



Case Study

ContiTech: 24/7 Smart Service for the Toughest Mining Conditions

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ContiTech is taking an unusual service approach in the world's largest underground iron ore mine in Kiruna, Sweden. Kiruna is situated north of the Arctic Circle and is roughly a 15-hour train ride away from Stockholm. It is Sweden's northernmost town and arose as a settlement for the mine of the same name. Here, in the world's largest underground iron ore mine, for around 120 years government-owned mining company LKAB (Luossavaara-Kiirunavaara Aktiebolag) has been extracting some 27 million metric tons a year of the sought-after raw material. The Guardian once reported that this amount could be used to build six Eiffel Towers a day. And most constructors in Europe using iron ore opt for the superior-quality Kiruna magnetite, which has an iron content of 60 to 70 percent. But LKAB also exports the material to markets all over the world.

The crude ore in Kiruna is used to manufacture 15 million metric tons of finished products, and the material is mostly shipped in the form of pellets. The Swedish Ore Railway is used to transport it to the ports of Luleå and Narvik in Norway. At the loading station the trains tip out their freight, where conveyor belts either transport it to stockpiles or directly to the ships.



Everywhere where top quality and reliability are important, where service and smart solutions are required, ContiTech is there.
(Photo: Frederic Alm)

Kiruna uses conveyor belts from **ContiTech** to ensure that the ore is conveyed from depths of up to 1,365 meters safely to its destination. The company also uses **ContiTech** technology in Narvik as well as at **LKAB**'s third-largest site, **Gruvberget** open-pit mine in the Svappavaara ore field. In a complex operating setting like a mine, conveyor are used to supplement key equipment such as mills, furnaces or pelletizing plants. Just like blood vessels in the human body,

they keep the whole mining process running. Conveyor belts are used for anything that needs to be transported quickly and continuously. In harsh working conditions, they cope with huge height differences and considerable distances. In Kiruna, there are around 350 individual conveyor systems making up a 21-kilometer-long conveyor. This is the same distance as a half marathon – the difference being that this equipment runs around the clock. And that's not the only ultimate sporting performance. These conveyor belts transport 90 million metric tons of material a year. If a belt breaks down as a result of damage, this can result in an extended period of downtime for the facility. By the same token, if the entire production chain collapses this can engender considerable sales losses for the operators.

Win-win situation for all contractual partners

A special service agreement, which was signed between **LKAB** and the service provider **Vertech AB** in close collaboration with **ContiTech**, is helping to remedy this situation. It ensures that all the conveyor belts at the site are functional at all times. This requires the presence of experts at the site day and night, seven days a week, to rectify any damage as quickly as possible. *“Our conveyor belts are extremely hard-wearing, but there are of course instances where a defective belt piece needs replacing. Which is why we stock the relevant replacement parts in Kiruna. Every belt type is available in any required length, width, fabric and strength class. The longest belt sections in stock are 600 meters long. It would take weeks for us to first produce the belt and then ship it to the far north,”* explains **Daniel Grimes** from **ContiTech**. **Vertech** supplies the fitters, **ContiTech** supplies the replacement belts and **LKAB** pays in öre, which is one-hundredth the value of the krona, per metric ton transported. The balance is settled at the end of the year. The three contracting parties then share any profits or losses. In this way, the service agreement benefits all sides and acts as an incentive for failure-free operations.

Partnership based on trust

It was **ContiTech** who engineered this unusual service agreement which requires exceptional trust-based, transparent and close cooperation between all parties involved. **ContiTech** conveyor belts have been in use at **LKAB** plants since the early 1990s. The first service agreement was concluded in 2001 and has proven to be a worthwhile undertaking to this day. For **LKAB**, the agreement provides additional advantages as it gives the company a much better overview of the costs. A budget was created as of the agreement start date. This factored in the value of the belts, the installation costs, the site labor costs and the stockholding costs. The calculation also takes into account the theoretical average service life of the belts. If a belt fails prematurely, absolute transparency is required. Has the belt simply worn out before its time or were the pellets too hot and not cooled down properly? In cases of system failure, the contract partners do all in their

power to get to the root of the problem. Is there room for improvement on the maintenance front or is the damage to the belt all part and parcel of the usual stresses of operation? Sometimes there are discussions. But so far an agreement as always been reached. This requires a willingness to compromise, trust and the desire to find a solution. At the end of the day, the contract partners are all pursuing the same goal: smooth running of the belts. This is absolutely critical for cost efficiency. Accurate records are also kept. Once every six months, **LKAB**, **ContiTech** and **Vertech** go through all the data and review performance. Where do we stand? Where could we improve training for the service technicians further? How do we fare on issues such as industrial safety and environmental protection? The contracting parties discuss these and many more issues as a team.

Fire safety: a must underground Industrial safety is essential when it comes to mining. This was one more reason why **LKAB** opted for **ContiTech** conveyor belts. **ContiTech** supplies belts made of self-extinguishing material. This is absolutely critical underground because pit fires have always been one of the biggest risks for miners. Burning conveyor belts could result in a fire with devastating consequences. But this will not happen in Kiruna. In the event of a fire, the **ContiTech** belts are self-extinguishing, which means that the flames are unable to spread along the whole length of the conveyor belt. Mine operators who use **ContiTech** solutions get much more than just a conveyor belt that is specially designed to meet their needs: *"We provide our customers with everything from one source – from technical advice, extensive planning and engineer-driven development all the way through to manufacturing and delivery of conveyor belts and components. Installation, commissioning, maintenance and monitoring of the belt round off the whole package. This is all perfectly coordinated to achieve the best possible operation and highest level of customer benefit,"* emphasizes **Grimes**. With expert advice, round-the-clock support for emergencies and an extensive service offer that covers every special case, **ContiTech** meets requirements for the highest levels of quality, safety and flexibility. After all, it is all about deriving the maximum benefit for the customer.



Inside the ship loaders, conveyor belts transport bulk cargo from land to ship.
(Photo: Frederic Alm)

About LKAB *Luossavaara-Kiirunavaara Aktiebolag (LKAB for short) is one of the world's leading manufacturers of highly enriched iron ore and other mining products and services. It is headquartered in Luleå, Sweden. LKAB, which is wholly owned by the Swedish government, extracts and processes the unique iron ore from Norrbotten and supplies it to the global steel market. The portfolio of the corporation, which generated annual sales of around SEK 16 billion in 2016, includes industrial minerals, drilling systems, rail transport, stonemasonry and engineering work, and real estate management. LKAB has more than 4,200 employees in 13 countries.*

About ContiTech *ContiTech is a leading*

*manufacturer and developer of innovative conveyor belt technology and part of the **Continental** technology company. As a provider of complete solutions with worldwide locations that are close to its customers, the company ensures comprehensive support for conveyor belts and systems in the mining industry, in the mechanical and plant engineering sectors as well as in many other industries.*