

## TERRA-DRILL 4407 V for geothermal bores

Two 100 m (330 ft) deep geothermal bores were drilled for heating a residential building in Brittnau, Kanton Aargau, Switzerland. The first 6 – 15 m (20 – 50 ft) was stabilised by using casing pipes OD 178 mm (7"). Then rock and sand stone were encountered. This rock was drilled using a 5" down-the-hole hammer with a drill bit of 150 mm (6"). On completion geothermal earth sondes 4x 32 mm (1.25") were lowered into the bore.



The vertical rig TERRA-DRILL 4407 V is only 0.95 m (37.4") wide and can manoeuvre through 1.00 m (3.3 ft) wide entrance doors to gain access into small gardens. It is equipped with a small self contained manoeuvre power pack. The main power pack is separated from the rig. It is installed outside of the garden. The low weight of the TERRA-DRILL 4407 V with only 2.1 tons (4'620 lbs) and the rubber crawlers prevent the lawn from being damaged.





The first casing 178 mm (7") OD with the casing ring bit is assembled. The bit has TCI tungsten carbide inserts. Smaller casings with 152 mm (6") OD or 133 mm (5.2") OD may also be used

The powerful triplex clamping and break-apart system for hydraulic clamping and break-apart of the casings and the drill rods is visible.

Vertical rig  
TERRA-DRILL 4407 V



The second bore is drilled



↑ The air compressor and the mud containers are positioned in the front yard. The compressor has an operating pressure of 21 bars (300 psi) at 19 m<sup>3</sup>/min (665 cfm). The TERRA-DRILL may also be driven by much smaller air compressors.

← As soon as the casings have reached the upper rock edge, the bayonet connection of the patented duplex connector (preventer) is released. Then the 5" down-the-hole hammer is driven down with the 89 mm (3.5") drill rods to the final depth of 100 m (330 ft). The drilling speed in this rock and sand stone was 18 m/h (60 ft/h).

## Vertical rig TERRA-DRILL 4407 V

The geothermal earth sonde 4 x DA 32 mm (1.25") with the filler pipe 25 mm (1") OD and the 25 kg (55 lbs) weight is lowered down to the final depth.



↑ Two earth sondes are installed into the bore.



← The casings are pulled out.



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