

Anna GOGOLEWSKA<sup>1</sup>, Natalia CZAJKOWSKA<sup>2</sup>

<sup>1</sup>Wrocław University of Science and Technology, Poland

<sup>2</sup> the graduate from Wrocław University of Science and Technology, Poland

## **Effectiveness of reducing seismic hazard by means of group winning blasting-case study from a copper ore mine in Poland**

### **Abstract**

The copper ore deposit situated in the south-west of Poland is mined by three underground mines that belong to KGHM Polish Copper JSC. Exploitation is accompanied by natural hazards such as gas flow, outbursts and rock bursts. The seismic hazard is the most dangerous. A lot of different preventing methods have been developed so far. However, no one is able to predict the time, place and strength of a dynamic event. There are three following types of rock-burst prevention: active, technological and organizational. The group winning blasting plays the prime role in active prevention. The more faces are blasted the more effective the shooting is. The paper aims at assessing the blasting effectiveness in inducing strong shocks and dynamic events i.e. rock bursts. Moreover, seismic activity connected with mining operations was investigated. The blasting frequency, the number of blasted faces and length of time between subsequent shootings were analysed and related to provocation effectiveness. The degree of the rock mass relaxation was evaluated by means of SWSG, which is a kind of seismoacoustic parameter measured directly after blasting. The study was conducted in one mine panel in Polkowice-Sieroszowice copper ore mine over two year period. The linear correlation and different regressions were calculated to determine the relationship between the number of blasts, the number of fired faces, the time interval between blast works and the provocation effectiveness.