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## „Brown coal drying in the fluidized bed by low temperature heat source”

### Summary

Consumption of brown coal in the energy industry in Poland is over 30%. Despite the planned increase of the share of renewable energy sources and natural gas, all the while essential part of the energy will be produced from burning brown coal. Brown coal is a cheap fossil fuel with large resources, which in many European countries, provides efficient and economical energy production in the next few decades. However, brown coal power plants must take steps to minimize the impact on the environment by increasing efficiency and reducing exhaust emissions, including carbon dioxide emissions. Brown coal drying in fluidized bed by low temperature heat for combustion in existing boilers and new power plants is considered to be crucial technique for achieving the above objectives.

Doctoral thesis describes the technical and procedural issues related to the fluidized bed drying of brown coal for use in power units. Overview of fluidized bed reactors - the analysis and comparison of their properties for application to the drying of brown coal. Also a review of existing fluidized bed installations for brown coal drying.

The study carried out an analysis of the properties of brown coal. Taken test for drying of different fluidized bed dryers configurations (follicular and fountain). As a result of studies defined: the effect of drying time, the size and initial temperature of dried coal particle, temperature and velocity of the drying medium and the moisture content of the coal drying process in a laboratory fluidized bed dryers. Based on an analysis of experimental studies drying parameters to assess their impact on the drying kinetics and the energy required to evaporate one kilogram of water from coal.

