

Delivers Sixth TBM **FOR DELHI METRO PHASE III**



After successful completion of the factory acceptance tests, TERRATEC delivered the sixth of eight TBMs for Delhi Metro Phase III on a ceremony which was held on 17th September, 2013. Representatives from the client, a joint venture between J.Kumar Infraprojects Ltd. of India and China Railway Third Group (CRTG) of China, attended to the event. This TBM, s/n S28, will excavate one of the twin tubes between Lajpat Nagar and Hazrat Nizamuddin Stations, which is part of Delhi Metro Contract CC-24. The JV will use two TBMs for this project, in addition to the other two units for the Contract CC-20, which the JV is also executing in Delhi.

In this way, TERRATEC completes the delivery of four Tunnel Borers for this JV, being previous three ready in India to start boring in the coming months. The Company had earlier delivered two TBMs for Contract CC-07 to Metrostroy-ERA JV, which have already started to work under Delhi ground.

The Tunnel Boring Machine is a $\text{\O}6.61\text{m}$ EPB Shield, identical to its twin sister s/n S25 delivered earlier this year. The TBM has a versatile design of CutterHead, able to excavate Delhi's soil with soft ground cutting tools, as well the mixed/rock strata, which may include quartzite of compressive strength up to 150MPa, by installing 17" Heavy-Duty Disc Cutters.

TERRATEC is at the moment finalising the production of another two Tunnel Borers for the Contract CC-34 being executed by HCC-SAMSUNG JV. With these two units TERRATEC will complete the delivery of total of eight TBMs for this Phase III of Delhi Metro, more than any other TBM maker.





Terratec Launches Its NEW UNIVERSAL BOXHOLE BORER

TERRATEC has launched a new rig to join its Raise Boring product line. The machine, called Universal Boxhole Boring Machine - UB1000, is designed to boxhole sections up to 1.06m diameter x 100m long and it can also ream conventional raises nominally 1.8m diameter x 200m deep.

The design and production of the machine were entirely done in the Company's facilities in Tasmania, Australia. The machine brings into the market innovative solutions to allow the safe and efficient execution of slots in the mines with a fully automated Raise Drill.

The major features include the followings:

The Derrick Assembly, including the Gearbox complete with Floating Drive Box (Chuck), is suitable for 10" dia. x 48" long Drill String. The gearbox is designed so it can be positioned with the drive box pointing up for box-holes, or down for conventional raising.

The machine is supplied complete with a gearbox turning cradle suitable to quickly and easily index from box hole mode to raise-bore mode in less than one shift. The integrated Torque Column/Thrust

Cylinders provide balanced thrust and clear access from all sides.

The Rig is able to operate at up to 45o dip, either side of centre-line, in a "cross-drift" orientation, with no requirement to turn the rig first, or any modifications to change from left hand to right hand dip.

Powered Overhead Worktable Doors with integrated Powered Wrenching System ensures no man access is required at height. Extendable Muck Chute for Boxholing, with a door to allow 1.06m diameter drill String

Components past. Also has integrated "Stinger" Cylinders and Adjustable "Spears" to help control vibration.

The All-Purpose Ground-Loading Rod Handler included in the machine, handles all drilling consumables, including reamer and non-rotating stabilisers.

The Sled Mounted Crane/Conveyor with integrated Operator Station removes the muck to a skip bin location beyond pipe loading area, and allows easy positioning of reamer, non-rotating stabilisers etc. around the drill.

Drill Rod Feed Cassettes are

supplied and each holds ten (10) rods. The cassettes are mechanized to feed one rod at a time to the rod handler, or accept one rod at a time from the pipe loader when removing rods from the machine. The feed cassette is powered from the hydraulic power unit.

The Hydraulic Power Unit and Electrical Cabinet are mounted on Twin Stackable Sleds, with fire suppression fitted to both sleds. Full pressure and return filtration for each pump.

Stainless Steel Operator Control Console complete with radio remote for selected functions.

Ceramic Coated Thrust Cylinder Rods for corrosion resistance. The transportation of machine is done by a Radio-Remote controlled Transport/Erector Crawler complete with 104kW Diesel Motor and Hydraulic System plus Fire Suppression System.

With this new Universal Borer, TERRATEC expects to cover the gap in the market in terms of safety, efficiency and fully automated Box-Holing machinery, which the demand is increasing significantly in the past few years in the mines in Australia and worldwide.



Terratec Delivers **NEW MICROTUNNELLING SYSTEM IN THAILAND**

On Thursday 4th July 2013, TERRATEC successfully completed the Factory Acceptance Tests of a new DN1500 Microtunnelling System. The ceremony was held in TERRATEC new facilities in Thailand, in the presence of the representatives from the Buyer, Nawarat Patanakarn PCL.

The MTBM is a Pipe Jacking System designed to handle standard Concrete Pipes of I.D. 1500mm, O.D. 1800mm and 2500mm in length to be used by the Contractor in different drainage projects of Bangkok Metropolitan Administration (BMA). The system is designed to excavate tunnel drives up to 350m in length with the assistance of one or two Intermediate Jacking Stations. TERRATEC scope of supply from include the Shield, the Main Jacking Station, Intermediate Jacking Stations, the Slurry Transport System, a digital Guidance System and a Control Room on the surface with the Operation Panel and Power

Pack.

The system was designed by TERRATEC on its Engineering Centre in Hobart, Australia, and the production and assembly was done in TERRATEC's new plant in Thailand, with key components coming mainly from Australia and Japan. In the last two years, the Company has sold fourteen (14) microtunnelling systems with diameter ranging from 300mm to 1800mm in South East Asia Region, reason why the TERRATEC's management decided to set-up the production and maintenance centre of its Microtunnelling Division in Thailand.

TERRATEC is well known in the industry as Tunnel Boring Machines and Raise Boring Machines designer and manufacturer and with the current orders for Pipe Jacking Systems, the Company completes its range of tunnelling machinery and expects to become a lead supplier also in the small diameter tunnelling market.



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