

A FLEET OF TERRATEC EPBMS GEAR UP FOR ACTION ON CHENNAI METRO



TERRATEC delivers the first of five TBMs that will be used by Tata Projects Ltd. for the Chennai Metro Rail Phase-II Corridors in India.

TERRATEC is pleased to announce the delivery of the first of five 6.61m diameter Earth Pressure Balance Tunnel Boring Machines (EPBMs) that will be used by Tata Projects Ltd. for its underground works contracts on Chennai Metro Rail Phase-II Corridors India, following successful factory testing of the S96 machine this month.

The new TBMs will be used by contractor Tata Projects Ltd. on

Chennai Metro Rail tunnelling contract for Chennai Metro Rail Limited (CMRL) to build Phase 2 - Corridor 3, from Venugopal Nagar Station to Kellys Station. The work involves the construction of 18 kms of bored tunnels. TERRATEC will provide five of the seven TBMs required for the package.

TERRATEC Mixed Ground EPBMs have been chosen to tackle this project because of the variable geological

conditions (boreholes indicate sand, silt, clay on the tunnel drives with some weathered rock). The expected "mixed ground" will be dealt with by the TBM's mixed-face dome-style cutterheads designed to work effectively in the geology on these contracts at pressures of up to 4 bar. Other features include VFD electric cutterhead drives, tungsten carbide soft ground cutting tools that are interchangeable with 17" roller disc cutters, high torque screw

conveyors, active articulation systems and state-of-the-art guidance and control systems.

As the TBMs progress, they will install 1,400mm wide by 275mm thick universal reinforced concrete lining rings consisting of five segments plus a key.

Chennai Metro is the fourth longest metro system in India. The network currently consists of two lines covering a length of 54.65 kilometres. The new Line 5 of Chennai metro will have 48 stations and connect from Madhavaram to Sholinganallur. The project is anticipated to be completed in about four years.

Being one of India's fastest

growing cities, Chennai is facing severe traffic congestion that is increasing in severity as time goes by. Therefore, the government has decided to implement the Chennai Metro Rail Project. This project aims to provide the people of Chennai with a fast, reliable, convenient, and economical mode of public transport.

In recent years, TERRATEC has emerged as the leading TBM supplier in the Indian market, having supplied 40 TBMs in the last nine years (more than all other TBM manufacturers combined over the same period). TERRATEC's continuing success on projects such as Phase III of the Delhi Metro, Lucknow Metro, the Ahmadabad Metro, Pune

Metro and Mumbai Metro is a result of tailor-made robust TBM design, prompt onsite assistance, readily available stock of TBM spares and highly-skilled specialised TBM support throughout tunnelling operations.

TERRATEC EPBM COMPLETES BANGKOK RAMA III CABLE TUNNEL PROJECT

TERRATEC is proud to announce the completion of the Rama III Tunnel Project in Bangkok, Thailand. The tunnel was completed using a TERRATEC 4.27m diameter Earth Pressure Balance Tunnel Boring Machine (EPBM). It successfully holed through in early April 2022 on the Rama III cable tunnel in downtown Bangkok.

The EPBM owned by contractor Italian-Thai Development PCL (ITD) had previously completed the Chidlom cable tunnel (CCT). After completing the CCT the contractor immediately deployed the machine to the Rama III

Tunnel Project.

The Rama III is a new high-voltage cable tunnel which is one of a series of tunnelling projects being undertaken by Bangkok's Metropolitan Electricity Authority (MEA), which are being built to meet increased power demands in the Thai capital.

This project is subject to several constraining factors including tight alignment constraints and navigating the foundations of the overhead bridges along the alignment. This could only be achieved thanks to the X-type articulation system incorporated

into the design, which can accommodate the very tight radius curves required by the project of approximately 85m. The TERRATEC 4.27m diameter's soft ground cutterhead features an open spoke design to ensure good material flow and the addition of knife bits to assist break-in and break-out of the concrete shaft eyes.

Two types of segment were installed, universal tapered precast concrete segments, 1200mm long (installed as the machine normally progresses), and shorter steel segments, 600mm long (utilised during

Contractor Italian-Thai Development PCL (ITD) completes multiple TBM projects for Bangkok's Metropolitan Electricity Authority with the same TERRATEC EPBM.





the course of the sharp radius curves).

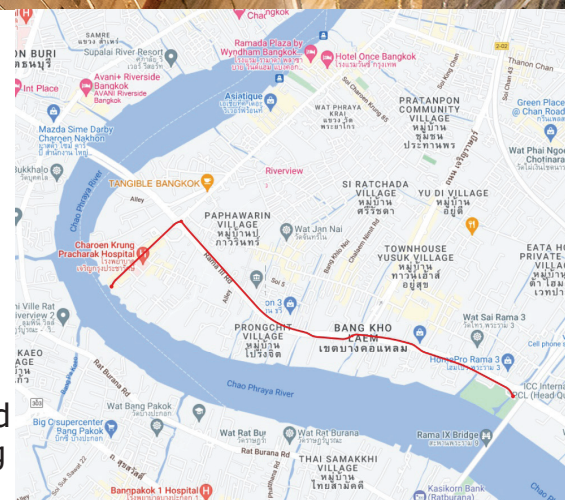
Tunnelling operations were closely observed throughout the project via a settlement monitoring programme that demonstrated minimal impact on the existing above-ground structures.

Geological conditions along the 3.5 km Rama III tunnel alignment consist of stiff to very stiff clay with lenses of sand and a groundwater head of about 2 bars.

The project is located close to the Chao Phraya River with heavy traffic and the physical limitations of this built-up area – which includes numerous high-rise buildings and the foundation of the overhead bridge. Logistics during the launch and operation of the TBM have been extremely

challenging especially during the transportation and delivery of oversize TBM parts for assembly on site. TERRATEC's highly-experienced Field Service staff have therefore been working closely with ITD from day one in order to ensure every aspect is planned in advance.

TERRATEC has a well-established regional base in Thailand, having sold its first machine in the country ten years ago for the Metropolitan Rapid Transit (MRT) Blue Line Extension Project. With outstanding tailor-made robust TBM design, prompt onsite assistance, readily available stock of TBM spares and specialised TBM support throughout the tunnelling operation, TERRATEC has become the country's leading TBM supplier.



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