

UNIT PROFILE

LPG PLANT

The LPG recovery plant is designed to process natural gas coming from Hazira gas processing complex through HBJ pipelines. Hazira complex receives gas from a number of oil and gas fields in western offshore region.. The plant was commissioned in January 1993. Storage and loading facilities are provided for the recovered product.



BRIEF PROCESS DESCRIPTION:

LPG production from this plant is 73,000 TPA at hundred percent capacity. Two spheres are provided for storing LPG only. For movement of LPG from the pant road loading facilities for hundred % capacities is envisaged. The plant further consists of utility facilities like instrument air plant, PSA Nitrogen Plant, Raw Water and Service Water System.

The LPG recovery plant at Vaghodia consists of following sections.

- (a) Gas drying, Chill down and separation
- (b) Fractionation.

(a) GAS DRYING AND CHILLING:

In this process natural gas is feed at 72 kg/Cm² and 35⁰C. Moisture content in the gas is brought down in molecular sieve dryers. While one drier is in operation for drying, the other is under regeneration. Dry gas is then filtered and chilled up to -22⁰C in Feed Gas Chiller and then fed to HP Separator, where hydrocarbon condensate formed is separated at 70 kg/Cm². H.P. Separator vapour is then expanded isoentropically in a Turbo Expander to a pressure of 37 kg/Cm² by which the temperature of gas falls to -60⁰C. The hydrocarbon condensate formed is separated in L.P. separator and vapour from L.P. Separator are routed through the LEF overhead condenser and then through feed gas chiller to recover the refrigeration and then compressed to around 46 kg/Cm² by expander driven compressor. This lean gas is supplied to downstream consumers.

(b) FRACTIONATION SECTION:

It consists of 2 columns, one is LEF column and the other is LPG column. Liquid from H.P. and L.P. separators are collected in Economizer Flash Vessel. This liquid after cold recovery in cold box is fed to LEF column which operates at 22 kg/Cm² pressure and -2⁰ to +2⁰C temp. at the top and 72⁰C temp. at bottom. The column removes all methane, ethane and heavier hydrocarbons from bottom of the column is fed to the LPG column. The overhead vapours from the LEF column after heat transfer in the Cold box are taken to molecular Sieve driers for regeneration via re-generation gas heater. The hot re-generation gas after drier, is cooled to 45⁰C temp. and then passed through re-generation gas moisture separators for taking out condensed water. The residue gas is compressed to around 46 kg/Cm² by residue gas compressor. Compressed residue gas after cooling to 40⁰C and water removal, is injected into lean gas.

Bottom product from LEF column is fed to LPG column. LPG is obtained as an overhead product. The column operates at 11-14 kg/Cm² pressure. The temperature at the top is 65⁰C. Overhead LPG vapors are then condensed using air cooled heat exchangers. Part of the condensed liquid is refluxed to the column and rest is taken as LPG product to the storage. Bottom product of LPG column is natural gasoline liquid(NGL). It is cooled in the NGL cooler and used as feed stock to NTGG plant and excess if produced injected into the lean gas header to improve calorific value.

Energy Consumption:

With the implementation of various energy conservation measures as on going practice, there is a continual improvement in specific consumption. Last three years specific energy consumption figures show the declining patters of the same.

