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能源和环境工程

SBR法低温短程硝化实现与稳定的中试研究

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摘要

短程生物脱氮技术对于节省能源和碳源具有重要意义，而低温条件下实现短程硝化一直是制约该工艺推广的重要难题。以实际城市污水为研究对象，应用 54 m^{3}的SBR中试系统重点研究了低温条件下短程硝化的实现途径和稳定方法。试验结果表明，通过对系统的硝化反硝化过程进行实时过程控制，并采用分段进水的运行模式，系统在温度为11.8～25℃的范围内均达到了稳定的短程脱氮效果，平均总氮去除率在９６％以上，平均亚硝化率在95%以上。长期的实时过程控制优化了系统的污泥种群结构，是低温中试SBR系统短程硝化实现与稳定的决定性因素。

关键词 SBR法 短程硝化 低温 实时控制

分类号

Achieving and stabilizing short-cut nitrogen removal at low temperature in pilot-scale SBR

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Abstract

It is important to achieve short-cut nitrogen removal from municipal wastewater for saving energy and carbon source.However, a low temperature (10—20℃) affects the actual application of short-cut nitrogen removal from wastewater.In this study, a large pilot-scale SBR was used to treat real municipal wastewater.The goal of achieving and stabilizing short-cut nitrification at a low temperature was mainly investigated.The results indicated that through real-time control and step-feed operating pattern, short-cut nitrogen removal with nitrite accumulation rate above 95% and nitrogen removal efficiency above 96% was achieved at 11.8—25℃.The key factor of achieving and stabilizing short-cut nitrification in pilot-scale SBR was the optimization of nitrifying communities in sludge owing to long-term application of real-time control.

Key words

SBR short-cut nitrification low temperature real-time control

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