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A Practical and Cost-Effective Solution to Monitor Product Recovery Rate in High Purity Side Draw Distillation Columns: An Industrial Methanol Distillation Case Study

A. Udugama, Isuru; Taube, Michael A.; Kirkpatrick, Robert ; Young, Brent R.; Bayer, Christoph

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551769 A Practical and Cost-Effective Solution to Monitor Product Recovery Rate in High Purity Side Draw Distillation Columns: An Industrial Methanol Distillation Case Study

Monday, April 1, 2019: 2:05 PM

Camp (Hilton New Orleans Riverside)

Isuru A. Udugama, PROSYS, Technical Univeristy of Denmark, Kgs. Lyngby, Denmark, Michael Taube, S&D Consulting, Houston, TX, Robert D. Kirkpatrick, The University of Auckland, Auckland, New Zealand, Brent R. Young, Dept of Chemical Engineering, University of Auckland, Auckland, New Zealand and Christoph Bayer, TH Nuernberg, Nuernberg, Germany

The measurement of product recovery ratio in industrial methanol distillation is of high economic importance and represents a key performance index (KPI) for the distillation unit. However, in many plants the product recovery of the distillation units is not actively monitored. Instead, it is back calculated based on daily production figures. This is primarily because the active monitoring of product recovery can be costly as this requires the installation of expensive gas chromatographs and accurate feed mass flow measurements, which can be difficult to justify economically. In this work we have developed a simple and economical method based on density and flow rate measurements to calculate the product recovery of industrial methanol distillation columns. This method has been validated against plant measurements as well as a validated process simulation. Step and disturbance tests carried out suggest the proposed method is able to accurately estimate the product recovery within the plant operational envelope.

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