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INVESTIGATIONS OF COMBUSTION PROCESS IN COMBINED COOKER-BOILER FIRED ON SOLID FUELS

ABSTRACT

The aim of the investigation was to make some reconstructions on the existing stove used for cooking and baking and to obtain the combined cooker-boiler which will fulfill the demands of European standard EN 12815. Implementation of modern scientific achievements in the field of combustion on stoves and furnaces fired on solid fuels was used. During the investigations four various constructions were made with different fresh air inlet and secondary air supply with the intention to obtain more complete combustion with increased efficiency and reduced CO emission. Three different fuels were used: firewood, coal, and wood briquette. A numerous parameters were measured: fuel weight changes during the combustion process, temperature of inlet and outlet water, flue gas composition (O2, CO, SO2, CO2, NOx), flue gas temperature, ash quantity ect. The result of the investigations is the stove with the efficiency of more than 75% - boiler Class 1 (according EN 12815) and CO emission of about 1% v/v. The results obtained during the measurements were used as parameters for modeling of combustion process.

KEYWORDS

solid fuels, combustion, cooker-boiler

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