

▲ Who should attend?

Engineers and technicians, who look for information not only on the Oil & Gas field treatments, but also on the technology of the equipment used in these onshore and offshore processing facilities.

▲ Duration

10 days

▲ Dates & Location

December 07-18, 2009
Rueil-Malmaison (Paris)

French session: F-502

▲ Registration

Fees: € 3,600

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▲ Course Coordinator

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Ref. PROD / FPSPF

FIELD PROCESSING AND SURFACE PRODUCTION FACILITIES

OBJECTIVES

To provide technical knowledge of Oil & Gas field processing techniques (onshore and offshore), as well as the technology and operating principle of the equipment used in these facilities.

On completion of the course, participants know the:

- fundamentals of Oil & Gas production techniques,
- operating principle of the Oil, Water and Gas processes, and their main operating conditions,
- techniques used for offshore production and their specificities,
- technology of the main equipment used in these processing facilities,
- fundamentals of process control and typical safety systems layout,
- fundamentals of metering techniques and corrosion prevention and monitoring.

COURSE CONTENT

FUNDAMENTALS OF RESERVOIR, DRILLING AND COMPLETION 0.5 day

Hydrocarbon genesis

Reservoirs: types, exploration techniques

Drilling principle - Case of offshore drilling

Main completion equipment - Principle of artificial lift by pumping, gas lift...

Enhanced Oil Recovery (EOR): aim and principle of the main techniques

WELL EFFLUENTS BEHAVIOR -

NEED FOR EFFLUENT FIELD PROCESSING

0.5 day

Well effluent composition - Different types of well effluent (black oil, light oil, volatile oil, wet gas, retrograde gas, dry gas)

Main characterization parameters: GOR, CGR, FVF, Bo, Bg, BSW, WOR, Water Cut, Bo, Bg, B'g...

Liquid/Vapor equilibrium of pure substances and mixtures - Vapor pressure curves and **phase envelopes**

Well effluent behavior from pay zone up to the surface processing plant inlet

Constituents that pose problems for storage, transport, or commercialization/utilization of crude oils and natural gases

Main **specifications** to be respected and required treatments

Examples of compositions of well effluents and commercialized crude oils and natural gases

CRUDE OIL TREATMENT

1 day

Crude **stabilization** (gas removal) by Multi Stage Separation (MSS) - Foaming problems and main available solutions

Crude **dehydration** (water removal) and desalting - Emulsion problems and main available treatments

Crude **sweetening** (H₂S removal)

Examples of oil treatment and associated gas compression process schemes

PRODUCTION AND INJECTION WATER TREATMENT

1 day

Production water networks: drain drums, open and closed drains, safety considerations

Reject water environmental constraints and required treatments

Injection water: aim, quality requirements and required treatments (chlorination, filtration, oxygen removal, sterilization)

GAS PROCESSING AND CONDITIONNING

2 days

Gas dehydration (drying): TEG units, desiccants - Hydrate formation inhibition: MeOH, MEG or DEG injection

Gas sweetening - Acid components (H₂S et CO₂) removal: amine units, molecular sieves, membranes

Natural Gas Liquids (NGL) extraction: use of cryogenic refrigeration, Joule-Thomson expansion, expansion, or Turbo-expander

Fundamentals of Liquefied Natural Gas (LNG) chain

CASE OF OFFSHORE DEVELOPMENTS - FLOW ASSURANCE

1 day

Different offshore production structures: jacket, semi-submersible, Spar, TLP, FPSO... - Selection criteria

Storage and offloading vessels (**FSO, FPSO, buoy**...)

Deep offshore developments - Examples of subsea architecture

Subsurface/surface flow assurance - Problems related to multiphase flow

Flow Assurance: problems of slug, erosion, hydrate formation, deposits (paraffins, asphaltenes, naphthenates, carbonates, sulfates, salts...) - Main preservation techniques and pigging solutions

ROTATING MACHINERY

1 day

Pumps, Compressors, turboexpanders and gas turbines: types, operation, technology - Examples of application

THERMAL EQUIPMENT

0.5 day

Heat exchangers, Air coolers, Furnaces, Heaters, fire tubes: types, operation, technology

FUNDAMENTALS OF CORROSION

0.5 day

Different types of corrosion, prevention and monitoring

Case of corrosion due to sea water

INSTRUMENTATION & PROCESS CONTROL - SAFETY SYSTEMS

1 day

Elements constituting a simple process control loop - Case of cascade and split-range loops - DCS

Technology and working principle of sensors, transmitters and control valves

Safety Systems: HIPS, ESD, EDP, F&G, USS

METERING AND ALLOCATION

1 day

Metering of liquids, gas - Multiphase metering