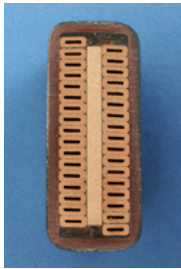


EEL 4936/6936 – Power Plant Engineering

Thomas Blair, P.E.



The American power industry is experiencing a talent drain of immense proportions. Over 50% of U.S. power engineers will be eligible to retire in the next 7 years, and the number of engineers entering the profession will make up only a small fraction of the experienced engineers leaving. In addition to this startling statistic, the U.S. infrastructure, including the power system, is deteriorated and antiquated. It is in desperate need of modernization. It takes qualified engineers to do this – and lots of them.



This is probably the best time ever to enter the power industry in the U.S. Of course there are no guarantees, but the outlook for a technically and financially rewarding career is fantastic.

EEL 4936/6936 provides an excellent overview of the electric power generation process and the role the engineer plays in the power generation process. This course will provide information into the various equipment types, plant process systems and technologies needed for electric power generation. This course will also present some of the engineering tasks performed by the power plant engineer. Two field trips are included to a power plant to acquaint students with power plant systems and equipment. One field trip will be to view a nuclear pressurized water reactor (PWR) simulator and tour of a pulverized coal power plant. The second field trip will be tour a fossil fuel combined cycle power plant.

Introduction

Review of methods of Electric Power Generation
Present and Future Trends
Electrical Safety Topics and Safety in Electrical Design

Power Plant Engineering

Engineering Economics
Thermodynamics
Fluid Statics and Dynamics
Power Plant Cycle Analysis
Protective Relaying and Selective Coordination
Ground Grid Design
Standards Utilization in Design Process

Power Plant Systems

Coal and Limestone Handling
Fossil Fuels and Combustion Process
Steam Generators
Circulating Water Systems
Emission Control

Water Treatment
Plant Auxiliary Electrical System
Cycle Performance Impacts
Plant Instrumentation and Control Systems

Power Plant Technologies

Pulverized Coal
Nuclear Power Generation
Integrated Gasification & Combined Cycle
Hydro Power & Wind Power
Gas Turbines
Fluidized Bed Combustion

Power Plant Equipment

Steam Turbines
Steam Cycle Heat Exchangers
Fan Applications
Pump Applications
Generator & Support Systems
Emerging Technologies
Electrical Switchgear and Motor Control Centers



EEL 4936/6936 will be offered spring 2008 on Mondays from 6:00pm-8:50pm. Like all power electives, power plant engineering is available via APEX webcast. For more information, please contact; Dr. Fehr at fehr@eng.usf.edu.

