TRENCHLESS international

Tough tunnelling

Using a unique TBM pull-back system for project delivery in Copenhagen

Page 48

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ISTT International Society for Trenchless Technology

A STEP FORWARD IN TBM PULL-BACK

Every year the Netherlands Society for Trenchless Technology (NSTT) awards a project, technology, or research paper that contributes to the further development of Trenchless Technology in the region. In 2016 the winner was Smet Tunnelling who was recognised for developing a unique tunnel boring machine (TBM) pull-back system.

The system was developed for a project in Copenhagen, Denmark, where the pull-back system was needed because of outside damage on one of the jacking pipes. Repairing the pipe from aboveground was not at option as the tunnel was passing 25 m below a river.

With an in-house designed and develop pull-back system the Smet Tunnelling team was able to draw the damaged pipe back and replace it in the jacking shaft. Once the pipe was removed tunnelling progressed without delay.

Speaking on the project, the Chairman of the NSTT No-Dig Award Jury Dr Wout Broere said "The option to pull-back a TBM if necessary adds a new and important possibility to this trenchless technique. At the same time the project shows us the importance of good quality control during the drilling process."

Mr Bart Vanhout, the Director of Smet Tunnelling, said "It was not that the tunnelling project itself was unique, but the fact that we were able to design and install a pull-back unit to reverse the TBM. It was the first time ever that such an operation took place.

"If the pull-back method did not succeed, the TBM and the installed tunnel sections would have been lost and unrecoverable. As a contractor, we would have lost a TBM, and the client would have been facing a severe project delay."

Mr Vanhout says that the designing the pull-back unit method was no mean feat. In fact Smet Tunnelling faced a number of challenges including the design, construction and installation of the unit, the difficulty of overcoming large pulling forces without causing further damage, recovering the damaged jacking pipe together with the object that caused the damage, and restarting the project after a seven month standstill.

The TBM pull-back system allowed project work to continue.

Thankfully, these challenges were overcome and Smet Tunnelling was able to complete the project in a timely manner.

NSTT NO-DIG AWARD NOMINEES

While Smet Tunnelling was the winner of the NSTT's 2016 award, there were a number of strong nominees for the prize:

- HOBAS and Strukton for the first drilling with a GVK-pipe with a diameter > 2,500 mm ever made underneath the active railways
- Kouwenberg for using the impact ramming technique to move two monumental trees which otherwise would have been cut down
- Town of Rotterdam for the development of a concept for trenchless replacement of over 1,700 small pipes without any hindrance for traffic and residents
- Normag for the design and manufacture of ab electrically powered horizontal directional drilling (HDD) rig featuring three independent motors that enable a power-on-demand-solution
- Visser & Smit Hanab for the introduction of Systems Engineering and the 4D-program BIM at four complex HDD projects as a part of the extension of the sea sluice complex at the port of Amsterdam

The NSTT's biennial No-Dig Event will be held on 11-12 October 2017 at Hart van Holland, Nijkerk. For further information on NSTT awards and events visit **www.nstt.nl**