

Geothermal power in Sarmenstorf



In Sarmenstorf in the Swiss canton Aargau the heating system of a residential building was changed to geothermal energy. The access route around this building was quite narrow. Therefore it was impossible to use a conventional large drilling machine. This was an ideal job site for the vertical drilling machine TERRA-DRILL 150x7 V. In its transportation mode it is only 0.95 m (2 ft) width. This is possible because of the modular design. The power pack is separate from the drilling machine. It can be positioned up to 45 m (150 ft) away.

The new heat pump for this residential building required a total length of 200 m (660 ft) of geothermal bores. The geological expertise limited the maximum drilling depth to 165 m (545 ft) due to ground water. Therefore 2 parallel bores were drilled in a distance of 6 m (20 ft) with a drilling depth of 100 m (330 ft) and 120 m (400 ft).



The small access routes required a narrow, mobile drilling machine. The TERRA-DRILL TD 150x7 V is only 0.95 m (3 ft) wide in its transportation mode.



The geological expertise showed, that gravel and loose rock were expected for the first 65 m (215 ft). The drilling machine had to be powerful enough, to drill casing pipes OD 152 mm (6") down for minimum 70 m (230 ft). The TERRA-DRILL 150x7 V is ideal for such challenging tasks. With a torque of 15'000 Nm (11'000 pt.lbs) it can drill down 152 mm (62) casings in depths up to 140 m (460 ft). For this jobsite the first 56 m (152 ft) were protected by casings. Then the 127 mm (5") bore continued in rock with medium strength (sand rock and marl).



The 2 m (6.6 ft) long drill rods OD 89 mm (3.5") and the casings 152 mm (6") were stored in the front garden.



The triplex clamping and breaking system.



For the first 46 m (152 ft) the casings OD 152 mm (6") and the drill rods OD 89 mm (3.5") with the DTH hammer were drilled down simultaneously.



A new pair of casing pipe with inner drill rod is lifted to the drill with the handling system and hydraulically screwed on.



The casings are drilled down for 46 m (152 ft). The DTH hammer with the drill rods continues alone down to the final depth.



After the DTH hammer has reached the final depth of 100 m (33 ft), the drill rods and the DTH hammer are pulled out.



The second bore is drilled down to a depth of 120 m (400 ft) in a distance of 6 m (20 ft).



One of the two earth sondes (double-U-sonde OD 40 mm (1.57") with 25 mm (1") filling pipe) after the filling of the bore channel.