

Training Course

**Operation of Process Equipment Fired
Heaters, Air Coolers, Heat Exchangers,
Pumps, Compressors, Crude Desalter,
Pressure Vessels & Valves**

Course Plan

Introduction

This intensive training program is designed to provide participants with a comprehensive understanding of the principles, operation, and maintenance of key process equipment used in oil, gas, and petrochemical industries. The course emphasizes practical knowledge and hands-on insights into the safe and efficient operation of fired heaters, air coolers, heat exchangers, pumps, compressors, crude desalters, pressure vessels, and valves. Participants will gain both theoretical and practical perspectives, equipping them with the skills needed to ensure optimal performance, reliability, and safety in day-to-day operations.

Course Objectives:

- ✓ Understand the design principles and functions of major process equipment.
- ✓ Operate equipment safely and efficiently under different operating conditions.
- ✓ Identify and troubleshoot common problems in process equipment.
- ✓ Apply effective preventive and corrective maintenance strategies.
- ✓ Enhance reliability and minimize downtime of process units.
- ✓ Interpret technical data, performance curves, and operational parameters.
- ✓ Recognize safety hazards and implement best practices for risk reduction.
- ✓ Integrate equipment operation knowledge into overall plant performance improvement.

Who Should Attend?

- Process engineers
- Operation engineers and supervisors
- Maintenance engineers and technicians
- Shift team leaders and plant operators
- Health & safety engineers working with process facilities
- Technical staff aspiring to enhance their knowledge of process equipment

Training Methods:

- ✓ Online Video material.
- ✓ Presentation.
- ✓ Live Interactive sessions.
- ✓ Course presenter will make extensive use of all tools that will be needed for the virtual environment.
- ✓ Questions & Answers

Course Outline:

Day One

- Introduction to process equipment in oil, gas & petrochemical industries
- Principles of heat transfer in process equipment
- Fired heaters: design, operation, and safety considerations
- Common problems and troubleshooting in fired heaters
- Air coolers: types, applications, and performance monitoring

Day Two

- Heat exchangers: classifications and operational challenges
- Fouling and cleaning strategies in heat exchangers
- Pumps: types, characteristics, and performance curves
- Cavitation in pumps: causes, effects, and prevention
- Centrifugal vs. positive displacement pumps: selection and operation

Day Three

- Compressors: types, working principles, and applications
- Performance evaluation of compressors and troubleshooting techniques
- Crude desalters: design, function, and importance in refining
- Operational challenges in crude desalting units
- Pressure vessels: design codes, safety, and inspection

Day Four

- Operational risks and safety management of pressure vessels
- Valves: classification, functions, and selection criteria
- Control valves and their role in process optimization
- Sealing systems and leakage prevention in valves
- Maintenance strategies for long-term equipment reliability

Day Five

- Monitoring and instrumentation in process equipment operation
- Energy efficiency and cost-saving opportunities in equipment operation
- Case studies of equipment failures and lessons learned
- Best practices for safe startup and shutdown procedures
- Integrated approach to improve plant reliability and performance

Training Details

Course Duration	5 Days
Pre-Schedule	16 – 20 Nov 2025
Venue	Dubai – Dusit Thani Hotel
Training Fees Per Person	KWD 1250 (One Thousand TwoHundred Fifty Only
Course Fees Include	✓ Tuition documentation ✓ Curriculum and Training Handout ✓ Five star Lunch ✓ Completion Certificates ✓ Lunch Included