



Press Release

HERRENKNECHT

Tunnel boring machines provide a modern drainage system for Doha

September 23, 2015

Doha / Schwanau

2 EPB Shields from Herrenknecht have provided first-class work during tunnel excavation of the large scale >>Abu Hamour Southern Outfall Project<<. After just about 5 kilometers of tunnelling each, both high-tech machines broke through the target shaft precisely to the millimeter in quick succession of each other. The segmental lining method has proven successful in the smaller diameter range for the first time in Qatar. The newly created sewage tunnels are important to better protect the city and the inhabitants of Doha from floods after heavy rainfalls.

Both Herrenknecht TBMs each with a diameter of 4.47 meters only required 12 and 14 months respectively for their tunnel sections. Under the professional guidance of the responsible construction company Salini-Impregilo they achieved remarkable top performances of up to 165 meters per week. At a depth of around 30 meters, the EPB method proved to be the optimum choice to master the cohesive soil with its high proportion of rock in Doha. Herrenknecht designed a special cutting wheel with a large opening ratio for the customer – resulting in correspondingly efficient material excavation. High maximum push forces ensured top advance rates for both machines. The final breakthrough on 29th of July marked the conclusion of Phase 1 of the tunnelling work on the >>Abu Hamour Southern Outfall Project<<.

„Both EPB Shields with segmental lining were perfectly suited for the project requirements in Doha“, said Simone Centis, project manager at Salini-Impregilo, during the breakthrough celebration. „The great partnership with Herrenknecht helped us to find the best technical answers for the often heterogeneous soil. This allowed for highest possible efficiency during tunnelling and project progress“.

Qatar is one of the driest places on Earth. When it rains heavily in Doha, this can result in dangerous flooding because the metropolis is only a few meters above water level, and therefore above the groundwater level. The >>Abu Hamour

Herrenknecht AG
Schlehenweg 2
77963 Schwanau

Corporate Communications
Tel. +49 7824 302-5400
pr@herrenknecht.de

www.herrenknecht.com



Southern Outfall Project<< should help to reduce this danger in the future. A tunnel system will drain-off superfluous water and relieve the existing pumps, which lower the high water level. This will save considerable energy and costs for the public. Further projects to improve the drainage situation in Doha and its surroundings are planned or already being constructed, i.e. the Inner Doha Re-sewerage Implementation Strategy (IDRIS) Project.

Herrenknecht technology is also working underground to improve the traffic situation in Qatar's metropolis. With over 50 tunnel kilometers already completed for the Doha Metro, 21 EPB Shields from Herrenknecht with a diameter of around 7 meters have already accomplished facts.

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MACHINE DATA

Machine type: 2 x EPB3700AH

- › Excavation diameter: 4,470 mm
- › Drive power: 660 kW
- › Torque: 2,170 kNm
- › Overall machine length: 112 m
- › Total weight: 348 t
- › Special features:
 - First use of segmental lining in Doha
 - Highly-flexible equipping of the cutting wheel for maximum efficiency under fast-changing soil conditions

PROJECT DATA ABU HAMOUR SOUTHERN OUTFALL (PHASE1) TUNNEL

Client: Public Works Authority of the State of Qatar 'Ashghal'

Customer: Salini-Impregilio Qatar Branch

Application: Drainage / flood protection

Advance length: overall 9,350 m

Geology: Heterogeneous soils with frequent change in composition: Simsima Limestone (60 %) up to 70 MPa, Midra Shale (30 %), Russ Carbonate

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Photo 1

The breakthrough of the first machine M-1795 on July 23rd, 2015 was celebrated by all participants in the target shaft. The EPB Shield had successfully completed a distance of 4.3 kilometer with best daily values of 30 meters. The sister machine reached the target shaft with millimeter precision just 6 days later.



Photo 2

Already during field assembly in Summer 2014, the teams from Salini-Impregilo and Herrenknecht worked closely with one another. Both machines started at the same starting shaft; this was a great logistical challenge and required intelligent advance planning.



Photo 3

Both EPB Shields with a diameter of 4.47 meters were produced in 2013 and handed over to the customer after successful technical acceptance. They are the first segmental lining machines ever used in Qatar.

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For further information: Please contact us.

Herrenknecht AG

Herrenknecht 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 as well as additional equipment and service packages. Herrenknecht also manufactures drilling rigs for vertical and inclined shafts as well as deep drilling rigs.

In 2014 the Herrenknecht Group achieved total revenue of 1.082 billion euros. The Herrenknecht Group employs around 5,000 people worldwide, including nearly 200 trainees (as of September 2015). With 80 domestic and overseas subsidiaries and associated companies working in related fields, Herrenknecht provides comprehensive services close to each project and customer.

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

Your contact:

Achim Kühn

Head of Group Marketing and Corporate Communications

Phone +49 7824 302 -5400

Fax +49 (0)7824 302-4730

pr@herrenknecht.de

Herrenknecht AG
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