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Agenda for October 29, 5:30PM Meeting

1. Report on Region 2 Telcon with Sections 30 Sept 2009 (Asad)
Please see the "IEEE Region 2 Telcon Agenda 9/30/09" at
http://www.ewh.ieee.org/reg/2/R2M/Meeting_menu.html click on
30 Sept. Telcon
2. Consultants Network (Ed)
3. Treasure report and status of funding request for Student design contest (Desa)
4. IEEE Membernet and Linkedin (Nan)
5. 2010 Election f (Asad)

Meeting will follow by dinner and Dr. Kourosh Sedghisigarchi's Technical Presentation: **"Fuel Cells as Future Distributed Generators"**

Abstract and bio are attached.

Location: Fifth Quarter Restaurant, Charleston

Title: Fuel Cells as Future Distributed Generators

By: Kourosh Sedghsigarchi, Assistant Professor ECE Department WVU Tech

Abstract:

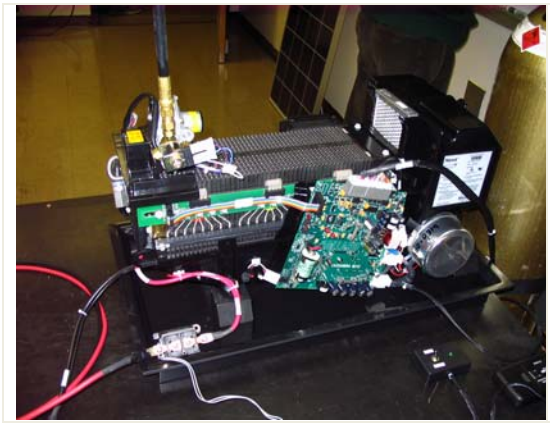
Fuel cells are very useful as power sources in remote locations, such as spacecraft, remote weather stations, large parks, rural locations, and in certain military applications. A fuel cell system running on hydrogen can be compact and lightweight, and have no major moving parts. Because fuel cells have no moving parts and do not involve combustion, in ideal conditions they can achieve up to 99.9999% reliability. This equates to around one minute of down time in a two year period.

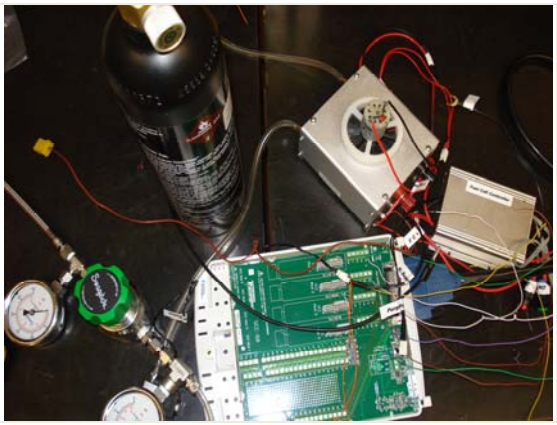
One of the most common types of fuel cells is Polymer Exchange Membrane (PEM). A PEM fuel cell is an electrochemical device that converts hydrogen fuel into energy and water without combustion.

A PEMFC operates at temperatures of 60-100° C. PEMFC applications include electric utilities, portable power, and transportation. The solid electrolyte reduces corrosion, operates at low temperatures, and delivers quick start-up. The cell requires expensive catalysts and the cell has high sensitivity to fuel impurities.

Fuel cell model can be used for dynamic and transient stability studies. The fuel cell model based on electro-chemical and thermal equations, accounts for temperature dynamics and output voltage losses.

Fuel cell dynamic response for fast and slow perturbations will be presented. The simulation results are validated in alternative energy lab at ECE Department of WVU Tech. PEM fuel cell control requires certain sequences and steps. A developed control strategy including several tasks will be presented. This control method manages fuel cell monitoring, start-up, production, protection and shut-down procedures. Some of the ongoing research activities focusing alternative energy technologies at ECE Dept of WVU Tech will be discussed.





Dr. Kourosh Sedghisigarchi received both his BSEE and MSEE from Sharif University of Technology in 1994 and 1997, respectively, and his PhD in Electrical Engineering from West Virginia University in 2004.

He is currently an assistant professor, Department of Electrical and Computer Engineering at West Virginia University Institute of Technology. His research interests are: Fuel Cells, Renewable Energy, Power Electronics, Energy Management Systems, Power System Security, Power System, Modeling, Stability and Control, Power System Operation and Economics, Power Distribution Systems, Distributed Generations. Kourosh has numerous journal and conference publications in the area of alternative energy. He has established the Alternative Energy Lab within the ECE Department, WVU Tech. Dr. Sedghisigarchi is a member of IEEE.