



Course Information Letter ---- OP431

ABC'S OF POWER GENERATION OP431

This course provides an insight as to how a power plant works. This course offers a meaningful introduction to power plant fundamentals, operational issues, safety considerations and health concerns. Lawyers, consultants, public officials, media representatives and veteran energy personnel will benefit from a well-rounded overview of industry basics. Those that work in or around the power plant, but not directly involved, will gain a needed understanding of the technology.

The goal of the course is that a non-industry, non-engineer, might have sufficient understanding of the design and operation of a non-nuclear power plant such that he/she can better understand technical communications on operational issues associated with power plant design.

There can be many issues governing the design and operation of these non-nuclear, as well as nuclear power plants. In the not-to-distant future we have a need to make significant decisions about the generation of electric power. We have a growing need, therefore, to better understand this equipment. In this 1.5 day course the participant will learn more about the sources of fuel as well as the advantages / disadvantages of each of these fuel choices (there can be more than what might meet the uninformed eye). Learn how this fuel is transformed into electrical energy.

Not too long ago a presidential candidate stated that he was appalled to learn that only 35% of the energy (available in the fuel) gets to the consumers' home. This statement was made once (as far as we know) and never repeated. It is apparent (to us – we think) that someone who “understood” informed this candidate of the facts. It is interesting, however, that candidate (to the best of our knowledge) never apologized, and this would have been a wonderful opportunity to educate the public. This course is intended to inform anyone/everyone of these facts so that responsible opinions can be developed.

WHO SHOULD ATTEND:

- Employees new to the power plant industry or with limited industry experience.
- Regulators, commission staff (state and federal), attorneys, ISOs/RTOs, industry vendors and others that need a basic understanding of power plants.
- Federal, state and local government officials who need to understand the ‘hows’ and ‘whys’ of electric power generation.
- Local and national media personnel who need who manage communications on electric power generation.
- Plant administrative and support personnel looking to augment their understanding of their electric power plants

OBJECTIVES: Upon completion of this course the participant will be able to:

1. List the sources of fuel that might be used to drive a modern power plant.
2. List some of the key advantages/disadvantages with each of these fuels.
3. Describe, in non-engineering terms, how steam is derived from fuel.
4. Describe, in non-engineering terms, how mechanical energy is derived from steam (and gas).
5. Describe, in non-engineering terms, how electrical energy is derived from a turbine output.
6. Describe, in non-engineering terms, how exhaust steam is returned to the steam generator.
7. Demonstrate an understanding of the terms used to describe efficiency for any of these power plants.
8. Describe how different power plants impact the environment and different tasks that might protect that environment.

COURSE OUTLINE

Day One

Introduction

Fuels

- Source
- Availability
- Advantage / Disadvantage
- Special Consideration
- Cost Considerations

Energy Conversion

- Generating Steam from Fuel
- Turbine: Mechanical Energy from Steam
- Generator: Electrical Energy from Mechanical

Day Two

Energy Conversion

- Condenser: Exhaust Steam to Water
- Pumps: Condenser Water to Steam Generator
- Gas Turbine Variations

Efficiency Issues

Environment Issues

COURSE DATES/LOCATION/FEE

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

FREQUENTLY ASKED QUESTIONS

- Will HPC Technical Services bring this course to our location for our personnel only? YES, call or email Stephen Parker, stparker@hpcnet.com for a price quotation.
- Will HPC Technical Services customize the presentation at our site to suit our particular needs? Yes.
- Is HPC Technical Services' textbook available for purchase as a reference document? No.
- What is the cost for HPC Technical Service to deliver this course at our location? Well, of course that can vary, but generally speaking, if you're planning on having 6+ attend, when considering your T&L; it is to your advantage to perform the course at your plant (office). You gain from the customization and price.

WHAT YOU WILL RECEIVE:

1. 1 copy of HPC Technical Services' instructor notes.
2. A "Certificate of Completion" with 1.0 CEU, authorized for issue by the International Associate of Continuing Education/Training.

INSTRUCTOR (S):

ABC's of Power Generation – OP431

www.hpcnet.com

Robert Hayes 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.



Harold Parker is the founder & President of H Parker & Company, Inc. Mr. Parker has worked in the "Power Generation" industry for 36 years, 14-years with GE as a Field Engineer, Start-Up Engineer, Technical Training Specialist and Manager. In 1983 Mr. Parker resigned from GE and started a training company, Schenectady Learning Systems, in Schenectady NY, which evolved into H Parker & Company, Inc. today. During this post-GE period, Mr. Parker was briefly employed as Manager Turbine-Generator Services with General Physics (2-years) and as a Field Engineer with Mechanical Dynamics & Analysis (2-years). Mr. Parker holds a BSME ('69 from Lawrence Institute of Technology), a MBA ('81 from the State University of New York @ Albany) and is a member of ASME, IEEE, NIULPE, and ASTD. Mr. Parker resides in Bradenton FL.



Dan Anderson 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.



Douglas Lemmo, PE. Mr. Lemmo has 35 years experience in the power generation industry, 31 of them with GE. Within GE he was initially employed as a field engineer (1971-1976). Here he was responsible for the installation and startup of a number of large and medium steam turbine generators and the feed pump turbines. In addition to this installation work, Mr. Lemmo also performed maintenance service on a variety of nuclear, fossil and marine turbine units. After leaving the field, Mr. Lemmo taught in GE's Field Engineering Development Center. Here his specialty was steam turbine generators, installation, alignment and maintenance. After a couple years instructing, he accepted a position selling maintenance and repair services. In 1982, Mr. Lemmo was the Project Manager for a Waste-to-Energy site. Later projects included a modernization of a hydroelectric facility and the management of the installation of a few combined cycle sites. In 2002, Doug left GE and founded Power Generation Consulting Services, which focuses primarily on the operation, maintenance and repair of steam turbine generators. In this last position, Doug has been closely aligned with HPC as he has instructed many of our courses and provided site-engineering support on HPC contracts.

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 #: _____

HOW DID YOU LEARN OF THIS COURSE

- Attended other HPC courses.
- Internet Search
- Received a fax.
- Received an email.
- Other: _____