



EUCI Presents a Course on:

# PEAKING POWER PLANTS 101

October 5-6, 2009 • Regency Plaza DTC • Denver, CO



This course has been approved for 12.5 CPEs.



EUCI is authorized by IACET to offer 1.0 CEUs for this program.

# PEAKING POWER PLANTS 101

October 5-6, 2009

## OVERVIEW

The peaking power plants 101 course is a general introductory course providing basic technical concepts needed to understand how a power plant works, followed by a general overview of the layout and operating principles of various peaking power plants. All major systems in the power plant will be discussed from fuel and water into the plant to the generation of electricity. Relationships between power plant systems will be illustrated. Focus will be on simple presentation of technical ideas, so attendees are not required to have an engineering or technical background.

## WHO SHOULD ATTEND

- New employees who work at or deal with peaking power plants
- Generation dispatchers who need a basic understanding of peaking power plant operation
- Regulators, communications staff, and others who need a basic understanding of peaking power plant operations
- Administrative or management support professionals who need a better understanding of peaking power plants to plan and implement projects
- Corporate accountants who desire a better understanding of peaking power plant operations and the factors that can affect operating costs
- Sales professionals who must understand peaking power plant operations to better serve customers

## LEARNING OUTCOMES

Attendees will review and discuss:

- The basic concepts of energy conversion, namely, conversion of chemical energy to electricity
- The basic concepts of temperature, work, and heat in power plant operation
- The basic components of a peaking power plant and how they work together to produce energy
- The basics of fuel combustion and how fuels are prepared and combusted in various peaking plants
- The basic components of the electrical generator and how the generator transforms mechanical energy from the turbine or engine into electrical energy
- The basic components of an electrical switch yard and how it works to transmit electrical energy into the electrical transmission and distribution systems outside of the power plant
- The basic regulations affecting operation of peaking power plants
- The flexibility in operation of a peaking power plant and how it can meet the demands of the market

## LOCATION INFORMATION

Regency Plaza is located in the Denver Technological Center at the intersection of two of Denver's major interchanges, I-25 and I-225 providing easy highway access, conveniently reaching anywhere in the Metro Area with a short 20 minute drive to the Downtown Denver Business District.

### Nearby Hotels

Hyatt Regency-Tech Center-  
Denver  
7800 East Tufts Ave.  
Denver, CO 80237  
(303) 779-1234  
www.techcenter.hyatt.com  
(1 block away)

Hilton Garden Inn Denver  
Tech Center  
7675 East Union Ave.  
Denver, CO 80237  
(303) 770-4200  
www.hiltongardeninn.com  
(2 blocks away)

Hampton Inn & Suites  
5001 South Ulster St.  
Denver, CO 80237  
(303) 804-9900  
www.denverttechcenter.  
hamptoninn.com  
(2 blocks away)

## IACET



EUCI has been approved as an

Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102. In obtaining this approval, EUCI has demonstrated that it complies with the ANSI/IACET Standards which are widely recognized as standards of good practice internationally.

As a result of their Authorized Provider membership status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standards.

EUCI is authorized by IACET to offer 1.0 CEUs for this program.

### Requirements for Successful Completion of Program

Participants must sign in/out each day and be in attendance for the entirety of the course to be eligible for continuing education credit.

### Instructional Methods

PowerPoint Presentations, Classroom Discussion

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## PROGRAM AGENDA

### MONDAY, OCTOBER 5, 2009

- 8:00 – 8:30 a.m.      **Registration and Continental Breakfast**  
8:30 a.m. – 5:00 p.m.      **Course Timing**  
12:00 – 1:00 p.m.      **Group Luncheon**
- 8:30 - 8:45 a.m.      **Introduction, Format, Objectives**
- 8:45 - 9:15 a.m.      **Primer**
- Power Plant Concepts
  - A Simple Power Plant
  - Basic Energy Conversion
  - Converting Combustion to Mechanical Energy
  - Converting Mechanical Energy to Electrical Energy
- 9:15 - 10:00 a.m.      **Heat and Energy**
- Properties of Substances
  - Mass, Volume, and Density
  - Pressure and Flow
  - Units of Pressure
  - Pressure Measurement
  - Causes of Flow, and Flow Measurement
  - Temperature and Heat
  - Forms of Energy
  - Work and Heat in Power Plants
  - The Properties of Water
- 10:00 - 10:30 a.m.      **Combustion Basics**
- How Does Fuel Burn?
  - Oil and Natural Gas Combustion
  - Heat Losses during Combustion
  - Natural Gas and Oil Ignition Systems
  - Fuel Supply Systems
  - Hazards of Handling and Storing Fuels
- 10:30 - 10:45 a.m.      **Morning Break**
- 10:45 a.m. - 12:00 p.m.      **Peaking Plant Basics**
- Types of Peaking Plants
  - How They Work
  - Peaking Plant Applications
  - Components of a Peaking Plant
  - Air, Fuel and Exhaust Flow Paths
  - Peaking Plant Operation
  - Requirements for Operation
- 12:00 - 1:00 p.m.      **Group Luncheon**

## CPE CREDITS



EUCI is registered with the National Association

of State Boards of Accountancy (NASBA) as a sponsor of continuing professional education on the National Registry of CPE Sponsors. State boards of accountancy have final authority on the acceptance of individual courses for CPE credit. Complaints regarding registered sponsors may be addressed to the National Registry of CPE Sponsors, 150 Fourth Avenue North, Suite 700, Nashville, TN, 37219-2417.

Web site: [www.nasba.org](http://www.nasba.org).

Upon successful completion of this event, program participants interested in receiving CPE credits will receive a certificate of completion.

This course has been approved for 12.5 CPEs. There is no prerequisite for this conference.

**Program Level:** Beginner

**Delivery Method:**

Group-Live

**Advanced Preparation:**

None

# PEAKING POWER PLANTS 101

October 5-6, 2009

## PROGRAM AGENDA

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### MONDAY, OCTOBER 5, 2009 (CONTINUED)

- 1:00 - 3:00 p.m.**      **Peaking Plant Components**
- Components of a Peaking Plant
  - Air, Fuel and Exhaust Flow Paths
  - Auxiliary Equipment
- 3:00 - 3:15 p.m.**      **Afternoon Break**
- 3:15 - 3:45 p.m.**      **Emissions Control**
- Basics of NOx and CO
  - Emissions Control Applications
- 3:45 - 4:15 p.m.**      **Power Plant Electrical Primer**
- Basic Electrical System Concepts
  - Simple Generation and Transmission Concepts
- 4:15 - 4:50 p.m.**      **Power Plant Alternating Current (AC) Generators**
- Construction and Operating Principles of Large AC Generators
  - Exciter Systems
- 4:50 - 5:00 p.m.**      **Summary**

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### TUESDAY, OCTOBER 6, 2009

- 7:30 - 8:00 a.m.**      **Continental Breakfast**
- 8:00 a.m. - 12:00 p.m.**      **Course Timing**
- 8:00 - 8:15 a.m.**      **Water Treatment**
- The Effects of Untreated Water on Operations
  - Water Chemistry Parameters
  - Treatment Systems
- 8:15 - 8:30 a.m.**      **Instrumentation**
- Instrumentation
  - Pressure
  - Temperature
  - Flow
  - Water Level
  - Turbine/Engine Supervisory
  - Combustion
  - Water Analysis
- 8:30 - 8:45 a.m.**      **Main Control Systems and Interlocks**
- Control
  - Combustion
  - Temperature
  - Interlocks
  - Electrical

register today! Call (201) 871-0474

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## PROGRAM AGENDA

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### TUESDAY, OCTOBER 6, 2009 (CONTINUED)

- 8:45 - 9:45 a.m. Peaking Plant Maintenance**
- Preventive and Predictive Maintenance
  - Maintenance Drivers
  - Repair / Replacement Options
- 9:45 - 10:00 a.m. Morning Break**
- 10:00 - 11:00 a.m. Plant Operations**
- Basic Operating Procedures and Principles
  - Peaking Plant Operation
  - Requirements for Operation
  - Emergency Situations
- 11:00 - 11:30 a.m. Station Performance**
- Measuring Efficiency
  - Measuring Reliability / Availability
  - Factors Effecting Plant Performance
- 11:30 a.m. - 12:00 p.m. Review**
- Summary of Material Covered
  - Final Questions and Discussion

## INSTRUCTOR

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**Rob Shepard** has over 21 years of power generation industry experience in the operation and maintenance of gas, oil and coal fired power plants. He has extensive experience in combustion turbine and steam turbine operations and maintenance and has worked at over 45 combustion turbine sites in simple or combined cycle configuration. Mr. Shepard is currently the **Owner and President of The Energy Group**. He provides leadership and consulting in asset management related services including O&M assessment, O&M strategy development, due diligence, condition assessment, plant feasibility and development, plant expansion, maintenance management, outage optimization, outage management, troubleshooting and problem solving, and process improvements. Prior to owning his own company, Mr. Shepard was a Project Manager and O&M Consultant at ProEnergy Services and Black & Veatch. His assignments included various assignments on gas and oil fired simple cycle and combined cycle plants as well as gas, oil, and coal fired thermal power plants. Mr. Shepard also worked for Entergy Corporation for over twelve years in the operation and maintenance of various plants, including steam and gas turbine power plants, as a Plant Engineer, Environmental Coordinator, Maintenance Manager, Outage Manager and Plant Manager.

PROCEEDINGS

The proceedings of the seminar will be published and one copy will be distributed to each registrant at the course.

COURSE LOCATION

The course will be held at the Regency Plaza DTC, 4643 S. Ulster Street, 12th Floor, Denver, CO 80237. Regency Plaza is located in the Denver Technological Center at the intersection of two of Denver's major interchanges, I-25 and I-225 providing easy highway access, conveniently reaching anywhere in the Metro Area with a short 20 minute drive to the Downtown Denver Business District.

Suggested hotels can be found on page 2.

REGISTRATION INFORMATION

REMEMBER, EVERY 4TH REGISTRANT IS FREE

For instant registration, call (201) 871-0474 or fax the Registration Form to (253) 663-7224.

Register 3, Send 4th Free!!

Any organization wishing to send multiple attendees to these conferences may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.

All cancellations received on or before September 4, 2009 will be subject to a US \$195 processing fee. Written cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI conference or publication. This credit will be good for six months. In case of conference cancellation, Electric Utility Consultants' liability is limited to refund of the conference registration fee only. For more information regarding administrative policies such as complaint and refunds, please contact our offices at (201) 871-0474.

EUCI reserves the right to alter this program without prior notice.

MAIL DIRECTLY TO:

The Power Marketing Association (PMA)
P.O. Box 2303
Falls Church, VA 22042

FAX TO: (253) 663-7224
PHONE: (201) 871-0474

PLEASE REGISTER THE FOLLOWING

Peaking Power Plants 101 Course, October 5-6, 2009, US \$1395
Early Bird on or Before September 25, 2009, US \$1195

ENERGIZE WEEKLY

When you sign up to "Energize Weekly" you will receive a new conference presentation each week via email on a relevant industry topic. The presentations are selected from a massive library of over 1000 current presentations that EUCI has gathered during its 22 years organizing conferences.

Sign me up for "Energize Weekly"

How did you hear about this event?
(Direct email, Colleague, Speaker(s), etc.)

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PAYMENT METHOD Please make checks payable to "PMA"

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Visa and MC cards have a 3 digit code on the signature panel on the back of the card, following the account number. American Express cards have a 4 digit code on the front of the card, above the card number.

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Or enclosed is a check for \$ \_\_\_\_\_ to cover \_\_\_\_\_ persons.

Check here if you have any dietary or accessibility needs. We will contact you for more details.

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