

Production



The objective of oil and gas operations is to produce and sell oil and gas for profit. For wells that encounter oil or gas, not every discovery will have enough volume of oil and / or gas to warrant the cost required to recover the hydrocarbons for production.

The 'recovery factor' which denotes the percentage of hydrocarbons in situ that will be recoverable, depends on three main items - nature of the fluid, reservoir drive mechanism, and productivity.

In the event that the discovery is big enough to be commercially viable, field production to get the hydrocarbons out of the ground comes under three main headings - **Primary, Secondary and Enhanced Recovery.**



Primary Recovery:

The reservoir pressure forces oil and gas to the well and hence to the surface under natural flow. Natural flow accounts for most of the world's oil production but only a portion of the hydrocarbons are recovered via this means.

Secondary Recovery:

There are three types of secondary recovery methods.

(a) Re-injection is a method where reservoir pressure is maintained by returning natural reservoir fluids such as water or gas to the producing zone via strategically placed wells in the field that are dedicated to re-injection.

(b) Gas lift ("artificial lift") is also a means of extending natural oil flow. It involves decreasing the density of the fluid to be produced by

injecting gas directly into the flowing column in a well rather than into the reservoir.

(c) Pumping is a third form of artificial lift and is accomplished in three ways - a beam or rod pump (the familiar oil field 'nodding donkey'), a hydraulic pump or an electrical submersible pump.

Enhanced recovery:

This is only done for oil production. It is achieved by injecting fluids which are not normally present into the reservoir with the aim of altering the properties of the oil to enable a greater proportion to be produced. Enhanced recovery methods are generally applied after primary and secondary techniques have been exhausted.

The production process for oil and gas is generally the same onshore as it is offshore.

Processing includes six systems:

1. Gathering

A series of small diameter pipelines connecting to each wellhead and feeding into the main processing inlet.

2. Separation

Oil, water and gas all have different densities and will settle into separate layers. Internal devices are used to speed up the separation process.

3. Treatment (Storage)

Once the oil, gas and water have separated, oil and gas is usually split into two streams. Oil leaves the separation system virtually free from dissolved gas and is termed "stabilised". However, it may still contain water in emulsion form. Further treatment removes the water using various techniques. The oil and gas are stored until they are transported to the refinery.

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4. Water Treatment & Disposal

This is done to the water which has come up with the oil / gas to reduce the residual oil content in the water to acceptable environmental levels before it can be disposed of, which may involve discharging to the ocean in an offshore scenario. Water treatment methods may include de-aeration, filtration or chemical treatment, with time allowed for settling out of the two phases.

5. Safety

This includes the installation of alarms, automatic shut-downs, back-up units on important equipment, flare stacks and fire-fighting equipment, plus strict administrative procedures and emergency containment and evacuation plans in case of an emergency such as an oil spill.

6. Utility Handling

This is the work required for power generation and facilities of the rig for normal services, all of which can be and frequently are powered by the gas or oil being processed in the plant.

Types of Petroleum

- › Natural gas
- › LPG
- › Petrol
- › Diesel
- › Light oil
- › Fuel oil
- › Wax
- › Tar



Products from petroleum are used to run the cars we drive, make the roads we drive on, cook our food, warm our houses, fuel machines in factories and generate electricity and power.

Petroleum products are used all around the globe in almost every country in massive quantities on a daily basis to allow humans to continue to live in today's modern-day society.

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