# Boliden's Aitik copper mine pioneers autonomous haulage systems in Arctic Sweden



Boliden Mineral AB’s Aitik copper mine in Arctic Sweden is experiencing significant advancements with the implementation of autonomous haulage systems (AHS), specifically through collaboration with Komatsu. This transition is centred around the new Liikkavaara satellite pit, which is approximately 3 kilometres from the main site. The integration of Komatsu's FrontRunner AHS marks a pioneering development, making Aitik the first mine in both Europe and the Arctic to adopt this state-of-the-art technology.

Since the beginning of 2024, Boliden has been expanding its operations at Aitik with the establishment of the Liikavaara pit. The AHS system, according to Tomas Eriksson-Ek, General Manager at Aitik, is primarily aimed at enhancing safety by reducing the physical presence of staff in high-risk areas. "We want to eliminate risks like slips, or large rocks accidentally falling causing potential injuries to operators," he stated, highlighting the commitment to increasing operational safety.

The autonomous trucks utilised in the AHS significantly reduce uncertainties in operations. This not only allows an increase in productivity—since machines are now operable 24/7 without the disruptions of shift changes or operator breaks—but also extends the longevity of the equipment thanks to optimal usage patterns. "In the long run, we expect that the AHS system will further increase productivity and minimise unscheduled downtime through more accurate component life prediction," commented Rikard Mäki, Head of Electrification & Automation at Boliden.

An essential aspect of the AHS is its precision in operations, which not only helps in accurately placing materials but also decreases the chances of errors that would necessitate rework. Effective planning of mine operations is crucial for the successful deployment of this technology. Mäki explained, “When we talk about AHS, it’s much more than taking operators out of their seats – it’s about automating and optimising work processes.”

The operational strategy includes deploying a fleet management system, such as the Komatsu DISPATCH, to effectively manage mine layouts and requirements. This information is crucial, as it is relayed to the supervisory system that controls the autonomous trucks. Mäki emphasised the importance of organisational development and leadership in the successful adoption of automation technologies.

With the advent of AHS at Boliden, new roles have emerged to support the advanced operational structure. Notably, a central controller oversees operations from a control room, utilising the FrontRunner software to monitor various aspects of the autonomous systems. This transition has been facilitated through collaboration with Komatsu and local distributor Hesselberg Maskin AB.

Former truck driver Pontus Wallgren has embraced his new role as a central controller, stating, "I used to spend countless hours in a truck, but now my job is much more ergonomic. I can now interact with machines remotely, in a more comfortable and efficient way." Meanwhile, pit patrollers complement this system by monitoring conditions on the ground, where one patroller, Erika Johansson, remarked on the increased safety of the operation: "With the autonomous trucks, I actually feel safer, because the trucks are following precise routes and there are no risks of the driver being distracted or feeling fatigue."

Training has been a cornerstone of the transition, with dedicated trainers from Komatsu and Hesselberg providing over 100 personnel at Aitik with the skills necessary for both traditional and newly created roles suited to the autonomous system. Mäki noted that these training efforts have included a mix of classroom sessions and simulators, with a team of 13 to 14 trainers on-site for support throughout the process.

Today, Boliden’s Liikavaara pit operates entirely under the management of the Komatsu FrontRunner AHS system, demonstrating a substantial shift towards automation in mining practices. Since the implementation, the fleet has transported approximately 9 million tonnes of material, with 5 million tonnes sourced from Liikavaara, marking a significant milestone in the mine’s operational efficiency. As Boliden and Komatsu continue to evolve this partnership, both companies aim to unlock further potential within the mining sector through advanced automation technologies.

Source: [Noah Wire Services](https://www.noahwire.com)

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