

Our largest TERRA-JET: the new TJ 8522 S

The new TERRA-JET 8522 S is the largest HDD machine ever built by TERRA AG. The TJ 8522 S was exhibited successfully at BAUMA, Munich. It completes the model range of the S Series at the upper end and is characterised by high power and drilling fluid volume.

Premium model with comfortable driver's cabin and on-board computer

The Premium model of the TERRA-JET 8522 S is equipped with a comfortable driver's cabin, which sets new standards. The cabin has all round tinted glazing, with the machine side being glazed in a single uninterrupted panel. This allows the operator to see every detail of the drilling machine. Large windscreen wipers with jets clean the front and right panels. Additionally the drilling fluid pressure inside the drill rods is automatically released just before each drill rod change, preventing bentonite from being splashed onto the glazing.

The on-board computer with a large touch screen (10.4") displays all vital information needed at any instance, and is controlled by finger touch on the screen. It updates and saves all relevant machine data every two seconds, updating the operator on the essential drilling elements. This data is essential for efficient service diagnostics. Additionally a bore log can be printed for each bore as regulated in the German specification DVGW 321.

Comfortable operator's seat

The operator sits in a comfortable operator's seat, which can be adjusted to suite the body shape and weight of the operator. The operator's cab is wide allowing the seat to rotate 180°. The drill operator can drill looking in the drilling direction, or he can rotate the seat to be at right angles to the drill and observe every detail of the drilling machine.

Machine technology

The TERRA-JET 8522 S may drill directional bores up to 400 m (1'300 ft) long and 1'000 mm (40") diameter (depending on ground conditions). Torque and pullback force are



produced by separate hydraulic circuits allowing the maximum torque of 8'500 Nm (6'250 ft.lbs) and the maximum pullback force of 220 kN (22 tons, 48'400 lbs) to be used simultaneously under full load.

Separate Bentonite chamber

The drilling fluid volume is 400 ltr/min (105 gpm). The mixing system which mixes the bentonite into the drilling fluid via an injector (venture hopper) is on board the HDD machine. This patented system removes the need for an extra mixing system and a second engine.

The bentonite high pressure pump and the mixing pump are placed in a separate chamber between driver's cabin and engine chamber. This aesthetically pleasing solution ensures that no Bentonite touches hydraulic components.



ADBS

The TERRA-JET 5415 S is equipped with a second generation Automatic Drilling and Backreaming System (ADBS). This patented system automatically and within milliseconds adjusts the working speed of the drill to suite the ground conditions. In soft ground the drill operates at maximum speed, in hard ground slowly. This allows the operator to operate the drill at maximum efficiency in a controlled and relaxed manner and prevents the drill rods and drilling tools from being overloaded. During the pilot bore the ADBS controls the thrust force. If the drill head hits an unexpected obstacle, the ADBS stops the drilling speed immediately and drills very slowly through the obstacle. All automatically!

Drill rod greasing

Another new feature is the automatic drill rod greasing function, which is undertaken during each drill rod change by an electrically driven grease press attached to the driving saddle.

New operator's concept

The drill operator drives and operates the HDD machine using the two multifunctional joysticks installed in the left and right armrests of the operator's seat. Driving using the joysticks allows instantaneous control and smooth movement of the TERRA-JET.

Geothermal Power in the Kosovo

In Malisheva, Kosovo a new modern school-house is to be constructed to the highest environmental standards in a project financed jointly by Norway and Kosovo. The heating system will utilise environmentally friendly geothermal power instead of oil or gas.

This entailed the drilling of 50 vertical bores with a diameter of 150 mm (6"). Each bore is 125 m (400 ft) deep. Heat sondes are slid into these vertical bores to harness the "free" geothermal energy. The ground consists predominantly of hard rock. Drilling equipment therefore needs to be extremely efficient as well as light and easily manoeuvrable due to the large number of bores required. The contractor NNE Nartel of Prishtina is the main contractor and will undertake the project on a turnkey basis. Nartel decided to purchase a TERRA-DRILL 4407 V as this vertical drill was considered ideal for the requirements of this construction project. It is powerful and productive as well as being easily manoeuvrable.

NNE Nartel is one of the largest contractors in Kosovo with 150-160 workers as well as having a well run engineering office with 50 engineers and architects. It was founded in

1981 and changed the company's name after the conclusion of the war in 1999 into Nartel. Mr. Gani Mehmeti is the founder and owner of this successful company, which is mostly active in building construction.

The installation of the first bore commenced at eight o'clock in the morning using the TERRA-DRILL.

Soft collapsible material was encountered from the surface down to 2m depth, whilst from 2m depth hard rock was encountered, which became softer and softer as the depth increased.



Casing pipes of 178mm OD (7") were inserted for the first 3 metres to support the collapsible material, and thereafter the bayonet connection of the duplex connector was disconnected which allowed the 5" DTH hammer with the 150 mm (6") drill bit to continue alone, until the final depth was reached.

The 125 m (400 ft) deep bore was drilled with a speed of 12-18 m (40-60 ft) per hour.

The heat sonde 4x OD 32 mm (1.25") with 25 mm (1") filler pipe was prepared and lowered down. Then the bore cavity was refilled. The first bore was completed in a day and a half.

For the remaining works, 4 to 5 vertical bores are planned per week to ensure the first geothermal power project in the Kosovo will be finished on time.

TERRA-JET 5415 S in action

A new 200mm OD HDPE pipe (8") had to be laid beneath a large crossing in the industrial area of the Hungarian city Győr. This new gas line was 87 m (287 ft) long.

This project was done by the company Inter PA-KO. The company's owner Mr. György Kovac decided to undertake this pipe laying

job with his HDD machine TERRA-JET 5415 S. Inter PA-KO is also the proud owner of a rod burster TERRA-HYDROCRACK HC 600 S+ and a pit launched TERRA MINI-JET MJ 1600.

Inter PA-KO is one of the largest Hungarian contractors with approximately 100 workers and was founded in 1990. Inter PA-KO operates in west Hungary mainly for new gas lines.



The ground was sandy and extremely compact with the bore being nearby the river. This proved to be no problem for the drill operator. He finished the pilot bore without any problems. But



he was too fast! Nobody had expected the pilot bore to be done that quickly, and the new HDPE pipe was not yet ready for pull-in. The TERRA-JET had to wait. The butt-welding of the HDPE pipe was finished at 22h00 at which time both the 260 mm (10") backreamer and the new HDPE pipe OD 200 mm (8") were attached and successfully pulled in, that same night.

Delivery of the first TJ 3008 E (2.0m)

In July 2010 the first TERRA-JET 3008 E (2.0m) pit launched HDD machine was delivered to the Swiss contractor Tschanz Grabenlos AG in Luterbach. The official equipment commissioning was attended by the company owners Heinz and Peter Tschanz, as well as Martin Siegrist (Sales Manager TERRA Switzerland) and Dietmar Jenne (owner TERRA AG).

The contractor Tschanz AG has more than 80 years of experience in building and un-

derground construction. They employ 18 members of staff and in 2005 a new company Tschanz Grabenlos AG was founded to concentrate exclusively on trenchless pipe and cable laying. They are active in all of Switzerland and have 6 operators.

Besides directional drilling with the new TJ 3008 E(2.0 m) drill the company also undertakes pipe renewal using hydraulic rod puller and undertakes trenchless house connections.



TERRA-JET 3008 E - HDD machine with a difference

The two new pit launched HDD machines; TERRA-JET 3008 E and 3008 E (2.0m) have turned out to be world champions. They are the most powerful pit launched HDD systems in the world.

Close co-operation with end users

The TERRA-JET 3008 E was developed in close co-operation with the Swiss HDD contractor Schenk AG from Heldswil. This development took nearly 2 years. The customer's essential requirements was that the machine should not be longer than 2.50 m (8.25 ft) or wider than 0.90 m (3 ft) and accommodate drill rod lengths of 1.50 m (5 ft).

The results are promising. The TERRA-JET 3008 E provides HDD bores in lengths up to 150 m (500 ft) and backream diameters up to 420 mm/16.5" (depending on ground conditions). The bores may have curves with a minimum bending radius of $R = 35$ m.

Modular design

The TERRA-JET 3008 E can be pit or surface launched. This HDD system has a modular design. Its main components are the pit frame, the hydraulic power pack and the mixing+pumping station.

Machine technology

The high torque of 3'000 Nm and the high thrust and pullback forces of 80 kN (8 tons) are unique. It allows HDD bores in hard ground. As a standard with all TERRA-JETs,



the TERRA-JET 3008 E is equipped with the ADBS. This unique drilling and backreaming system adjusts the working speed automatically to the ground conditions within milliseconds.

With its 2 separated hydraulic circuits for thrust and rotation, the TERRA-JET 3008 E can operate simultaneously at maximum torque and maximum thrust or pullback force. The hydro-chain-drive has the highest efficiency rate, low wear and is dirt resistant. Due to the movable break-apart-system, the backreamers and the new pipe can be pulled into the pit frame to finish the pipe pulling.

Telescopic rubber crawler

The optional telescopic rubber crawler can ex-

tend its width from 0.80–1.20 m (2.65-4 ft). Its drive and break components are strong enough to climb stairs with 100 % inclination even with the assembled TJ 3008 E. This mobility allows bores even from cellars.

Still shorter TJ 3008 E (2.0m)

Another Swiss contractor, Tschanz Grabenlos AG from Luterbach, wanted to drill from even smaller pits without compromising on power. Therefore the TERRA-JET 3008 E (2.0m) was developed. This pit machine is only 2.0 m (6.6 ft) long and uses 1.0 m (3.3 ft) long drill rods.

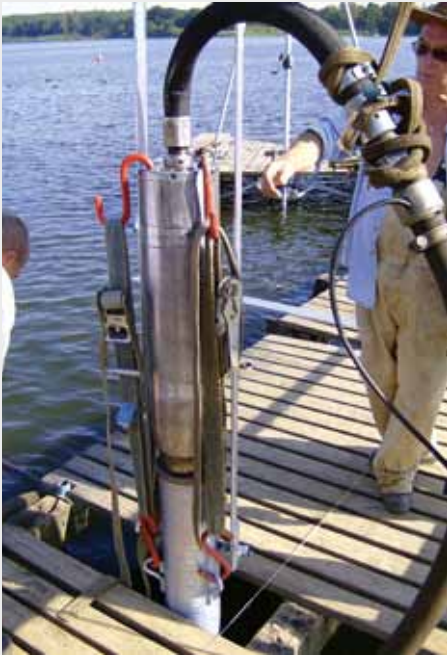


Environmental protection by Diesel particulate filter

The PERKINS Powered 3008 E drives the pit frame and the mixing+pumping station. As an option, it can be equipped with a Diesel particulate filter (DPF), which fulfils the strictest anti-pollution norms.

TR 190mini rams 19 steel piles

In the German city of Löcknitz an old swimming platform in the public lake had to be renewed due to safety concerns. This construction project was undertaken by the contractor Orka Steganlagenbau.



The old and weak wooden platform was rebuilt. A new metal frame was assembled and connected onto 19 steel pipe piles. This metal frame formed the foundation of the new swimming platform.

Mr. Carsten Lindner, managing director of Orka, performed this piling project employing his TERRA steel pipe ram TR 190mini. This mini ram is ideal for vertical ramming projects as a result of its short length of only 0.90 m (3").

The 12 m (40 ft) long galvanized steel pipes OD 200 mm (8") along with the assembled TR 190mini were held vertically with a truck crane and positioned for ramming. The TR



190mini required only 12 minutes for each of these 12 m (40 ft) long steel pipes to be driven in, up to the lake water level.

Each steel pipe pile was positioned accurately using a ramming gauge. The new swimming platform equipped with two new diving boards was successfully completed within three weeks.

4 speeds for our piercing tools

The new lubricator Version F has been designed for all TERRA piercing tools (moles) with remote controlled reverse.

This new lubricator is contained within a stable frame and can be used alongside or in the starting pit, within easy reach of the operator.

The environmentally friendly TERRA special lubricant can be easily filled into the lubricator and checking the oil level is also simple.

The impulse valve guarantees the proper starting of the TERRA piercing tool over longer bore distances. Additionally it allows immediate air exhaust behind the piercing tool, to stop the hammer action immediately without any further blows. This makes the impulse valve also an emergency stop.

The reverse valve allows the remote controlled change of the operating direction



either in standstill or during the operation of the piercing tool.

The new design enables 4 operating speeds for all TERRA piercing tools by adjustment of the regulation valve the correct air flow can be chosen. "25 %" is elected in very soft ground to avoid dangerous oscillating of the piercing tool, "50 %" in soft ground with more grip, "75 %" in grounds with reasonable friction. Full throttle "100 %" is always chosen where the TERRA piercing tool has good contact with the bore channel.

🇨🇭 TERRA AG für Tiefbautechnik

Hauptstr. 92 · 6260 Reiden, Switzerland
Phone: +41-62-749 10 10
Fax: +41-62-749 10 11
E-Mail: terra.ch@bluewin.ch
Internet: www.terra-eu.eu

🇩🇪 TERRA Deutschland GmbH

Grabenlose Bohrsysteme
Schulze-Delitzsch-Straße 2
68542 Heddesheim, Germany
Phone: +49-6203-40 31 50
Fax: +49-6203-40 31 55
E-Mail: info@terra-de.de
Internet: www.terra-eu.eu

Editorial staff / Editor

Dietmar Jenne, TERRA AG
Herbert Reissnecker
Martin Siegrist
Lorena Nocera
Hans Jürgen König
Sam Efrat (Contributor)

The contents of the TERRA News may not be copied (text or pictures), reprinted or published without the written permission of the editor.
Technical changes without prior notice.
Errors are possible. © August 2010