Cyclic distillation technology - A mini-review - DTU Orbit (04/12/2018)

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Process intensification in distillation systems has received much attention during the past decades, with the aim of increasing both energy and separation efficiency. Various techniques, such as internal heat-integrated distillation, membrane distillation, rotating packedbed, dividing-wall columns and reactive distillation were studied and reported in literature. All these techniques employ the conventional continuous counter-current contact of vapor and liquid phases. Cyclic distillation technology is based on an alternative operating mode using separate phase movement which leads to key practical advantages in both chemical and biochemical processes. This article provides a mini-review of cyclic distillation technology. The topics covered include the working principle, design and control methods, main benefits and limitations as well as current industrial applications. Cyclic distillation can be rather easily implemented in existing columns by simply changing the internals and the operating mode, thus bringing new life in old distillation towers by significantly increasing the column throughput, reducing the energy requirements and offering a better separation performance.

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