



## The Value of Variety



This edition of the *Journal* contains five general papers on a variety of topics. Three of the papers deal with rock engineering issues, one deals with spontaneous combustion, and another with soiling of solar reflectors or heliostats. The three rock engineering papers each cover very different challenges faced by the mining industry.

Squeezing rock conditions occur when tunnels located in weak, ductile rock masses are overstressed. Unlike the strong, brittle rock masses typically encountered in deep South African gold mines, which fracture and burst when overstressed, these weaker rock masses deform excessively, resulting in gradual closure of the tunnels until they are no longer serviceable. Support needs to be designed to manage squeezing rock conditions without rockfall incidents, and to keep the tunnels serviceable. The paper on this topic represents an update of an earlier benchmarking exercise on squeezing ground management in Australian and Canadian mines, taking into account advancements in deformation monitoring technologies and the increased availability of yielding ground support elements. The authors provide practical guidelines for predicting the level of squeezing, selecting appropriate support systems, and rehabilitation.

Another rock engineering paper deals with pillar design in Himalayan rock salt mines. The authors describe a comprehensive field testing exercise using flat jacks to determine pillar stress.

Monitoring and predicting the performance (overbreak and underbreak) of open stopes is essential for minimizing dilution, ore loss, and disruptions to the mining cycle to ensure profitability. Most open stoping operations perform cavity monitoring surveys of all stopes. The paper on open stope performance describes an improvement on the classic empirical methods for predicting overbreak that includes prediction of underbreak. The method was developed using machine learning techniques.

Spontaneous combustion is a common problem in coal mines, which causes environmental and safety and health problem risks. Another paper deals with the potential for spontaneous combustion and ground reactivity in carbonaceous shales at an opencast iron ore mine, and highlights the importance of determining the properties of the carbonaceous shale.

The soiling of solar reflectors (heliostats) is perhaps an unusual topic for inclusion in the *Journal*. However, concentrating solar power (CSP) technology is likely to play an important role in the energy transition, particularly for energy-intensive industries such as smelting. This paper addresses the soiling rate due to dust from a ferromanganese smelter, and its effect on heliostat performance.

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