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COMPUTERIZED SIMULATION OF MINE VENTILATION NETWORKS FOR SUSTAINABLE DECISION MAKING PROCESS

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Abstract

The simulation of different situations that may occur in the operation of the mine ventilation network is performed on its virtual model, developed and optimized using dedicated software. Depending on the chosen scenario, on the network model are applied a number of changes (addition of new ventilation workings, addition / removal of branches and nodes, changes in aerodynamic parameters: pressure, air flow driven by the fan etc.), the ultimate goals being: to assess how the new model obtained respond to anticipated requirements, diagnose of existing or potential problems, providing a quick feedback to the operator by making available all the data necessary for decision making process.

The complexity of the simulation lies in the need to execute a number of operations due to changes of the network structure and symbolism carried out on the virtual model. This article aims to simplify this process through automation and efficiency using software subroutines, subroutines containing the entire chain of operations performed for each step of the simulation, in order to reduce the simulation time and the level of complexity required for understanding the phenomena that occur in the mine ventilation networks.

Key words: 3D-CANVENT, automation, mine ventilation, simulation and solving, ventilation network modeling

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