally funded research programs. He was a Principal Investigator on several of the DARPA, Department of Energy, and PNGV/FreedomCar sponsored projects on electric and hybrid vehicles. He has also closely worked with NASA and Boeing to investigate the use of fuel cells for aerospace applications. He has worked with several universities on sponsored research programs. He has been in the NSF panels to select the funding level for university projects.

At GM and Delphi, Dr. Rajashekara has held various technical and managerial positions. He managed the Energy Conversion group. He was responsible for technical direction and management of several projects in the areas of power electronic systems in automobiles, and propulsion systems for alternative powered vehicles, such as electric, hybrid, 42V systems, and fuel cell vehicles. He has directed and managed projects related to GM EV1, Electric Shuttle Bus, Torpedo Propulsion Systems, DOE funded Hybrid Propulsion Programs, NASA/Boeing hybrid APU feasibility study, etc.

In addition to research, Dr. Rajashekara has a passion for teaching. He taught a number of courses while he was a faculty member at the Indian Institute of Science. While he is currently working in the industry, he is in close contact with the faculties at various universities around the world and follows their research efforts. For the past 10 years, Dr. Rajashekara has been spending three weeks every year giving short-term courses in major universities on advanced research topics related to Energy & Environment, Power Conversion; Hybrid and Fuel Cell systems etc. He has given his seminars in almost all the major universities across Asia and Europe. Some of these universities are:
Japan: Tokyo Institute of Technology; Nagoya Institute; Meiji University; Yokohama National University
China: Tsinghua University; Shanghai Jiatong University as UNDP sponsored visiting scholar
India: Indian Institute of Science; IIT, Kanpur
Korea: Seoul National University
Hong Kong: Hong Kong Polytechnic and State University
Europe: University of Padova, University of Turin, University of Salerno in Italy; Technical Universities in Budapest (Hungary), Vienna (Austria), Warsaw (Poland), Dresden (Germany), and Berlin (Germany); EPFL, Switzerland
USA: SAE Distinguished lecturer in several universities (2001)

In addition, Dr. Rajashekara has conducted one-day tutorial courses in various IEEE conferences. He has also given invited speeches in local IEEE Chapters. He has been a keynote speaker in several conferences.

Dr. Rajashekara has written six monographs in the area of Power Electronics and Drive systems, while he was a faculty member at the Indian Institute of Science. He is the co-editor of the IEEE Press book on "Sensorless Control of AC Motor Drives" (1996). He has contributed two chapters on power converters for the “Electrical Engineering Handbook” (CRC Press, 1993), one chapter on "Power Electronics" for the “Engineering Handbook,” (CRC Press, 1995), and one chapter on "Power Electronics" for the “Electric Power Engineering Handbook,” (CRC Press, 2000). He is the co-editor of the special section on Hybrid, Electric and Fuel Cell Vehicles for the IEEE Transactions on Vehicular Technology, which will be published in 2005.

Dr. Rajashekara was a member of the Technical Program Committee, Session Chair, and Session Organizer for several IEEE conferences. He was the Technical Program Chairman of the IEEE Workshop on Power Electronics in Transportation. He is the past Chairman of the Power Electronics Devices and Components committee of the IEEE Industry Applications Society. He is also a member of the Editorial board of “Advanced Technology of Electrical

Engineering and Energy" published by Academia Sinica.

As Chief Scientist at Delphi, Dr. Rajashekara is involved in defining strategic technology directions for Delphi Corporation. His work is multi-disciplinary, covering the areas of Electrical, Electronics, Materials, Chemical, Mechanical, and Environmental engineering disciplines. He is also involved in defining the technology and business directions for Delphi in the areas of Nanotechnology, Hydrogen generation and storage, Fuel related issues, etc.