



Using the ammonia water to reduce the pollutants emissions from coal boilers

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In modern conditions, the combustion of coal is bound to be associated with solving environmental problems. First of all, this concerns the reduction of content of sulfur dioxide, nitrogen oxides and particulates in the flue gas, the emission limit values of which in Europe are set in Directive 2010/75/EU on industrial emissions for large combustion plants and in Directive 2015/2193/EU for medium combustion plants. For achieving the required degree of emission reduction of nitrogen oxides in coal-fired boilers, it is proposed to apply a selective non-catalytic reduction technology based on ammonia water. To increase the efficiency of the reaction between ammonia and nitric oxide, it is expedient to increase the concentration of ammonia above stoichiometric. Unreacted ammonia will be completely consumed in the reactions of binding of sulfur dioxide in a gas medium and in droplets of aqueous ammonia solution in the ammonia desulphurization installation, located after the dust precipitator. The experiments have shown that at temperatures above 110 °C, with high water vapor content in flue gas, the efficiency of binding the sulfur dioxide by ammonia exceeds 80 %. In drops of ammonia solution there is a highly effective absorption of sulfur dioxide to produce a ammonium sulfate, which is a mineral fertilizer. To prevent the emission of ammonia into the air, the flow rate of ammonia water will determined by the final concentration of sulfur dioxide in the flue gas.

