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www.hpcnet.com

Course Information Letter ---- CT101

COMBINED CYCLE PLANT FUNDAMENTALS CT101

For new personnel entering the power plant industry, the initial experience can be overwhelming. The goal of this course is to familiarize operating personnel with the balance-of-plant aspects of operating a combined cycle power plant. For information regarding the "thermal-block", see our course CT301, Combined Cycle Fundamentals. This course is intended for operating personnel new to combined cycle power plant operations.

OBJECTIVES:

At the completion of this course the participant will be able to:

1. Describe the four phases of the power generation cycle as it pertains to combined cycle systems.
2. Describe the operation and major components of a combustion turbine.
3. Describe the operation and major components of the heat recovery system.
4. Describe the operation and major components of a steam turbine.
5. Describe the operation and major components of the condensate system.
6. Describe the interaction between the Rankine and Brayton Cycles.
7. Describe how each component interacts with each other component in the system.
8. List and briefly describe the environmental systems typically found in a combined cycle power plant.

COURSE OUTLINE:

- I. Fuel System Flow Path and Major Components
- II. Condensation System Flow Path and Major Components
- III. Feedwater System Flow Path and Major Components
- IV. Heater System Flow Path and Major Components
- V. Heater Drain System Flow Path and Major Components
- VI. Main Steam System Flow Path and Major Components
- VII. Steam Extraction System Flow Path and Major Components
- VIII. Circulating Water Flow Path and Major Components
- IX. Environmental Systems
- X. Water Treatment System

COURSE DATES/LOCATION/FEE

For current dates / locations / prices, please see HPC's website, www.hpcnet.com.

INSTRUCTOR (S):

Combined Cycle Plant Fundamentals CT101

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Dan Anderson is the primary instructor for this course. Dan started his career in the US Navy as a Boiler Technician. After his discharge Dan was a civilian instructor for the US Navy at Great Lakes Naval Training Center. While there Dan instructed Navy personnel in the four-phase steam cycle including balance of plant equipment. In 1990 Dan returned to Minnesota and received his Minnesota State Chief A Engineers license. After a few years in the position as Chief Boiler Engineer For Green Giant Co. and Maintenance Manager for Minnesota Energy, Dan went to work for Hutchinson Utilities Commission in Hutchinson, Minnesota. His position there was Operator 1. His operational responsibilities included GE LM 6000 Combined Cycle, GE Frame 5 Simple Cycle, and a GE Frame 3 Combined Cycle. He also had operations of 6 Diesel Engines for power production. Dan joined HPC Technical Services, June 2001. His main area of instruction is Gas Turbine/Combine Cycle Fundamental, Steam Turbine/Generator Fundamentals, Mechanical Maintenance Courses, and The Boiler Training. Dan currently holds a Chief A Engineers License for Minnesota, A Chief NIULPE Certificate, NIULPE Instructor and Examiners Certificate, Chief ASOPE Certificate, and is a Member of ASME.

Dana Elrod

Mr. Elrod has near 30-years experience in operating large electrical power plant facilities. From 1979 thru 2000, MidAmerican Energy Company in Council Bluffs IA employed Dana. Positions held include that of Operations Superintendent, Shift Supervisor, Training & Safety Supervisor and Environmental Specialist. From 1974 thru 1979 Mr. Elrod was employed as an Environmental Specialist for the State of Iowa Department of Environmental Quality. Mr. Elrod holds a BS in Management from Drake University, 1985

Hayes, Robert

Mr. Hayes instructs HPC's Balance-of-Plant O&M courses as well as our popular "Power Plant Blackout Preparedness" course. Mr. Hayes, prior to early retirement, held several positions during his long tenure at Illinois Power: (1) Results Engineer, Results Supervisor. Mr. Hayes had responsibilities, which included equipment performance testing, and rotating machinery vibration analysis and correction. (2) Supervisor Plant Operations. Mr. Hayes had responsibilities which included startup and checkout of new equipment, supervision of four operating shifts, and coal receiving and handling group. (3) Power Plant Operations Specialist. Mr. Hayes had responsibilities, which included frequent visits to all five fossil power stations, participation in control replacement projects, participation in development and implementation of clean air compliance plans, and served as an internal consultant for fossil power generation operations. He led several technical teams that identified and recommended protective system improvements to the large generating units. He conducted root cause analysis of several major equipment failures.

HPC TECHNICAL SERVICES
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Website: www.hpcnet.com

REGISTRATION FORM

Company: _____

Plant: _____

Address: _____

City/State/Zip: _____

Telephone: _____ FAX: _____

Course Number/Title: _____

Course Dates: ____/____/____ Thru ____/____/____

Course Location: _____ Course Fee: _____

Please enroll the following individual(s) listed below:

Student #1: _____

Student #2: _____

Taking advantage of HPC's 3-4-2 Policy: Send 3, Pay for 2 when paying in advance.

Student #3: _____

Enrolled by: _____

Date: _____

METHOD OF PAYMENT

Check to Follow: _____

Check Enclosed #: _____

MC/Visa/AMEX #: _____

Expiration Date: _____ CV Code: _____

Purchase Order #: _____