

Röbäcks Sweden AB, 905 80 Umeå, Sweden

Readymix plant for extreme conditions delivered to the North of Sweden

For one of the largest construction sites in Sweden, operating 365 days a year at extreme temperatures below minus 30°C, the Swedish company Röbäcks recently delivered a readymix plant with an output capacity of 176m³/hour.

Kiruna is located in the north of Sweden, 145 kilometers north of the Arctic Circle. The city centre is built on a hill at an altitude of 530m. The climate is very harsh with temperature well under minus 30 degrees Celsius and hard winds from the Atlantic sea. Iron has been mined in Kiruna for over 100 years. Iron ore extraction is a key industry of the area, and the town is very dependent on the mining company LKAB. Now the town has to move, to give place for a new mine under the city where the core ore is located. The first actual work on moving the town was done in November 2007, when work on the new main sewage pipe started. In whole the city, including city hall, church and an artificial lake has to move to give place that mining under the city can be started.

For opening the new mine and moving the city, there is a great demand for concrete. The concrete plant has to produce concrete 365 days a year and 22 hours a day. Most of the concrete produced is shotcrete for stabilizing the mine. The shotcrete concrete in the mine is reinforced by conventional steel rods, steel mesh, and synthetic fibers.

Kiruna Gravel & Stone Processing (KGS), a company in the LKAB Group, provides services in mining mainly to LKAB. To solve this huge demand of concrete in a harsh climate, KGS got the task to set up a new big concrete plant with a sufficient supply of concrete for the future. The plant needs to provide all the concrete for the mining operations, including ready-mix concrete for the securing of the mining walls, and to provide all the construction sites for the new city.

The decision to invest in a new concrete plant at Kiruna took place in 2008. After long and careful procurement the prestigious election finally fell to the concrete plant from Röbäcks Sweden AB in Umeå. In late summer 2009 the factory was ready for operation. KGS is Sweden's largest single concrete producer with nearly 300.000 m³ ready-mixed concrete produced per year.

Factory description

The factory has five cement silos with a total capacity of 480m³ storage capacity, and in total about 895m³ storage facilities for 12 different fractions of aggregates. Double

dosing facilities ensure the correct dispense of steel fibres and synthetic fibres just the right amount and in time.

The factory of AB Röbäcks has a maximum capacity of approximately 176 m³ ready mixed concrete per hour at a mixing time of 90 sec (22 batches of each 2 x 4 m³).

The twinshaft concrete mixers type DKX with an output of 4m³ each were included from BHS Sonthofen, Germany. KGS delivers with the concrete with standard ready mix trucks to the overground construction sites, as well as with special transportation trucks into the mine to provide 8 robotic spray rigs operating at between 900-1200 meters deep.

In order to operate the plant all the features complete and precisely, the factory was equipped with the Röbäcks RCS4 Linux-control system that was entirely developed by Röbäcks. This control system is a very reliable system running on the known stable and swift operating system Linux.

For the production of warm concrete at temperature down under minus 30 degrees for months the optimal choice of the heating equipment was very important. The choice



The Kiruna plant during erection, the 2 BHS 4.0 mixers in place.



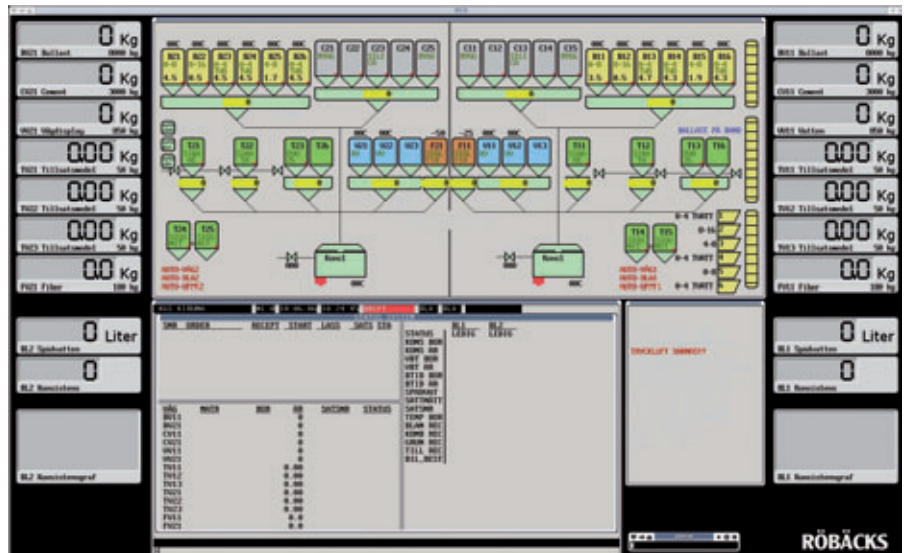
The new plant was designed by Röbäcks to operate at temperature below minus 30°C and in rough climate.

fell on a 1.5 MW Turbo from Polarmatic in Finland, who have a lot of knowledge about concrete production in arctic environment.

“This project was a great success story for Röbbäcks, working in such special conditions and covering all the special rules and demands from LKAB/KGS. To achieve the goal to make a great, fast factory and a satisfied customer was what we all had to work hard for”, commented Fredrik Lindvall, project manager for Röbbäcks.

FURTHER INFORMATION

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The plant is operated with the new Röbbäcks RCS4 Linux control system.



The special bin is for loading all types of trucks. The low one is for 12m3 trucks that are used in the mine, and the normal one is for normal truck mixers for the street.



The trucks are loaded inside independent of extreme weather.