

**Presentation
of the
WIRTH
DUAL MODE
Tunnel Boring Machine
TB 1024 E-ES**



Technical Features of the DUAL MODE TBM

Mode	EPB	Open
Feature	Screw Conveyor	Belt Conveyor / Muck Chutes
	Cutter Head	
	without Muck Chutes Face Support	with Muck Chutes self-supporting Ground

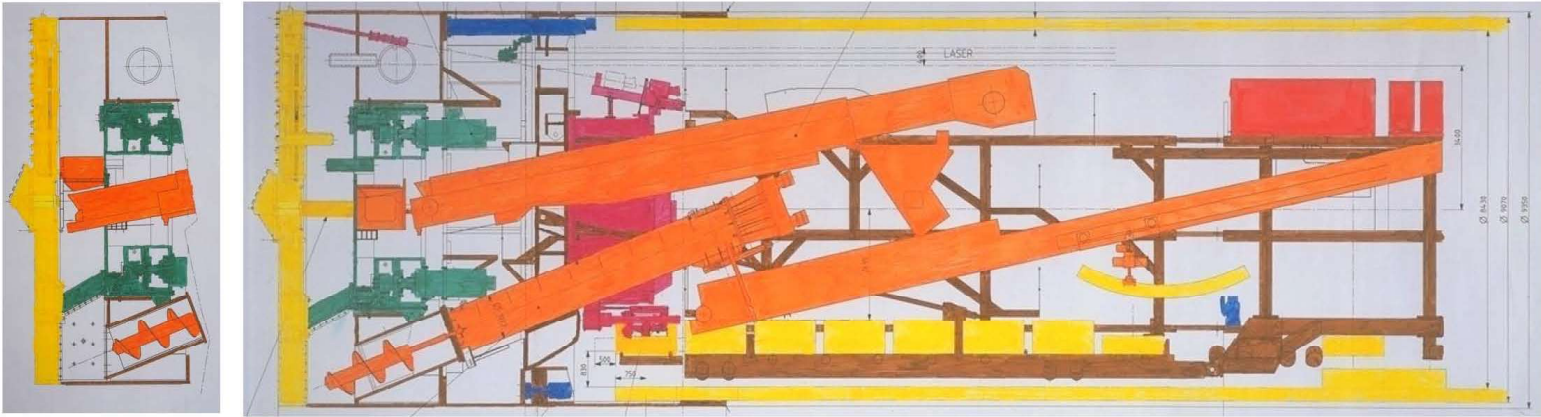
The DUAL MODE TBM is a combination of an EPB Shield TBM and a Hard Rock Shield TBM. The machine is dedicated for Projects with varying geo-technical formations. The machine provides for Active Face Support when excavating in Soft Ground Formations and can be operated in the Classic Open Mode Style when excavating in stable Rock Formations.

In the EPB – Mode, the Screw Conveyor is extended into the Cutting Chamber. The Belt Conveyor remains in the retracted position with the Centre Muck Hopper closing up the Bulkhead.

In the Open – Mode, the Screw Conveyor is retracted in the parking position and the Centre Muck Hopper and the Belt Conveyor are extended into the Cutting Chamber.

The Shield itself as well as the Back-up remain unchanged in both operational modes.

The Dual Mode Process

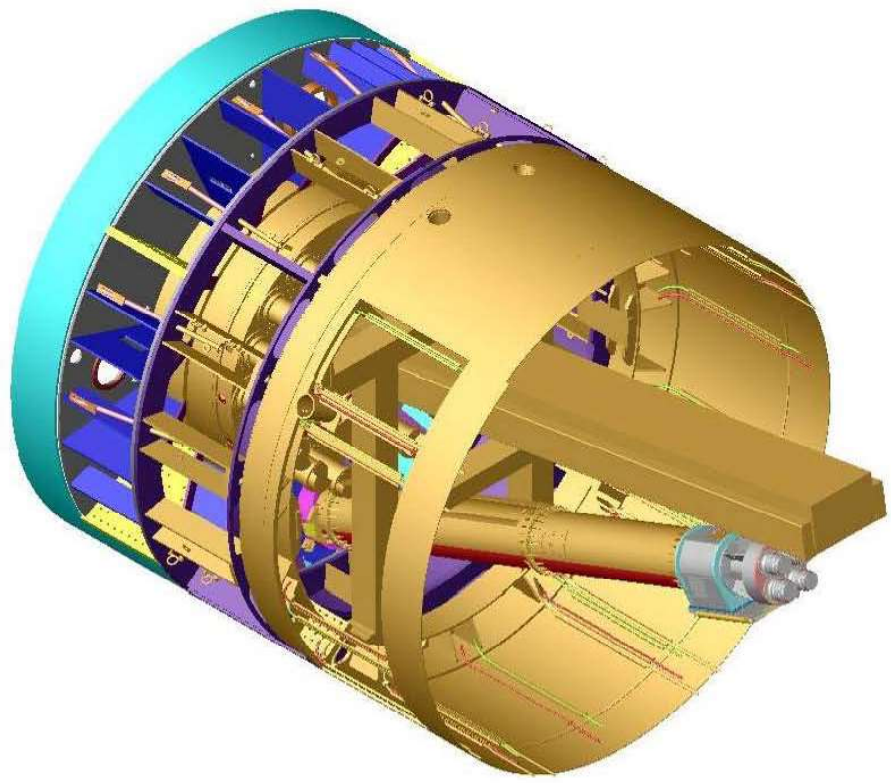


OPEN MODE:

Excavated material muck out by buckets from cutting chamber to the central conveyor

EPB MODE:

The cutting chamber is pressurized by excavated material.
The mucking out by screw conveyor controls the pressure



Mode – Change : EPB - Open

Mode Change will take about 6 shifts of 8 hours each, so about 48 h in total.

During the first shift,

- the Cutting Chamber will be emptied from muck by means of the Screw Conveyor
- the EPB style Rotary Manifold will be dismantled and the Centre Muck Hopper and the Belt Conveyor will be shifted in their Working Position

During the five shifts remaining, the other works comprising in major terms

- the assembly of the Muck Chutes in the Cutter Head,
 - the installation of the Open Mode style Rotary Manifold,
 - the retraction of the Screw Conveyor in the Parking Position
- will be undertaken.

Also, changing or completion of the Cutter Head Dressing has to be done during this time and all above actions are considered being taken in parallel.

Mode – Change : Open - EPB

Mode Change from Open – Mode to EPB – Mode will be taken in opposite direction of above change from EPB to Open Mode:

- the Belt Conveyor will be unlocked and moved into the Rear Parking Position
- the Open Mode Rotary Manifold and the Muck Chutes in the Cutter Head will be dismantled and removed from the Cutting Chamber
- the EPB Mode Rotary Manifold will be assembled and the Screw Conveyor will be moved in it's Working Position
- the Cutter Head dressing will be modified for EPB Mode Operation, if desired

The re-start of excavation will be taken carefully. Digging and filling of the Cutting Chamber will be performed with Conditioning of the muck to achieve the EPB Mode conditions and Face Support.

Above mode change will take about 6 shifts of 8 hours each.