

SUMMARY

The thematic scope of the work resulted from the situation of the Polish energy sector, which is influenced by the implementation of EU regulations. This causes a change in the role that the new environmental policy assigns to coal-based sources of electricity and heat generation. This role is directly related to the acquisition and collection of coal ensuring the continuity of production processes.

In detail, the work presents information on the problems of safe coal storage. Theories in the literature describing the mechanisms of coal self-heating in the various phases of the process are cited, as well as data from the literature on the impact of long-term storage of coal on the deterioration of its quality parameters.

Basic information on how coal is stored in accordance with standards, which specify methods for selecting storage sites, stacking heaps on the landfill, and temperature control methods used, is described. Existing possibilities for reducing the danger of spontaneous combustion of stored coal are also presented.

The paper describes in detail the research methods used, the work in setting up the testing ground and the system used to monitor and record the temperature in the various layers of the heap.

The economic viability of long-term storage of coal in hardened heaps was also evaluated. The ranges of the decrease in the calorific value of coal stored in the research heaps created, allow for a directional discussion of the effect of the method of storing coal on its energy properties.

The primary objective of the research conducted was to develop a new method of storing thermal coal in heaps, using continuous temperature monitoring. The development of a new method of storing coal with the use of a measuring method made it possible to maintain coal stockpiles in the long term safely while reducing the loss of its energy properties.

The paper showed that it is possible and technically feasible to store coal, which shows a high tendency to spontaneous combustion, in a way that limits the supply of atmospheric air (oxygen) to the accumulated coal, which reduces the rate of its spontaneous combustion and loss of its energy value.

Confirmation of the demonstrated thesis was possible thanks to the design and use of a system for continuous monitoring of coal temperature throughout the heap.