Operator Basic Training Course

40 days
Overview

LEVEL
Foundation

PURPOSE
This course provides operators with the knowledge and know-how required for safe, efficient and reliable field operations.

LEARNING OBJECTIVES
Upon completion of the course, participants will be able to:
- monitor each main type of equipment on the field, detect and report abnormal situations,
- execute on the field the day-to-day operating tasks related to each main type of equipment,
- strictly apply safety rules, to effectively use collective and personal protective equipment,
- communicate effectively with shift colleagues.

WAYS AND MEANS
IFP Training classroom training uses interactive delivery methods (tutorials, case studies, role playing).
During classroom training, short practical on-site exercises on specific pieces of equipment.
In between IFP Training classroom modules, On-the-Job Orientation on Clients’ assigned unit.

LEARNING ASSESSMENT
Continuous assessment.

PREREQUISITES
No prerequisites for this course.

MORE INFO
Esta formación se puede proponer en español.

Agenda

For each equipment type: principle, technology, ancillary systems, monitoring, basic operations, risks, safety devices, good practices.

PIPING - VESSELS - STORAGE TANKS - DRAWINGS
Valves, fittings, flexible hoses, safety devices/interlocks. Vessels, storage tanks. Identification symbols for various items of equipment.
Block diagrams, flow sheet, P&ID. Introduction to isometric drawings.
Field applications: equipment recognition, practical exercise of line-plotting, demonstration equipment in the workshop (when available).

INSTRUMENTATION & CONTROL DEVICES
Physical variables used in process operations (pressure, temperature, flowrate, density, specific gravity).
Components of a control loop. Instrumentation: workings and operation. Field applications: practical exercise on control loops, demonstration loops (if available), work on Man-Machine Interface in control room.

**HEAT EXCHANGE EQUIPMENT**
Heat, energy and heat transfer. Heat exchangers: technology, main types, workings and operation.
On-site practical exercise on a heat exchanger.
Furnaces and boilers: technology, combustion, draft and operation.
On-site practical exercise on furnaces/boilers.

**ROTATING MACHINERY**
Fluid flows.
Rotating machinery field recognition.
Centrifugal and positive displacement pumps.
On-site practical exercise on pumps.
Centrifugal and reciprocating compressors.
Single stage, back-pressure steam turbines.
On-site practical exercise on a compressor or turbine.
Electric motors operation.
Extruder.

**PROCESSES - PRODUCTS - SAMPLING & TESTING - UTILITIES**
Basic chemistry. Chemical products and chemical solutions: composition and hazards.
Chemical reactions.
Vapor pressure and boiling point.
Distillation: principles of the separation, distillation columns.
Products. Quality control tests. Sampling.
Principles of manufacturing processes.
Notion of material and heat balance.
Manufacturing process diagram.
Utilities: flare network, wastewater treatment, cooling water, air production.
On-site practical exercise on different processes (main equipment, operating conditions).

**OPERATORS’ TOOLS - SKILLS & ORGANIZATION**
Plant documentation: inventory, content, usage.
Radio communication. Teamwork.
Reporting and handover duties.
Role plays.

**SAFETY**
Product hazards: flammability, toxicity, physical hazards.
Job Safety Analysis for field operators’ routine activity (equipment check, circuit alignment, sampling, etc.).
Emptying processes: blind and gasket fitting, degassing and inerting, entering a vessel.
Example of procedures for equipment shutdown and start-up.
Safe behavior.
Field hazard recognition and prevention means plotting.
Case studies - Group work. Lessons learned.

**ASSESSMENT (DURATION INCLUDED IN THE PREVIOUS CHAPTERS)**
Continuous assessment: written tests and oral presentations.