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热能工程

有机酸添加剂在石灰石－石膏法脱硫中应用的试验研究

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摘要：

在烟气处理量为1.1?106 m3/h的实际石灰石－石膏法脱硫装置上，对有机酸添加剂强化脱硫性能进行了试验研究。试验结果证实，有机酸具有良好的pH缓冲作用，同时能够促进石灰石溶解速率，缓解固体颗粒在浆液中的沉降速度，从而有效提高脱硫效率、石灰石利用率，减轻脱硫系统结垢。在吸收塔浆液中按照7 mmol/L的浓度加入有机酸添加剂DBA，脱硫效率可由90.3%提高至95.7%，脱硫反应产物石膏中CaCO3含量由4.12%降至0.56%。加入DBA后，在浆液pH为4.0时，脱硫效率仍高于95%；2台浆液循环泵运行时，液气比为9.5L/m3，脱硫效率高于92%，大大提高了脱硫系统运行的经济性和稳定性。

关键词： 机酸 石灰石－石膏法 液气比 脱硫效率

Experimental Study of the Application of Organic Acids on Lmiestone-Gypsum Desulfurization

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Abstract:

The reinforcing function of organic acids on limestone-gypsum flue gas desulfurization process was studied in an actual desulfurization system with the flue gas flux of 1.1?106 m3/h. Experimental results confirmed that organic acids presented a predominant pH buffer character, promoted the limestone dissolution rate, and reduced the settlementation velocity of solid particles in the slurry, so that the desulfurization efficiency and the limestone utilization were effectively improved, and the scaling phenomenon of desulfurization system was relieved. After dibasic acids with 7 mmol/L was added into the slurry, the desulfurization efficiency of system was increased by 95.7% from 90.3%, and the content of CaCO3 in gypsum was reduce by 0.56% from 4.12%. Meanwhile, when pH was controlled at 4.0, the desulfurization efficiency was still higher than 95%. When two slurry circulation pumps were run and liquid-gas ratio was controlled at 9.5 L/m3, the desulfurization efficiency is higher than 92%; under this condition, the operation economy and stability of desulfurization system can be greatly improved.

Keywords: organic acids lmiestone-gypsum liquid-gas ratio desulfurization efficiency

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