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A Study on Removal of SO3 in Flue Gas Generated from Power Plant

Authors : E. Y. Jo, S. M. Park, I. S. Yeo, K. K. Kim, S. J. Park, Y. K. Kim, Y. D. Kim, C. G. Park

Abstract : SO3 is created in small quantities during the combustion of fuel that contains sulfur, with the quantity produced a function of the boiler design, fuel sulfur content, excess air level, and the presence of oxidizing agents. Typically, about 1% of the fuel sulfur will be oxidized to SO3, but it can range from 0.5% to 1.5% depending on various factors. Combustion of fuels that contain oxidizing agents, such as certain types of fuel oil or petroleum coke, can result in even higher levels of oxidation. SO3 levels in the flue gas emitted by combustion are very high, which becomes a cause of machinery corrosion or a visible blue plume. Because of that, power plants firing petroleum residues need to installation of SO3 removal system. In this study, SO3 removal system using salt solution was developed and several salts solutions were tested for obtain optimal solution for SO3 removal system. Response surface methodology was used to optimize the operation parameters such as gas-liquid ratio, concentration of salts.

Keywords : flue gas desulfurization, petroleum cokes, Sulfur trioxide, SO3 removal
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