Mining equipment serves as a crucial source of information. With Remote Monitoring Service this information can be harnessed and put to use.

Converting data into action

Remote Monitoring Service is a new set of advanced digital services. The system can translate vast amounts of data acquired from underground mining equipment into actionable recommendations, thus reducing operating costs and boosting productivity and sustainability.

TEXT: **TURKKA KULMALA** PHOTO: **SANDVIK**

AVAILABILITY, PRODUCTIVITY AND safety are key factors in any mining operation's profitability. They are broad concepts made up of innumerable small details, such as whether equipment is available whenever needed or if there is unplanned downtime. Did the spare part last as long as planned, and can the operators work safely and meet the productivity target and schedules?

The constant flow of urgent tasks to complete and problems to tackle makes it difficult to gain sufficient "breathing space" to continuously improve operations, even if everyone recognizes how vital this is in the long term. Operator A consistently achieves better productivity than operator B, but there are no apparent reasons to account for this. A specific loader suffers from unplanned downtime due to problems in the hydraulic system. How do you find the root cause of the issue while you're under the relentless pressure of daily production tasks?

Remote Monitoring Service converts information masses into concrete action points, making it easier to continuously improve operations.

Mining equipment serves as a crucial source of information, as these units have effectively become powerful telemetry and data acquisition platforms. But large amounts of raw data have little value without proper analysis. Using hundreds of data points for troubleshooting a specific problem, such as a transmission breakdown, can be a daunting task – like looking for a needle in a haystack.

Sandvik now responds to these challenges with its Remote Monitoring Service. In a nutshell, it means using the telemetry data acquired from the mine equipment fleet and merging it with Sandvik's digital and OEM technical expertise, vast global pool of reference data and in-depth analytical skills to produce actionable recommendations for continuous improvement of mining operations. Another way to put it is that Remote Monitoring Service utilizes a data-driven study of abnormal behavior, in terms of both vehicle usage and health, to generate tangible remedial actions based on data.

In practical terms, this means that Sandvik data scientists continuously monitor and analyze the data points acquired from

Sandvik's team of engineers trace and analyze the data acquired from the customers' underground production equipment around the clock.

customers' production equipment. They identify root causes for abnormalities and develop predictive solutions to increase the mean time between failures in a customer's fleet. The significant advantage is the intrinsic knowledge and experience that only the OEM can have of its equipment. Sandvik knows its equipment and their features through and through and is consequently uniquely positioned to maximize their productivity.

"Many customers have asked us to provide support in the process of translating their data into actionable items," says Ricus Terblanche, business line manager with Sandvik Mining and Rock Solutions. "This customer request was the main motivational factor to establish a remote monitoring service. Remote Monitoring Service does not require heavy investments in terms of IT infrastructure or associated resources from a customer perspective. This service provides the customer with a high return on the initial investment along with short lead times and low risks."

REMOTE MONITORING SERVICE is primarily designed for underground mining, suitable for both large and small operations and all types of underground production equipment.

One practical example of the possibilities that Remote Monitoring Service offers is to avoid improper gear selection, which can easily damage power train components. Remote Monitoring Service can identify incorrect gear selection when driving uphill and downhill, utilizing algorithms tailored to the conditions at the customer's mine.

Another scenario where Remote Monitoring Service can help is identifying premature engine failure by using a neural network to observe operational signals from the engine. The possible defect can then be determined before it escalates to power loss and engine breakdown.

All this adds up to an attractive value proposition for mine owners and mining contractors. Sandvik can say, for example, "We will increase the mean time between failures by X%." The actual delivery of the target is followed up by continuous monitoring, active support and recommended actions from Sandvik reliability and maintenance experts. Remote Monitoring Service can ultimately slash the cost per hour of production equipment, increase its total usable lifetime and implement significant operational improvements, such as improved operator safety.

There is also the bigger picture of stakeholder expectations: the emerging social investors and other stakeholders not only pay attention to the profitability of a mining operation, but they also expect results and transparency in matters such as decarbonization, value creation and sustainability beyond compliance.

Miners are expected to have meaningful sustainability goals and show results in achieving them.

CLEAR-CUT FIGURES SPEAK plain language, and Remote Monitoring Service will probably bring about statements such as: "Remote Monitoring Service helped us to train our operators and reduce our fuel consumption by

Remote Monitoring Service

Continuous remote monitoring: Sandvik traces the data acquired from underground production equipment 24/7, so there is no need for massive investments in resources and infrastructure.

Predictive and preventive maintenance recommendations: harness the expertise of Sandvik data scientists and engineers to prevent premature failures and unplanned downtime.

Visibility of equipment operations: identify operator-specific challenges for individualized feedback and training plans.

Fact-based insight reporting on measured data: pre-failure component behaviour gives clues to maintenance and training needs to prevent recurring problems.

Tracking fleet performance: continuous feedback loop with Sandvik experts helps leverage your equipment's full potential.

improved equipment uptime is a positive effect you can expect when using Remote Monitoring Service.

X%, which also slashed our climate emissions." "The service reduced our collisions by Y%, which also cuts back scrap metal impact of the operation by Z tonnes." "It helped us to de-bottleneck our process, significantly reducing the idling times of our machines, which directly cuts fuel consumption and CO_2 emissions."

"It is fair to say that with Sandvik's Remote Monitoring Service you can now truly convert data into action and improve your equipment uptime," Terblanche says. ■

REMOTE MONITORING SERVICE BENEFITS

- **Increased efficiency:** continuous analysis of real-time data year round helps get the most out of the equipment, minimizing downtime and maximizing uptime.
- **Lower emissions:** clear insights into fuel consumption and excessive idling times can drastically reduce underground emissions. Optimized component life cuts back on scrap metal.
- **Better operator safety:** alerts on speeding, brake violations, freewheeling in neutral and more.