



Pressemitteilung

HERRENKNECHT

Hard rock TBM »Ulrikke« takes tunnelling in Norway to the next level

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Schwanau, Germany / Bergen, Norway

Whether it's a world record with the longest underground railway connection on earth at the Brenner or the epoch-making Gotthard project: the business of mechanized tunnel boring through hard rock is currently reaching new heights in Europe. Now Scandinavia is discovering the advantages of mechanized tunnelling. With the breakthrough at the Ulriken Tunnel, the first major tunnel project in Norway using a Herrenknecht Gripper TBM has been successfully completed.

_____ Hard, harder, Norwegian gneiss. With compressive strength of up to 300 megapascals, Scandinavian rock is regarded worldwide as the ultimate test of mechanized tunnelling technology. International construction companies trust in Herrenknecht's technology for this complex challenge. The global market leader from Schwanau looks back at decades of experience in tunnelling through the toughest of hard rock: Herrenknecht hard rock machines have excavated around 820 kilometers of tunnels in more than 200 projects since the year 2000. In late August the breakthrough of the Ulriken Tunnel for the expansion of the Norwegian railway network added another hard rock highlight to the list.

The railway tunnel through the Ulriken mountain is the first major traffic project in Norway to be realized with a Gripper TBM. On the west coast of Norway, the hard rock machine »Ulrikke« (Ø 9,300 mm) has bitten its way through extremely tough rock meter by meter in recent months. The miners of the »Skanska Strabag Ulriken ANS« joint venture have driven the 6.9 kilometer long tunnel between the cities of Bergen and Arna with excellent top advance rates of up to 170 meters per week.

In Norway, drill & blast tunnelling traditionally dominates. "The realization that mechanical tunnelling is a real alternative even in the extremely hard rock now seems to be spreading in Scandinavia," says Eric Fourchault, Project Manager at Herrenknecht. Compared to traditional drill & blast, mechanized tunnelling has a

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number of advantages. It has less impact on the mountain and provides highest safety for the crew, without the shocks of blasting. The short distance of only 30 meters from the existing operational railway tunnel was therefore decisive for the use of a TBM at the Ulriken Tunnel. Furthermore, machine technology can achieve higher average advance rates, especially over long distances.

TBM's are already being preferred over the traditional drill & blast method in other Norwegian tunnel projects. For Norway's latest large-scale infrastructure project, the »Follo Line« in Oslo, four Double Shield TBM's (Ø 9,900 mm) from Herrenknecht are creating the country's longest railway tunnel. In 15 months of excavation, more than 19 kilometers of the approximately 38 kilometer long total route have meanwhile been driven as a tunnel.

Project data

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MACHINE / PROJECT DATA S-935 ULRIKEN TUNNEL

Machine type: Gripper TBM "Ulrikke"

- › Shield diameter: 9,300 mm
- › Drive power: 4,200 kW
- › Tunnel length: 6.9 km
- › Geology: augen gneiss, granite gneiss
- › Customer: Skanska Strabag Ulriken ANS
- › Client: Bane NOR (state railway company), Norway

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Photos

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Photo 1

The moment everyone has been waiting for: tunnel boring machine "Ulrikke" breaks through the target wall. The cutterhead weighs 236 tonnes and was equipped with a total of 62 19 inch disc cutters for the drive through extremely hard gneiss with overburdens of up to 600 meters.



Photo 2

The miners of the »Skanska Strabag Ulriken ANS« joint venture have pulled off a real pioneering achievement. In Norway, drill & blast tunnelling traditionally dominates. The Ulriken Tunnel is the first major railway project to be realized with mechanized tunnelling technology and can be seen as a trailblazer.



Photo 3

The 6.9 kilometer long Ulriken Tunnel extends the railway link between Bergen and Arna on the west coast of Norway. After 19 months of tunnelling through the toughest hard rock the project was completed successfully.

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Herrenknecht AG

Herrenknecht AG is the only company worldwide to deliver tunnel boring machines for all geologies and in all diameters – ranging from 0.10 to 19 meters. The product range comprises tailor-made machines for traffic, supply and disposal tunnels, technologies for routing of pipe lines, as well as additional equipment and service packages. Herrenknecht also manufactures drilling equipment for vertical and inclined shafts as well as deep drilling rigs.

The Herrenknecht Group achieved total revenues of 1,208 million euros in 2016. The independent family business employs over 5,000 people worldwide, from which are 180 trainees. With 76 domestic and overseas subsidiaries and associated companies working in related fields, Herrenknecht provides comprehensive fast and targeted services close to each project and customer.

› <http://www.herrenknecht.com/en/references>

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