

MiningSEE: Application of forecasted variant of hydrodynamic calculations in redesigning the mine protection system against groundwaters – example of open cast mine “Field C”

Conducted hydrodynamic analysis defined the construction and operation of drainage wells that are in function of protection of the open cast mine Field “C” against groundwater.

The calculations covered the period from January 2009 to December 2018.

The number of drainage wells is analyzed, their mutual schedules, start time, and individual wells capacities, and four variants of the protection of the mine from ground water from different locations of drainage wells.

At the 11th International Conference on surface mining, held on Zlatibor 2014, a group of authors analyzed the best schemes and the best protection of the OCM Field “C”, the effects of dewatering, and size and speed of water level reduction, the structures capacity resistance, the length of the well, but also techno-economic assessment of the offered solutions.

The conclusion is that in the future it would be necessary to design a detailed hydrogeological investigations. Then, to add and verify existing mathematical model, or, to carry out control of obtained forecasts.

Otherwise, implemented forecasted variants calculations enable the accurate consideration of all characteristics of a drainage system on the open cast mine Field “C”. Determination of mutual schedule, individual capacities and periodicals connections of drainage wells that draw water from the interburden.

The drainage system consists of 23 wells, which are in operation. In the next phase it is necessary to choose the best out of four variants of protection the mine from groundwater.