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The invention relates to heat power engineering, particularly to power plants for burning various types of fuel and to processes for recycling smoke gases for fuel burning in power plants.

The power plant for burning fuel comprises a furnace (1) with burners (2) and a convective flue duct (3), connected through a smoke exhauster (4) and a smoke duct (5) to a smokestack (6); an outer air duct (9) connected to the smoke duct (5) through a smoke gas bypass conduit (11) and an outer air and smoke gas mixture duct (14), which is connected to a blow fan (13); a throttle (10) mounted on the duct (9), and a valve (12) mounted on the smoke gas bypass conduit (11), the throttle (10) and the valve (12) being equipped with actuators; an air preheater (8) placed in the convective flue duct (3), connected to the blow fan (13) and joined with the burners (2 ) through a heated outer air and smoke gas mixture duct (15); a smoke gas sampling transducer (16), mounted at the inlet into the convective flue duct (3) and connected to a gas analyzer (17) determining the content of oxygen and carbon monoxide in the smoke gases; an electronic control unit (18), which is connected to the gas analyzer (17) and to the actuators of the throttle (10) and the valve (12).

The process for recycling smoke gases for fuel burning in power plants includes the selection of a part of smoke gases with static pressure greater than the atmospheric pressure from a smoke duct (5) and feeding it through a smoke gas bypass conduit (11) into an outer air duct (9) with the outer air static pressure less than the atmospheric pressure; regulation of fresh air and smoke gas feeding through the actuators of a throttle (10) and a valve (12), controlled by an electronic control unit (18), so that the percentage content of oxygen in the ambient air may be reduced to a level, at which at the inlet into a convective flue duct (3) the oxygen content in the smoke gases may be less than 1% in the absence of carbon monoxide; subsequent mixing of smoke gases with the outer air in an air duct (14) and a blow fan (13) to obtain a homogeneous mixture of outer air and smoke gases; heating of the resulting mixture in an air preheater (8) by utilizing the heat of smoke gases; feeding of the heated mixture into burners (2) through a duct (15).

Claims: 3
Fig.: 1