PEP Report 300
Unconventional Aromatics Processes

Rajesh Kumar Verma
Principal Analyst

Tony Pavone
Senior Principal Analyst
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Rajesh Kumar Verma, Principal Analyst
Tony Pavone, Senior Principal Analyst

Abstract

Aromatics are the main building blocks for petrochemical products and intermediates. Of the aromatics feedstocks, benzene and \textit{para}-xylene are of great importance because of their wide variety of applications. These petrochemical products have wide-reaching impact on modern consumer lifestyles because of their extensive use in domestic, transportation, construction, and other applications. Petrochemical demand is closely linked to a country’s economy, and it largely increases with a country’s population and GDP.

The conventional feedstocks for aromatics production are catalytic reformate from refineries, pygas from naphtha steam crackers, and light oils from coke oven gas/coal. These accounts for the majority of BTX (benzene, toluene, and xylene) production worldwide. In the past few years, many refineries in Europe and the United States have shut down as a result of environmental concerns, but aromatics demand in these regions, as well as in the Middle East and Northeast Asia, is increasing, which has increased the demand for alternate feedstock and processes for aromatics production like natural gas, shale gas, light hydrocarbons gases like \textit{C}_3/\textit{C}_4, methanol, biomass, etc.

This report covers the technological advancements of unconventional feedstocks and commercial-scale technologies for the production of BTX aromatics. It also includes a technoeconomic evaluation GTC’s GT-G2A\textsuperscript{SM} technology to convert natural gas to aromatics; Tsinghua University/Huadian Corporation’s fluidized bed methanol-to-aromatics (FMTA) technology; and Anellotech’s Bio-TCat\textsuperscript{TM} technology to convert biomass to aromatics.
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