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Spray Dryers for Acid Gas Control of MSW Combustors

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Abstract

Air pollution control system design to achieve consistently low emission rates is essential to ensure that waste incineration facilities maintain continual environmental acceptability. This paper examines several semi dry scrubbing systems on waste incineration facilities in Asia and North America to illustrate the critical items required to ensure reliable system operation and continuous compliance with regulatory requirements.

The facilities examined include a 1600 TPD facility in North America, a 200 TPD facility in Korea which has been in operation for approximately 4 years, and a new facility in Korea which is designed meet very stringent emission standards. For the newest facility in Korea HCl and SO_2 are limited to 10 ppm. Particulate emissions must be below 10 mg/Nm^3. 50 ug/Nm^3 is the limit for mercury emissions and dioxin emissions must be less than 0.1 ng/Nm^3 TEQ. NO_x emissions must be lower than 50 ppm.

For each facility, the detailed design of the semi dry scrubber, pulse jet fabric filter, carbon injection system, and SCR(if applicable) is discussed, along with considerations to ensure continuous compliance with the emission levels. Operation of each facility is discussed, along with any special operating issues that have been encountered. Finally, performance tests and continuous emissions data is presented to illustrate the actual performance level of each facility.

Introduction

Semi dry scrubbing system have proven to be extremely effective in controlling emissions from municipal waste incinerators. While the basic semi dry scrubbing system typically consists of the semi dry scrubber, reagent preparation, and fabric filter, additional items are added as required to provide for a complete emissions control system. These additional items include activated carbon injection for the control of dioxins and heavy metals, and selective catalytic reduction (SCR) systems for the control of No_x.