

Development of mining automation system at Northparkes Mines

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ABSTRACT

A mine is like a giant factory, and mining companies are seeking to automate greater portions of this factory. Automation in mining means increased efficiency and safety, and it brings a reduction in operating costs. It also means a safer working environment and improved environmental monitoring.

Northparkes was the first mine in Australia to use the highly efficient block cave mining method, becoming a more widely used mining method throughout the world. In 2015, Northparkes became the world's most automated underground mine with 100% of production from automated loaders. This breakthrough allows Northparkes to operate continuously, 24/7, without pause. Higher daily production are achieved at a significantly reduced cost. Importantly, complete automation reduces the risk profile: operators are located on the surface, rather than in the cab, thereby eliminating exposure to hazards such as dust, noise and vibration. One experienced operator can control three loaders at the same time.

This paper presents the development of the mining automation system as well as its performance at Northparkes Mines. The current used automation system is called AutoMine® Lite. It is a reliable and advanced single loader automation system for tele-remote and radio remote controlled systems. It offers a high level of productivity and is the perfect solution for hazardous environments. The system is designed for fast installation and start-up. This enables quick relocation from one production area to another. The system utilizes WLAN-based applications for automatic operation. The underground radio communication system provides real-time video, audio and data communication between the loader and the operator station.