Process Economics Program

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LDPE Process Summary

By Susan L. Bell
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Abstract

Low density polyethylene (LDPE) is a high volume commodity thermoplastic with a production volume of 18.3 million tons in 2012. Demand is expected to grow at an AAGR (average annual growth rate) of 2.8% from 2013–2023. Capacity additions are planned in North America, Asia, and the Middle East. LDPE processes have been reviewed by PEP since 1968.

In this process summary, we review the current LDPE production processes. Features and differences between processes are summarized. The current LDPE process licensors and their offerings are compared. Updated process economics for different LDPE processes are presented. The process economics include estimated capital costs, variable costs, and plant cash costs. Carbon footprints of the processes are also included. The review also discusses recent technology development based on patent reviews. A brief market overview summarizes the global supply and demand and end-use markets and demand drivers.

This review will also highlight the new iPEPSpectra™ cost module. The cost module, attached with this process summary on the PEP website, provides a powerful interactive tool with which the user can interpret data in a flexible manner by generating pivot tables and corresponding charts. In this review, the iPEPSpectra™ cost module is demonstrated with historical economics for the LDPE processes for different regions of the world. Until now, most process economics were presented as snapshot comparisons. Due to fluctuation and variation of feedstock and utility prices over time and in different regions, ranking of the processes using a snapshot comparison can be misleading. An iPEPSpectra™ historical economics comparison provides a more comprehensive way of assessing competing technologies, leading to a more valid investment decision.
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