

# MAX-ISOM Technology

## for Light Naphtha Isomerization

PEP Review 2019-11

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### Abstract

Light naphtha isomerization technology is commonly utilized in petroleum refineries to meet gasoline pool octane specifications. Low octane naphtha feedstocks are isomerized to boost Research Octane Number (RON) from 60–70 RON to 82–92 RON. Isomerization involves the conversion of straight-chain normal paraffins to single- and double-branched iso-paraffins.

This PEP review evaluates KBR's reactive distillation-based light naphtha isomerization process called MAX-ISOM. The evaluation is based on public domain information on the process. The developers claim the process allows isomerate RON upto 90–91 in a once-through configuration, has lower capital and operating costs, smaller plot space requirement, and allows higher feed benzene levels vis-a-vis conventional processes.

Reactive distillation (RD) is a process intensification approach that can lead to significant reductions in capital and operating cost of a process. The method requires a suitable overlap of operating conditions, viz. temperature and pressure for reaction, as well as distillation separation. In our evaluation, the reactive distillation column is simulated using HYSYS commercial simulation software with a standard distillation column coupled with side reactors. This configuration is one of the several possible options for the process that have been outlined in patents published by the developers of the process.

A technical and economic analysis of this new isomerization technology is presented and comparison with conventional isomerization processes is given.

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