

Improved Mass Transfer Efficiency in Wet Limestone Flue Gas Desulfurization

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Abstract

The most commonly used Flue Gas Desulphurization systems use limestone forced oxidation in order to produce fully oxidized gypsum products. Oxidation air is dispersed into the solution, typically by means of injection in front of a rotating impeller.

Efficiency of the oxidation is determined by the value of the mass transfer coefficient (kLa) and the system resistance to impeller flooding. High mass transfer coefficient may help to reduce the size of the air compressors. The system resistance to flooding allows for close proximity of the injection point to the impeller and further increases the mass transfer coefficient.

The paper discusses the new design of the air injection technology that increases mass transfer coefficient up to 30%, compared with a traditional lance injection. In addition, the new system is very resistant to flooding, and it is perfectly suitable for cases where high air flow is required.