Cyclic distillation technology - A mini-review - DTU Orbit (08/11/2017)

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Process intensification in distillation systems has received much attention during the pastdecades, with the aim of increasing both energy and separation efficiency. Varioustechniques, 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 andliquid phases. Cyclic distillation technology is based on an alternative operating mode usingseparate phase movement which leads to key practical advantages in both chemical andbiochemical processes. This article provides a mini-review of cyclic distillation technology.The topics covered include the working principle, design and control methods, main benefitsand limitations as well as current industrial applications. Cyclic distillation can be rathereasily implemented in existing columns by simply changing the internals and the operatingmode, thus bringing new life in old distillation towers by significantly increasing the columnthroughput, reducing the energy requirements and offering a better separation performance.

General information

State: Published
Organisations: Department of Chemical and Biochemical Engineering, CAPEC-PROCESS, University Politehnica of Bucharest, University of Twente
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Pages: 1215-1223
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information

Journal: Journal of Chemical Technology and Biotechnology
Volume: 91
ISSN (Print): 0268-2575
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.843 SNIP 1.111 CiteScore 2.94
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.8 SNIP 0.967 CiteScore 2.55
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.942 SNIP 1.03 CiteScore 2.49
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.027 SNIP 1.196 CiteScore 2.82
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.136 SNIP 1.146 CiteScore 2.58
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.981 SNIP 0.963 CiteScore 2.28
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.887 SNIP 0.896
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.843 SNIP 0.941
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.805 SNIP 1.019
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.625 SNIP 0.856

Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.676 SNIP 0.915
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.595 SNIP 0.921
Scopus rating (2004): SJR 0.648 SNIP 0.773
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.548 SNIP 1.082
Scopus rating (2002): SJR 0.698 SNIP 1.073
Scopus rating (2001): SJR 0.648 SNIP 0.989
Scopus rating (2000): SJR 0.627 SNIP 1.046
Scopus rating (1999): SJR 0.645 SNIP 1.089
Original language: English
Cyclic distillation, Periodic operation, Process design, Control, Applications
Electronic versions:
jctb4887.pdf. Embargo ended: 08/01/2017
DOIs:
10.1002/jctb.4887
Source: FindIt
Source-ID: 2290274126
Publication: Research - peer-review › Review – Annual report year: 2016