中国化学工程学报 2003 11 (5): 559-564 ISSN: 1004-616x CN: 44-1063/R

RESEARCH PAPERS

多杂质水网络设计和零排放

李英, 都健, 姚平经

Institute of Process Systems Engineering, Dalian University of Technology, Dalian,116012, China

收稿日期 修回日期 网络版发布日期 接受日期

摘要 The paper presents a procedure to design water network. First of all, water reuse system,
water regeneration reuse system (including regeneration recycle) and wastewater treatment system are designed separately.But the interaction between different parts demands that each part is designed iteratively to optimize the whole water network. Therefore, on the basis of the separated design a water network superstructure including reuse,regeneration and wastewater treatment is established from the system engineering point of view. And a multiobjective adaptive simulated annealing genetic algorithm is adopted to simultaneously integrate the overall water network to balance the economic and environmental effects. The algorithm overcomes the defect of local optimum of simulated annealing (SA), avoids the pre-maturation of genetic algorithm (GA) and finds a set of solutions (pareto front) in acceptable computer time. From the pareto front, a point with minimum fresh water consumption will be extended to zero discharge as our ultimate goal.

关键词 water network wastewater treatment reuse regeneration reuse multi-objective adaptive
simulated annealing genetic algorithm zero discharge

分类号

DOI:

扩展功能

本文信息

Supporting info

PDF(1868KB)

[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“water network”的 相关文章

本文作者相关文章

· 李英
· 都健
· 姚平经

Design of Water Network with Multiple Contaminants and Zero Discharge

LI Ying, DU jian, YAO Pingjing

Institute of Process Systems Engineering, Dalian University of Technology, Dalian, 116012, China

Received Revised Online Accepted

Abstract The paper presents a procedure to design water network. First of all, water reuse system, water regeneration reuse system (including regeneration recycle) and wastewater treatment system are designed separately.But the interaction between different parts demands that each part is designed iteratively to optimize the whole water network. Therefore, on the basis of the separated design a water network superstructure including reuse,regeneration and wastewater treatment is established from the system engineering point of view. And a multiobjective adaptive simulated annealing genetic algorithm is adopted to simultaneously integrate the overall water network to balance the economic and environmental effects. The algorithm overcomes the defect of local optimum of simulated annealing (SA), avoids the pre-maturation of genetic algorithm (GA) and finds a set of solutions (pareto front) in acceptable computer time. From the pareto front, a point with minimum fresh water consumption will be extended to zero discharge as our ultimate goal.

Key words water network; wastewater treatment; reuse; regeneration reuse; multi-objective adaptive simulated annealing genetic algorithm; zero discharge

通讯作者:
李英 yaopj@dlut.edu.cn
作者个人主页: 李英; 都健; 姚平经