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New More Operable Multicomponent Dividing Wall Columns

New distillation column arrays featuring vertical partitions allow independent control of vapor flow to achieve higher purity for intermediate volatility products and increased flexibility for complex feed mixtures, enhancing operability and efficiency.

Due to low overall heat duty, industrial application of dividing wall columns derived from fully thermally coupled (single condenser and single reboiler) configurations has increased. However, it is often difficult to obtain full benefit of the configuration and achieve high purity of the intermediate volatility product streams due to the inability to regulate the vapor split independently at the bottom of any of the vertical partitions.

Researchers at Purdue University have developed an array of new distillation columns with vertical partitions. This new array allows independent control of the vapor flow rates in each partitioned zone, while operating the columns to produce constituent product streams. Furthermore, a new column with vertical partition(s) drawn from the n-component mixture can be adapted to distill feed mixtures that contain more than n-components.

Advantages:

-More operable columns with vertical partitions for ternary/quaternary feed mixtures

-Vertical partition(s) can be adapted to distill feed mixtures with more components

Potential Applications:

-Alternative fuels

TRL: 3

Intellectual Property:

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Category
Energy & Power Systems/Power Generation
Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

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