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Condensate Splitting

PEP Review 2018-02

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Abstract

Condensate oil is a high-quality light hydrocarbon that is recovered from lease separators at natural gas wells. Condensate oil is referred to as the light crude oil that primarily consists of pentanes and naphtha content. The liquid condensate is a very light hydrocarbon with gravity between 50 and 75°API. The primary market for condensate is as a diluent for heavy crude blending and as light crude, as well as processing it in a splitter to generate components for blending.

This review examines a condensate splitter column with a downstream stabilizer column. The light condensate is processed in a condensate splitter to produce blending products—specifically, light gases, liquefied petroleum gas (LPG), light naphtha, heavy naphtha, kerosene, heavy distillate, and atmospheric residue. These products can be sent directly to downstream units for further processing, or can be blended with refinery products. A condensate splitter is a simple refinery, designed to handle the light crude. It is less sophisticated and less expensive than a full refinery, which costs billions of dollars.

This review presents the technoeconomic evaluation of a condensate splitter unit considering that the separated products are blending products. 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 global producing companies, as well as consumption and generation of condensate.

IHS Markit has prepared this review using information derived from public domain information sources. The process design was modeled primarily using Aspen Tech HYSYS simulations. Plant and process economics (capex and opex) were worked out using IHS proprietary PEPCOST software, using our own design judgments based on operational experience.

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