

# SURFACE PRODUCTION OPERATOR TRAINING

Field Operations  
Field processing

E- 531

## OBJECTIVES

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

At 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.

### 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 - Gathering network.  
Oil processing: stabilization, associated gas compression, dehydration, sweetening.  
Production and injection waters treatment. Gas processing and conditioning: dehydration, sweetening, liquids extraction, compression, export.

### ▲ Who should attend?

Newly hired operators working for Oil & Gas production facilities, or terminals.

### ▲ Duration

**40 days**  
(May be adapted)

### ▲ Dates & Location

**Non scheduled**  
**May be organised for a single company**

### ▲ Tuition Fees

**To be agreed upon**

### ▲ Course Coordinator

**Mohamed SKHIRI**

Ref. **PROD / PRODOPE**



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