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Phenol and Cumene Process Summary

By Girish Ballal

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Abstract

Phenol is an important chemical intermediate, which is mostly consumed in the production of phenolic resins and polycarbonates via bisphenol A. The production economics of phenol are closely interlinked with cumene, which is the primary feedstock and with acetone, which is the primary coproduct. Phenol and cumene production processes have been extensively reviewed by PEP in several reports and reviews since 1967.

In this PEP process summary, we review various production technologies for phenol and cumene, based on PEP reports. Salient features of the production economics for various current and selected alternative technologies are consolidated and presented for convenient review. Moreover, recent process development efforts are outlined through an updated patent review. A brief market overview summarizes the global supply and demand for phenol and cumene, with underlying market drivers. This review also includes a new iPEPSpectra™ cost module. The cost module, provided with this process summary on the PEP website, provides a powerful interactive tool using Excel pivot tables, with which the user can generate historical process economics comparisons of competing processes in charts and tables for four major world regions. Until now, most process economics were presented as snapshot comparisons. Due to the fluctuation and variation of feedstock and utility prices over time and in different regions, ranking of the processes by 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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