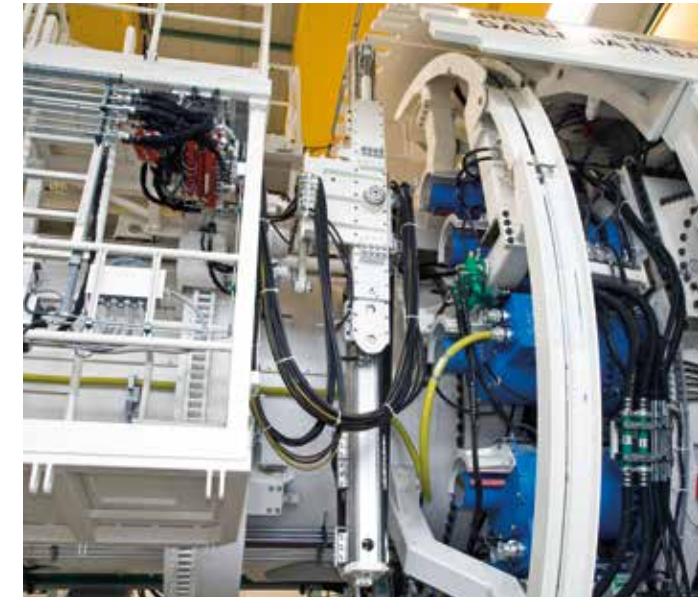




Herrenknecht

A world leader in groundbreaking tunnelling technology.

Herrenknecht is a technology and market leader in the area of mechanized tunnelling systems. As the only company worldwide, Herrenknecht delivers cutting-edge tunnel boring machines for all ground conditions and in all diameters – ranging from 0.10 to 19 meters. Under the umbrella of the Herrenknecht Group, a team of innovative specialists has formed to provide integrated solutions around mechanized tunnel construction with project-specific additional equipment and services. Pioneering technology by Herrenknecht is always involved when paving the way for the future underground – whether for tunnelling, mining or exploration. Herrenknecht ensures safe and fast progress when constructing modern infrastructures in all areas of application. Exactly where they are needed.



HERRENKNECHT DRILLING SYSTEMS

Areas of application

- > Tunnel boring machines
- > Drill Jumbos
- > MSV
- > Road headers/Continuous miners
- > Shaft boring systems

Applications

- > Top hammer drilling
- > DTH drilling
- > Core drilling
- > Rotary drilling
- > Preventer drilling



Headquarters in Germany, active worldwide. With more than 3,100 project references, we are a market leader all around the globe.

Pioneering Underground Technologies

DRILLING SYSTEMS

Efficient exploration and rock stabilization for underground construction

Drilling Systems

High level of safety in demanding underground conditions.

Even when tunnelling in heterogeneous soils consistently, high performance rates are essential for the success of the project. Accurate preliminary exploration of the subsoil is extremely important in maintaining these high rates of advance. Early detection of hazards in the tunnel route or difficult geological zones warn the machine operator, allowing him to apply prompt countermeasures, such

as introducing conditioning suitable for the ground conditions or changing the tunnelling mode. The probe drill assemblies enable exploration at up to 150 meters away from the tunnel face, ensuring an optimal geological conditions knowledge prior to excavation. On request from our customers, we also design specific custom solutions, such as for conventional mining applications.

Special drill rigs for probe drilling and rock stabilization.

Rock stabilization.

Maximum safety at work for the personnel is an important factor in mechanized tunnelling. This is especially the case when advancing with open tunnel boring machines. Ensuring appropriate rock stabilization at an early stage ensures that tunnelling crews can work more safely and that the tunnelling machine is protected from falling rock. By avoiding unnecessary stoppages, this also benefits the entire project flow.



Herrenknecht drilling systems have been successfully used in numerous projects around the world.



PRODUCT HIGHLIGHTS

Custom-made drill rigs for probe drilling, dewatering, core and injection drilling

Special solutions for tunnelling and mining

Efficient probe drilling.

Probe drilling equipment by Herrenknecht Drilling Systems are specially manufactured to customer machine or geological requirements. They can be fitted with top-hammer, down-the-hole-hammer and rotary drillheads. To provide optimal coverage of all drilling positions and applications, all the indexing systems, travel units, hydraulic power units and controls for Herrenknecht drilling systems are developed in-house. This ensures that all drilling patterns in the rock are possible. Hydraulic cylinders or hydraulic motors deliver up to 12 metric tons of thrust. The high-quality aluminum carriage guarantees maximum strength with minimum weight. For heterogeneous

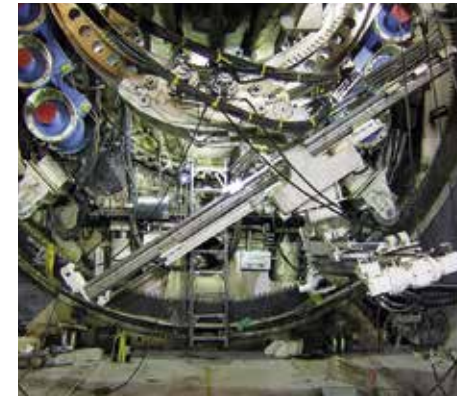
soils, Herrenknecht also supplies drainage and injection systems to stabilize ground with water pressure up to 20 bar. Special drill rods are sealed by rotary seals, while ball valves allow flushing of drilling water, drainage and injection. As an option, we can also supply simple or double hydraulic clamp guides, rod feed systems and rod magazines for our drilling devices.

A PLC control system records and processes the drilling data collected in real time, which can be translated into a geology report. This enables visualization of the encountered geology and guarantees safe tunnelling, even in heterogeneous soils.

PRODUCT HIGHLIGHTS

Custom-made drill rigs for probe drilling, dewatering, core and injection drilling

Special solutions for tunnelling and mining



The main area of application of Herrenknecht drilling systems is mechanized tunnelling.

Strata control in hard rock.

When advancing with open excavation machines, rock stabilization takes absolute priority to ensure the best possible protection of personnel and machinery. Herrenknecht Drilling Systems supplies roof bolting units suited for all machine types, including tunnel boring machines, mobile boring units and shaft drilling systems. Our rugged bolting drilling rigs are suited according to roof support requirements, and can be used in any geology. Their modular design allows the use of hydraulic, pneumatic or electric powered hammers or rotary heads.

The roof bolting systems are designed with custom-made mounts and indexing mechanisms to match the machine and drilling patterns. Wear parts are easily exchangeable, minimizing downtimes and optimizing maintenance costs. On request, we can also supply automated hydraulic rod extensions, hydraulic clamp guides and temporary rock support systems. In addition, Herrenknecht also offers a full range of shotcrete robots, ring erectors and wire mesh handling devices.

Project-specific custom solutions.

Herrenknecht Drilling Systems develops custom solutions to meet special requirements. Development, design, process technology, manufacture and customer service are all supplied from a single source. This allows us to implement extremely functional custom products including conventional shaft drilling machines, mobile boring units and turnkey add-on drilling modules, with short delivery times.

