



COURSE OVERVIEW PE0118 Energy Efficiency Tools and Applications in the Oil and Gas Industry

Course Title

Energy Efficiency Tools and Applications in the Oil and Gas Industry

Course Date/Venue

Session 1: July 20-24, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Session 2: December 22-26, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE



Course Reference

PE0118



Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Description



This practical and highly-interactive course includes real-life case studies where participants will be engaged in a series of interactive small groups and class workshops

Many companies, especially the larger ones, have developed comprehensive programs that include corporate energy policies, reporting systems, benchmarking, various types of energy audits, and integration of energy efficiency elements into engineering procedures and purchasing protocols.



It is not only industry that has taken an interest in this area. Governmental Department of Energy and the Environmental Protection Agency have been active in developing and promoting energy efficiency practices. Meanwhile, the International Organization for Standardization launched ISO 50001:2011 in 2011 to “support organizations in all sectors to use energy more efficiently, through the development of an energy management system (EnMS)”.



To many people the term “process industries” is synonymous with continuous, largescale, petroleum and petrochemical processing—and indeed these types of operations are well represented in this book.

However, the Institute of Industrial Engineers defines the process industries much more broadly as “those industries where the primary production processes are either continuous, or occur on a batch of materials that is indistinguishable”. This includes not just oil refining and petrochemicals, but also a wide range of other sectors such as food and beverages, inorganic chemicals, pharmaceuticals, base metals, plastics, rubber, wood and wood products, paper and paper products, textiles, and many others.

This course presents a practical approach to building effective industrial energy efficiency policy through a focus on energy management, industrial system optimization, and measurement and documentation to support continuous improvement. Examples will be provided from United States, Europe, and China to illustrate the benefits of industrial energy efficiency.

This approach is not targeted to the use of energy efficient technologies in any specific sector; instead, it addresses the opportunities for improving energy efficiency that are common across all industrial sector. This course provides comprehensive and applied knowledge of pinch analysis and covers how to improve energy efficiency in existing plants or new projects.

This course is designed to provide participants with an up-to-date and detailed overview on energy efficiency improvement for process plants. It covers the value of an energy management program and the roles and responsibilities of energy resources; the energy benchmarking including the use of energy benchmarking to drive the improvement plan and the possible benchmarking methodologies; the energy efficiency trends and the objectives and methodology of energy efficiency indicators; the overall energy efficiency performance; the energy management standards that includes ISO management system basics and ISO 50001; and the energy management technologies covering the technologies of industrial energy efficiency, departmental classification, time frame classification, equipment, utility systems and process classification.

The course will also discuss the energy efficiency in furnaces and boilers, enhanced heat transfer, energy efficiency and heat exchanger cleaning methods; the monitoring of heat exchanger fouling and cleaning analysis; implementing the sustainable steam trap management program and managing steam leaks; the utility systems energy efficiency covering heat, power and the price of steam, balancing steam headers and managing steam/power system operations, etc.; and the process improvements for energy efficiency as well as pinch analysis, process heat integration, energy management key performance indicators (EnPIs) and energy dashboards.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an in-depth knowledge on energy efficiency improvement for process plants
- Assess the value of an energy management program, launch the program and identify the roles and responsibilities of energy resources

- Discuss energy benchmarking including the use of energy benchmarking to drive the improvement plan and the possible benchmarking methodologies
- Describe the energy efficiency trends and the objectives and methodology of energy efficiency indicators
- Carryout overall energy efficiency performance and review energy management standards that includes ISO management system basics and ISO 50001
- Recognize energy management technologies covering the technologies of industrial energy efficiency, departmental classification, time frame classification, equipment, utility systems and process classification
- Describe the energy efficiency in furnaces and boilers, enhanced heat transfer and energy efficiency and heat exchanger cleaning methods
- Monitor heat exchanger fouling and cleaning analysis, implement sustainable steam trap management program and manage steam leaks
- Determine utility systems energy efficiency covering heat, power and the price of steam, balancing steam headers and managing steam/power system operations, etc.
- Identify process improvements for energy efficiency as well as pinch analysis, process heat integration, energy management key performance indicators (EnPIs) and energy dashboards

Exclusive Smart Training Kit - H-STK®



*Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of energy efficiency improvement for process plants for engineers from process, engineering, R&D departments of industrial plants in various industries (oil, gas, petrochemical, chemical, energy, paper, food, etc.).

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos


In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.


Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology’s courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant’s involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant’s CEU and PDH Transcript of Records upon request.



Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Mr. Attalla Ersan, PEng, MSc, BSc, is a Senior Process Engineer with over 35 years of extensive experience within the Oil & Gas, Hydrocarbon and Petrochemical industries. His expertise widely covers the areas of Process Simulation Using Aspen Hysys & UniSim, Process Modelling, Process Design, Process Plant Operations, Process Plant Startup & Operating Procedure, Ethylene & Vinyl Chloride, Ethane Cracking Furnaces Operations,

Ethylene & Polyethylene Operation, Acid Gas Treatment, Sulphur Recovery, EDC & VCM, Caustic Soda Storage, Debottle-necking, Process Operation, Safety Audits, Process Engineering, Root Cause Investigations, Pyrolysis Cracking, Gas Plant Commissioning, Loss Prevention Techniques, Occupational Hazards, Hot Tapping & Tie-Ins, Pre-Start-Up Safety Review (PSSR), Standard Operating Procedure (SOP), Emergency Operating Procedure (EOP), Permit to Work Systems (PTW), Steam Cracking, Steam Generation, Binary Fractionators Operations, Tanks Farm & Metering Station Techniques, Gas Treatment, Sulphur Recovery Process Unit Operation, Permit to Work System, Emergency Response Planning, Boiler & Steam System Management, Waste Heat Recovery, Boiler Plant Safety, Boiler Controls, Steam Distribution Systems, Steam Traps, Pollution Control, Cracked Gas Compressor, Reboilers, Sulphur Unit Air Blower, Steam Turbine, Distillation Columns, Gas Treatment, Waste & Water Treatment Units, Pumps, Compressors, Turbines, Motors, Turbo-expanders, Gears, Heat Exchanger, Hazard and Operability (HAZOP) Study, Process Hazards Analysis (PHA), HAZOP Facilitation, Loss Prevention, Consequence Analysis Application, Gas Detectors Operation, Accident/Incident Investigation (Why Tree Method), Occupational Exposure Assessment, Fire Fighting & First Aid, Environmental Management and Basic Safety Awareness. Further, he is also well-versed in Project Management, Human Resources Consultancy, Manpower Planning, Job Design & Evaluation, Recruitment, Training & Development and Leadership, Creative Problem Solving Skills, Work Ethic, Job Analysis Evaluation, Training & Development Needs, Bidding & Tendering, Technical Report Writing, Supervisory Leadership, Effective Communication Skills and Total Quality Management (TQM). He is currently the CEO of Ersan Petrokimya Teknoloji Company Limited wherein he is responsible for the design and operation of Biogas Process Plants.

During his career life, Mr. Ersan has gained his practical and field experience through his various significant positions and dedication as the **Policy, Organization & Manpower Development Head, Training & Development, Head, Ethylene Plant – Pyrolysis Furnace Engineer, Production Engineer, Process Training Coordinator, Ethylene Plant Shift Supervisor, Ethylene Plant Panel & Fit Operator, Process Training & Development Coordinator, Technical Consultant, and Instructor/Trainer** for Qatar Vinyl Company Limited and Qatar Petroleum Company (QAPCO).

Mr. Ersan is a **Registered Professional Engineer** and has a **Master's degree of Education in Educational Training & Leadership** and a **Bachelor's degree of Petrochemical Engineering**. Further, he is a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, workshops, conferences and seminars internationally.



Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Fee

US\$ 5,500 per Delegate + **VAT**. This rate includes H-STK® (Howard Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	Energy Management in Practice Assessing the Value of an Energy Management Program • Launching the Program • Energy Resources: Roles & Responsibilities
0930 – 0945	Break
0945 – 1200	Case Study
1200 – 1215	Break
1215 – 1330	Energy Benchmarking What is Benchmarking? • Why Benchmark?
1330 – 1420	Energy Benchmarking (cont'd) Use of Energy Benchmarking to Drive the Improvement Plan • Possible Benchmarking Methodologies
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2

0730 – 0900	Energy Efficiency Trends
0900 – 0915	Break
0915 – 1100	Energy Efficiency Indicators: Objectives & Methodology
1100 – 1230	Overall Energy Efficiency Performance
1230 – 1245	Break
1245 – 1420	Energy Management Standards ISO Management System Basics • ISO 50001
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3

0730 – 0900	Energy Management Technologies The Technologies of Industrial Energy Efficiency • Departmental Classification • Time Frame Classification • Equipment, Utility Systems & Process Classification
0900 – 0915	Break
0915 – 1100	Equipment Energy Efficiency Energy Efficiency in Furnaces and Boilers • Enhanced Heat Transfer & Energy Efficiency • Heat Exchanger Cleaning Methods





1100 – 1230	Equipment Energy Efficiency (cont'd) Monitoring of Heat Exchanger Fouling & Cleaning Analysis • Successful Implementation of a Sustainable Steam Trap Management Program • Managing Steam Leaks • Rotating Equipment: Centrifugal Pumps & Fans
1230 – 1245	Break
1245 – 1420	Equipment Energy Efficiency (cont'd) Rotating Equipment: Centrifugal Pumps & Fans • Industrial Insulation
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4

0730 – 0900	Utility Systems Energy Efficiency Heat, Power & the Price of Steam • Balancing Steam Headers & Managing Steam/Power System Operations • Real-Time Optimization of Steam & Power Systems Fuel Gas Management & Energy Efficiency in Oil Refineries
0900 – 0915	Break
0915 – 1100	Utility Systems Energy Efficiency (cont'd) Refrigeration, Chillers & Cooling Water • Compressed Air System Efficiency
1100 – 1230	Utility Systems Energy Efficiency (cont'd) Lighting Systems • Heating, Ventilation & Air-Conditioning Systems
1230 – 1245	Break
1245 – 1420	Process Energy Efficiency Identifying Process Improvements for Energy Efficiency
1420 – 1430	Recap
1430	Lunch & End of Day Four

Day 5

0730 – 0900	Process Energy Efficiency (cont'd) Identifying Process Improvements for Energy Efficiency (cont'd)
0900 – 0915	Break
0915 – 1100	Process Energy Efficiency (cont'd) Pinch Analysis & Process Heat Integration
1100 – 1230	Process Energy Efficiency (cont'd) Energy Management Key Performance Indicators (EnPIs) and Energy Dashboards
1230 – 1245	Break
1245 – 1345	Case Study
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course



Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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