An Experimental Study on Using Wet Scrubbing Process to Clean Flue Gas from Wood Burning

Han, Hojin

The objective of this experimental study was to evaluate the feasibility of using the wet scrubbing method for cleaning flue gases from wood burning stoves or boilers. Wood burning flue gases contain harmful particulate matter(PM) and volatile organic compounds(VOCs), which cause human health issues. A small scale Venturi scrubber and a counter-current wet scrubber system were used to clean the flue gases from a wood burning stove. Removal efficiencies of PM and VOC were measured after cleaning the flue gases using various solutions and solution mixtures. More than 80% of removal efficiency of PM 2.5 was achieved by using a Venturi/wet scrubber combination process. For VOC removal, it was observed that 40% of VOCs were removed when a water and canola oil mixture was used in the wet scrubber. Our experimental study has shown that a wet scrubber process with a Venturi scrubber is a feasible solution to clean the flue gases from wood burning devices that are widely used at houses in rural areas for heating.

Awards Won: