Improving Epiroc Boomer M20 underground drill safety with collaborative solution development – Epiroc and BHP Olympic Dam

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Abstract

This paper details a collaborative effort to address a safety hurdle encountered during the rollout of Epiroc's new Boomer M20 development drill at BHP. The existing solution, DrillStop Mk2.0 proximity detection system, in itself was an upgrade to previous generations of drill stop systems. Unfortunately, it fell short due to local environmental circumstances, such as ambient rock temperature, which saw it at times suffer from the inability to differentiate between the mine rock temperature and human body heat.

This limitation prevented the system from consistently detecting the critical 2-degree delta temperature required to identify personnel entering the safety zone, compared to rock temperatures.

The importance of collaboration between mining companies and equipment suppliers in addressing unforeseen technical and operating condition and related challenges was at a core in this case. BHP and Epiroc worked together to develop and implement a suitable alternative within a relatively short timeframe - the Retenua Emitrace system. This vision-based system utilises AI for superior detection accuracy and dust mitigation, overcoming the environmental limitations of the original solution.

By engaging both Epiroc and BHP technical engineers through in person and online video meetings both companies were able to further develop Epiroc's existing agnostic Rig Control System (RCS), to ensure the Retenua system's compatibility. Thanks to the safety integrity of the DrillStop 2.0, which also has a built-in agnostic auxiliary input, a great variety of sensors and add-on systems can be implemented, depending on local circumstances and customer requirements.

The abstract showcases the success of this "plug-and-play" solution: BHP raised the safety concern in early July, and by December, the Retenua system was fully tested, approved, and operational, restoring the M20 boomer drills to full work within five months. This case study demonstrates the effectiveness of collaborative problem-solving and system adaptability to improve mining equipment safety while minimizing operational downtime.