



**COURSE OVERVIEW TE0173(GA2)**  
**Effluent Treatment System (Sour and Sewage)**

**Course Title**

Effluent Treatment System (Sour and Sewage)

**Course Date/Venue**

December 16-20, 2024/ Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

**Course Reference**

TE0173(GA2)

**Course Duration/Credits**

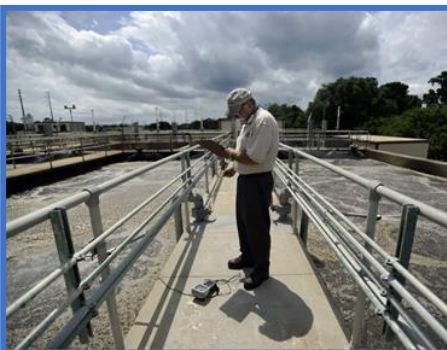
Five days/3.0 CEUs/30 PDHs



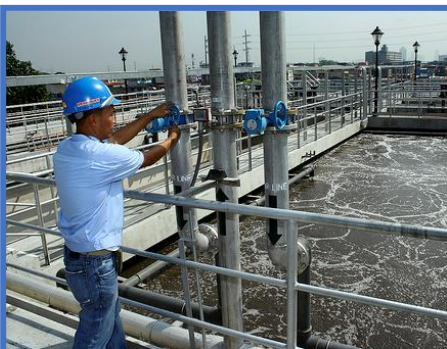
**Course Description**



***This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using the “MS Excel” application.***



This course is designed to familiarize participants with the basic principles of the effluent gases removal and treatment operations. It covers the sources of effluent gases in gas industry; the sanitary sewer system, industrial waste water systems, clean water sewer, oily water sewer, acid sewer, sources and characteristics of each type; the physical and chemical monitoring of liquids effluents; the waste effluent analysis and interpretation of analysis results; the waste liquid effluents control; and marine environment protection.



During this interactive course, participants will learn the sludge thickening and dewatering; the technologies for waste water treatment; the correct treatment and disposal system; the wastewater problems; the control regulation for industrial waste water; and the operations, details of the wastewater audit, wastewater characterization and the criteria used to establish the requirement for treatment evaluation.



## Course Objectives

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

- Apply and gain a comprehensive knowledge on effluent treatment system
- Explain the sources of effluent gases in gas industry, their environmental impact, the regulations which normally included in the local laws and different methods of their treatment and disposal
- Describe sanitary sewer system, industrial waste water systems, clean water sewer, oily water sewer, acid sewer, sources and characteristics of each type
- Employ physical and chemical monitoring of liquids effluents including waste effluent analysis and interpretation of analysis results
- Carryout waste liquid effluents control before disposal to environment covering primary treatment, intermediate treatment, chemical coagulation, air flotation, secondary treatment, biological oxidation, filters, bacterial oxidation and etc
- Employ marine environment protection that include laws, regulation, international standards as well as explain the effect on marine life
- Perform sludge thickening and dewatering as well as recognize the technologies for waste water treatment
- Select the correct treatment and disposal system
- Solve wastewater problems through monitoring, assessment and environmental engineering
- Regulate control for industrial waste water
- Discuss the operations, details of the wastewater audit, wastewater characterization and the criteria used to establish the requirement for treatment evaluation

## Exclusive Smart Training Kit - H-STK<sup>®</sup>



Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK<sup>®</sup>). The H-STK<sup>®</sup> 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 effluent treatment system for process engineers, production engineers, supervisors, specialists, technicians and operations.

## Course Fee

**US\$ 5,500** per Delegate + **VAT**. This rate includes H-STK<sup>®</sup> (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: -

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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.

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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.

**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. Kyle Bester** is a **Process Engineer and Senior HSE Consultant** with extensive years of practical experience within the **Oil & Gas, Power & Water Utilities** and other **Energy** sectors. His expertise includes **Troubleshooting Gas Processing, Ammonia Manufacturing & Process Troubleshooting, Ammonia Storage & Loading Systems, Ammonia Plant Operation, Troubleshooting & Optimization, Gas Removal, Amine Regeneration, Amine & Gas Dehydration, Molecular Sieves, NGL Recovery, LPG Distillation, Gas Processing, Furnaces, Waste Heat Recovery, Process Troubleshooting, Gas Compression & Expansion, Process Liquid, Process Handling & Measuring Equipment, Gas Dehydration, Gas Separation, Distillation Processes, Safety in Industrial Plants, Rigging Safety Rules, Machinery & Hydraulic Lifting Equipment, Handling Hazardous Chemicals, Spill Containment, Fire Protection, Fire Precautions, Incidents & Accidents Reporting, HSEQ Audits & Inspection, HAZOP & HAZID, HAZMAT & HAZCOM Storage & Disposal, As Low as Reasonably Practicable (ALARP), Process Hazard Analysis (PHA), Process Safety Management (PSM), Hazardous Materials & Chemicals Handling, Pollution Control, Environment, Health & Safety Management, Process Risk Analysis, Effective Tool Box Talks, Construction Sites Safety, HSSE Management System, HSSE Audit & Inspection, HSEQ Procedures, Authorized Gas Testing, Confined Space Entry & Rescue, Risk Management, Quantitative & Qualitative Risk Assessment, Working at Height, Firefighting Techniques, Fire & Gas Detection System, Fire Fighter & Fire Rescue, Fire Risk Assessment, HSE Industrial Practices, Manual Handling, Rigging Safety Rules, Machinery & Hydraulic Lifting Equipment, Warehouse Incidents & Accidents Reporting, Incident & Accident Investigation, Emergency Planning, Emergency Response & Crisis Management Operations, Waste Management Monitoring, Root Cause Analysis, Hazard & Risk Assessment, Task Risk Assessment (TRA), Incident Command, Job Safety Analysis (JSA), Behavioral Based Safety (BBS), Fall Protection and Work Permit & First Aid. He is currently the **Part Owner & Manager** of Extreme Water SA wherein he manages, re-designed and commissioned a water and wastewater treatment plants.**

During his career life, Mr. Bester has gained his practical and field experience through his various significant positions and dedication as the **Project Manager, Asset Manager, Manager, Water Engineer, HSE Advisor, Safety Engineer, Supervisor, Team Leader, Analyst, Process Technician, Landscape Designer** and **Senior Instructor/Trainer** for various international companies, infrastructures, water and wastewater treatment plants from New Zealand, UK, Samoa, Zimbabwe and South Africa, just to name a few.

Mr. Bester holds a **Diploma in Wastewater Treatment** and a **National Certificate in Wastewater & Water Treatment**. Further, he is a **Certified Instructor/Trainer**, an **Approved Chemical Handler** and has delivered numerous courses, trainings, conferences, seminars and workshops 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.

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**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: Monday 19<sup>th</sup> of December 2024**

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	<b>PRE-TEST</b>
0830 – 0930	<b>Introduction</b> Sanitary Sewer System • Industrial Waste Water Systems • Clean Water Sewer • Oily Water Sewer • Acid Sewer • Sources & Characteristics of Each Type
0930 – 0945	Break
0945 – 1100	<b>Physical &amp; Chemical Monitoring of Liquids Effluents</b> Colour & Turbidity • PH & Conductivity • Alkalinity, Hardness & Chlorides
1100 – 1215	<b>Physical &amp; Chemical Monitoring of Liquids Effluents (cont'd)</b> Biological Oxygen Demand • Chemical Oxygen Demand • Heavy Metals in Wastewater
1215 – 1230	Break
1230 – 1420	<b>Physical &amp; Chemical Monitoring of Liquids Effluents (cont'd)</b> Hydrocarbons, Oils & Greases • Nitrates, Phosphates, Sulphates & Silicates
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day One

**Day 2: Tuesday 17<sup>th</sup> of December 2024**

0730 – 0930	<b>Waste Effluent Analysis</b> Calorimetric Methods • Electrical/Potential Methods • Selective Electrodes • Spectrophotometer
0930 – 0945	Break
0945 – 1100	<b>Waste Effluent Analysis (cont'd)</b> Atomic Absorption • Gas/Liquid Chromatography • Polarography • Volumetric & Gravimetric Analysis





1100 – 1215	<b>Interpretation of Analysis Results</b> <i>Precision, Accuracy &amp; Reproducibility • Pollution Trend Indicated by the Analysis</i>
1215 – 1230	<i>Break</i>
1230 – 1420	<b>Interpretation of Analysis Results (cont'd)</b> <i>Determination of Source(s) of Pollution</i>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Two</i>

**Day 3: Wednesday 18<sup>th</sup> of December 2024**

0730 – 0930	<b>Waste Liquid Effluents Control before Disposal to Environment</b> <i>Primary Treatment • Intermediate Treatment • Chemical Coagulation • Air Flotation • Secondary Treatment • Biological Oxidation • Filters • Bacterial Oxidation</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Waste Liquid Effluents Control before Disposal to Environment (cont'd)</b> <i>Natural Oxidation Lagoons • Activated Sludge Units • Tertiary Treatment • Activated Carbon Absorption • Reverse Osmosis • Removal of Dissolved Organic Chemicals • Semi Batch Cyclic Processes</i>
1100 – 1215	<b>Marine Environment Protection</b> <i>Laws &amp; Regulation • International Standards</i>
1215 – 1230	<i>Break</i>
1230 – 1420	<b>Marine Environment Protection (cont'd)</b> <i>Effect on Marine Life • Case Studies</i>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Three</i>

**Day 4: Thursday 19<sup>th</sup> of December 2024**

0730 – 0930	<b>Sludge Thickening &amp; Dewatering: A Review of The Available Options</b> <i>Sludge in the Overall Process • Types of Sludge &amp; their Tendency to Dewater • Traditional Methods of Dewatering</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<b>Sludge Thickening &amp; Dewatering: A Review of The Available Options (cont'd)</b> <i>Current Mechanical Dewatering Technology • Typical Dewatering Scenarios • Future Trends</i>
1100 – 1215	<b>An Overview of Technologies for Waste Water Treatment</b> <i>Advanced Oxidation Process (Air, UV/Zone, Hydrogen Peroxide/Ozone) • Electrical Process • Extraction Process (Solvent, Supercritical Water)</i>
1215 – 1230	<i>Break</i>
1230 – 1420	<b>An Overview of Technologies for Waste Water Treatment (cont'd)</b> <i>Ion Exchange &amp; Adsorption Processes • Membrane Separation by Reverse Osmosis</i>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Four</i>

**Day 5: Friday 20<sup>th</sup> of December 2024**

0730 – 0930	<b>Selecting the Correct Treatment &amp; Disposal System: Solving Wastewater Problems through Monitoring, Assessment &amp; Environmental Engineering with reference to Quality Standards &amp; Commercial Constraints:</b> <i>What Constitutes a Wastewater Problem? • Assessment of the Problems • Solution Identification</i>
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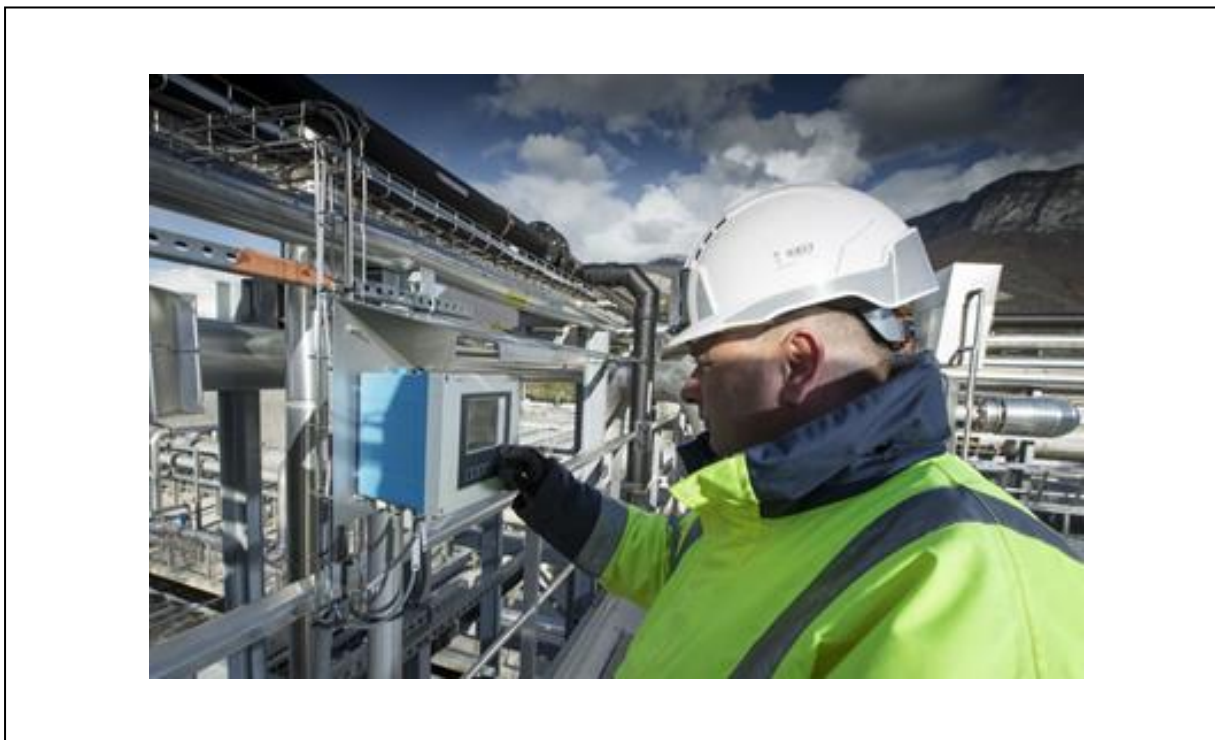




0930 – 0945	Break
0945 – 1100	<i>Selecting the Correct Treatment &amp; Disposal System: Solving Wastewater Problems through Monitoring, Assessment &amp; Environmental Engineering with reference to Quality Standards &amp; Commercial Constraints: (cont'd)_ Intermediate Improvement Options • Treatment &amp; Disposal System Options • Case Study Examples</i>
1100 – 1215	<i>Case Studies of Industrial Waste Water Controls: The Regulatory Control for Industrial Waste Water &amp; Overview &amp; Brief Comparison</i>
1215 – 1230	Break
1230 – 1345	<i>Case Studies of Industrial Waste Water Controls: Case Studies including a brief discussion of the Operations, Details of the Wastewater Audit, Wastewater Characterization &amp; a discussion of the Criteria used to establish the Requirement for Treatment Evaluation of the Treatment Options, the Final Recommendations &amp; their Effectiveness</i>
1345 – 1400	<b>Course Conclusion</b> <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course</i>
1400 – 1415	<b>POST-TEST</b>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch &amp; End of Course</i>

**Practical Sessions**

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



**Course Coordinator**

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