环境工程学报
Chinese Journal of Environmental Engineering

生物膜填料塔净化模拟烟气和电厂烟气中SO_2和NO_x的对比实验

Comparative experiment on removal of SO_2 and NO_x from simulated gas streams and flue gas by biological film packed tower

投稿时间： 2011-10-21 最后修改时间： 2011-12-04

DOI：

中文关键词： 生物膜填料塔 烟气脱硫脱氮 对比实验

英文关键词:biological film packed tower flue gas desulfurization and denitrification comparative experiment

基金项目:国家高技术研究发展计划(863)项目(2007AA06Z312);国家自然科学基金资助项目(51168046)

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中文摘要:

对生物膜填料塔对模拟烟气和电厂烟气的净化效果进行了实验研究。实验对比分析了在相同的实验条件下生物膜填料塔对不同烟气中SO_2和NO_x的净化效率。实验结果表明,在循环液温度在24~35℃、空床停留时间(EBRT)为60 s、喷淋量为8~10 L/h、脱硫塔的pH为0.8~1.5、脱氮塔的pH为7.5~8.0的条件下,生物膜填料塔对模拟烟气和电厂烟气中SO_2的净化效率都很高,但模拟烟气条件下的总脱氮率的平均值为80%,而在电厂烟气条件下只有35%。经分析认为,脱氮率产生差异的主要原因是电厂烟气中杂质的影响,以及烟气中氧气含量的不同,同时因为生长条件不同从而驯化出的微生物群体组成也不同。

英文摘要:

The removal of sulfur dioxide (SO_2) and nitrogen oxides (NO_x) from simulated gas streams and flue gas was studied. Removal efficiency of SO_2 and NO_x in different gas was compared and analyzed under the same conditions. It is indicated that, with empty bed residence time (EBRT) of 60 s, cycling fluid of 8~10 L/h, cycling fluid temperature of 24~35℃, cycling fluid' s pH value of desulfurizing tower of 0.8~1.5 and denitrification tower pH of 7.5~8.0, the biological film packed tower showed a high removal efficiency of simulated gas streams and flue gas purification of SO_2. Average rate of the total nitrogen removal efficiency of simulated gas streams was 80%, and removal rate of flue gas was 35%. By analysis, the main reasons of the discrepancy of the nitrogen removal efficiency were the impurities and the oxygen concentration in flue gas. At the same time, different micro populations which were acclimated under different growth conditions can be another reason.

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