PROBLEMS OF METHANE EXPLOSION AND BLAST ENERGY SUPPRESSION IN COAL MINES

M.Chikhradze[1,2], E.Mataradze[1], K.Tavlalashvili[1], G.Janikashvili[1]

1G.Tsulukidze Mining Institute,7 E.Mindeli str., Tbilisi 0186, Georgia
[2]Georgian Technical University, 77 Kostava str., Tbilisi 0160, Georgia
e-mail: m.chikhradze@gtu.ge

The accidents in coal mines from methane/coal dust explosion still remains as the problem in many countries. In spite of the strict safety regulations frequently the negative consequences can not be avoided. Methane explosion is considered as one of the most dangerous to the miners and infrastructure [1]. Considering the growing threat of methane explosion, the development of fast - acting energy suppression systems seems to be urgent to increase the safety level of an underground coal mine. The designing and development of effective explosion energy suppression system will significantly decrease the damage of infrastructure and fatal outcomes in coal mines.

This paper focuses on technical solutions to be used in designing a protective system for minimizing the consequences of methane explosions in coal mines. Based on the analyses of recent studies [2,3] were designed and created prototype of new protective system including explosion detector block, activation block with wireless device and shock wave energy absorber. As a suppression device an absorber with a pyrotechnic element were used, which ensures the discharge of dispersed water. Finally presented the results of experiments carried out for the determination of blast suppression effect. Experimental investigations have been carried out at G. Tsulukidze Mining Institute.

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