化工学报 2008 59 (2): 322-327 ISSN: 0438-1157 CN: 11-1946/TQ

多相流和计算流体力学

新型洗涤冷却室内气液两相的分布特性

陈意心，王亦飞，梁铁，姚永春，刘霞，于遵宏

华东理工大学煤气化教育部重点实验室

收稿日期 2007-4-9 修回日期 2007-7-2 网络版发布日期 2008-2-20 接受日期

摘要

采用双头电导探针法对新型洗涤冷却室环隙鼓泡床内气液两相的局部气含率、气泡直径等分布规律进行了实验研究，并用Fluent商业软件对床层内气含率分布进行了模拟计算，模拟结果与实验结果吻合较好。研究结果表明：新型洗涤冷却室内部构件对环隙鼓泡床内气液两相的分布特性影响显著，气相分布更加均匀，液面波动更趋平稳，有效地减少了气体带水问题，相比国外技术具有更好的操作弹性。

关键词

洗涤冷却室 气液两相流 气含率 气泡直径 数值模拟

分类号

Characteristics of phase distribution of gas-liquid two-phase flow in new scrubbing-cooling chamber

CHEN Yixin，WANG Yifei，LIANG Tie，YAO Yongchun，LIU Xia，YU Zunhong

Abstract

The bubbly flow parameters，such as phase fraction and bubble diameter in the bubble column of a new type scrubbing-cooling chamber were measured by a double-sensor probe.A numerical model of the phase profile of gas-liquid two-phase flow in this scrubbing-cooling chamber was established by the software Fluent.The simulation results agreed with the experimental data.The research indicated that the inner component in this scrubbing-cooling chamber affected the gas-liquid two-phase distribution in the bubble column obviously.Compared with the GE-Texaco technology，the distribution of gas phase concentration in this chamber was more uniform，the liquid surface was more stable，the outlet gas entrainment was also controlled well，and the flexibility of operation was much better.

Key words

scrubbing-cooling chamber gas-liquid two-phase flow gas concentration bubble diameter numerical simulation

DOI:

通讯作者 陈意心 cyx-icct@mail.ecust.edu.cn