

# **Abstract of the doctoral dissertation**

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## **Factors determining the volume of production in zones of the longwall face in the example of PGG S.A.**

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The goal of the doctoral dissertation was to conduct research on the factors influencing the mining process in the zone of the longwall face aimed at the development of an indicator that assesses the impact of certain factors on losses in this process. In order to achieve this goal, the following research questions were asked:

- 1) Which factors have the greatest impact on the mining process in the zone of the longwall face?
- 2) What are the root causes of losses in the mining process?
- 3) How to assess the impact of certain factors on losses in the mining process in the zones of the longwall face?

All coal mines, belonging to Polska Grupa Górnicza S.A., were selected as the research objects. The subject of the research was zones of the longwall face, in which mining exploitation of the deposit was carried out.

The basic research methods used in the work were: Analytical Hierarchy Process (AHP) and the 5 Why Method.

The aim of the work was achieved in three research stages:

- 1) The first stage of the research was aimed at presenting a proposal for the division and determination of the quantitative and qualitative impact of selected factors on the mining process in the zone of the longwall face.
- 2) In the second stage of the research, the root causes, that cause disturbance in the mining process in longwall faces, and losses, related to the occurrence of these causes, were determined.

- 3) The third stage of the research was the combination of the first two stages by determining the indicator of mining production losses  $W_s$ . This indicator determines the impact of a given factor on the mining process in the zone of the longwall face taking into account the number of losses resulting from the influence of this factor on the total volume of output in the mine.

The research results obtained during the realization of the doctoral dissertation deepen the knowledge about the mining process in the zone of the longwall face and exceed the state of knowledge described in the literature.