



4-DAY COURSE SYLLABUS

Energy Management

ENBE01-ONL26 · ONLINE (ZOOM)

This course provides essential knowledge and tools for identifying and implementing energy-saving opportunities (ESOs) in industrial equipment and systems, offering significant cost-saving potential. Efficient engineering practices, combined with advanced energy management programs, can generate energy savings exceeding 40% of an industrial facility's total energy costs. This course equips participants with expertise in technology-based energy conservation measures and analysis procedures to achieve these savings.

CEUS / PDHS	INSTRUCTOR	DAYS	PRICE	WORKSHOPS	SKILL LEVEL	COURSE CODE
2.2 / 22	Dr. Mohamed Hamed, PhD, P.Eng., FEC	4	\$2,195.00 CAD	6 workshops	Beginner	ENBE01-ONL26

DESCRIPTION

This course provides essential knowledge and tools for identifying and implementing energy-saving opportunities (ESOs) in industrial equipment and systems, offering significant cost-saving potential.

Efficient engineering practices, combined with advanced energy management programs, can generate energy savings exceeding 40% of an industrial facility's total energy costs. This course equips participants with expertise in technology-based energy conservation measures and analysis procedures to achieve these savings.

The course covers the fundamentals of energy conservation analysis and technical methodologies for assessing ESOs in equipment and systems commonly found in industrial facilities. Participants will also gain hands-on experience with one of the most widely used energy conservation software tools in North America and internationally. The knowledge shared is applicable for optimizing existing equipment and selecting energy-efficient new systems.

Workshops on real case studies, guided by the instructor, provide valuable practical experience. Participants are encouraged to bring their own laptop for the course.

WHAT YOU WILL LEARN

- Perform advanced energy management and conservation analyses for industrial equipment and systems
- Identify and assess energy-saving opportunities in a range of industrial equipment and systems
- Utilize a leading energy conservation software tool to analyze the feasibility of energy-saving projects

COURSE OUTLINE

- 01 Fundamentals of Energy Conservation Analysis
- 02 Introduction and Demonstration of the Energy Conservation Computer Software
- 03 ESOs in Boiler Systems
- 04 ESOs in Steam Distribution Systems
- 05 ESOs in Waste-Heat Recovery and Cogeneration Systems
- 06 ESOs in HVAC Systems
- 07 ESOs in Lighting Systems
- 08 ESOs in Piping Systems Using Pumps and Fans

WHO SHOULD ATTEND

- Design and project engineers
- Technologists
- Plant and facility engineers
- Consultants
- Mechanical engineers and technologists
- Maintenance and operation personnel
- Other technical personnel needing to develop/upgrade/refresh their knowledge of HVAC and energy conservation systems
- Engineering Students

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Customize this course — We can offer a customized version of this course, in terms of duration and content, upon request.

REQUEST CUSTOMIZATION

DAILY SCHEDULE

4-Day Course Schedule

START	END	FORMAT	
10:00 AM EST	5:00 PM EST	Live Online	One-hour lunch break each day, plus refreshment and networking breaks each morning and afternoon session.

DAY	TOPIC	SUBTOPICS
DAY I	Fundamentals of Energy Conservation Analysis	- Principles of conservation analysis - Key performance metrics
	Energy Conservation Software	- Introduction to the software - Demonstration and guided practice
	ESOs in Boiler Systems	- Types of boilers - Boiler energy consumption - Mass and heat balance for boilers - Boiler combustion and thermal efficiencies - Key elements to maximize boiler efficiency - Assessment of heat-recovery potential
DAY II	Workshop I - using the computer software	Assess the impact of boiler efficiency improvements
	ESOs in Steam Distribution Systems	- Estimating surface and leakage losses - Steam traps - impact of inefficient removal of condensate - Impact of air in steam systems
	Workshop II - using the computer software	Assess the cost associated with steam leaks
DAY III	ESOs in Waste-Heat Recovery & Cogeneration	- Quantifying waste heat - Temporal availability - matching loads to source - Analyzing the possibility and economics of waste heat recovery - Waste heat recovery equipment and storage - Cogeneration Technologies
	Workshop III - using the computer software	Assess the feasibility of an industrial heat recovery project
	ESOs in HVAC Systems	- HVAC optimization techniques - System upgrades
	Workshop IV	Assess the feasibility of a set of measures to improve an industrial HVAC system
	ESOs in Lighting Systems	- Lighting technologies - Determining lighting needs
DAY IV	Workshop V	Assess the feasibility of an Industrial Re-Lamping Project
	ESOs in Piping Systems with Pumps & Fans	- System characteristics - Performance curves - Factors affecting the energy performance of a pump or a fan system - Energy efficiency opportunities
	Workshop VI	Assess the feasibility of using variable speed drive for a set of industrial fans