

Crude Oil Vacuum Distillation

PEP Review 2018-04

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Anshuman Agrawal
Associate Director

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Anshuman Agrawal, Associate Director

Abstract

The vacuum distillation unit is the second main unit after the atmospheric distillation unit that processes atmospheric residue in any refinery. To extract more valuable distillates from the atmospheric residue, the residue from the atmospheric distillation unit is sent to the vacuum distillation unit. The objective of vacuum distillation is to separate the atmospheric residue into several fractions, including light vacuum gas oil (LVGO) and heavy vacuum gas oil (HVGO).

This review presents a technoeconomic evaluation of a vacuum distillation unit using 4.1 MMTPA atmospheric residue having specific gravity of 10.53°API as feed. The technoeconomic evaluation in this review includes estimated capital and production cost estimates, showing the details of important process cost parameters such as battery limits and offsite costs, variable cost, plant cash cost, plant gate cost, production cost, etc. A brief market overview summarizes the major global producing companies, as well as regional and countrywide crude distillation unit capacities. This review also includes the material balance, equipment list, and a brief technology review.

We have prepared this review using information derived from public domain information sources. The process design was simulated primarily through BR&E ProMax[®] 4.0 software simulations. Plant and process economics (CAPEX and OPEX) were worked out using IHS proprietary PEPCOST software, using in places our own design judgments based on operational experiences.

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IHS Markit Customer Care:

CustomerCare@ihsmarkit.com

Americas: +1 800 IHS CARE (+1 800 447 2273)

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