



“Gheorghe Asachi” Technical University of Iasi, Romania



ANALYSIS OF TRANSITORY PHENOMENA GENERATED BY UNDERGROUND EXPLOSIONS UPON THE VENTILATION NETWORKS

**Doru Cioclea*, Ion Toth, Ion Gherghe, Cristian Tomescu,
Marius Cornel Şuvar, Vlad Mihai Păsculescu**

*National Institute for Research and Development in Mine Safety and Protection to Explosion – INSEMEX, 32-34 G-ral Vasile
Milea Str., Petroşani, Hunedoara, Romania*

Abstract

The explosion phenomenon is an extremely complex physical-chemical process, which leads to the physical change of objects and objectives encountered on the propagation path, as well as the chemical modification of the underground atmosphere from the area of influence. During the underground propagation of the explosion, the most affected objectives are the following: ventilation constructions, regulation and insulation doors and the insulation dams. Dynamic pressure waves generated by the explosion propagate both towards the workings for fresh air input and towards mine workings for exhausting return air.

At the end of the path for exhausting return air is located the main ventilation station, which may be affected by the explosion type phenomenon. Due to this fact, the aeration capacity the mine may be endangered after the event. In this paper there is presented the analysis of transitory phenomena upon main ventilation stations, due to dynamic effects generated by underground explosions.

Key words: transitory phenomena, underground explosions, ventilation network

Received: December 2013; Revised final: June, 2014; Accepted: June 2014

* Author to whom all correspondence should be addressed: E-mail: doru.cioclea@insemex.ro; Phone: + 40 254541621; Fax: +40 254546277