COURSE OVERVIEW TE0075
Oily Water Treatment Technology

Course Title
Oily Water Treatment Technology

Course Date/Venue
September 15-19, 2024/Ras Al Khaimah Meeting, The Tower Plaza Hotel, Dubai, UAE

Course Reference
TE0075

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

Billions of gallons of wastewaters containing oils and particulates are produced each year by metallurgical plants, ships, petroleum and gas operations, industrial washing operations, and other processes. Traditional technologies, such as gravity separators, air or gas flotation, chemical flocculation, plate coalescers, and hydroclones, are generally able to produce effluents containing as little as 30 ppm dispersed oil and particulates. However, these treatment technologies perform poorly on chemically stabilized suspensions and emulsions, very small particles and droplets (G-10 um in diameter), and soluble components. Moreover, effluents with less than 10 ppm impurities are desired, because of the potential toxic effects of the contaminants and their tendency to foul reverse-osmosis membranes and downstream processing equipment.

Microfiltration and ultrafiltration membranes are able to remove particulates, microorganisms and oils from water, if the membrane material and pore sizes are chosen appropriately. However, they are subject to fouling, which often reduces the permeate flux (volume of water passing through the membrane per surface area per time) below acceptable levels.

Water systems have long tended to be one of the neglected areas of the process plant. However, this situation is changing rapidly as environmental legislation tightens. This course is uniquely placed to assist process plants in meeting these challenges, offering unrivalled expertise in water systems and the problems associated with treatment of oily water. Much of the technology discussed in this course has been developed to meet the challenges faced in the North Sea; oil producers there face some of the toughest environmental controls in the oil industry.

This course will cover all stages of oily water treatment from receiving waste oil and oily water to delivering cleaned water that meets the environmentally safe standards.

Course Objectives

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

- Apply systematic techniques in the treatment of oily water
- Discuss the sources of oily water in oil production fields, refining and steam cracking and explain the environmental imperative standards & legislations pertaining to the discharge of oily water
- Describe the layout of treatments, stages of general effluent treatment, the pretreatment of sour condensates, principles of preliminary oil separation and the physicochemical purification of effluents from preliminary oil separators
- Monitor purification plants such as measurement of hydrocarbons and organic matter, pH meters and performance of WTP equipment
- Discuss new technology such as membrane biological reactors (MBR), rotating biological contractors (RBC), sequence batch reactor (SBR) as well as sludge pumping and flowmeters for mass balances

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, sample video clips of the instructor's actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of oily water treatment technology for environmental and HSE professionals and engineers, oily water treatment staff, design engineers and sewage operators, municipal planners and engineers, plant and maintenance engineers, mechanical engineers and other technical staff. Further, this course is suitable for process engineers, operation, maintenance, inspection and production managers, supervisors, foremen and those responsible for managing and operating waste water treatment facilities.

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

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.

Accommodation

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

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. Emam Bakr, BSc, NEBOSH-PSM, API, is a **NEBOSH Approved Instructor** and **Senior Chemical Engineer** with over **25 years** of industrial experience within the **Petroleum**, **Oil** & **Gas** industries. His wide expertise widely covers in the areas of **Oily Water Treatment Technology**, **Water Desalination**, **Advanced Waste Water Treatment Operation** & **Process**, **Oil Refinery & Petrochemical Industry Wastewater Treatment**, **Boiler Feed** Water Treatment, **Pipeline** Integrity, **Corrosion** Management & Monitoring and **Water Injection Treatment,** Oil & Water**, Corrosion & Corrosion** Protection, **Pipeline** Operations & Maintenance **NEBOSH** Certificate in Process Safety Management, **Advanced Internal Corrosion** in **Pipelines**, Basic of **Corrosion**, **CIP level 1 & 2**, **API 570** Piping Inspection, **API 510** Pressure Vessel Inspection, **API 653** Storage Tank Inspection, **API Lead Auditor**, **API 580** Risk Base Inspection, **Startup & Commissioning**, **Corrosion Control** by **Cathodic Protection**, **Corrosion** Control & Corrosion Monitoring, **Metallurgy & Metallurgical** Processes, **Material** Selection, **Corrosion** Monitoring Prevention & Control, **Corrosion** Prevention & Control, Corrosion Management in Production/Processing Operations, **Corrosion** Prevention in Oil and Gas Industry, **Corrosion Inhibitor**, **Corrosion** Technology & Inspection, **Corrosion** Control in Gas, **Corrosion** Prevention, **Corrosion** Assessment, **Pipeline Corrosion** Inspection, **Pipeline** Design & Construction, **Pipeline** Engineering. His wide range of industrial experience also covers **Cathodic Protection**, **Offshore Structure** & **Facilities**, **Onshore Facilities & Storage Tanks**. Further, he is also well-versed in, **HAZOP** and **HAZID**, **HAZMAT**, **Hazard & Risk Assessment**, **Emergency Response Procedures** Behavioural Based Safety (**BBS**), **Confined Space Entry**, **Fall Protection**, **Emergency Response**, H_2S, **Advanced Process Safety Management**, Liquefaction of Natural Gases (**LONG**), **Absorption & Striping**, **Acid Gas Removal**, **Gas Conditioning & Processes**, **Steam Boiler** and **Hazardous Waste Management**.

During his career life, Mr. Emam has gained his practical and field experience through his various significant positions and dedication as the **General Manager Assistant**, **Corrosion & Material Team Leader**, **Integrity Engineer**, **Chemical Engineer** and **Senior Instructor/Consultant** from various international companies such as Gulf of Suez Petroluem Company, Gupco Ras Shukeir Oil Fields and Kafer Eldour Spinning Company.

Mr. Emam has a **Bachelor's** degrees in **Chemical Engineering**. He is a **Senior Internal Corrosion Technologist** of the **National Association of Corrosion Engineers** (**NACE-USA**), **a Certified CSWIP Plant Inspector Level 1 through** (**TWI**), **Certified API 570 Piping Inspector**, **Certified API 510 Pressure vessels inspection**, **Certified API 580 Risk Base Inspection**, **Certified API 653 Above Ground Storage Tank Inspection**, a **Certified NEBOSH Process Safety Management** and has further delivered numerous courses, trainings, seminars and conferences internationally.

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 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: ***Sunday, 15th of September 2024***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction* *Source – Process – Consented Discharge (Model)*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Sources of Oily Water in Oil Production Fields, Refining & Steam Cracking*** *Desalter Water ● Process Condensates ● Particular Process Effluents ● Oily Water ● Nonoily Waste Water ● Transportation Waste Water ●Spent Caustic ● Steam Cracking Condensates*
0930 – 0945	*Break*
0945 – 1100	***Environmental Imperatives Standards & Legislation*** *The Environmental Imperatives ● Bacteria – Coliforms and Ecoli ● Standards for Discharge and Monitoring of Hydrocarbons in Gulf Area ● Belgian Regulations*
1100 – 1230	***Environmental Imperatives Standards & Legislation (cont'd)*** *Canadian Regulations ● World Bank Environmental Standards ● BP Environmental and Social Action Plan*
1230 – 1245	*Break*
1245 – 1420	***Definition & Layout of Treatments*** *Need to Separate Sewer Systems ● Stages in Treating the General Effluent ● Planning Sewer Networks ● Surge Tanks ● Lagoons – Implications of Algal Growth*
1420 - 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Monday, 16th of September 2024***

0730 – 0930	***Pre-treatment of Sour Condensates*** *Stripping ● Air Oxidation of Sour Condensates*
0930 – 0945	*Break*
0945 – 1100	***Preliminary Oil Separation*** *Principles of Preliminary Oil Separation ● Construction of Gravity Oil Separators*

1100 – 1230	***Physicochemical Purification of Effluents from Preliminary Oil Separators*** *Aims of Physicochemical Purification ● Notes on Coagulation and Flocculation ● Floc Separation by Settling-Sedimentation ● Separation by Dissolved Air Flotation (DAF)*
1230 – 1245	*Break*
1245 – 1420	***Physicochemical Purification of Effluents from Preliminary Oil Separators (cont'd)*** *Separation by Filtration (Down Flow on Granular Material) ● Separation by Coalescence ● Choosing Separation Process ● Induced Air Flotation (IAF) or Mechanical Flotation*
1420 - 1430	*Recap*
1430	*Lunch & End of Day Two*

Day 3: ***Tuesday, 17th of September 2024***

0730 – 0930	***Monitoring Purification Plants*** *Measuring Hydrocarbons ● Measuring Organic Matter ● pH-meters ● Miscellaneous Devices ● Performance Condition Monitoring of WTP Equipment*
0930 – 0945	*Break*
0945 – 1100	***Case Study # 1: French Mobil Oil Gravenchon Refinery*** *Treatment of Waste Water ● Eliminating Purification Sludge ● Cooling Systems*
1100 – 1230	***New Technologies***
1230 – 1245	*Break*
1245 – 1420	***Membrane Biological Reactors (MBR)***
1420 - 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4: ***Wednesday, 18th of September 2024***

0730 -0930	***Rotating Biological Contactors (RBC)***
0930 – 0945	*Break*
0945 – 1100	***Sequence Batch Reactor (SBR)***
1100 – 1230	***Sludge Pumping***
1230 – 1245	*Break*
1245 – 1420	***Flowmeters for Mass Balances***
1420 - 1430	***Recap***
1430	*Lunch & End of Day Four*

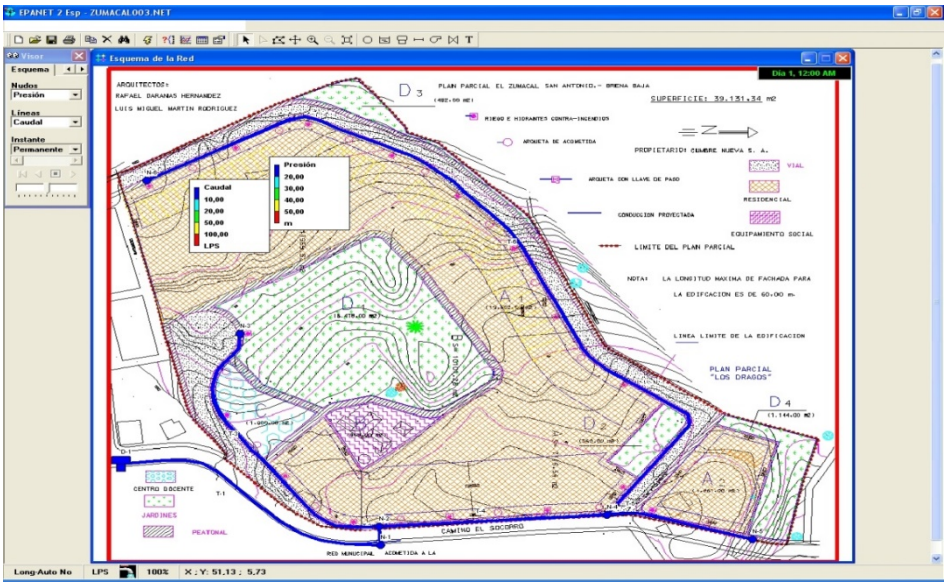
Day 5: ***Thursday, 19th of September 2024***

0730 – 0930	***Case Study # 2: Shell Oil Company Petit-Couronne Refinery*** *Effluent and Pretreatment Set Up ● General Treatment of Effluents ● Eliminating Purification Sludge*
0930 – 0945	*Break*
0945 – 1045	***Case Study # 3: Esso-SAF: Port-Jerome*** *Treatment of Waste Water ● Eliminating Purification Sludge ● Cooling Systems*
1045 - 1130	***Case Study # 4: Shell Complex in Berre*** *Effluent and Pretreatment Set Up ● General Biological Treatment ● Sludge Treatment*

1130 – 1230	***Case Study # 4: Shell Complex in Berre (cont'd)*** *Cooling Systems ● Growing Real Organisms Experiment*
1230 – 1245	*Break*
1245 – 1345	***Open Forum & Final Discussion***
1345 - 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the latest revision of "EPANET" Simulators.



EPANET Simulator

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org