

Axis bolsters the first fully automated drill fleet in Africa.

Real-time monitoring supports automated drilling process at Kumba Iron Ore's Kolomela Mine.



Organization:

Anglo American and Kumba Iron Ore

Location:

Northern Cape, South Africa

Industry segment:

Critical infrastructure

Application:

Safety and security

Axis partners:

Sedna Industrial IT Solutions, Milestone, Geo-Cam

Mission

Kumba, Anglo American's iron ore business in South Africa, cemented its position as an early adopter of new technologies when it implemented automated drilling on the Kolomela Mine. This project was the first fully automated drill fleet in Africa and aimed to increase utilisation, improve safety and performance, boost reliability and productivity, and save costs.

The remote command of mining equipment relies on line of sight through remote drill monitoring to honour the guidelines of the Mine Health and Safety Act, specifically guidelines towards Trackless Mobile Machinery (TMM). As the preferred supplier to Kumba Iron Ore, Sedna Industrial IT Solutions (Sedna), were asked to provide visual monitoring to support this.

Solution

As an Axis Development Partner, Sedna naturally collaborated with the market leader in video surveillance.

The team has worked together on several mining applications in the past, and Sedna relies on the exceptional durability and performance of the Axis products.

AXIS P3905-RE Network Cameras were installed on the drills in order to replace the onboard visibility during the absence of an operator and the Geo-Cam was used with AXIS Q6115-E as the base platform for drill and bench monitoring, from a distance providing a 360 coverage of the entire working area of the drill. AXIS Q8722-E were used as the base for the Thermal Geo-Cam; drill and bench monitoring in poor light or high dust conditions.

Result

The custom-built, world-class mining application reinforces the project through real-time visual monitoring for automated process optimization and early problem detecting. As a result, the Kolomea Mine benefit from increased efficiency, improved safety, minimized downtime and lowered operating costs.

“The project’s conceptual phase required creative thinking that led to custom-built products. Sedna provided basic specifications, with minor on site changes to products once introduced and thoroughly tested. Furthermore, their Axis partnership meant we had superior technology and hardware to support the project requirements. Their combined commitment and technical ability is phenomenal and contributed to the overall success of the project.”

Pieterjan le Roux, Technologist Engineering at Kolomela Mine , Kumba Iron Ore.

Ramping up iron ore production in South Africa

Kolomela Mine, situated in the Northern Cape in South Africa, is Kumba Iron Ore’s newest operation. It mines lump iron ore, which is in high demand from Asia-Pacific as well as European steel markets due to its excellent physical strength and high iron content. Kolomela boasts an estimated life expectancy of 29 years, with around 23 years remaining, and has potential for further expansion.

In the spirit of reducing costs and improving efficiencies, Kumba rolled out an automated drilling approach at Kolomela, and the project became the first fully automated drill fleet in Africa.

Flanders was commissioned to supply the autonomous blast hole drilling control system, as they are renowned for engineering best-in-class solutions to overcome mining operation challenges. The system promised to improve safety, optimise blast hole planning, generate more predictable fragmentation, and enhance the performance of the drilling fleet.

Remote drill visual monitoring

Automated drilling presents many benefits as it promises to increase efficiency and reliability, while improving safety, minimising downtime and lowering operating costs. It is best suited for remote and inaccessible locations, and allows for more accurate pressure control and more rapid response to drilling anomalies. Combined with visual monitoring through high definition cameras, a single person can operate multiple drills from a control room on a 24/7 basis.

Axis Development Partner, Sedna Industrial IT Solutions (Sedna), specialising in mining-based systems was approached by Kolomela Mine Project to provide visual monitoring support.

Peter Dormehl, Director of Sedna Industrial IT Solutions, has partnered with Kolomela over the years on technical mining solutions, and therefore understood the requirements and client preferences.

Dormehl commented, “In making our recommendations to Kumba’s team, we put Axis forward as the IP camera partner of choice. Sedna has worked with Axis for almost a decade and we are confident in their product support. We know their hardware can survive demanding environments, as we’ve deployed their cameras in mining operations worldwide.”

Superior technology and hardware

A few years ago, Sedna built a Geo-Cam for monitoring operations within environments such as opencast mines, where there is no cabling infrastructure. The robust, mobile device is solar powered and locates positional information or tracks a moving object with GPS. The camera communicates via industrial wireless LAN and can be controlled (Pan, Tilt, Zoom) remotely, allowing for monitoring from remote operations.

“Part of our comprehensive solution to Kolomela was to install 7 Geo-Cams, which were used with AXIS Q6115-E Network Cameras as the base platform for drill and bench monitoring, while AXIS Q8722-E was used as the base for the six Thermal Geo-Cams for drill and bench monitoring in poor light or high dust conditions. In addition, we installed outdoor-ready AXIS P3905-RE on the drills, as they are ideal for onboard surveillance. This is recorded and managed on a Milestone platform with the Geo-Cam software,” explained Dormehl.

Automatic success

“The drill project deployment was rolled out over eight months by a strong, competent team of experts who helped contribute towards ensuring that our automated drilling delivers against an ambitious growth strategy,” concluded Siphon Mathonsi, Manager Engineering at Kolomela mine.

