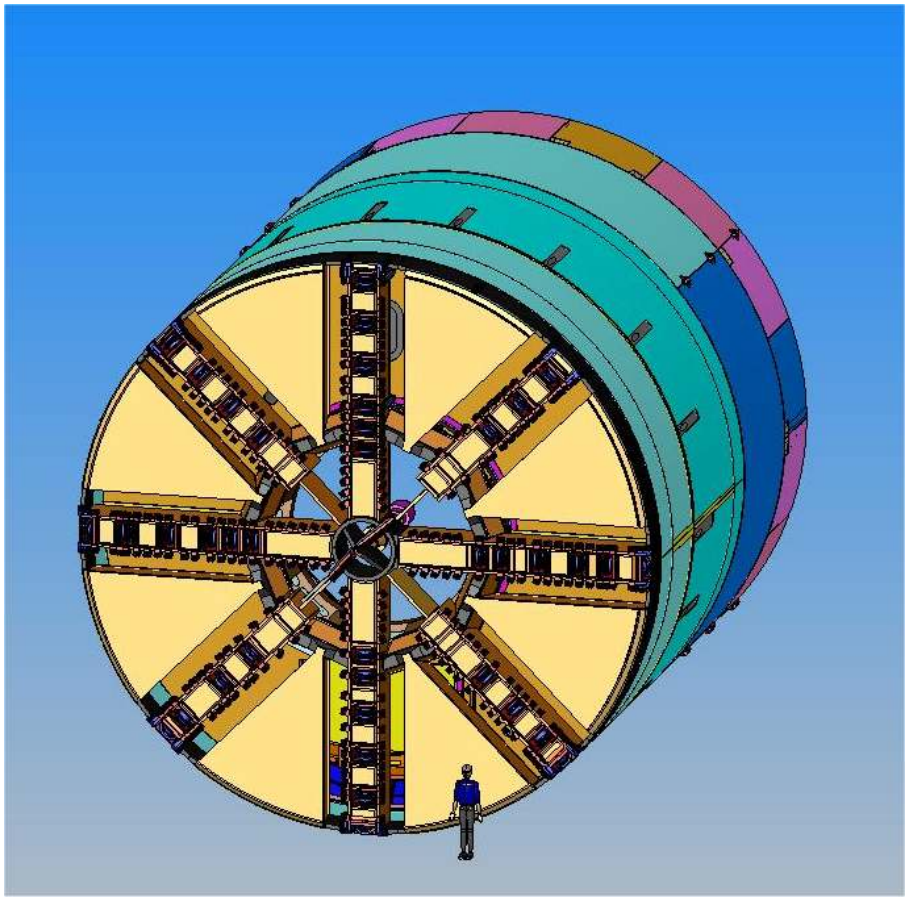
WIRTH GROUP

YANGTZE RIVER CROSSING

Ø 11.38 m 2 BENTON'AIR® TBMs

Wuhan is the largest and most important city in China with 8467 km² area and 7.3 million people among wich 4.4 million lived in the city proper. Wuhan is divided into three parts by Yangtze river and Han river. The restricted passage across Yangtze (2 bridges) blocks seriously the traffic and impedes the economic development of Wuhan city. So the Wuhan government has decided to build a tunnel across Yangtze river in the center of the city.



STRUCTURE

OVERALL PROJECT:

Wuhan Yangtze tunnels will be located between the 2 Yangtze bridges, connecting Hankou Dazhi road in the north with Wuchan Yonyi road in the south. It will be the main road passing Yangtze river in the city. The tunnel will be a double usage, highway and subway tunnel, with 4 automobile lanes and a double-line subway lane will be prepared for Wuhan subway system. The total length of the tunnel is 3,630 m including 2720 m bored with TBMs. The two portals of the tunnels are performed by cut and cover method before the TBMs arrival.

Yangtze crossing tunnel

Phase one bored with NFM Technologies TBMs

Work carried out using the TBM

Bored length: 2,500 m
Soils: silt and sand with clay
Overburden: 7 to 40,5 m
Minimum radius of curvature: 800 m
Maximum slope: 4.4%
Overall inner diameter: 10 m
Lining used for tunnel segments:
- Number/shape: 9
- Thickness: 500 mm
- Length: 2 m
- Maximum segment weight: 10 t

THE PARTICIPANTS:

Contractor:
China Railway Tunnel Group Co.,Ltd.
Operator:
Wuhan Municipal Construction Investment and Development Group Co., Ltd.
Industrial partner: SHMG

THE TUNNELLING MACHINES

- Type: Benton'Air® pressurized slurry TBM
- Cutter head: full face type with 8 arms and hard facing
- Cutting tools: drag bits, disc cutters, variable overcuts
- Electrically powered variable speed with 8 motors
- Erector: 6 degrees of freedom-range +/ - 220 °
- Back-up: 3 gantries
- Maximal outlet flow: 1,144 m3/h

THE JOB SITE

CHARACTERISTICS OF THE MACHINES

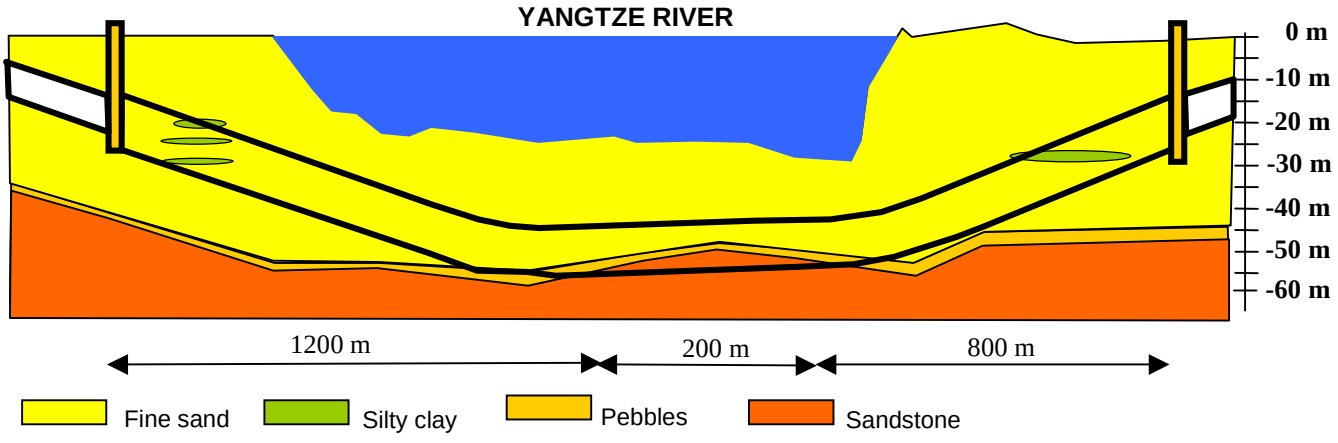
- Excavation diameter: 11.38 m
- Total length: 58 m
- Total weight: 1,285 t
- Installed power: 4,500 kW

SHIELD:
- Shield diameter: 11.36 m
- Shield weight: 970 t
- Total thrust: 120,000 kN
- Maximal speed of advance: 4 cm/min.

CUTTERHEAD
- Cutterhead motor: 8 X 200 kN
- Cutterhead power: 1,600 kW
- Rotation speed: 0 to 2.3 rpm

DRIVE UNIT
- Maximal nominal torque: 13,650 kN.m
- Maximal breakout torque: 17,745 kN.m

GEOLOGICAL PROFILE



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