

## Rock drilling for FTTH with the TERRA MINI-JET MJ 1600

Swiss made 



# TERRA MINI-JET MJ 1600

Rock drilling for FTTH

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## Job site report

Veflen Entreprenør from Skarnes / Norway was contracted to install cables for fiber to the home (FTTH) services in the entire town of Raufoss. Part of the project where 300 trenchless road crossings for protective pipes for those cables. In mixed ground conditions from gravel to boulders to rocky sections pipes of diameters 50, 63 and 110 mm had to be installed.

## TERRA MINI-JET MJ 1600

The experienced drilling team of Veflen Entreprenør used their new TERRA MINI-JET MJ 1600 in combination with the TERRA-ROCK 65 – a down-the-hole-hammer for rock drilling and drilling in mixed ground conditions. The TERRA MINI-JET MJ 1600 has a thrust and pull back force of six tons due to a direct ram cylinder system. It can be installed in pit sizes starting from 1.20 m.

## Fluid-Rock drilling

The down-the-hole-hammer TERRA-ROCK 65 is driven by air and works additionally with water and a rock additive that ensures drilling through mixed underground conditions.

For the pilot bore two directional drill bits are available (76 mm and 100 mm). For upsizing in a second step an expander bit 130 mm can be used. This allows to cover all pipes up to 110 mm. For larger pipes rock reamers are used for backreaming and pipe pulling-in.

The TERRA MINI-JET MJ 1600 can be used for rock drilling as well as for soft undergrounds. In soft underground steered bores are possible up to a minimum radius of 15 m.



Pic. 1: TERRA-ROCK 65 through mixed ground conditions

## Job site procedure

### Drilling in mixed ground



Pic. 2: 300 of roads like this had to be under passed to install pipes for fiber optics cable. The length of the bores varied from 7 m to 18 m.



Pic. 3: Mixed underground conditions are often a challenge for every bore. In these 300 road crossings in Raufoss conditions changed from gravel to boulders and rock. This is exactly the terrain where the TERRA-ROCK 65 - an air-liquid down-the-hole-drilling system - can show its advantages at its best.



Pic. 4: The operator sets up the MINI-JET MJ 1600 in the starting pit. The air percussion hammer TERRA-ROCK 65 is driven by minimum 4 m<sup>3</sup>/min air at minimum 8 bar (ideally 14 bar).

## External Power Pack

Mixing and pumping system



Pic. 5: The pit launched HDD-rig TERRA MINI-JET MJ 1600 is driven by a separate power pack. This power pack together with the mixing unit and drilling mud tank are temporarily installed nearby the pit and connected with the rig with hydraulic hoses.

Alternatively and ideally these three units are fix installed on a pick-up truck or trailer, which needs to be placed nearby the pit during drilling.



Pic. 6: Pipe installation with the 115 mm reamer.

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