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AGGLOMERATION OF BED MATERIAL: INFLUENCE ON EFFICIENCY OF BIOFUEL FLUIDIZED BED BOILER

ABSTRACT

The successful design and operation of a fluidized bed combustor requires the ability to control and mitigate ash-related problems. The main ash-related problem of biomass firing boiler is agglomeration. The fluidized bed boiler with steam capacity of 66 t/h (4 MPa, 440 OC) was started up at the Archangelsk Paper-Pulp-Plant in 2001. This boiler was manufactured by the Russian companies "Energosofin" and "Belenergomash" and installed instead of the existing boiler with mechanical grate. Some constructional elements and steam drum of existing boiler remained unchanged. The primary air fan was installed past the common air fan, which supply part of the air into 24 secondary air ports. First operating period shows that the bed material is expanded and then operator should increase the primary air rate, and the boiler efficiency dramatically decreases. This paper presents some results of our investigations of fuel, bed and fly ash chemical compositions and other characteristics. Special experiments were carried out to optimize the bed drain flow rate. The influence of secondary air supply improvement on mixing with the main flow and boiler efficiency are given.

KEYWORDS

[biomass combustion](#), [bubbling fluidized bed](#), [agglomeration](#), [efficiency](#), [boilers](#)

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