

# SURFACE PRODUCTION OPERATOR TRAINING

## OBJECTIVES

To provide the operator with the required technical background for an efficient and rapid integration into the shift team.

On completion of the course, participants:

- have a solid theoretical background for a better understanding of the processing operations, enabling them to be reactive in the event of hazardous or unusual situation,
- know the well and surface processing equipment,
- know the practical operating recommendations of these equipment (startup, shutdown, isolation...),
- are aware of the hazards relative to their facilities, and the HSE equipment.

## COURSE CONTENT

### APPLIED PHYSICS AND CHEMISTRY

4 days

Applied physics: force, work, energy, temperature, hydrostatics, hydrodynamics  
Fundamentals of liquid-vapor equilibrium of pure components and mixtures  
Applied chemistry - Hydrocarbons: types and main characteristics

### WELL

6 days

Fundamentals of reservoir engineering and drilling techniques  
Wells: types - Completion equipment: types and functions  
Wellheads: types and typical equipment  
Artificial lift: Gas Lift (GL), Pumping (Electrical Submersible Pumps: PCP, Sucker Rod Pumps...)  
Well safety equipment

### STATIC EQUIPMENT

7 days

Piping: gate and globe valves, check valves, safety valves and rupture disks...  
Thermal insulation and tracing  
Thermal equipment: heat exchanger, air coolers, fire tubes, heating oil furnace...  
Storage equipment: tanks, spheres, cigars -Technology of FSO/FPSO and tankers  
Instrumentation and process control: sensors, controllers, control valves...  
Distributed Control System (DCS) and Safety Systems  
Schematization: PID, PFD, Block Flow Diagram  
Safety systems: HIPS, ESD, EDP, F&G, USS

### SEPARATION TECHNIQUES

3 days

Separators: types (two or three-phase, scrubber, FWKO...) and technology (horizontal, vertical, spherical, internals, safety equipment...)  
Absorbers, strippers and other distillation columns: types, technology, internals details  
Separation equipment operation: start-up, shutdown, follow-up during normal operation

### ELECTRICITY, ELECTRICAL MOTORS AND POWER GENERATORS

1 day

Fundamentals of industrial electricity  
Electrical motors and power generators: types, technology and operation

### TECHNOLOGY AND OPERATION OF PUMPS

4 days

Surface centrifugal pumps  
Electrical Submersible Pumps (ESP)  
Surface Positive displacement Pumps  
Progressing Cavity Pumps (PCP)  
Technology and operation (Start-up, Shutdown, permutation, follow-up during normal operation...)

### TECHNOLOGY AND OPERATION OF COMPRESSORS, EXPANDERS AND GAS TURBINES

5 days

Centrifugal and reciprocating compressors  
Expanders and Turbo-expanders  
Gas turbines  
Technology and operation (Start-up, Shutdown, switch, follow-up during normal operations...)

### BASIC OPERATIONS IN PRODUCTION ACTIVITIES - HSE

5 days

Utilities: types and operating use rules  
Basic operations realized or followed-up by operators: shutdown and start-up of a well, equipment operation (startup, shutdown, switch, isolation and preparation for maintenance...), follow-up during normal operation...  
Products, operation and works related HSE risks  
HSE rules - Personal Protection Equipment

### OIL, WATER AND GAS TREATMENT

5 days

Well effluent: types and characteristics - Flowline network  
Oil processing: stabilization, associated gas compression, dehydration, sweetening  
Production and injection waters treatment  
Gas processing and conditioning: dehydration, sweetening, liquids extraction, compression, export

*The classroom course is split into four modules, separated by field practical individual work periods.  
The course technical content may be adapted to site specificities.*

### ▲ Who should attend?

Junior or more experienced operators working for Oil & Gas production facilities, or terminals.

### ▲ Duration

**40 days**  
(Duration is indicative ;  
may be adapted if needed)

### ▲ Dates & Location

*May be organised for a  
single company*

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**French session: F-531**

### ▲ Course Coordinator

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