

## TEAMWORK IN TUNNELLING TO BREAKTHROUGH.

During construction, along with the performance and reliability of our boring machines, "All Around Solutions" also integrate additional equipment and all-inclusive services, which contribute to rapid advance progress.

Cutting tools are some of the most important additional equipment which need to be optimally adapted to TBM and project requirements.

We help our customers to breakthrough. Anytime. Anywhere.



S-421 Gotthard, Switzerland



S-405 Jinping, China



S-308 Singapore



S-359 Zhengzhou, China



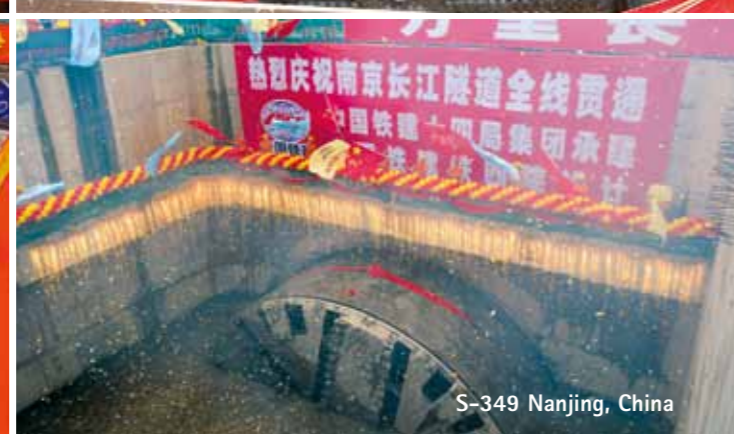
S-412 New Delhi, India



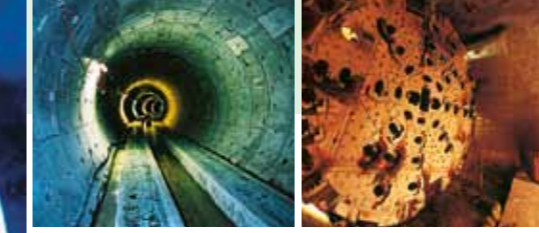
S-335 Hong Kong, China



S-318 Shanghai, China



S-349 Nanjing, China



## WWW.HERRENKNECHT.COM

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.

The Herrenknecht product range includes tailor-made machines for transport tunnels (Traffic Tunnelling) and supply and disposal tunnels (Utility Tunnelling). Under the umbrella of the Herrenknecht Group, a team of innovative specialists has formed to provide integrated solutions for tunnel construction with project-specific equipment and service packages on request: these include separation plants, conveyor belt systems, navigation systems, rolling stock systems and segment moulds right up to turnkey lining segment production plants. The range of products also includes services in the area of technical consulting, planning and supervision for tunnelling projects as well as personnel solutions to complement construction site crews on a temporary basis.

Herrenknecht develops innovative technical solutions to sink vertical shafts down to great depths as well as to successfully excavate sloping shafts. The company also produces state-of-the-art deep drilling rigs that drill down to depths of 6,000 meters as well as rigs for the exploration of shallow geothermal energy.

The Herrenknecht Group employs more than 3,100 people and has 65 subsidiaries and associated companies.

Herrenknecht AG  
D-77963 Schwanau  
Phone +49 7824 302 0  
Fax +49 7824 3403  
pr@herrenknecht.com  
www.herrenknecht.com

Herrenknecht (Guangzhou)  
Tunnelling Equipment Co. Ltd.  
Guangzhou China 510760  
Phone +86 20 8220 9300  
Fax +86 20 8221 9020  
www.herrenknecht.cn



## HERRENKNECHT CUTTING TOOLS. HIGHEST QUALITY CLAIMS IN CHINA.

- Tailor-made cutting tools for the local market.
- Global Herrenknecht production standards and quality control.
- Modern production facility.
- Competent consulting and flexible service.
- Worldwide knowledge exchange.



## TOP PERFORMANCE FOR THE CHINESE MARKET.

### REQUIREMENT

#### EXTREMELY RESILIENT HIGH-QUALITY DISC CUTTERS AND OTHER CUTTING TOOLS

- Fast delivery of cutting tools
- High-strength cutting tools
- Optimized cutting tools for the specific geology in China
- Refurbishment of cutting tools
- Comprehensive cutting tool service

China's urbanization is one of the most important engines for its economy as well as the expansion of infrastructure, especially in traffic tunnelling projects. There are challenges on such infrastructure projects at every turn as China is a country covering a vast area and with widely different ground conditions. From hard rock up to 350MPa, to water-bearing ground up to 10 bar, various cutting tools should be put into use.

### SOLUTION

#### LOCAL CUTTER WORKSHOP STANDBY AND 24/7 SERVICE

- Full range of cutting tool production: Cutters, scrapers and other spare parts
- Service: Cutting tool refurbishment, on-site cutter shop
- ISO 9001 certified

The cutter workshop at Herrenknecht (Guangzhou) Tunnelling Equipment Co., Ltd., comprising assembly and machining as well as welding workshops, with an area of approximately 1,400m<sup>2</sup>, manufactures premium cutting tools for the local market. We take advantage of the workshop location to provide tailor-made products and fast service to our clients. We provide a full range of cutting tools including cutters (single disc, double disc and twin disc), scrapers (cutting knives, buckets, ripper tools etc.), cutting tool housings and other fixing parts according to market demand and research. Our annual productive capacity can reach: disc cutters 6,000 pcs, scrapers 8,000 pcs, housings 1,500 pcs and fixing parts 1,000 sets.



Cutter assembly

Up to now, Herrenknecht has been involved in large-scale mechanized tunnelling projects in China, including the Yangtze River Crossing, Yellow River Crossing, Guangzhou Metro, Nanjing Metro etc. Thus, the market demand for associated high-end cutting tools, which help to achieve effective TBM performances, is expanding quickly.

## DISC CUTTERS: RELIABILITY, ENDURANCE AND SERVICE.

- The right cutter for every application: Standard, Heavy Duty, Reinforced Heavy Duty and Pressure Compensated.
- Special cutters for soft and hard rock conditions.
- Suitable for high ambient pressure ground.
- Designed in Germany, in action on tunnelling projects all around the world.
- Fast supply of Cutting Tools.
- Competent consulting and repair service.

### REQUIREMENT

#### RELIABILITY, ENDURANCE AND SERVICE

- Performance and reliability – cost-efficient tunnelling
- Cutters adapted to the project and geological requirements
- Fast, professional and flexible after-sales service
- Our aim: Provision of premium products and customized service to save project costs and improve tunnelling performance

### SOLUTION

#### QUALITY BASED ON TECHNOLOGY AND EXPERIENCE, DEDICATION TO RESEARCH & DEVELOPMENT.

- Immediate response to customer requirements
- Product range: Single disc, twin disc and double disc
- Cutter size: 17" and 19"
- Additional service: refurbishment and on-site Cutter Shops
- Fully equipped cutter container
- With more than 30 years of experience in tunnelling, TBM design and cutter production go hand in hand

With our leading technology in mechanized tunnelling, we design the cutters based on the specific cutterhead concept and cutter change requirements. All of our heavy duty cutting tools, produced in Guangzhou, China, are designed in Germany. We provide sufficient supplies, fast



Wide range of scraper tools.

## SCRAPERS: VAST RANGE FOR ANY GROUND CONDITIONS.

- Maximum-quality tungsten carbide and hard-facing welding are used to achieve maximum wear resistances.
- Consistent supplies, short delivery times and on-site service.
- Vast range of scraper tools: Bucket, Cutting Knife, Ripper Tools.
- Scrapers for varying ground conditions.

### REQUIREMENT

#### COMPLEX GEOLOGICAL CONDITIONS

- A vast range of scraper tools is much in demand for various geological conditions
- Flexible designs, efficient supplies and guaranteed quality are required
- Aim: Prompt supply of customized products to improve the process of tunnelling projects

### SOLUTION

#### QUALITY BASED ON TECHNOLOGY AND EXPERIENCE

- Selective raw materials
- Stringent welding standards
- Customized product range
- Sufficient stocks

Cutter performance and after-sales service will considerably affect the profitability and progress of mechanized tunnelling projects. Materials and design have been carefully selected to achieve the best performance and an incomparably high performance-cost ratio. From high strength rock to water-bearing and highly-abrasive ground, our design follows the requirements of your specific tunnelling project.



Single disc (17" and 19")



17" Double disc



17" Twin disc

delivery and on-site service to our local clients.

Herrenknecht benefits from the experience gained during more than 1,400 projects worldwide which gives us a leading role in the industry. Herrenknecht has the right cutters for all ground conditions from soft and mixed grounds to hard rock. Single disc, twin disc and double disc both in 17" and 19" are available in our cutter workshop from cutter ring widths of 13 to 24mm.

Our cutting tools are widely used in different tunnel boring projects, such as the Hong Kong Kowloon Southern Link, Guangzhou, Chengdu and the Beijing Metro projects. For the Jinping-II hydropower station headrace tunnel project, we provide all cutting tools as well as an on-site cutter shop.

Where complex and formidable ground conditions are involved, e.g. from cohesive to non cohesive soils and mixed face conditions, different kinds of scrapers need to be applied when completing tunnelling projects. Furthermore, the difficulty and inconvenience of changing cutting tools during the tunnelling process requires highly adapted scrapers and cutting knives.

Welding and brazing are carried out according to strict Herrenknecht standards. Our welders are trained and certified. Additionally, hard-facing welding treatment provides hardness up to HRC 52-57.

Our scraper tools are widely used in complex conditions, such as the Guangzhou, Chengdu, Shenzhen and Nanjing metro systems as well as in the Yellow River crossing tunnel which is part of the South-North Water Transfer Project.



Scraper brazing

