



Processes at Sohar Refinery

The initial operations at Sohar Refinery start after the mixed crude is transferred from MAF Refinery via the pipeline.

Crude Distillation Unit (CDU)

This Unit is designed to produce a long residue as a feedstock to RFCC and other products such as LPG, Naphtha, Kerosene and Gas Oil or Diesel. It processes 116,000 bpd; 40,000 bpd of long residue and 76,400 bpd of Oman Export Blend Crude. The CDU consists of a Preheating section, Heaters, De-salters and the main Fractionation and Stabilizer section.

CDU/RFCC LPG Merox Process Unit

The Hydrogen Sulphide (H₂S) and Mercaptan (R-SH) in the LPG are removed from the bottom of the Amine Absorber at the CDU unit and in the LPG from the RFCC Unit. The LPG Merox utilizes UOP's Merox process, the design feed rate being 2,040 to 29,500 bpd. The LPG Merox Unit consists of a pre-treatment section, an extraction section and a caustic regeneration section.

Kerosene Merox Process Unit (Unit 1300)

The Jet A-1 grade is produced by removing naphthenic compounds and free water in the Kerosene from the CDU unit and by converting mercaptans into disulphide. The Unit utilizes UOP's Merox process whose design feed rate is 12,320 bpd. It consists of a pre-treatment section and a sweetening section.

Residue Fluid Catalyst Cracking (RFCC) Unit

Here the heavy residual oils are converted into lighter, more valuable hydrocarbons such as LPG, gasoline and light cycle oil products. The RFCC utilizes the principles of UOP's fluid catalytic cracking process to process 75,260 bpd of Oman long residue feed from the upstream CDU process unit. It consists of the Reactor and Regenerator Section, main Fractionator Section, Gas Concentration Section and the Flue Gas Section.

Propylene Recovery Unit (PRU)

It is designed to recover polymer grade propylene from 3/C₄ mixture of the RFCC unit. The recovered propylene is used as the feedstock for a polypropylene plant. This Unit processes 29,368 bpd of a mixture of C₃ and C₄ hydrocarbons. PRU can also handle 257 T/D of Carrier/Purge Fluid from the Polypropylene plant. It consists of a depropanizer, a de-ethanizer, propylene-propane splitter, COS/Arsine treaters and a dryer.

Indirect Alkylation (InALK) Unit

The purpose is to produce a high-octane gasoline blending component similar to Motor Alkylate from butane or butane feedstock from RFCC Unit. It consists of a polymerization section and hydro treating and fractionation sections.

Diesel Hydro-Desulphurization Unit (DHDS)

In this unit the Sulphur and Nitrogen are removed as Hydrogen Sulphide (H₂S) and Ammonia (NH₃) from a mixture of straight run gas oil from CDU and LCO from RFCC and produce diesel oil product with improved combustion properties.

Hydrogen Generation Unit

The HGU is designed to produce 1,900,000 Nm³/day of hydrogen with 99.9 % purity from Natural Gas.

Sour Water Stripping Unit

The purpose of Sour Water Stripping unit is to remove Hydrogen Sulphide (H₂S) and Ammonia (NH₃) from various sour waters from upstream process units, and produce stripped water. It is designed to treat 2,640 metric tones per day of sour water.

Amine Regeneration Unit (ARU)

The Hydrogen Sulphide (H₂S) is removed from ARU to remove the rich amine streams produced in RFCC, RFCC LPG Merox, DHDS and GHDS.

Sulphur Recovery Unit (SRU)

The objective of this unit is to recover elemental Sulphur from Hydrogen Sulphide in the Acid Gas from ARU, SWS and the Tail Gas Treating Unit (TGT). It utilizes Stork's modified Claus process and comprises two identical trains each having 75 % of total capacity of 155 tons/day of recovered Sulphur. The recovered Sulphur, liquid phase, from Sulphur condensers contains 300 wt ppm of Hydrogen Sulphide (H₂S), partly dissolved and partly present in the form of Polysulphides (H₂S_x).

Sulphur Granulation Unit

The purpose of this Unit is to produce dry Sulphur pastilles from degassed liquid Sulphur produced in the SRU and to package the pastilles.

Selective Hydrogenation Unit

The purpose of this Unit is essentially to hydrogenate all the butadiene in the feed in order to minimize catalyst deactivation in the Indirect Alkylation unit and to increase the octane of the Indirect Alkylation unit's product by increasing the concentration of 2-butene in the SHP product. The SHP utilizes UOP's selective hydrogenation process. Its feed throughput is 15,000 bpd of a mixed C₄. It consists of a reactor section and a stripper section.

TAME Unit

The purpose of TAME is to produce etherified gasoline as a gasoline blending component by removing of reactive olefins in the LLG. It utilizes Fortum (Neste)'s ? etherification process. It consists of a reactor section, a fractionation section and a closed slop system to recover any methanol.

Gasoline Hydro-Desulphurization Process Unit (GHDS)

The GHDS is designed to remove Sulphur as a Hydrogen Sulphide from a mixture of HLG from TSHP unit and HG from RFCC unit and to pass doctor test negative in the product. It utilizes Axens' hydro-De-Sulphurization process and its feed throughput is 26,500 bpd.