



Press release

HERRENKNECHT

Mega project Brenner Base Tunnel: first milestone achieved with Herrenknecht tunnel boring machine

August 5, 2020

Steinach am Brenner, Tyrol, Austria / Schwanau, Germany

A first major step has been taken in the construction of the world's longest underground rail link with a length of twice 64 kilometers in total. On Monday, July 6, 2020, with the completion of the 16.7 km long exploratory tunnel, proud tunnelers at the Brenner Base Tunnel celebrated the first decisive breakthrough of a Herrenknecht tunnel boring machine. A key structure for sustainable trans-European freight and passenger transport is being built on the north-south axis from Helsinki to Valletta.

_____ 8:27 a.m. early Monday morning, July 6, 2020: precise and confident, internationally experienced miners crack the last centimeters of rock with their tunnel boring machine. With the precision targeted breakthrough into the cavern on the Austrian side of the new Brenner tunnel, the first main breakthrough was achieved with a Herrenknecht tunnel boring machine (TBM). A groundbreaking signal for what is currently the largest European railway infrastructure project and an emotional high point for the hard-working tunnel builders, engineers and project managers on this day: "We reached our target with pinpoint accuracy," says Anton Ertl, overall site manager of the construction phase, visibly moved.

The ARGE Tulfes-Pfons (ATP) construction consortium, consisting of Austria's STRABAG AG and Italian contractor »webuild« (formerly Salini-Impregilo), and the Gripper TBM manufactured in Schwanau thus completed an unusual hard rock mission. They are pioneers in the production of a superlative railway infrastructure. From October 2015, the tunnel boring specialists steadfastly drove hard rock machine "Günther" (Ø 7,910mm) 16.7 kilometers from north to south under up to 1,300 meters of alpine rock toward their target. The TBM's name is borrowed from Tyrolean governor Günther Platter. The machine is one of a total of six tunnel boring machines that international construction joint ventures have so far ordered from Herrenknecht AG in Schwanau, South Baden, for the new world record project.

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Congratulations

Pat Cox, member of the European Commission and TEN-T coordinator for the SCAN-MED Corridor, congratulated the site crews and the many other project partners on their outstanding performance:

- › "I congratulate you on the breakthrough of the tunnel boring machine, another important step and milestone for the Brenner Base Tunnel. After its completion, the BBT will not only link Austria with Italy, but will be the centerpiece of the Scandinavian-Mediterranean Corridor, which extends from Finland to Malta."

Under the direction of the Austrian-Italian BBT SE, with the Brenner Base Tunnel and a total length of twice 64 kilometers, the longest underground rail link in the world is being created. It crosses beneath the Alps between Innsbruck in Austria and Franzensfeste (Fortezza) in Italy as a particularly efficient flat rail route, that is, without any notable, energy-consuming gradients. **Leonore Gewessler, Austrian Federal Minister of Climate Action, Environment, Energy, Mobility, Innovation and Technology**, explained the ecological benefits of the project:

- › "Currently, 72 percent of goods are transported by truck. This results in 2.5 million truck journeys a year over the Brenner Pass. So the Brenner Base Tunnel means a shift from truck to rail. This is not just good news for the climate, i.e. significant CO₂ reductions, but also for the people of Tyrol, and with the Brenner Base Tunnel we will be able to increase the number of freight trains from 66 to 225 per day."

Dr.-Ing. E.h. Martin Herrenknecht, founder and Chairman of the Board of Management of Herrenknecht AG, is certain:

- › "61 meters and 4 centimeters in just 24 hours with a modern Gripper TBM – in May 2020 the tunnelers at the Brenner Base Tunnel were able to set a new record in hard rock tunnelling. We very much appreciate the trust our customers and the client place in our Herrenknecht technology. We are proud to be part of the next record-setting structure in the Alps after the Gotthard Base Tunnel."

Project features of the Brenner Base Tunnel exploratory tunnel (Gripper TBM S-932 Günther)

- › Findings from driving the exploratory tunnel benefit the subsequent advance of the main tubes. They run 12 meters above the exploratory tunnel with an inner diameter of 8.1 meters.
- › The exploratory tunnel will later serve as a drainage and service tunnel.

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- › DCRM (Disc Cutter Rotation Monitoring): the system developed by Herrenknecht for monitoring the rotational movement and temperature of the disc cutters allows optimization of tool maintenance intervals.

Herrenknecht sextet

For the Italian lot of the exploratory tunnel (south axis), Herrenknecht supplied a Double Shield TBM (diameter 6,800 mm) specialized in rapid tunnelling in stable rock. By July 2020, it had already bored 9 of a total of 14 kilometers from south to north. The customer here is BTC S.c.a.r.l. consisting of the companies Astaldi S.p.A., Ghella S.p.A., P.A.C. S.p.A. and Cogeis S.p.A.

Since May 2019, the Italian sections of the main tubes have been bored by two Herrenknecht Double Shield TBMs (diameter 10,650 mm), also under the direction of BTC S.c.a.r.l. These two machines had already covered 4.3 and 4.7 kilometers respectively by July 2020. Two Herrenknecht Single Shield TBMs (diameter 10,340 mm) are planned for the main tubes on the Austrian side. Here the ARGE H51 Pfonns-Brenner joint venture (PORR Bau GmbH – Tunnelbau, G. HINTEREGGER & SÖHNE Baugesellschaft m.b.H., ITINERA S.p.A., Società Italiana per Condotte d'Acqua S.p.A.) is responsible for the tunnelling. Tenders for additional mechanized machine drives are currently in preparation.

Group deliveries

The Herrenknecht Group has also supplied the large-scale Brenner Base Tunnel project with a belt conveyor system for the transport of excavated rock. Bochum-based H+E GmbH designed and manufactured a system consisting of 37 belt conveyors and four spreaders with a total length of over 60 kilometers. The entire system is controlled from a central control panel. Additionally, Euroform S.r.l. is supplying formwork for the lining of machine-driven or conventionally advanced tunnels. For the Mauls lot, the SDS production and logistics management system for segment production comes from VMT GmbH. VMT supplied the TUnIS navigation systems for all six tunnel boring machines ordered to date – for the Gripper TBM also the newly developed TUnIS.mobile app for operating the navigation system from outside the control cabin.

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Project data

Brenner Base Tunnel

MACHINE / PROJECT DATA TULFES-PFONS EXPLORATORY TUNNEL

Machine type: Gripper TBM S-932

- › Diameter: 7,910mm
 - › Drive power: 3,500kW
 - › Drive length: 16,630m
 - › Geology: quartz phyllite, schist
 - › Client: Brenner Base Tunnel BBT SE
 - › Contractor: ARGE Tulfes-Pfons (STRABAG AG, webuild)
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MACHINE DATA MAULS

Machine type: Double Shield TBM S-1054

- › Shield diameter: 6,800mm
- › Drive power: 2,800kW
- › Drive length: 14,000m

Machine type: 2 x Double Shield TBM S-1071 / S-1072

- › Shield diameter: 10,650mm
- › Drive power: 4,200kW
- › Drive length: 2 x 14,000m

PROJECT DATA MAULS

- › Geology: granite gneiss, granodiorite, mica schist, phyllite
 - › Client: Brenner Base Tunnel BBT SE
 - › Contractor: BTC S.c.a.r.l. (Astaldi S.p.A., Ghella S.p.A., P.A.C. S.p.A. and Cogeis S.p.A.)
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MACHINE / PROJECT DATA Pfons - Brenner

Machine type: 2 x Single Shield TBM S-1211 / S-1212

- › Shield diameter: 10,340mm
 - › Drive power: 4,200kW
 - › Drive length: 10,544m / 10,249m
 - › Geology: quartz phyllite, Graubünden shale
 - › Client: Brenner Base Tunnel BBT SE
 - › Contractor: ARGE H51 Pfons-Brenner (PORR Bau GmbH – Tunnelbau, G. HINTEREGGER & SÖHNE Baugesellschaft m.b.H., ITINERA S.p.A., Società Italiana per Condotte d'Acqua S.p.A.)
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Photos

Mega project Brenner Base Tunnel: first milestone achieved with Herrenknecht tunnel borer



Photo 1

In May 2015, Herrenknecht completed the Gripper TBM for the northern section of the exploratory tunnel for the Brenner Base Tunnel at the Schwanau plant.



Photo 2:

After assembly of the Herrenknecht machine on the jobsite, the miners started tunnelling in October 2015.



Photo 3:

July 6, 2020: Breakthrough is accomplished. The tunnelers are proud of over 16.7 kilometers of tunnelling through the rock of the Austrian Alps with top performances of up to 61 meters within 24 hours.

Photo: BBT SE/STRABAG/Jan Hetfleisch

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For further information: Please contact us.

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

In 2019 the Herrenknecht Group achieved total output of 1,145 million euros. The independent family business employs about 5,000 people worldwide, from which circa 200 are trainees. With about 70 domestic and overseas subsidiaries and associated companies working in related fields, Herrenknecht offers comprehensive, fast and targeted services close to each project and contractor.

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

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