

Safeguard system of intelligent mining at Huangling, with special emphasis on ventilation monitoring

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A well-planned ventilation system is a major factor in managing toxic gas, mine dusts, and maintaining proper environment conditions in underground mines, which plays a critical in mine safety. With the advent of full mechanization, intelligent control and coal mining systems, China has gradually evolved into full automation at the working face complete with data monitoring and control and eventually, a fully automated longwall system.

Although Chinese ventilation regulations require that all coal mines install safety monitoring systems to collect real-time data in underground roadways and working faces, accuracy of measurement, data transmission and data-sharing abilities, anti-jamming, vibration, dust prevention are still not able to adequately meet system requirement, which have slowed down the development of intelligent mining. More work is needed to improve data accuracy and system integration/optimization to ensure system performance, so as to accurately forecast potential dangers and safeguard mining safety.

Huangling Mining Group Co., Ltd., Shaanxi Coal and Chemical Industry Group Co., Ltd. has two coal operations, with a combined production capacity of 14 Mt in 2017 (6 Mt for #1 Mine and 8 Mt for #2). It has made significant and sustained progress in longwall face automation, applying monitoring and control technologies in mine ventilation and production, it has been recognized as one of China's most innovative modern coal operations. This article introduces Huangling coal operation, its design and development its intelligent automation system, as well as future development and challenges it went through during system development.