COURSE OVERVIEW PE0792-4D

Aromatics Manufacturing Process Technology

Benzene & Paraxylene

Course Title

Aromatics Manufacturing Process Technology: *Benzene & Paraxylene*

Course Date/Venue

October 14-17, 2024/Ajman Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference

PE0792-4D

Course Duration/Credits

Four days/2.4 CEUs/24 PDHS

Course Description

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

Aromatics are a major sector within the global petrochemical industry. The key products are benzene, toluene and xylene (BTX). These are the raw materials for a number of the most important petrochemical intermediates and polymers.

Aromatics markets are complex to understand due to their close relationship to gasoline markets. Changes in aromatics markets are thus often not driven by supply/demand factors in the individual product markets, but by upstream developments in oil and feedstock markets. In addition, Asia's dominance of the C8 polyester chain adds a further geographic complication when trying to forecast likely developments in those business areas further down the value chain that depend on aromatics.

This course will give the participants deeper insights into different manufacturing aromatics processes. It will help participants to acquire a more detailed understanding of the various aromatics technologies, the varied applications of aromatics and their competing alternative valuations from a refinery.

Course Objectives

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

- Apply a comprehensive overview of the aromatics manufacturing process technology
- Describe the aromatic complex and distinguish the manufacturing process of benzene and paraxylene
- Identify the chemistry of aromatic compounds, extraction of aromatics, different processes used in the manufacture of different aromatics and feedstock selection
- Analyze the important functions of benzene, different manufacturing processes and carryout proven methods regarding economics, feedstock consideration, performance and equipment selection
- Recognize the importance and uses of the material, physical & chemical properties of the different types of xylenes and the economic important manufacturing processes that include economics, feedstock consideration, performance and equipment selection

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 aromatics manufacturing process technology for process engineers, operations process support engineers, cost engineers and other technical staff seeking a better understanding of the aromatics manufacturing process technology.

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:-

- 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 **2.4 CEUs** (Continuing Education Units) or **24 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. Mervyn Frampton is a **Senior Process Engineer** with over **30 years** of industrial experience within the **Oil & Gas**, **Refinery**, **Petrochemical** and **Utilities** industries. His expertise lies extensively in the areas of **Process Troubleshooting**, **Distillation Towers**, **Fundamentals of Distillation** for Engineers, **Distillation** Operation and Troubleshooting, **Advanced Distillation** Troubleshooting, **Distillation** Technology, Vacuum **Distillation**, **Distillation Column** Operation & Control, **Oil Movement** Storage & Troubleshooting, **Process Equipment** Design, Applied **Process Engineering** Elements, **Process Plant** Optimization, **Revamping & Debottlenecking**, **Process Plant** Troubleshooting & Engineering Problem Solving, **Process Plant** Monitoring, **Catalyst** Selection & Production Optimization, Operations Abnormalities & Plant Upset, **Process Plant** Start-up & Commissioning, **Clean Fuel** Technology & Standards, Flare, Blowdown & Pressure Relief Systems, **Oil & Gas Field Commissioning** Techniques, **Pressure Vessel** Operation, **Gas Processing**, **Chemical** Engineering, **Process Reactors** Start-Up & Shutdown, **Gasoline Blending** for Refineries, **Urea Manufacturing** Process Technology, Continuous Catalytic Reformer (**CCR**), **De-Sulfurization** Technology, Advanced Operational & Troubleshooting Skills, Principles of Operations Planning, **Rotating Equipment** Maintenance & Troubleshooting, **Hazardous Waste Management & Pollution Prevention**, **Heat Exchangers & Fired Heaters** Operation & Troubleshooting, **Energy Conservation** Skills, **Catalyst Technology**, **Refinery & Process Industry**, **Chemical Analysis**, **Process Plant**, **Commissioning & Start-Up**, **Alkylation**, **Hydrogenation**, **Dehydrogenation**, **Isomerization**, **Hydrocracking & De-Alkylation**, **Fluidized Catalytic Cracking**, **Catalytic Hydrodesulphuriser**, **Kerosene Hydrotreater**, **Thermal Cracker**, **Catalytic Reforming**, **Polymerization**, **Polyethylene**, **Polypropylene**, Pilot Water Treatment Plant, **Gas Cooling**, **Cooling Water Systems**, Effluent Systems, Material Handling Systems, **Gasifier**, **Gasification**, Coal Feeder System, **Sulphur Extraction Plant**, **Crude Distillation Unit**, **Acid Plant Revamp** and **Crude Pumping**. Further, he is also well-versed in HSE Leadership, Project and Programme Management, Project Coordination, Project Cost & Schedule Monitoring, Control & Analysis, Team Building, Relationship Management, Quality Management, Performance Reporting, Project Change Control, Commercial Awareness and Risk Management.

During his career life, Mr. Frampton held significant positions as the **Site Engineering Manager**, **Senior Project Manager**, **Process Engineering Manager**, **Project Engineering Manager**, **Construction Manager**, **Site Manager**, **Area Manager**, **Procurement Manager**, **Factory Manager**, **Technical Services Manager**, **Senior Project Engineer**, **Process Engineer**, **Project Engineer**, **Assistant Project Manager**, **Handover Coordinator** and **Engineering Coordinator** from various international companies such as the **Fluor Daniel**, **KBR** South Africa, **ESKOM**, MEGAWATT PARK, CHEMEPIC, PDPS, CAKASA, **Worley Parsons**, Lurgi South Africa, **Sasol**, **Foster Wheeler**, **Bosch** & **Associates**, **BCG** Engineering Contractors, Fina Refinery, Sapref Refinery, Secunda Engine Refinery just to name a few.

Mr. Frampton has a **Bachelor's degree** in **Industrial Chemistry** from **The City University** in **London**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management** (**ILM**) and has delivered numerous trainings, courses, workshops, conferences and seminars internationally.

Course Fee

US$ 4,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course 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, 14th of October 2024***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Aromatic Complex*** *Introduction ● Aromatic Compounds*
0930 - 0945	*Break*
0945 - 1100	***Aromatic Complex (cont'd)*** *Extraction of Aromatics*
1100 - 1215	***Aromatic Complex (cont'd)*** *Description of the Flow Process ● Feedstock Consideration*
1215 - 1230	*Break*
1230 – 1420	***Aromatic Complex (cont'd)*** *Configuration ● Case Study*
1420 - 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Tuesday, 15th of October 2024***

0730 - 0930	***Benzene*** *Introduction ● Benzene Uses ● Benzene Production & Manufacturing Process ● Catalytic Reforming ● Pyrolysis Gasoline ● Production from Coal Tar*
0930 - 0945	*Break*
0945 - 1100	***Benzene (cont'd)*** *Toluene Hydrodealkylation ● Toluene Disproportionation ● Selection of the Process ● Thermal Hydrodealkylation (THDA) Process - Process Description ● Process Economics*
1100 - 1215	***P-Xylene*** *Introduction to Xylenes and P-Xylene ● Xylenes Physical Properties ● Xylene Chemical Properties*
1215 - 1230	*Break*
1230 – 1420	***P-Xylene (cont'd)*** *Economic Environment for Para-xylene Producers ● UOP Aromatics Complex to Produce Para-xylene ● BP-UOP Cycler Process - Introduction*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3: **Wednesday, 16th of October 2024**

0730 - 0930	***BP-UOP Cycler Process*** *BP-UOP Cycler Process – Process Chemistry ● Description of the Flow Process*
0930 - 0945	*Break*
0945 - 1100	***BP-UOP Cycler Process (cont'd)*** *Feedstock Consideration ● Process Performance ● Equipment Consideration*
1100 - 1215	***UOP Isomer Process*** *Introduction ● Process Chemistry ● Description of the Flow Process ● Feedstock Consideration*
1215 - 1230	*Break*
1230 - 1420	***UOP Isomer Process (cont'd)*** *Process Performance ● Equipment Consideration*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4: **Thursday, 17th of October 2024**

0730 - 0930	***UOP Parex Process*** *Introduction ● Parex vs. Crystallization*
0930 - 0945	*Break*
0945 - 1100	***UOP Parex Process (cont'd)*** *Process Performance ● Feedstock Consideration ● Description of the Flow Process ● Equipment Consideration*
1100 - 1215	***UOP TATORAY Process*** *Introduction ● Process Chemistry ● Description of the Flow Process*
1215 - 1230	*Break*
1230 - 1345	***UOP TATORAY Process (cont'd)*** *Process Performance ● Equipment Consideration*
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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