Haward Technology Middle East

COURSE OVERVIEW PE0359-4D
Introduction to Process Integration & Optimization

Course Title
Introduction to Process Integration & Optimization

Course Date/Venue
November 04-07, 2024/ Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
PE0359-4D

Course Duration/Credits
Four days/2.4 CEUs/24 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.

This course is designed to provide participants with a detailed and up-to-date overview of introduction to process integration and optimization. It covers design and optimize within the design cycle as well the simulation process integration and design windows: the optimization as well the single-and multi-objective and topology optimization; the basics, concepts, methods, and examples of optimization.

During this interactive course, participants will learn the design of experiments (DoE), concepts, uses, guidance and the typical algorithms; the parameter optimization, concepts and guidance; the method (gradient, GA, evolution, others), decision making tools and the response surface/meta-model methods; the methods, algorithms and real-life/experimental information; the robust design methodologies, sensitivity and examples in many sectors are distributed throughout the course.

Course Objectives

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

- Apply and gain an in-depth knowledge on introduction to process integration and optimization

- Design and optimize within the design cycle as well the simulation process integration and design windows

- Discuss the optimization as well the single-and multi-objective and topology optimization

- Explain the basics, concepts, methods, and examples of optimization

- Design of experiments (DoE), concepts, uses, guidance and the typical algorithms

- Recognize the parameter optimization, concepts and guidance

- Discuss the method (gradient, GA, evolution, others), decision making tools and the response surface/meta-model methods

- Apply the methods, algorithms and real-life/experimental information

- Review robust design methodologies, sensitivity and examples in many sectors are distributed throughout the course

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 aspects and considerations of introduction to process integration and optimization for those engineers and designers who are interested in using design optimization methodologies to explore the whole design space leading to improved and optimized designs for products and processes.

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. Attalla Ersan, PEng, MSc, BSc, is a **Senior Process Engineer** with over **35 years** of extensive experience within the **Oil & Gas**, **Hydrocarbon** and **Petrochemical** industries. His expertise widely covers the areas of **Process Simulation Using Aspen Hysys & UniSim**, **Process Modelling**, **Process Design**, **Process Plant** Operations, **Process Plant Startup & Operating Procedure**, **Ethylene & Vinyl Chloride**, **Ethane Cracking Furnaces** Operations, **Ethylene & Polyethylene** Operation, **Acid Gas Treatment**, **Sulphur Recovery**, **EDC & VCM**, Caustic Soda Storage, Debottle-necking, **Process Operation**, **Safety Audits**, **Process Engineering**, **Root Cause Investigations**, **Pyrolysis Cracking**, **Gas Plant Commissioning**, **Loss Prevention Techniques**, **Occupational Hazards**, Hot Tapping & Tie-Ins, Pre-Start-Up Safety Review (**PSSR**), Standard Operating Procedure (**SOP**), Emergency Operating Procedure (**EOP**), Permit to Work Systems (**PTW**), **Steam Cracking**, **Steam Generation**, **Binary Fractionators** Operations, **Tanks Farm & Metering Station Techniques**, **Gas Treatment**, **Sulphur Recovery Process Unit Operation**, **Permit to Work System**, **Emergency Response Planning**, **Boiler & Steam System** Management, **Waste Heat Recovery**, **Boiler Plant Safety**, **Boiler Controls**, **Steam Distribution** Systems, **Steam Traps**, Pollution Control, Cracked **Gas Compressor**, **Reboilers**, **Sulphur Unit Air Blower**, **Steam Turbine**, **Distillation Columns**, **Gas Treatment**, **Waste & Water Treatment Units**, **Pumps**, **Compressors**, **Turbines**, **Motors**, **Turbo-expanders**, **Gears**, **Heat Exchanger**, Hazard and Operability (**HAZOP**) Study, Process Hazards Analysis (**PHA**), **HAZOP** Facilitation, **Loss Prevention**, Consequence Analysis Application, **Gas Detectors** Operation, **Accident/Incident Investigation (Why Tree Method)**, **Occupational Exposure Assessment**, **Fire Fighting & First Aid**, **Environmental Management** and **Basic Safety** Awareness. Further, he is also well-versed in Project Management, Human Resources Consultancy, Manpower Planning, Job Design & Evaluation, Recruitment, Training & Development and Leadership, Creative Problem Solving Skills, Work Ethic, Job Analysis Evaluation, Training & Development Needs, Bidding & Tendering, Technical Report Writing, Supervisory Leadership, Effective Communication Skills and Total Quality Management (TQM). He is currently the **CEO** of **Ersan Petrokimya Teknoloji Company Limited** wherein he is responsible for the design and operation of Biogas Process Plants.

During his career life, Mr. Ersan has gained his practical and field experience through his various significant positions and dedication as the **Policy**, **Organization & Manpower Development Head**, **Training & Development**, **Head**, **Ethylene Plant – Pyrolysis Furnace Engineer**, **Production Engineer**, Process Training Coordinator, Ethylene Plant Shift Supervisor, Ethylene Plant Panel & Fit Operator, Process Training & Development Coordinator, **Technical Consultant**, and **Instructor/Trainer** for Qatar Vinyl Company Limited and Qatar Petroleum Company (QAPCO).

Mr. Ersan is a **Registered Professional Engineer** and has a **Master's degree** of **Education** in **Educational Training & Leadership** and a **Bachelor's degree** of **Petrochemical Engineering**. Further, he is a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, workshops, conferences and seminars internationally.

Haward Technology Middle East

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

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Introduction & Welcome*
0815 – 0830	**PRE-TEST**
0830 – 0930	**Design Cycles**
0930 – 0945	*Break*
0945 – 1030	**Optimization within a Design Cycle**
1030 - 1130	**Simulation Process Integration**
1130 – 1230	**Design Windows**
1230 – 1245	*Break*
1245 – 1330	**Optimization**
1330 – 1420	**Basics**
1420 –1430	**Recap**
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	**Single-& Multi-Objective Optimization**
0830 - 0930	**Basic Methodologies**
0930 – 0945	*Break*
0945 – 1045	**Topology Optimization**
1045 - 1230	**Concepts, Methods, & Examples**
1230 – 1245	*Break*
1245 – 1330	**Design of Experiments (DoE)**
1330 – 1420	**Concepts, Uses, Guidance**
1420 – 1430	**Recap**
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	**Typical Algorithms**
0830 - 0930	**Parameter Optimization**
0930 – 0945	*Break*
0945 – 1045	**Concepts & Guidance**
1045 - 1230	**Method (Gradient, GA, Evolution, Others)**
1230 – 1245	*Break*
1245 – 1330	**Decision Making Tools**
1330 – 1420	**Response Surface/Meta-Model Methods**
1420 – 1430	**Recap**
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	**Methods & Algorithms**
0830 – 0930	**Real-Life/Experimental Information**
0930 – 0945	*Break*

0945 – 1100	*Robust Design Methodologies*
1100 – 1215	*Sensitivity*
1215 – 1230	*Break*
1230 – 1345	***Examples in Many Sectors are Distributed throughout the Course***
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 "ASPEN HYSYS" simulator.

ASPEN HYSYS V12.1 Simulator
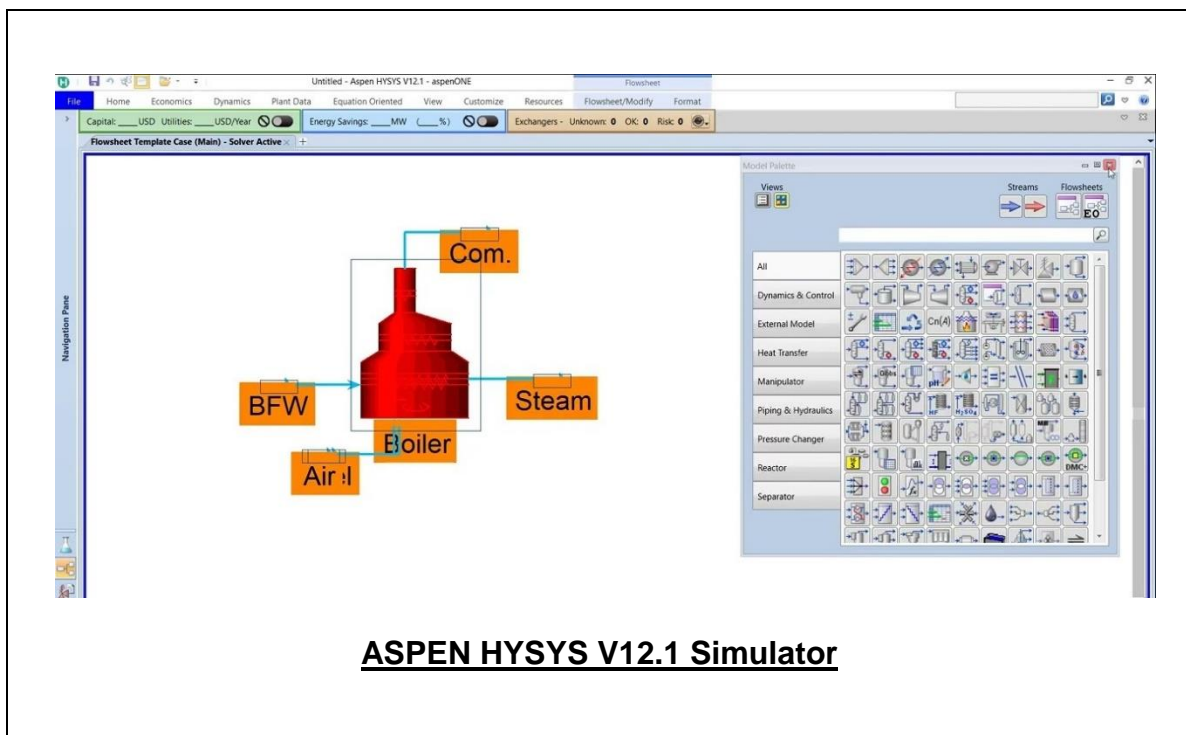
Course Coordinator

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