Underground vehicle detection

Maptek™ VisionV2X proximity detection has been in steady use at Oyu Tolgoi for more than 2 million vehicle operating hours, contributing to safety underground.

Oyu Tolgoi LLC, one of the largest known copper and gold deposits in the world, is a strategic partnership between the Government of Mongolia and Rio Tinto. The mine is also one of the most modern, safe and sustainable operations.

Maptek™ has been involved with Oyu Tolgoi since 2008, before open pit mining began in 2011. The Maptek VisionV2X detection system has helped mitigate significant risk since expansion into underground production commenced in 2023.

VisionV2X enhances safety by providing heavy equipment operators with improved situational awareness. Its detection and ranging capabilities have proven to be reliable and predictable, performing well in the challenging underground environment.

VisionV2X was implemented at the Oyu Tolgoi underground operation at the onset of the COVID pandemic.

'This meant we had to develop our local team capability to successfully implement and maintain the system, with remote support from Maptek,' said Russell Kennett, Oyu Tolgoi Underground Technology Manager.

Kennett has been involved in the underground mining automation and technology domain for more than 20 years, primarily working on underground mobile equipment automation, IS&T infrastructure and digital and data projects, so his expertise was invaluable to oversee implementation and use of the VisionV2X system.

'After initial implementation and stabilisation, VisionV2X has been reasonably cost-effective to maintain—ease of use has resulted in good operator acceptance, and Maptek has provided good support,' said Kennett.

Maptek initially customised the solution to operational requirements, adding compatibility to the Cohda V2X technology. Maptek has further improved the data integration options since implementation, allowing the data to be ingested and used in decision support tools.

'Cohda V2X technology leverages the market scale of the surface automotive industry, improving reliability and interoperability, and reducing cost compared with bespoke mining solutions,' said Kennett.

VisionV2X provides operators of heavy equipment with awareness of surrounding personnel and equipment, allowing them to safely operate equipment with limited field of view. The system provides data that can be used to validate traffic management controls and workforce exposure to vehicle and driving risks.

Prevention of safety incidents has a positive flow-on effect to productivity and cost.

Kennett sees collaboration and interoperability as being important in the underground mining technology space, especially for safety technology.

The importance of data sharing was highlighted by a recent report of a heavy vehicle to light vehicle incident at another mine.

Oyu Tolgoi was able to use the data from the VisionV2X system to verify that their traffic management plan and administrative controls were successfully minimising the exposure to similar scenarios.

Analysing the data and verifying that the two classes of vehicle had been in close proximity for only a very small period of time per shift increased confidence in their own safety measures.

Thanks to
Russell Kennett
Underground Technology Manager
Rio Tinto Oyu Tolgoi Mine