



# **BIG** energy seminar series

Addressing the scale and complexity of the global energy challenge.



## *Sustainable Energy Engineering*

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**Date:** Thursday, September 19, 2013 at 3:30pm

**Location:** Fleming Building, Room 156

#### **Abstract:**

This seminar will cover many issues related maintaining our society in a sustainable way. There are pending problems leading to a shortage of many resources including the need to manage:

- Human Society:** energy, population growth, food, resource depletion
- Economy:** Economic Disasters, Economic Refugees, Wealth Imbalances
- Resources:** Finite Resources, Approaching shortages Finite Fossil Fuels

The living film covering the surface of planet earth is delicately balanced. The conditions for life are created by life. These conditions are complex of systems and feedback mechanisms that are poorly understood. Humanity now captures one quarter of primary productivity of the planet. However, we lack engineering systems to properly manage this productivity at the planetary scale. This is resulting in environmental impacts, such as biodiversity loss, pollution, and climate change. The solution is a new way of thinking and new technologies that I refer to as Sustainable Energy Engineering.

In this seminar I will review the above issues with special attention to power electronics technologies of sustainable energy production, consumption and the relationship between these two. This will establish the foundations of the holistic sustainable energy production-consumption technology complex. Then I will examine some individual technologies with this insight.

#### **BIO:**

M. Ehsani received the B.S. and M.S. degrees from the University of Texas at Austin in 1973 and 1974, respectively, and the Ph.D. degree from the University of Wisconsin-Madison in 1981, all in electrical engineering. From 1974 to 1977 he was with the Fusion Research Center, University of Texas, as a Research Engineer. From 1977 to 1981 he was with Argonne National Laboratory, Argonne, Illinois, as a Resident Research Associate, while simultaneously doing the doctoral work at the University of Wisconsin-Madison in energy systems and control systems. Since 1981 he has been at Texas A&M University, College Station, Texas where he is now a Professor of electrical engineering and Director of Advanced Vehicle Systems Research Program and the Power Electronics and Motor Drives Laboratory. He is the author of over 300 publications, the co-author of twelve books, and has over 23 granted or pending US and EC patents. His current research work is in power electronics, motor drives, hybrid vehicles and their control systems. Dr. Ehsani is a Fellow of IEEE, an IEEE Industrial Electronics Society and Vehicular Technology Society Distinguished Speaker, IEEE Industry Applications Society and Power Engineering Society Distinguished Lecturer. He is also a registered professional engineer in the State of Texas.

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