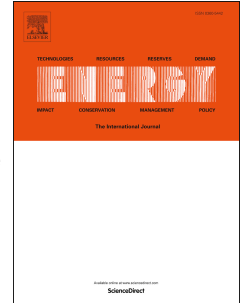


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IMPROVING ENERGY AND ENVIRONMENTAL PERFORMANCE OF COAL FUELED BOILERS – A NEW TYPE OF CENTRIFUGAL DUST SEPARATOR WITH EXTERNAL FLUE RECYCLE

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Keywords: combustion of coal, dust emission abatement, NO_x emission abatement, flue gas recycle, cyclone type deduster with vertical baffles

Abstract

The paper provides a discussion on environmental and energy performance of coal fuelled boilers falling into the group of small combustion installations and medium combustion plants. In particular, new technical measure for reducing emissions, mainly of particulate matter is described. The paper presents a new cyclone type deduster, combined with known technique of external flue gas recycle. A new technical solution offers efficient removal of particulate matter from flue gasses, by centrifugal mechanism. The approaches to modeling of apparatus performance, with experimental validation of the models used, as well as resulting design are presented. The new cyclone type separator, with vertical baffles along with improved separation efficiency, by 37.8%, allows for external flue gas recycle, which results in emissions of NO_x reduced by 20.3% as well as energy efficiency improved by 2.3%. The measurement results of an industrial case study are presented and discussed.

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