

# CASE STUDY - IRON ORE PRODUCTION

## LKAB, Kiruna mine, Sweden



View of Kiirunavaara. LKAB has been mining iron ore for more than 100 years. In the beginning, the mining was open cast, above ground; it wasn't until the 1960s that the mining went underground.

## “We produce iron which requires reliable products”

In the tough environment at the Kiruna mine, it is essential for the pulse encoders providing feedback on location and speed to live up to expectations for problem-free production processes. Leine & Linde have been supplying customized models for the international high-tech mineral group LKAB and its production of highly-refined iron ore for around 20 years.

In the land of the midnight sun, among vast mountainous areas, lie the ore deposits that provide the whole of Norrbotten with an important industry. Iron ore, known as magnetite, dominates and is of excellent quality, thanks to its high iron content.

LKAB has been mining ore in Kiruna since the company was founded in 1890. Today, the company is a leading international producer of refined iron ore products for steel making and is expanding its operations for supplying mineral products to other industrial sectors. The principle operations include iron ore mines and processing plants in Kiruna, Malmberget and Svapavaara and ore harbors in Sweden and Norway.

The main level of Kiirunavaara is currently at a depth of 1045 meters. Approximately 25 million tons of crude ore is mined annually from the ore body, and, to date, over one billion tons has been extracted from the Kiruna mine.

### Tough field of application

Bernt Sundbris is an electricity equipment planner at the Kiruna mine. He is responsible for servicing and maintenance of the mining locomotives, among other things, and can explain the function and purpose of Leine & Linde's pulse encoders in the production process:

“A somewhat customized version of the small, reliable incremental 861 model is used to gauge the location and speed of the ore trains, but you can also find Leine & Linde products elsewhere in the mine. The pulse encoders also determine the speed of the elevators, and are in the mountain winches too, as well as parts of the conveyor tracks. Both incremental and absolute pulse encoders are used. The environment is tough, in terms of vibration, dirt and dust,” explains Bernt.

“Other makes were used previously, but failed to satisfy our quality requirements,” continues Andreas Karlsson, service engineer in the department. He is responsible for maintenance of the locomotives, and says that the service life and function of Leine & Linde's encoders, on the other hand, is more than satisfactory. “We

are very satisfied with the quality and the partnership with Leine & Linde.”

Service personnel had previously encountered problems when installing the encoders due to the confined spaces, but with the help of a specially-designed solution, the problem was solved.

### Major focus on development

From an early stage, LKAB has focused on advanced technology, and has always been at the forefront of development. Modern IT solutions mean that boring, loading and transporting can all be remotely controlled, which provides better process control. This creates very efficient logistics from crude ore to pellets and from mine to harbor.

Leine & Linde 861 heavy-duty encoders, along with other absolute encoders, are used frequently within mining operations.

Leine & Linde has a close partnership with LKAB, and constant technical development takes place in order to maintain their high quality requirements.

Leine & Linde heavy-duty encoder is installed on one of the mining locomotives.



Bernt Sundbris (LKAB), Håkan Karlsson (sales engineer, Leine & Linde) and Andreas Karlsson (LKAB) discuss the installation of a pulse encoder.

**Company:** LKAB

**Location:** Kiruna, Sweden

**Production:** Iron ore

**Employees:** At the mine approximately 500 (within the entire group 3,800)

**Production capacity:** 25 million tons crude ore/year



# LEINE LINDE

For further information on pulse encoders within this industry, contact Håkan Karlsson on +46-(0)152-265 51!

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