



AUSTRALIA'S MINING AUTOMATION TECHNOLOGIES

Australia is considered a world leader in mining automation technologies that enable resources companies to operate safely and more efficiently in remote and harsh conditions. Automation advances are providing the solution to the increasing cost pressures facing the global mining industry.

The Australian mining equipment, technology and services sector has developed advanced solutions that automate a wide variety of processes and tasks across mine operations. Numerous Australian research centres, university departments and industry partnerships are also investing millions of dollars in automation technologies.

These solutions have helped mining companies worldwide to reduce costs, improve productivity, maximise plant and equipment use, and enhance the safety of workers.

AUSTRALIAN INNOVATION, GLOBAL APPLICATIONS

Australian resources firms operate in some of the most remote and harsh conditions in the world. The need to mine smarter to remain globally competitive has driven the development of sophisticated mining automation solutions, including:

- autonomous and near-autonomous load haul dump (LHD) and truck haulage systems that optimise fuel consumption, improve tyre life and increase vehicle efficiency and safety
- autonomous train loading and transportation systems that can be controlled remotely
- automated underground mining systems that increase the accuracy of cutting sequences in mechanized mining, continuous longwall mining and haulage operations, reducing shift changes and operator fatigue

- automated drilling control technology, which increases efficiency and removes operators from potentially dangerous zones on the drill rig, open cut or underground mine
- intelligent software that autonomously or semi-autonomously interprets disparate data that can alter the parameters of processes and/or machinery during the mining operation. This allows for smarter, more flexible control architectures and greater decision support.

These innovative solutions are enabling Australian and global mining firms to successfully explore, extract, process and transport mineral deposits – and to do so while minimising operating costs, increasing productivity, optimising plant and equipment use, and providing a safe working environment for mine employees.

SUCCESS STORIES

Cayeli Bakir Isletmeleri increases productivity with mine reporting system

Cayeli Bakir Isletmeleri (CBI) is an underground copper and zinc mine located on the Black Sea coast of north-eastern Turkey. The mine faced depleting reserves and declining copper grades, which threatened future production and cash flow.

CBI implemented Australian mining software provider Micromine's Pitram mine control and management system to improve efficiency and reduce costs. The solution increased productivity across all of CBI's activities by 10 per cent.

Pitram also improved the mine's planning, communication, safety, business intelligence and on-site coordination by:

- integrating with third-party enterprise resource planning solutions, including SAP, to allow management to analyse information holistically and make informed decisions
- enabling staff to monitor production status and equipment availability
- improving in-shift priority settings between the Mine Control Room and maintenance personnel.



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Morobe Mining increases throughput with new process control system

The Morobe Mining Joint Venture (MMJV) is owned by Newcrest and Harmony Gold Mining Company Limited.

MMJV asked Australian process control engineering firm MIPAC to conduct an audit of its gold and silver mine in Papua New Guinea's Hidden Valley and develop a detailed control plan. In addition to optimising the site's production control system, MIPAC suggested introducing more advanced feed and mill control systems, and mill circuit controls.

MMJV installed a new flotation control system that allows mass balances to be adjusted. MIPAC also worked on froth rendition so additives can be tailored, which reduces costs. These refinements have resulted in a notable rise in throughput. MMJV's daily tonnage rate has improved and the flotation circuit is regulating flow to thickeners and generating a steadier mass balance, improving yield.

Robotics help Northparkes improve productivity and reduce risk

Northparkes is a copper and gold mine in the Central West of New South Wales, Australia. The mine is a joint venture between China Molybdenum Co., Ltd and the Sumitomo Groups.

Northparkes wanted to eliminate the need to manually change conveyor idlers. To do this, the mine used the Robotic Idler Replacement System developed by Australian firm Machinery Automation & Robotics.

The system comprises a robot mounted on a vehicle that scans the conveyor idler frame, stringer and belt. It positions a lift unit under the belt, clamps it to the stringer and lifts the belt, before removing and replacing the failed idlers, and stowing the old idlers on the vehicle.

The Robotic Idler Replacement System reduced the need to manually replace conveyor idlers by 90 per cent. As a result, Northparkes has increased production levels by maximising conveyor use, and improved safety by limiting workers' exposure to hazards associated with changing idlers.

ABOUT AUSTRADE

The Australian Trade Commission – Austrade – contributes to Australia's economic prosperity by helping Australian businesses, education institutions, tourism operators, governments and citizens as they:

- develop international markets
- win productive foreign direct investment
- promote international education
- strengthen Australia's tourism industry
- seek consular and passport services.

Through extensive industry networks across Australia, Austrade can help global mining companies connect with Australian mining equipment, technology and services companies that can reduce costs and improve the efficiency and safety of mining operations.

W austrade.gov.au

E info@austrade.gov.au

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