

CFD Friction Factors Verification in an Underground Mine

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Extended Abstract

Friction factor determination is necessary to model the ventilation system in an underground mine. These parameters were obtained by means of in situ measurements in two potash mines between 2013-2015 [1-2], obtaining an adjusted model to the reality in terms of airflow distribution. In this study, the friction factors were verified by means of a CFD software. The simulation of the air behaviour inside the mine drifts was done using a multiphysical numerical model of computational fluid dynamics (CFD). The well-known FLOW-3D® software was applied to numerically solve Navier-Stokes equations for solution domains, introducing deviations and mean values of airflow and cross-sections. A standard k-Ypsilon model was used to estimate turbulence flow. These models are based on the fluid volume method and are capable of simulating ventilation flow conditions. Results obtained by this method displayed similar friction factors to the values obtained from in situ measurements.

Keywords: CFD, Mine Ventilation, Friction Factor.

References

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