ETM
Department of Engineering and Technology Management

Technology Management Seminar Series
Graduate Seminars - Fall 2008

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M.B.A., (Economics, Finance), University of Iowa, December (2001)
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Topic:
Sustainable energy, renewable energy, microgrids, and distributed generation – What are the new technologies?

Abstract:
The advent of high oil prices has led to the implementation of previously expensive energy resources. The laws of physics, of chemistry, and of biology have not changed, but the price of oil has. This seminar will discuss the technology changes that are easing the implementation of wind energy, solar energy, wave energy, geothermal energy, and biofuel generation. The technology changes are primarily in the interfacing and the integration of these sources into the existing energy grids. There are several energy grids present: the transmission system grid is the electric energy grid, the gas pipeline grid is for natural gas; the train, barge, and interstate are the grid for coal - some are changing, as coal can be gasified and piped instead of carried in solid form. Focus will be on the electric transmission grid and the devices used to integrate all of the various resources into a harmonious, reliable, and most cost effective system. Ancillary services will be defined and the tools to provide such services, previously not accomplished, will be presented. The information technology (IT) to coordinate and to schedule such devices will also be identified and outlined. The impact of power electronics, the internet, and IT provide a vast array of jobs for the next decade. The skills needed for these career positions will be identified.