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过程系统工程

基于一般模型控制的高纯内部热耦合精馏策略

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摘要

内部热耦合精馏塔（ITCDIC）是精馏节能控制的一个前沿。本文提出了一种基于一般模型控制（GMC）的内部热耦合精馏塔的先控策略，以解决导致传统线性控制策略难以得到较好控制效果的高纯下内部热耦合精馏塔的非线性。以苯-甲苯物系作为研究实例，对所提出的高纯ITCDIC控制策略进行了详细研究。设定值改变和过程扰动下的控制品质表明了所提出的高纯ITCDIC的GMC控制策略的切实有效性。

关键词

内部热耦合 高纯 精馏塔 一般模型控制

分类号

Control system design of high purity ITCDIC based on generic model control algorithm

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Abstract

Internal thermally coupled distillation column（ITCDIC）is a frontier of high-efficient energy-saving distillation technology. A novel APC strategy based on generic model control（GMC）was therefore proposed to overcome the increasing nonlinearity with increasing product purity,which was difficult to deal with by the traditional linear control strategy. The basic algorithm of GMC and the application to ITCDIC were presented. Also the parameter preference method was given. The benzene-toluene system was adopted as the illustration example. The detailed comparative researches were carried out between GMC and traditional PID controller. The control performance of both servo control under step disturbance in feed composition and feed flow rate and fix-value control under step changes in set-point proves the efficiency of this proposed APC strategy for high purity ITCDIC process.

Key words

internal thermally coupled high purity distillation generic model control

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