CONDITIONING MONITORING AND FURNACE OPERATION AND DESIGN

(694) - EFFECT OF MOISTURE CONTENT OF SOLID WOODY BIOFUEL ON THE BOILERS PERFORMANCE

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The work presents the R&D experience of recent years in cooperation with local heat supply companies operating a solid woody biofuel boilers. Last decade, in Lithuania, most district heating supply companies have switched from liquid (heavy fuel oil) or gaseous fuels (natural gas) to solid biofuels, mainly burning forestry residues. The increase in demand for solid biofuels has not only increased the price, but has also reduced their quality. In particular, one of its main characteristics, moisture content, has changed or variated over the last decade. In most cases, solid biofuel boilers works well in the automated mode when their moisture content of wood chips varies between 40 and 55 %wt. However, once out of this range, there are constant operational and process control problems. This results in increased emissions of harmful pollutants and a reduction in the efficiency of the boiler itself, leading to significant economic losses.

The paper presents examples from several projects showing how the performance of the firebox varies with extremely dry or with wet solid biofuels. Proposed solutions and mechanisms to control the process are also presented.

Palavras-chave : wet biofuel, furnace, combustion, flue gas recirculation, process efficiency