Haward Technology Middle East

COURSE OVERVIEW PE0129
Product Optimization Process

Course Title
Product Optimization Process

Course Date/Venue
Session 1: February 17-21, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Session 2: July 27-31, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
PE0129

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

Course Description

This hands-on, 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.

This course is designed to provide participants with a detailed and up-to-date overview of production process optimization, problem solving and operational troubleshooting. It covers the fundamentals of production process optimization; the basic optimization tools and what can optimization achieve; the cost versus capacity and the pareto principle in operational and investment economics; and the financial returns, breakeven analysis, graphical solutions, incremental method, global and local optima and configuration optimization.

Further, the course will also discuss the capacity creep, plant debottlenecking, optimizing operations planning and unit performance; the proper scheduling, optimizing process operations and the key parameters for optimization; the components of plant problem solving, the limitations to plant problem solving, and the sources of historical data; the daily monitoring system guidelines, setting trigger points and problem solving approach; and the step 1 to step 6 considerations, risk analysis and troubleshooting manual.

During this interactive course, participants will learn the guidelines for temperature, pressure and level problem solving; the process controls, verifying measurements and analogue controls versus digital controls; the feedback and feedforward controls; the DCS (Distributed Control Systems) and advanced controls including process analyzers, offline optimization, real time online optimization and model predictive control; the potential sources, basic principles of fluid overview and equivalent piping lengths; and the commercial correlations, two phase flow/theory and applications, heat transfer, troubleshooting techniques/applications and hazards.

Course Objectives

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

- Apply systematic techniques on production process optimization, problem solving and operational troubleshooting

- Discuss the fundamentals of production process optimization

- Define and identify the basic optimization tools and what can optimization achieve

- Differentiate cost versus capacity and apply pareto principle in operational and investment economics

- Review financial returns and carryout breakeven analysis, graphical solutions, incremental method, global and local optima and configuration optimization

- Identify capacity creep and illustrate plant debottlenecking, optimizing operations planning and unit performance

- Apply proper scheduling, optimizing process operations and the key parameters for optimization

- Recognize the components of plant problem solving, the limitations to plant problem solving, and the sources of historical data

- Apply daily monitoring system guidelines, set trigger points and employ disciplined learned problem solving approach

- Identify the step 1 to step 6 considerations, carryout risk analysis and review troubleshooting manual

- Implement guidelines for temperature, pressure and level problem solving

- Determine process controls, verify measurements and discuss analogue controls versus digital controls as well as feedback and feedforward controls

- Describe DCS (Distributed Control Systems) and advanced controls including process analyzers, offline optimization, real time online optimization and model predictive control

- Define and identify potential sources, basic principles of fluid overview and equivalent piping lengths

- Describe commercial correlations, two phase flow/theory and applications, heat transfer, troubleshooting techniques/applications and hazards

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 covers systematic techniques and methodologies on the production process optimization, problem solving and operational troubleshooting for controller production operators II.

Course Fee

US$ 5,500 per Delegate. 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.

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: -

- 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.

- 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. Basem Al-Qarout is a **Senior Process & Chemical Engineer** with over **35 years** of extensive teaching and field industrial experience. His expertise covers **Fundamentals of Process Operations**, **Hydrocarbon Processing**, **Process Plant Start-Up & Commissioning**, **Crude Oil & Refinery Products**, **Sampling & Feed/Product Quality**, **Process Troubleshooting & Problem Solving**, **Separation of Oil/Gas/Water**, **Oil Field Operations**, **Gas Field Operations**, **Oil Production**, **Gas Processing**, **Process Equipment Design**, **Operation of Process Equipment**, **Hydro-Treating**, **Hydro-Forming**, **Hydro-Cracking** and **Catalyst Technology.** Furthermore, he is also well-versed in **P&ID** and **Wiring Schematics Rotating Equipment-Machinery** (**Pumps**, **Compressors**, **Turbines**, **Fans & Blowers**, **Electric Motors**, **Gears & Transmission Equipment**), **Static Equipment-Stationary**, (**Heat Exchangers**, **Distillation Column**, **How Trays Work**, **Process Heaters/Furnaces**, **Reboilers**, **Condensers**, **Piping System**, **Valves**) and **Process Control & Instrumentation** (**Process Control**, **Instrumentation**, **Control Valves**).

During Mr. Al-Qarout's career life, he has handled challenging positions wherein he has acquired his thorough practical and academic experience as the **Technical Instructor**, Senior **Production Foreman**, **Panel Operator** at **Hydro Cracking Plant** and **Plant Foreman** of various companies such as **Mellitah Oil and Gas B.V.**, **KNPC**, **Chevron**, **Jordan Refinery Company** and **Libya Oil Center**.

Mr. Al-Qarout has a **Diploma** in **Chemical Engineering** from the **Polytechnic University** in **Jordan**. Further, he is **Certified** by **City & Guilds** as **Level 2 & 3 NVQ Processing Operations: Hydrocarbons Assessor** and a **Certified Instructor** by **Haward Technology Train-the-Trainer Program**.

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 – 0845	**Fundamentals of Production Process Optimization**
0845 – 0900	**Definitions & Basic Optimization Tools**
0900 – 0930	**What can Optimization Achieve**
0930 – 0945	**Cost Versus Capacity**
0945 – 1000	*Break*
1000 – 1030	**Pareto Principle**
1030 – 1100	**Operational Economics**
1100 – 1200	**Investment Economics**

1200 – 1215	Break
1215 – 1230	**Financial Returns**
1230 – 1330	**Breakeven Analysis**
1330 – 1420	**Graphical Solutions**
1420 – 1430	**Recap**
1430	Lunch & End of Day One

Day 2

0730 – 0800	**Incremental Method**
0800 – 0830	**Global & Local Optima**
0830 – 0900	**Configuration Optimization**
0900 - 0945	**Capacity Creep**
0945 – 1000	Break
1000 – 1100	**Plant Debottlenecking**
1100 – 1130	**Optimizing Operations Planning**
1130 – 1200	**Optimizing Unit Performance**
1200 – 1215	Break
1230 – 1300	**Scheduling**
1300 – 1330	**Optimizing Process Operations**
1330 – 1420	**Key Parameters for Optimization**
1420 – 1430	**Recap**
1430	Lunch & End of Day Two

Day 3

0730 – 0800	**Components of Plant Problem Solving**
0800 – 0830	**Limitations to Plant Problem Solving**
0830 – 0900	**Sources of Historical Data**
0900 – 0945	**Daily Monitoring System Guidelines**
0945 – 1000	Break
1000 – 1030	**Setting Trigger Points**
1030 – 1130	**Disciplined Learned Problem Solving Approach**
1130 – 1200	**Step 1 to Step 6 – Considerations**
1200 – 1215	Break
1215 – 1300	**Risk Analysis – HAZOP – MSDS**
1300 – 1330	**Troubleshooting Manual: Sample Problems**
1330 – 1420	**Guidelines for Problem Solving Temperature, Pressure, Level**
1420 – 1430	**Recap**
1430	Lunch & End of Day Three

Day 4

0730 – 0800	**Process Controls**
0800 – 0830	**Measurements,Verification**
0830 – 0900	**Analogue Controls versus Digital Controls**
0900 – 0945	**Feedback & Feedforward Controls**
0945 – 1000	Break
1000 – 1030	**DCS (Distributed Control Systems) & Advanced Controls**
1030 – 1130	**Process Analyzers**
1130 - 1200	**Offline Optimization**

1200 – 1215	*Break*
1215 – 1300	**Real Time Online Optimization**
1300 – 1330	**Model Predictive Control**
1330 – 1420	**Definition, Potential Sources**
1420 – 1430	**Recap**
1430	*Lunch & End of Day Four*

Day 5

0730 – 0800	**Fluid Overview – Basic Principles**
0800 – 0830	**Fluid Overview – Basic Principles (cont'd)**
0830 – 0900	**Fluid Overview – Head Definition**
0900 – 0945	**Equivalent Piping Lengths**
0945 – 1000	*Break*
1000 – 1030	**Commercial Correlations**
1030 – 1130	**Two Phase Flow/Theory & Applications**
1130 – 1200	**Heat Transfer Overview**
1200 – 1215	*Break*
1215 – 1330	**Troubleshooting Lessons Learned Techniques/Applications**
1330 – 1345	**Hazards**
1345 – 1400	**Course Conclusion**
1400 – 1415	**POST-TEST**
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

This hands-on, highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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