LKAB Kiruna and Malmbegeret Iron Ore Mines in Sweden

Mission: Scaling up production by drilling longer and straighter blast holes in two block caving mines.

Result: By extending the borehole lengths from 28 to 56 meters, the total production efficiency has increased by 500%. The Wassara technology was fully implemented in 1995 and has until today been used to drill more than 18 million metres.

COSTA CONCORDIA, ITALY

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we Are Very Proud of our Water-Powered DTH Hammer

Intense development work through the years has given an absolutely unique product where plain water is used to power a drill system. The water-powered drilling has numerous features and benefits, proven by 25 million meters of boreholes.

Johan Jonasson
R&D Manager, LKAB Wassara

International Use

WOLF CREEK DAM IN KENTUCKY, USA

Mission: Dam rehabilitation for groundwater reduction by installation of concrete walls. The challenge was to keep the borehole straight and clean for the following grouting. The project also faced a short timeframe.

Result: Both borehole deviation and time used for the drilling was according to specification.

WASSARA SOLUTION

1. High-pressure pump
2. High-pressure hose
3. Swivel
4. Drill tube
5. Check valve
6. DTH-hammer
7. Drill bit
8. Sedimentation unit

THE WATER-POWERED DRILLING MAKES A DIFFERENCE

MALMÖ LIVE, SWEDEN

When drilling for geothermal heating system at the Malmö Live construction site, large amounts of water made drilling with air-powered equipment impossible. By drilling with Wassara water-powered DTH hammer instead, the water in the formation was not affected at all and the delay was heavily reduced.

WASSARA delivers environmentally friendly drilling and maintained penetration speed. Being it water-rich formations, sensitive urban areas, very sensitive dams, mine drilling or mineral exploration.

Costa Concordia, Italy

An important part of the salvage project is to secure the vessel, keeping it from sliding further down the slope if it circles.

A vital part is played by the Wassara DTH hammer when drilling for the anchoring points. The water-powered percussion drilling is the only feasible method for drilling in the marine national park with its coral reefs.

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Safe and benign drilling explained

**THE WATER-POWERED TECHNOLOGY EXPLAINED**

**THE MAIN DIFFERENCE BETWEEN WASSARA AND AIR-POWERED EQUIPMENT**

A Wassara DTH hammer requires 300 liters of water at 180 bar each minute of operation, the same 300 liters of water goes out without pressure.

To power the same size of an air powered DTH hammer, 24 000 liters of air at 30 bar per minute of operation is required. This gives 720 000 liters of non-compressed air that goes out each minute.

**HOW WASSARA WORKS**

The Wassara technology uses high pressure water to power the DTH hammer. Water enables a high frequency and high power output. When the water leaves the hammer, it has a sufficient velocity to bring the cuttings and debris to the surface and clean the hole. Result: clean and straight holes with a minimum of deviation.

Wassara offers superior benefits like high productivity, borehole quality and minimal impact on the formation you are drilling in.

**ENVIRONMENTALLY FRIENDLY**

When drilling with water-powered equipment, there is no introduction of oil or dust to the ground or to the air.

The consumed water is often completely safe to discharge.

**COMPARING DRILLING TECHNOLOGIES**

1. Water-powered DTH
2. Air-powered DTH
3. Top hammer
4. Rotary drilling
5. Diamond core

**THE MAIN ADVANTAGES OF WATER-POWERED DRILLING**

1. Lower power consumption
2. Clean borehole surface
3. Tight spacing, straight holes
4. Environmentally friendly
5. Simple fact enables the hammer to operate at any borehole length.