

COURSE OVERVIEW PE0245 Separation Process Technology in the Industry

Course Title

Separation Process Technology in the Industry

Course Date/Venue

Session 1: February 23-27, 2025/Al Khobar Meeting Room, Hilton Garden Inn, Al Khobar, KSA

Session 2: October 26-30, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE



PE0245

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.

This course is designed to provide participants with a detailed and up-to-date overview of separation process technology in the industry. It covers the separation process technology and its various roles and separating agents; the common steps in designing all separation process; and the process of distillation including its similar and alternative processes and the stages of equilibrium and its efficiency.

Further, the course will also discuss the absorption and stripping processes covering the operating lines for absorption, stripping analysis, column diameter, dilute multisolute absorbers, strippers, etc; the extraction process and the various types and features of extractors; the importance and role of leaching and washing methods in separation technology and the common equipments used in the processes; the concept of adsorption process and desorption method; and the theory of membrane processes including its design consideration and future uses.

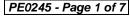


















During this interactive course, participants will learn the role of energy consumption in distillation; the concept and uses of the distillation and extraction; the strengths and weaknesses of distillation and other separation processes in the industry; the advantages and disadvantages of each separation process their features and specifications; and the step-by-step procedures for separation process selection for liquid and gas waste treatment applications.

Course Objectives

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

- Apply and gain a comprehensive knowledge on separation process technology in the industry
- Discuss the separation process technology and identify its various roles and separating agents
- Recognize the common steps in designing all separation processes
- Explain the process of distillation including its similar and alternative processes and the stages of equilibrium and its efficiency
- Identify absorption and stripping processes covering the operating lines for absorption, stripping analysis, column diameter, dilute multisolute absorbers, strippers, etc.
- Carryout extraction process and recognize the various types and features of extractors
- Identify the importance and role of leaching and washing methods in separation technology and list down the common equipments used in the following processes
- Distinguish the concept of adsorption process and desorption method
- Discuss the theory of membrane processes including its design considerations and future uses
- Determine the role of energy consumption in distillation and differentiate the concepts and uses of distillation and extraction
- Describe the strengths and weaknesses of distillation and other separation processes in the industry as well as the advantages and disadvantages of each separation process and their features and specifications
- Employ the step-by-step procedures for separation process selection for liquid and gas waste treatment applications

Exclusive Smart Training Kit - H-STK®



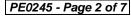
Participants of this course will receive the exclusive "Haward Smart Training Kit" (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes electronic version of the course materials conveniently saved in a Tablet PC.















Who Should Attend

This course provides an overview of all significant aspects and considerations of separation process technology in the industry for engineers, chemists, managers and other technical staff who will maximize profitability by optimizing performance of separation processes in the chemical, petrochemical, petroleum, pharmaceutical, food and paper industries.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations:-

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.



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.



















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. Manuel Dalas, MSc, BSc, PMI-PMP, is a Senior Project & Management Consultant with over 20 years of industrial experience in Oil, Gas, Refinery, Petrochemical, Power and Nuclear industries. His wide expertise includes Project Management, Project Management Professional (PMP), Project Management Concepts. Project Management Framework, Integration Management, Scope Management, Time Management, Human Management, Communications Management, Scorecard, Change Management, Contract Management, Procurement & Purchasing Management, Strategic & Planning Management, Root Cause

Analysis, Quality Assurance Management, Claim & Counterclaim Management, Budgeting, Project Scheduling and Risk Management. Further, he is also well-versed in Petroleum Economics, Maintenance Planning & Scheduling, Maintenance & Reliability Management, Process Piping, Vibration Monitoring, Safety Relief Valve, Heat Exchanger, Process Plant Start-Up, Commissioning Troubleshooting, Process Plant Performance & Efficiency, Process Plant Optimization, Revamping & Debottlenecking, Hydrogen Sulfide and Flare Systems. Currently, he is the Technical Consultant of the Association of Local Authorities of Greater Thessaloniki where he is in charge of the mechanical engineering services for piping, pressure vessels fabrications and ironwork.

During his career life, Mr. Dalas has gained his practical and field experience through his various significant positions and dedication as the Technical Manager, Project Engineer, Safety Engineer, Deputy Officer, Instructor, Construction Manager, Construction Engineer Consultant Engineer and Mechanical Engineer for numerous multi-billion companies including the Biological Recycling Unit and the Department of Supplies of Greece, Alpha Bank Group, EMKE S.A, ASTE LLC and Polytechnic College of Evosmos.

Mr. Dalas has a Master degree in Energy System from the International Hellenic University, School of Science & Technology and a Bachelor degree in Mechanical Engineering from the Mechanical Engineering Technical University of Greece along with a Diploma in Management & Production Engineering from Technical University of Crete. Further, he is a Certified Instructor/Trainer, Certified Internal Verifier/Trainer/Assessor by the Institute of Leadership & Management (ILM) and a Certified Project Manager Professional (PMI-PMP), and also a Certified Energy Auditor for Buildings, Heating & Climate Systems and a Member of the Hellenic Valuation Institute and the Association of Greek Valuers and he is a Licensed **Expert Valuer Consultant of the Ministry of Development and Competitiveness.**





















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 Fee

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

Accommodation

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

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

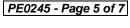
0730 - 0800	Registration & Coffee
0800 - 0815	Welcome & Introduction
0815 - 0830	PRE-TEST
0830 - 0945	Introduction Roles of Separation Processes in Industry • Separating Agents • Technological Maturity of Processes • Efficiency versus Capacity • Emergence of the Monolith as a Contacting Device • Steps Common to Designing All Separation Processes
0945 - 1000	Break
1000 - 1130	Distillation Equilibrium ● Equilibrium Stages ● Efficiency ● Trays • Packings
1130 – 1230	Distillation (cont'd) Trays versus Packings ● Membrane Phase Contractors ● Design Procedures ● Rate-Based Design Method
1230 – 1245	Break
1245 - 1420	Distillation (cont'd) Alternative Distillation Processes • Processes Similar to Distillation • Enhanced Distillation Configurations • Hybrid Systems • Distillation Economics
1420 – 1430	Recap
1430	Lunch & End of Day One















Day 2

	Absorption & Stripping
0730 - 0900	Absorption and Stripping Equilibria • Operating Lines for Absorption •
	Stripping Analysis • Column Diameter
0900 - 0915	Break
0915 – 1100	Absorption & Stripping (cont'd)
	Analytical Solution: Kremser Equation • Dilute Multisolute Absorbers and
	Strippers • Matrix Solution for Concentrated Absorbers and Strippers •
	Irreversible Absorption
	Extraction
1100 - 1230	Liquid/Liquid Extraction • Supercritical Fluid Extraction • Liquid/Liquid
	Equilibria • Equilibrium Stage Calculations • Efficiency
1230 - 1245	Break
	Extraction (cont'd)
1245 - 1420	Solvent Selection • Extraction Equipment • Simple Extractors • Mechanical
	Extractors • Extractor Costs
1420 - 1430	Recap
1430	Lunch & End of Day Two

Dav 3

Day 3	
0730 – 0900	Leaching & Washing Instructional Objectives ● Equipment for Leaching
0900 - 0915	Break
0915 – 1100	Leaching & Washing (cont'd) Equilibrium-Stage Model for Leaching & Washing ● Rate-Based Model for Leaching
1100 – 1230	AdsorptionAdsorption & Desorption ● Adsorbents
1230 - 1245	Break
1245 – 1420	Adsorption (cont'd) Design Considerations • Adsorption Processes
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4

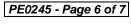
0730 - 0900	<i>Membrane Processes</i> Theory • Membranes & Modules • Design Considerations
0900 - 0915	Break
0915 - 1100	Membrane Processes (cont'd)
	Some Current Uses • Future Uses for Membranes
1100 – 1230	Crystallization, Desublimation & Evaporation
	Instructional Objectives • Crystal Geometry • Thermodynamic
	Considerations • Kinetic & Transport Considerations • Equipment for
	Solution Crystallization • The MSMPR Crystallization Model
1230 - 1245	Break
1245 – 1420	Crystallization, Desublimation & Evaporation (cont'd)
	Precipitation • Melt Crystallization • Zone Melting • Desublimation •
	Evaporation
1420 - 1430	Recap
1430	Lunch & End of Day Four















Day 5

	Energy Considerations
0730 - 0900	Energy Consumption in Distillation • Energy Consumption-Distillation versus Extraction • Maximum Thermodynamic Efficiency
0900 - 0915	Break
0915 - 1100	Process Selection Strengths & Weaknesses of Distillation & Other ● Vapor-Liquid Separation Processes
1100 – 1230	Process Selection (cont'd) Pluses & Minuses of Alternative Processes ● Separation of Complex Mixtures and Heuristic Guidelines for Process Selection
1230 - 1245	Break
1245 - 1345	Process Selection (cont'd) Procedures for Process Selection • Process Selection for Liquid & Gas Waste Treatment Applications
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:-



<u>Course Coordinator</u>
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