COURSE OVERVIEW PE1070
UOP Sulfolane Technology (Advanced)

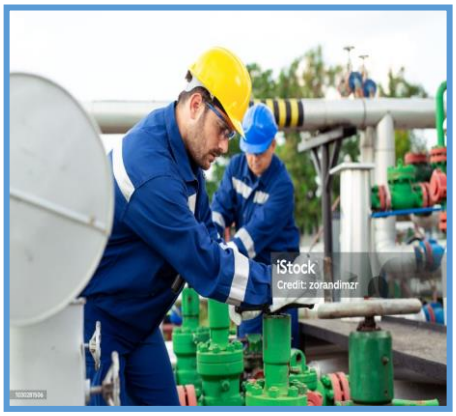
Course Title
UOP Sulfolane Technology (Advanced)

Course Date/Venue
Ocrober 12-16, 2025/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Reference
PE1070

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 Universal Oil Products Sulfolane Technology (Advanced). It covers the sulfolane technology including process purpose and applications in aromatics extraction, key features of UOP's sulfolane process and integration into refinery and petrochemical complexes; the physical and chemical properties of sulfolane, solubility of aromatics and non-aromatics, partition coefficient behavior and temperature and pressure dependency; the extraction column operation, stripping and solvent recovery sections, contaminants and degradation mechanisms and process chemistry; and the detailed process flow diagram (PFD), process and instrumentation diagram (P&ID) and major equipment design and operation.

Further, the course will also discuss the heat integration and energy optimization, solvent circulation and makeup system including advanced process control (APC) and automation; the startup and shutdown procedures covering step-by-step startup process, solvent preheating and loading, shutdown strategies for planned/unplanned stops and purging and equipment isolation; the operational troubleshooting, solvent quality and reclamation; and the hydraulic and flow distribution control, process optimization techniques and corrosion and material selection.

During this interactive course, participants will learn the key performance indicators (KPIs), simulation and modeling and operational data analysis; the benchmarking and global best practices covering UOP plant performance benchmarks, comparative review of licensed facilities and upgrades and modernization trends; the process safety, HAZOP methodology and critical nodes, fire and explosion prevention and emergency shutdown system design; the VOC emission control, wastewater and solvent recovery, regulatory requirements and monitoring and reporting best practices; the reliability and maintenance strategy covering maintenance criticality analysis, reliability-centered maintenance (RCM), spare part standardization and turnaround planning for sulfolane units; and the standard operating procedure development and operator qualification matrix.

Course Objectives

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

- Apply and gain an advanced knowledge on universal oil products sulfolane technology
- Discuss sulfolane technology including process purpose and applications in aromatics extraction, key features of UOP's sulfolane process and integration into refinery and petrochemical complexes
- Explain physical and chemical properties of sulfolane, solubility of aromatics and non-aromatics, partition coefficient behavior and temperature and pressure dependency
- Recognize extraction column operation, stripping and solvent recovery sections, contaminants and degradation mechanisms and process chemistry
- Illustrate detailed process flow diagram (PFD), process and instrumentation diagram (P&ID) and major equipment design and operation
- Apply heat integration and energy optimization and discuss solvent circulation and makeup system including advanced process control (APC) and automation
- Employ startup and shutdown procedures covering step-by-step startup process, solvent preheating and loading, shutdown strategies for planned/unplanned stops and purging and equipment isolation
- Carryout operational troubleshooting, solvent quality and reclamation, hydraulic and flow distribution control, process optimization techniques and corrosion and material selection
- Explain key performance indicators (KPIs), simulation and modeling and operational data analysis
- Employ benchmarking and global best practices covering UOP plant performance benchmarks, comparative review of licensed facilities and upgrades and modernization trends
- Apply process safety, HAZOP methodology and critical nodes, fire and explosion prevention and emergency shutdown system design
- Carryout VOC emission control, wastewater and solvent recovery, regulatory requirements and monitoring and reporting best practices

- Implement reliability and maintenance strategy covering maintenance criticality analysis, reliability-centered maintenance (RCM), spare part standardization and turnaround planning for sulfolane units
- Apply standard operating procedure development and operator qualification matrix

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 advanced universal oil products sulfolane technology for process engineers, operations personnel, technical support staff, maintenance and reliability engineers, process design engineers, project engineers and managers, technology licensing and consulting professionals.

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.

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® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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

Haward's certificates are accredited by the following international accreditation organizations:

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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.

- 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. Dimitry Rovas, CEng, MSc, PMI-PMP, SMRP-CMRP is a **Senior Engineer** with extensive industrial experience in **Oil**, **Gas**, **Power** and **Utilities** industries. His expertise includes **Gas Conditioning & Processing**, **Process Plant** Optimization, Effective **Production Operations** in the Oil & Gas Fields, Advanced Process Safety Management (**PSM**), **Process Equipment** Design, Applied **Process** Engineering, **Oil Production & Processing** Facilities, Pr**ocess Plant Optimization & Rehabilitation**, **Process Plant** Troubleshooting & Engineering Problem Solving, **Operations Abnormalities & Plant Upset**, **Glass Reinforced Plastics**, **GRP Resins**, **Pipe Products & Applications**, **Pipe** System Designs & Installation, **Steel & Fiberglass** Construction, **GRP Linings** & Method Application, **Rubber Com**pounding, Elastomers, Thermoplastic, Industrial Rubber Products, Rubber Manufacturing Systems, **Heat Transfer**, **Vulcanization** Methods, **Energy Conservation**, **Energy Loss** Management in Electricity Distribution Systems, **Energy Saving**, **Thermal Power Plant** Management, **Thermal Power Plant** Operation & Maintenance, **Gas & Steam Turbines**, **Turbine Operations**, **Heat Transfer**, **Machine Design**, **Fluid Mechanics**, **Heating & Cooling Systems**, **Heat Insulation** Systems, **Heat Exchanger & Cooling Towers**, **Mechanical Erection**, **Heavy Rotating Equipment**, **HAZMAT & HAZCOM**, **Hazardous Materials & Chemicals MSDS**, Modern Heating, Ventilation, Air-Conditioning (**HVAC**) **& Refrigeration** Systems, Emergency **Air Compressors**, **Gas Turbine** Condition Monitoring & Fault Diagnosis, Modern **Valve** Technology, **Pumps & Valves**, Detailed Engineering Codes & Standards, **Hydraulic** System Overhaul & Troubleshooting, **Hydraulic** System Design & Troubleshooting, **Boiler** Maintenance & Inspection, **Pipe Stress** Analysis, Material Unloading & Storage, Commissioning & Start-Up. Further, he is also well-versed in MS project & AutoCAD, EPC Power Plant, Power Generation, Combined Cycle Powerplant, Leadership & Mentoring, Project Management, Strategic Planning/Analysis, Construction Management, Team Formation, Relationship Building, Communication, Reporting and Six Sigma. He was the **Project Manager** wherein he was managing, directing and controlling all activities and functions associated with the domestic heating/cooling facilities projects.

During his life career, Mr. Rovas has gained his practical and field experience through his various significant positions and dedication as the **EPC Project Manager**, **Field Engineer**, **Preventive Maintenance Engineer**, **Researcher**, **Instructor/Trainer**, **Telecom Consultant** and **Consultant** from various companies such as the Podaras Engineering Studies, Metka and Diadikasia, S.A., **Hellenic Petroleum Oil Refinery** and COSMOTE.

Mr. Rovas is a **Chartered Engineer** of the **Technical Chamber** of **Greece**. Further, he has **Master's** degree in **Mechanical Engineering** and **Energy Production & Management** from the **National Technical University of Athens**. Moreover, he is a **Certified Instructor/Trainer**, a **Certified Maintenance and Reliability Professional** (**CMRP**) from the Society of Maintenance & Reliability Professionals (**SMRP**), a **Certified Project Management Professional** (**PMP**), a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and a **Certified Six Sigma Black Belt**. He is an active member of Project Management Institute (**PMI**), Technical Chamber of Greece and Body of Certified Energy Auditors and has further delivered numerous trainings, seminars, courses, workshops and conferences internationally.

Course Program

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

Day 1: Sunday, 12th of October 2025

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Overview of Sulfolane Technology*** *Process Purpose and Applications in Aromatics Extraction • Key Features of UOP's Sulfolane Process • Comparison with Other Extraction Technologies • Integration into Refinery and Petrochemical Complexes*
0930 – 0945	*Break*
0945 – 1030	***Solvent Properties & Thermodynamics*** *Physical and Chemical Properties of Sulfolane • Solubility of Aromatics and Non-Aromatics • Partition Coefficient Behavior • Temperature and Pressure Dependency*
1030 – 1130	***Extraction Column Operation*** *Column Configuration and Internals • Solvent-to-Feed Ratio Optimization • Flooding, Weeping, and Entrainment Control • Troubleshooting Common Problems*
1130 – 1215	***Stripping & Solvent Recovery Sections*** *Role of Extract and Raffinate Strippers • Solvent Regeneration Methods • Steam and Energy Balance Considerations • Recovery Unit Fouling and Mitigation*
1215 – 1230	*Break*
1230 – 1330	***Contaminants & Degradation Mechanisms*** *Sources of Contaminants (e.g., Water, Oxygenates) • Thermal and Chemical Degradation of Sulfolane • Corrosion Risks and Byproduct Formation • Inhibitor and Additive Use*
1330 – 1420	***Process Chemistry Deep Dive*** *Aromatics Solubility Mechanisms • Reaction Pathways of Sulfolane Degradation • Equilibrium Considerations • Impact of Process Impurities on Separation Efficiency*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2: Monday, 13th of October 2025

0730 – 0830	***Detailed Process Flow Diagram (PFD) Review*** *Block and Detailed Process Flow Analysis • Material and Energy Balance Explanation • Heat Exchanger Network • Key Operating Parameters Identification*
0830 - 0930	***Process & Instrumentation Diagram (P&ID) Review*** *Instrumentation Control Points and Logic • Interlocks and Safety Systems • Control Valves, Analyzers, and Transmitters • Line Sizing and Pressure Drop Analysis*
0930 – 0945	*Break*

0945 – 1100	***Major Equipment Design & Operation*** *Extractors and Strippers • Heat Exchangers and Reboilers • Pumps and Solvent Circulation Systems • Degassing and Vent Systems*
1100 – 1215	***Heat Integration & Energy Optimization*** *Heat Exchanger Configuration (E1–E6) • Pinch Analysis Application • Steam System Interaction • Energy Loss and Recovery Points*
1215 – 1230	*Break*
1230 – 1330	***Solvent Circulation & Makeup System*** *Solvent Tank and Makeup Line Design • Circulation Pump Selection • Degassing Drum Operation • Makeup Injection Strategy*
1330 – 1420	***Advanced Process Control (APC) & Automation*** *Control Strategy for Sulfolane Extraction • APC Tuning Parameters • Alarms and Trip Settings • Automation for Startup, Shutdown, and Transition Phases*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3: ***Tuesday, 14th of October 2025***

0730 – 0830	***Startup & Shutdown Procedures*** *Step-by-Step Startup Process • Solvent Preheating and Loading • Shutdown Strategies for Planned/Unplanned Stops • Purging and Equipment Isolation*
0830 – 0930	***Operational Troubleshooting*** *Off-Spec Raffinate or Extract • High Solvent Losses • Column Instability and Maldistribution • Equipment Vibration or Mechanical Failures*
0930 – 0945	*Break*
0945 – 1100	***Solvent Quality & Reclamation*** *Criteria for Solvent Replacement • Laboratory Monitoring Techniques • In-Line Solvent Cleaning Options • Reclaiming Spent Sulfolane*
1100 – 1215	***Hydraulic & Flow Distribution Control*** *Feed Distribution in Extractors • Managing Maldistribution • Tray/Packing Hydraulics and Fouling Detection • Vapor-Liquid Contact Efficiency*
1215 – 1230	*Break*
1230 – 1330	***Process Optimization Techniques*** *Target Setting for Yield and Purity • Adjusting Solvent-to-Feed Ratio • Debottlenecking Analysis • Improving Selectivity and Efficiency*
1330 – 1420	***Corrosion & Material Selection*** *Corrosive Agents and Critical Locations • Alloy and Lining Recommendations Corrosion Monitoring Techniques • Maintenance Planning for Corrosion-Prone Areas*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4: Wednesday, 15th of October 2025

0730 – 0830	***Key Performance Indicators (KPIs)*** *Extraction Efficiency • Solvent Loss Rate • Aromatic Content in Raffinate • Energy Consumption Metrics*
0830 – 0930	***Simulation & Modeling*** *Use of Simulation Software (Aspen, HYSYS, UOP Models) • Building Extraction and Regeneration Models • Sensitivity Analysis • Validation of Simulation with Field Data*
0930 – 0945	*Break*
0945 – 1100	***Operational Data Analysis*** *Data Trending and Interpretation • Mass Balance Reconciliation • Detecting Gradual Performance Degradation • Root Cause Analysis of Performance Dips*
1100 – 1215	***Case Study: Plant Optimization*** *Example of Solvent Loss Reduction • Yield Improvement Strategy • Feedstock Change Handling • Operator Training Outcome*
1215 – 1230	*Break*
1230 – 1330	***Case Study: Troubleshooting & Recovery*** *Sudden Drop in Extract Purity • Water Ingress in Solvent System • Heat Exchanger Fouling Recovery • Startup Error and Quick Correction*
1330 – 1420	***Benchmarking & Global Best Practices*** *UOP Plant Performance Benchmarks • Comparative Review of Licensed Facilities • Upgrades and Modernization Trends • Lessons Learned from Global Operations*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

Day 5: Thursday, 16th of October 2025

0730 – 0830	***Process Safety & HAZOP Review*** *Key Risks in Sulfolane Systems • HAZOP Methodology and Critical Nodes • Fire and Explosion Prevention • Emergency Shutdown System Design*
0830 – 0930	***Environmental Compliance & Emissions*** *VOC Emission Control • Wastewater and Solvent Recovery • Regulatory Requirements • Monitoring and Reporting Best Practices*
0930 – 0945	*Break*
0945 – 1100	***Debottlenecking & Revamp Projects*** *Capacity Enhancement Approaches • Equipment Replacement versus Upgrade • Heat Integration for Expansion • Minimizing Downtime During Revamp*
1100 – 1215	***Reliability & Maintenance Strategy*** *Maintenance Criticality Analysis • Reliability-Centered Maintenance (RCM) • Spare Part Standardization • Turnaround Planning for Sulfolane Units*
1215 – 1230	*Break*

1230 – 1345	***Training, SOPs, & Operator Readiness*** *Standard Operating Procedure Development • Operator Qualification Matrix • Control Room Operator Training Simulations • Knowledge Transfer Tools*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about t Topics that were Covered During the Course*
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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