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# METHOD FOR IMPROVING THE MANAGEMENT OF MINE VENTILATION NETWORKS AFTER AN EXPLOSION

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## Abstract

During the development of an underground explosion phenomenon, due to the energy of dynamic wave, important mechanical effects are registered both in the affected mine workings and in ventilation constructions (stoppings and seals, ventilation doors, regulators and air crossings). An explosion directly affects the ventilation network by modifying specific operational parameters of the main fans. This creates a different natural post event repartition of the air flows, at the branch level.
In order to ensure safety conditions after the event, it is necessary to restore the ventilation network. This complex process is based on critical pathways, for whose identification were first established ventilation constructions in relation with their emergency level.
This paper presents the process for restoring a mining ventilation network affected by an explosion, following the determination of critical pathways, through successive steps for restoring the ventilation in circuits affected by the wave front. For presenting these steps and for highlighting obtained results, a case study was conducted, based on a hypothetical, medium intensity explosion scenario, produced in the underground of Uricani coal mine, a mining unit in the Jiu Valley carboniferous basin, Romania, using 3D CANVENT specialized software for modeling, simulating and solving ventilation networks.

*Keywords:* computerized modeling, critical pathway, mine safety, mine ventilation

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