

RESEARCH PAPERS

在高纯度理想热耦合精馏塔的双组分控制中考虑过程的非线性

黄克谨^a, NAKAIWA Masaru^a, TAKAMATSU Takeichiro^b

^a National Institute of Materials and Chemical Research, Tsukuba 305-8565, Japan

^b Institute of Industrial Technology, Kansai University, Suita 564-8680, Japan

收稿日期 修回日期 网络版发布日期 接受日期

摘要 Dual-point composition control for a high-purity ideal heat integrated distillation column (HIDiC) is addressed in this work. Three measures are suggested and combined for overcoming process inherent nonlinearities: (1) variable scaling; (2) multi-model representation of process dynamics and (3) feedforward compensation. These strategies can offer the developed control systems with several distinct advantages: (1) capability of dealing with severe disturbances; (2) tight tuning of controller parameters and (3) high robustness with respect to variation of operating conditions. Simulation results demonstrate the effectiveness of the proposed methodology.

关键词 [distillation](#) [nonlinearity](#) [variable scaling](#) [multi-model representation](#) [feedforward compensation](#) [process control](#) [closed-loop simulation](#)

分类号

DOI:

Considering Process Nonlinearity in Dual-Point Composition Control of a High-Purity Ideal Heat Integrated Distillation Column

HUANG Kejin^a, NAKAIWA Masaru^a, TAKAMATSU Takeichiro^b

^a National Institute of Materials and Chemical Research, Tsukuba 305-8565, Japan

^b Institute of Industrial Technology, Kansai University, Suita 564-8680, Japan

Received Revised Online Accepted

Abstract Dual-point composition control for a high-purity ideal heat integrated distillation column (HIDiC) is addressed in this work. Three measures are suggested and combined for overcoming process inherent nonlinearities: (1) variable scaling; (2) multi-model representation of process dynamics and (3) feedforward compensation. These strategies can offer the developed control systems with several distinct advantages: (1) capability of dealing with severe disturbances; (2) tight tuning of controller parameters and (3) high robustness with respect to variation of operating conditions. Simulation results demonstrate the effectiveness of the proposed methodology.

Key words [distillation](#); [nonlinearity](#); [variable scaling](#); [multi-model representation](#); [feedforward compensation](#); [process control](#); [closed-loop simulation](#)

通讯作者:

黄克谨

作者个人主页: [黄克谨^a](#); [NAKAIWA Masaru^a](#); [TAKAMATSU Takeichiro^b](#)

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF](#) (1821KB)

▶ [\[HTML全文\]](#) (0KB)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [引用本文](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中包含“distillation”的相关文章](#)

▶ 本文作者相关文章

· [黄克谨a](#)

· [NAKAIWA Masaru](#)

· [TAKAMATSU Takeichiro](#)