

STEAM BOILER FURNACE UTILITY MODEL EE 2000 00241 U1

A. MARTINS, A. PESUR

Estonian Energy Research Institute
1 Paldiski Rd, Tallinn, 10137 Estonia

The steam boiler furnace belongs to the series of fluidized-bed equipment, in particular to the furnaces with circulating fluidized bed used for burning oil shale and other fuels of high ash content and their mixtures. The objective of the invention is to reduce the amount of circulating ashes and *via* this decrease the size, capacity and cost of necessary cleaning equipment. The goal is reached by combining combustion of fuel in circulating and bubbling beds while the fuel discharged from the chamber with circulating fluidized bed is channelled to the area of bubbling bed. Fuel flow to the bubbling bed combustion zone is provided by the properly selected shape of furnace and the way of injecting secondary air into the furnace.

Layout of the new practicable solution for the furnace of a steam boiler with circulating fluidized bed.

Flows: *a)* fuel, *b)* primary air, *c)* secondary air, *d)* ashes.

Legend: 1 – furnace; 2 – cyclone; 3 – flue gas tract; 4 and 5 – return systems for ashes that have passed through the cyclone; 6 – ash regulating valve; 7 – ash hopper; 8 – cooled vertically partition; 9 – circulating fluidised bed; 10 – bubbling bed; 11 – vertical combustion chamber; 12 – specially designed front wall; 13 and 14 – holes for the introduction of secondary air; 15 – grate; 16 – heat exchanger; 18 – grate; 19 – heat exchanger; 20 – convective heating surfaces; 21 – heat exchanger with the bubbling bed; 24 – convective heating surfaces; 25 – grate

