

# Boliden Aitik Copper Mine

WHERE SUSTAINABILITY THRIVES







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# BOLIDEN AITIK COPPER MINE:

Where Sustainability Thrives

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**C**opper is known for its excellent ability to conduct electricity and heat. Thus making it a vital resource in the advancement of both modern electronics and communities and crucial for increased electrification.

So it is no surprise that electrification is at the heart of the Boliden Aitik Copper Mine in northern Sweden. It is the nation's largest open-pit copper mine and the world's most efficient.

The mine is also one of the most modern, given it features an advanced electrification project for rock trucks. This project effectively drives the decarbonization of the operation and brings sustainability to the fore.

#### Overview

The Boliden Aitik Copper Mine is 3 km long, 1.1 km wide and 450 meters deep and lies just south of Gällivare.

Ore containing copper, gold, and silver is mined around the clock from chalcopyrite. The work at Aitik is done by some of the biggest machines in the world. They include rock dumpers weighing 570 tonnes when loaded, whose wheels alone are 4 metres across, and excavators whose buckets can hold 45 cubic metres of rock.

These machines are operated by nearly as many women as men, which makes Aitik one of the most gender-neutral mines in the world. With around 900 employees, the Aitik mine is the largest private employer in the Gällivare Municipality.

Boliden's copper is produced at the smelters Rönnskär in Sweden and Harjavalta in Finland. It sells both





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copper cathodes to metal customers and copper anodes to industrial clients.

As copper, like other metals, can be recycled endlessly without compromising its properties or quality, the smelters Rönnskär and Harjavalta recycle and produce new copper with a low carbon footprint.

In 2023, around 40,700 tons of ore were processed to form metal concentrates containing copper, gold and silver. Aitik now produces 2 million tons of copper annually.

### Sustainability Run

Boliden's portfolio of mines is among the safest in the world, and due to advanced automation, the mines are also becoming increasingly digitized.

Boliden is conducting a unique initiative to develop automation in mines in a cross-functional programme with employees from the entire group and partners such as Volvo, Ericsson, Atlas Copco, Sandvik, and ABB. The goal is to keep production running non-stop round-the-clock, but the most significant gain is improved safety.

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**17 self-driving trucks will form part of regular operations, with optimized driving performance and less idleness contributing to higher production capacity.**

A truck operating in the Aitik operation consumes around one million litres of diesel annually. During 2018-2019, a project for electrification of rock trucks was conducted in Aitik. Four CAT 795-trucks were adapted with current collectors, similar to those on railway carts, and a 700 m long test lane was built.

The results were so promising that in late 2019, a decision was made to expand the project with a total of 3 km of electrical

lanes, including the existing one, and equip ten more trucks with current collectors.

A pilot for its Autonomous Hauling System – the first of its kind in Europe – was conducted in Aitik with seven trucks. When implemented in 2024, 17 self-driving trucks will form part of regular operations, with optimized driving performance and less idleness contributing to higher production capacity.

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Ore haulage has been highly automated, enabling large-scale production while also ensuring a safe workplace with good climate performance. The open pit's reserves and planned production will provide a further 27 years of mining.

Boliden also recently signed an agreement with the Swedish explosives supplier Hypex Bio regarding the production and delivery of nitrate-free and environmentally friendly explosives. As a result, the need for nitrogen treatment of water will be strongly reduced, and climate performance will improve by around 400 tons of CO2 per year.

The technology has proven to meet Boliden's requirements for safety, performance, and the environment, as well as reduced carbon dioxide emissions. Tests have also been carried out in the Aitik copper mine.

**Diverse Partnerships**

In addition to its primary supply partners, Boliden Aitik Mining collaborates closely

with a range of other key partners, each playing a vital role in advancing its operational objectives and sustainability initiatives. Partnerships with organizations such as KCEM emphasize Boliden's commitment to promoting sustainable practices in the use of energetic materials, further enhancing its efforts in recycling and recovery.

Orefields Raise Boring AB contributes significantly to infrastructure development through its specialized raise boring and shaft services, bolstering Boliden Aitik Mine's operational capabilities. Moreover, NKR Demolition Sweden AB's expertise in providing demolition services for infrastructure projects not only aids in site redevelopment but also aligns with Boliden's vision for responsible resource management. Fredheim Maskin's supply of equipment for waste rock management underscores Boliden's dedication to environmental rehabilitation efforts, while Swecon's provision of machinery and equipment support services ensures the smooth functioning of mining operations.





**Hands-on biodiversity**

To strengthen biodiversity and create accessible nature experiences for the public, Boliden has inaugurated the Sarkanenä Sustainability Park close to the Aitik mine. The company’s aim is for additional sustainability parks to be introduced in connection with active or decommissioned sites.

Furthermore, partnerships with Isakssons Markteknik AB, BDX Företagen AB, and MOMEK MOMIN AB further complement Boliden Aitik Mining’s operations, encompassing crucial aspects such as crushing and sorting equipment, support services, maintenance, and repair of mining equipment. Together, these collaborative endeavors epitomize Boliden Aitik Mining’s holistic approach to partnership engagement, driving forward its objectives of sustainability, efficiency, and excellence in the mining industry.

Åsa Jackson, Executive Vice President of People and Sustainability at Boliden, said: “Mines inevitably have an impact on the environment and the local community in which mining takes place.

“However, by restoring the land or setting aside other land and initiating efforts to promote biodiversity, we can strengthen the overall natural values and contribute to long-term solutions for both ourselves and others.”

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Sarkanenä Sustainability Park, located about 10 km south of Gällivare, includes other features, such as a circa-2 km hiking trail with an experience trail. The park is the result of a collaboration between Boliden, the Swedish University of Agricultural Sciences and the land owner Sveaskog.

Boliden has also announced it will spend US\$350 million improving the tailings dam at the Aitik copper mine. "Ongoing geotechnical investigations in Aitik show

the need to eventually change to a new dam construction method to ensure long-term disposal of tailings," the company said in a statement.

The company said that Boliden also wants to strengthen Aitik's current dam to meet the best industry standards. The Swedish miner has identified areas of poorer soil conditions, and has suspended plans for dam heightening and tailings deposits in these areas.

Boliden will now strengthen existing dam structures and move some infrastructure, a process the company estimates will take



two years. After this work is completed, the company will resume work on heightening the dams and depositing tailings.

### Boliden's Centenary

Across its mines' portfolio, Boliden now employs around 6,000 employees, has annual revenues of approximately \$7 billion, and is listed in the Large Cap segment of NASDAQ OMX Stockholm. As Europe's leading producer of sustainable metals, and guided by its values of care, courage, and responsibility, the company will continue to operate in exploration, mines, smelters, and recycling.

Looking ahead, the company's vision remains steadfast and ambitious. As it commemorates a century since the discovery of gold in Fågelmýran in 1924, Boliden aspires to become the epitome of a climate-friendly and respected metal provider on a global scale. Through innovation, collaboration, and unwavering

dedication, Boliden envisions a future where the extraction and processing of metals are harmonized with the principles of ecological preservation and community enrichment.

In the coming years, Boliden's journey will be defined not only by its continued growth and profitability but also by its profound impact on shaping a more sustainable and equitable world. As it forges ahead into its second century, Boliden stands poised to lead the charge towards a brighter, greener future for the mining industry and beyond.

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