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## MIXED JET-VORTEX METHOD FOR REDUCING NO<sub>x</sub> EMISSIONS OF PULVERIZED COAL COMBUSTION

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### **Abstract**

This paper presents an original jet-vortex method to improve one of the classical methods to reduce the NO<sub>x</sub> emission due to the pulverized coal combustion. Usually, flue gas recirculation is one of most common method, but has an important disadvantage regarding the non-uniform concentration of the flue gas stream in the primary air – coal mixture. Here, a supplementary mechanical process using a special designed regenerative blower is used additionally to jet method in order to obtain a homogenous mixture of re-circulated flue gas, air and coal. In this way, all assumptions to create a lower homogenous temperature field inside the furnace are achieved. Modification of the rotor, side channel and blower outlet were considered. The discharge section of the blower has been designed to create a hydrodynamic shape to avoid head losses and pressure shocks. The experimental research performed using laser technology confirmed the positive effect of the design modifications by the presence of strong vortex at outlet.

*Key words:* biphasic fluid flow, furnace, NO<sub>x</sub> emission, regenerative blower

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