



AEE CERTIFIED ENERGY MANAGER (CEM): 3.6 CEU's PREPARATORY COURSE FOR THE AEE CEM EXAMINATION *FIVE-DAY SEMINAR*

LOCATIONS & DATES

New York, NY

Stony Brook University Manhattan
387 Park Avenue South
New York, NY 10016

Registration Contact:
(631) 216-7516

http://www.stonybrook.edu/commcms/cet/courses/leed_and_greentech/cem.html

April 9-13, 2012

Certification Exam: April 13, 2012

May 14-18, 2012

Certification Exam: May 18, 2012



ABOUT THE SEMINAR

This special 5-day seminar provides an in-depth, comprehensive learning and problem-solving forum for those who want a broader understanding of the latest energy cost reduction techniques and strategies. The program begins by examining the basic fundamentals within all key areas of energy management. From there, the instructors systematically move to a “working level” knowledge of the specific principles and techniques needed to really get the job done. This approach has been specially designed to fulfill the needs of professionals who seek a broader and more detailed learning experience than can be provided in AEE’s shorter courses. In only five days, you can gain the knowledge and confidence it takes to effectively apply state-of-the-art principles of energy management, and to achieve control over energy costs in your organization — whether you’re responsible for managing a single facility or developing an energy management program for multiple corporate facilities, government buildings, etc. AEE’s most requested program, this seminar has been completed by thousands of professionals since its inception in 1994.

ABOUT CERTIFICATION

In order to qualify to sit for the CEM exam. The CEM examination will be administered at each seminar site beginning at 11:00 am on the last day of instruction - only to those candidates who have qualified in advance to sit for the exam. To obtain/print your CEM application form or see further information on the CEM program, visit www.aeecenter.org/inhouseforms.

Please submit your application well in advance of the training to the AEE CEM Certification Director, Helen Johnson, via email: helen@aeecenter.org or (770) 447-5083 x218.

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SEMINAR OUTLINE

THE NEED FOR ENERGY MANAGEMENT

- Building energy cost control
- Utility DSM programs and deregulation — energy efficiency and peak demand reduction
- Commercial business energy cost control
- Industrial plant operation improvement:
 - Reducing energy costs
 - Reducing environmental emissions
 - Improving product quality
 - Improving plant productivity

ENERGY AUDIT INSTRUMENTATION

- The need for instrumentation
- Light level meters
- Electric meters – Voltages, current, power, energy, power factor
- Temperature-measuring instruments
- Combustion efficiency measurement
- Air flow and air leak measurement
- Thermography
- Data logging

BUILDING ENERGY USE AND PERFORMANCE

- Fuel types and costs
- Energy content of fuels
- Energy conversion factors
- Building envelope
- Natural gas purchasing
- Retail wheeling of electricity
- Major building energy use systems

ELECTRIC RATE STRUCTURES

- Short history of electric rates
- The difference between power and energy
- Electric meters
- Components of electric rates
- Example rate structures
- Factors in controlling electric costs
- Electric utility incentive programs
- Special schedules (interruptible, TOU, real-time pricing)

CONDUCTING AN ENERGY AUDIT

- Purpose of the energy audit
- Facility description and data needs
- Major systems in the facility
- Data forms for recording information
- Collecting the actual data
- Identification of preliminary energy management opportunities

ENERGY CODES AND STANDARDS

- Building codes
- ASHRAE standards (62, 15, 3, 90.1)
- ASME, IEEE, and other standards
- Federal legislation – NECPA, PURPA, NGPA, CAAA, NEPA of 1992
- CFC replacements – Montreal Protocol, Global Climate Change
- National Energy Policy Act of 2005
- Proposed tax incentives 2002

ENERGY ACCOUNTING IN BUILDINGS AND FACILITIES

- Energy use index, energy cost index
- Where energy is used in facilities
- Lighting and HVAC energy use

ENERGY RATE STRUCTURES

- Identifying types of energy used
- Electric rates, gas rates
- Oil, coal, and other rates
- Steam and hot water rates
- Factors in controlling fuel costs
- Utility incentive programs

ECONOMIC ANALYSIS OF ALTERNATIVE INVESTMENTS

- Economic decision analysis
- Simple economic measures
- The time value of money
- Present and future values
- Cost and benefit analysis
- After tax cash flows

ALTERNATIVE FINANCING

- Role of performance contracting
- Different sources (loans, stock sales, bonds, etc.)
- FEMP and alternative financing
- True lease, capital lease, bonds, etc.

LIFE CYCLE COSTING

- Concept of life cycle costing
- Purchase costs vs. operating costs
- Example analyses
- Government standards — FEMP

ELECTRICAL ENERGY MANAGEMENT

- Peak load reduction
- Power factor improvement
- Energy management control systems
- Load management
- Harmonics and other power quality issues

MOTORS AND ADJUSTABLE SPEED DRIVES

- How motors work
- High-efficiency motors
- Examples of cost-effective motor changes
- Use of adjustable speed drives
- Example of cost-effective ASD use improved motor belts and drives
- Compressed air management
- Adjustable speed drive alternatives:
 - eddy current clutches
 - permanent magnet clutches
 - variable frequency drives
 - inlet and outlet vane control, etc.

CONTROLS AND ENERGY MANAGEMENT

- Night set back
- Optimum start/stop
- Enthalpy economizers
- Temperature resets
- PID controls, pneumatic controls
- Control characteristics
- DDC

LIGHTING

- Basics of lighting and current lighting technologies
- New lighting technologies
- Economic evaluation of example lighting improvements
- Lighting standards
- EPA Green Lights program
- T12, T8, T5 lamps
- Compact fluorescents
- HID, sulfur lamps

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HVAC SYSTEM

- Types of HVAC systems and new technologies
- The vapor-compression cycle
- Air conditioning loads
- Chiller improvement example
- Control, thermal storage, absorption systems

INSULATION

- Types of insulation
- Heat flow calculations
- Economic levels of insulation
- Passive thermal energy
- Process insulation

GREEN BUILDINGS, LEED® & ENERGY STAR

- Green buildings and sustainable design
- U.S. Green Buildings Council and LEED
- LEED certification: LEED -- NC, EB, CI, CS
- ASHRAE 90.1 energy cost budget method
- Energy and atmosphere, indoor environmental quality, water efficiency
- EPA and the ENERGY STAR program
- ENERGY STAR building label
- Energy performance ratings and profile manager

BOILERS AND STEAM GENERATION

- Basics of combustion systems – excess air control
- Boiler efficiency improvement – blowdown management, condensate return, turbulators
- Combustion controls
- Waste heat recovery
- Steam traps – purpose and testing
- Process insulation
- Example of boiler improvement

MAINTENANCE

- Maintenance management systems
- Monitoring for maintenance
- Infrared photography for maintenance
- Cost of – Air, steam, gas leaks; uninsulated surfaces

COGENERATION (CHP)

- What is cogeneration
- Types of cogeneration cycles
- Examples of cost-effective use of cogen
- QF's and deregulation
- Use of waste for fuel
- Fuel cells, microturbines, etc.

ALTERNATIVE FINANCING

- Different financing methods
- Attributes of each method
- After-tax cash flow analysis

FEES

Note: Fees below are for seminar and certification exam. In order to qualify to sit for the CEM exam, you must submit your completed CEM application.

Regular Fee: \$1750

Reduced rate for New York State Residents in SBC Territory: \$1250*

* Those that live or work within the NYS SBC service territory, or who demonstrate active participation in a NYSEERDA or utility program funded by the NYS SBC or EEPS, are eligible for a \$500 discount.

SEMINAR HOURS

Note: Below are standard seminar hours. Please refer to your registration confirmation letter to confirm actual seminar hours for the program for which you have registered.

Sign-in and On-site Registration Day 1: 8:00 am

Seminar Hours Day 1: 8:30 am - 5:00 pm

Seminar Hours Days 2 through 4..... 8:00 am - 4:30 pm

Seminar Hours Day 5: 8:00 - 10:00 am

Exam on Day 5 Following Seminar: 11:00 am - 3:00 pm

(separate pre-application required to sit for exam)

REGISTRATION ASSISTANCE

For assistance or questions pertaining to your seminar registration, please contact:
Stony Brook, Manhattan: (631) 216-7516