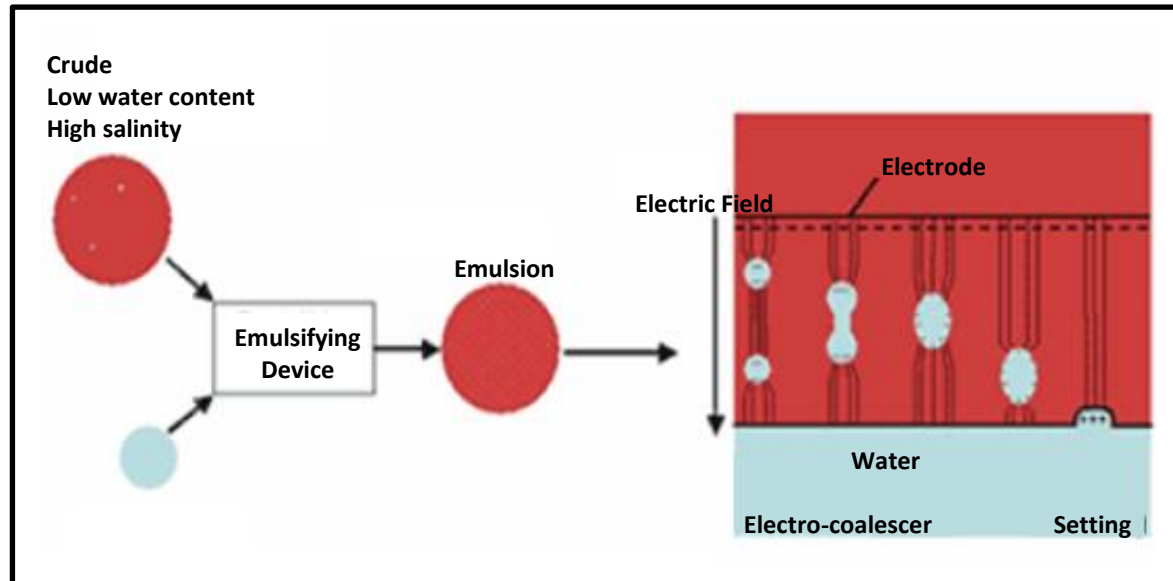


Downstream

Refining Operations *Separation Processes*

DESALTING

- ✓ The main function of the Desalter is to remove salt and water from the crude oil before it reaches any of the major unit operations.
- ✓ The Desalter removes contaminants from crude oil by first emulsifying the crude oil with chemicals and wash water to promote thorough contact of the water and oil.
- ✓ After the oil has been washed and mixed as an emulsion of oil and water, demulsifying chemicals are then added and electrostatic field are used to break the emulsion.



Downstream

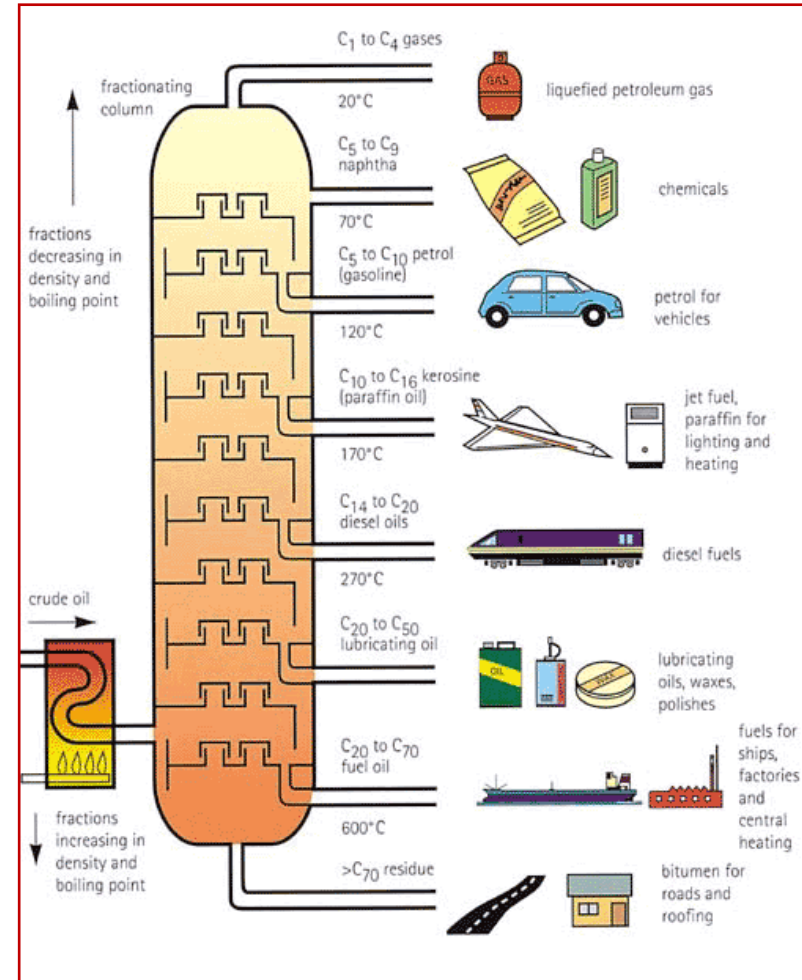
Refining Operations Separation Processes

ATMOSPHERIC DISTILLATION (TOPPING)

- ✓ Oil is piped through hot furnaces. The resulting liquids and vapors are discharged into distillation tower.
- ✓ Inside the tower, the liquids and vapors separate into components or fractions according to weight and boiling point.

VACUUM DISTILLATION

- ✓ The VDU takes the residuum from the ADU (Atmospheric Distillation Unit) and separates the heavier end products such as light vacuum gas oil, heavy vacuum distillate, slop wax and residue.



Downstream

Refining Operations *Separation Processes*

SOLVENT DEASPHALTING

- ✓ Separation process in which residue is separated by molecular weight (density), instead of by boiling point
- ✓ Solvent Deasphalting process produces a low-contaminant deasphalted oil (DAO) rich in paraffinic type molecules. These fractions can then be further processed in conventional conversion units such as an FCC unit or hydrocracking unit.
- ✓ The pitch product contains the majority of the residue's contaminants (metals, asphaltenes, Conradson carbon) and is rich in aromatic compounds and asphaltenes.