

## GRUNDOPIT task in Italy (I) House drainage

Two villas next to each other on a hillside in Rovereto, near Trient had sewage problems due to the groundwater level rising as a result of the snowy winter 2008. The groundwater had been collected in specially constructed shafts in the gardens of these houses. Depending on the groundwater level there was a danger of the water entering the houses.

The shafts were not constructed to accommodate this unusual amount of water and therefore urgently needed to be relieved. For this reason a relief pipe HD-PE ND 110 was to be installed from the collector shafts to a canal situated at a distance of 40 m. GEOVIE, Meran ([www.geovie.it](http://www.geovie.it)), the company contracted to carry out the task decided to apply the small, steerable HDD bore unit GRUNDOPIT. One shaft in the garden of one house was to be used as the starting shaft for the GRUNDOPIT, so that it could be used in both directions. The starting shaft was deep enough and had an appropriate length and width, therefore there was no need to excavate a new shaft in the gardens, which were difficult to access.

The bore rig was placed into position with a crane and aligned on a second light shaft 12 m away. The small hydraulic power unit TT B20 had enough room in the garden as well. Thus long feeding hoses were not required. The bore in the stony soil took one day including pipe installation. Afterwards the GRUNDOPIT was converted into the other direction for the 28 m bore up to the canal. This bore was completed in two days. Overall a height difference of 1,80 m had to be taken into consideration over the total bore length of 40 m.

GEVIE was consulted by Maurizio Bissolo from:  
**VOLTA Macchine S.r.l.** I-39100 Bolzano BZ, Via Copernico 13/A  
Telefon: +39 0471546.100 · [www.volta-macchine.com](http://www.volta-macchine.com)



GRUNDOPIT placed into the light shaft with a crane. The picture below shows the power unit TT B 20.



GRUNDOPIT during the pilot bore.



Detection.



The GRUNDOPIT during the installation of the HDPE pipe ND 110 from the reel.



Installation pipe.

Everything „flowing“ again.



## A convincing performance 327 m bore with GRUNDODRILL 15N (D)



- Jobsite:** Estuary of the river Schlei near Olpenitz/Germany  
**Task:** Establishing a power supply for the lighting of the ship navigation signs and the water level on the pilotage island to increase the safety of the shipping traffic  
**Contractor:** Board for shipping traffic Lübeck  
**Bore company:** Benno Paasch Brunnen- und Rohrleitungsbau, Damendorf  
[www.paasch-rohrbau.de](http://www.paasch-rohrbau.de)  
**Bore length:** 327 m, of which 260 m were under water  
**Depth:** 8 m below the river bed, 15,50 m below water level  
**Type of pipe:** 160 mm HDPE empty pipe SDR 11 on pipe reel for 1 KV-cable 0,4 x 240 mm<sup>2</sup>  
**Bore length:** GRUNDODRILL 15N  
**Expander:** 230 mm backreamer  
**Type of soil:** Easy to bore soil surface  
**Duration:** 1 working day (10 hrs.) pilot bore,  
 1 working day pipe installation



### Description:

Contractor Paasch did not want to apply the cable-guided bore method, which would be the usual and safest method in these depths, because it would have been too time and labour consuming. Instead they installed a depth sonde into the bore head which could send signals up to depths of 25 m. The detection of this sonde had to be carried out from a rubber dinghy. Due to the strong current flow, this was not possible in the 50 m wide shipping channel.

This is where the plan came into action to use a pontoon which was set up outside the waterway. Now a rope could be tightened from the mainland, so that the dinghy could be pulled alongside. This way a precise control and protocol of the bore path could be kept. The pontoon had to be placed in position twice to achieve this.



Detection of the bore head from the dinghy - pontoon in the background.



Installation of the empty pipe and cable injection.



## Buderus Info day at TT

Numerous sales partners of Buderus Giesserei Wetzlar GmbH and their customers from many European countries visited TRACTO-TECHNIK in Lennestadt.

The reason for the joint initiative of Buderus and TRACTO-TECHNIK was the clearly expanding interest for the installation of ductile iron pipes using the trenchless installation method.

The ductile iron pipes have advantages, especially for drinking water suppliers, because of their cement mortar housings. They are especially suitable for high operating pressures and really impress with their long service life and corrosive consistency of 140 years.

For the trenchless installation of these ductile iron pipes TT offers the HDD bore method, the pipe cracking method and the cable plow method for the ductile iron pipe installation. This enables a nominal width range to be covered from 80 to 1000 mm.

The HDD bore rig Grundodrill 25 N which installed the ductile iron pipe ND 100 was on show.

The pipe bursting rig Grundoburst 400G cut open an old steel pipe with a roller blade and simultaneously pulled in a ductile iron pipe ND 100.

In order to demonstrate the pipe cracking technology more vividly the work was carried out on the surface in this case.



Demonstration of the GRUNDOBURST 400G above ground: Cutting of a steel pipe (old pipe) and simultaneous pulling in of the new ductile iron pipe.

## New sawing centre by KASTO for flexible + cost-effective production



In order to meet the trend towards decreasing batch sizes and to cope with the ever increasing deadline pressure, TT invested in a new sawing centre by German manufacturer Kasto. Only with a fully automatic sawing centre small batch sizes and one-off parts can be produced cost-effectively with minimum downtimes and maximum flexibility.

A computer-controlled shelf operation unit transports the single steel bars to an integrated CNC circular saw. While the steel bar is sawed further operations, for example storage of new material, run off automatically. Via a PC the stock is automatically controlled and replenished, potential demand is reported to the ERP system. The perfectly coordinated single components of the sawing centre are able to carry out the work of three single saws.



## Tenix Alliance co-operates with TT Asia Pacific

Tenix Alliance is one of Australasia's leading infrastructure providers with services spanning design, construction and maintenance to water, power, gas, industrial and transport sectors in Australia, New Zealand and the South Pacific.

Tenix views trenchless as the way to go and is looking to use the earth displacement hammer across other applications, e.g. in an electrical environment to put in conduit, to supply domestic electricity and to install fibre-optic cable. Recently Tenix Maintenance Services took delivery of the first of 46 Grundomat earth displacement hammers from TT Asia Pacific. TMS will equip its maintenance trucks with the machines to ensure efficient and effective installation of gas supply lines. According to Tenix manager Jacob Bonisch an important component of the selection process were practical tests. The Grundomat and to two competitive hammers were trialled side-by-side in a variety of soil conditions, comparing the time taken and the accuracy of the equipment. The genuine Grundomat soil displacement hammers were the stand out performers. In choosing the genuine Tracto-Technik Grundomat product, TMS reduces the long term costs as the hammer has been proven reliable and accurate.



[More...](#)

## Apollo test run



A 20-t crane had to be hired for the transport of the huge ramming machine from the factory to the test stand.

The largest compressed air driven pipe rammer worldwide, type Apollo, with a total weight of 11,5 tons carried out a function test a week before being delivered to the Dutch customer DALCAI.

A test stand was set up especially for this occasion. The running performance of the machine was checked and the number of strokes measured. The the weight of the piston in the single piece casing is 3,5 tons. To drive the piston a compressor was available which supplied 40 m<sup>3</sup>/min compressed air at 5 bar. The Apollo developed its highest performance level at 100 m<sup>3</sup> /min and 7 bar.



## DALCAI (NL) places emphasis on the Apollo rammer

Civil engineering company DALCAI wants to apply the Apollo for installing steel pipes from Ø 1200 mm with 22,7 mm wall thickness over up to 100 m bore lengths. In most cases it will be applied to cross under traffic routes. Up to 2012 gas provider GAS-UNIE in the Netherlands are building a gas pipeline from the north to the south over a distance of 275 km. 10 - 12 km will be completed with underground installations.



A small model for company owner J.W. Dalvoorde

During the take-over of the Apollo in Lennestadt DALCAI owner Jan-Willem Dalvoorde said: „The ramming method makes us competitive, as it works much quicker than over installation methods. Furthermore this equipment makes us more flexible and enables us to complete the tasks ahead of us smoothly. The contractors expect this.“ Performance, resilience and durability of the TT rammers, as well as the service given by Meerman Jr b.v. from Hendrik Ido Ambacht ([www.meerman.com](http://www.meerman.com)) is described by Dalvoorde simply as „perfect“. The Apollo can install steel pipes up to 4 m Ø and it is the FIRST machine in the Netherlands in this performance class.

## Company profile DALCAI

**Founded:** DALCAI was founded in 1990  
**Employees:** 10  
**Field of operation:** HDD-bores, steel pipe installations, house connections  
**Machienfleet:** GRUNDOMAT: 75, 95 and 130 mm  
 GRUNDORAM: 2 Koloss, 1 Goliath, 1 Taurus, 1 Apollo  
 GRUNDODRILL: 4X, 10S  
 Atlas-Copco-Compressors: 1 with 63 m<sup>3</sup>, 2 with 45 m<sup>3</sup>, 1 with 22 m<sup>3</sup>, 4 with 10 m<sup>3</sup>, 1 with 7 m<sup>3</sup> air consumption.  
**Pipe installation:** Record with Taurus: 24" (600 mm) pipe over 137 m length  
**Contact:** DALCAI b.v.  
 Van den Bergsweg 43 · 7442 CK Nijverdal / Netherlands  
 Tel.: 0548-618382 · Fax: 0548-614134 · [www.dalcai.nl](http://www.dalcai.nl)

### DIT IS ÉCHT

DE GROOTSTE RAMRAKET TER WERELD  
 GRUNDORAM APOLLO  
 EN WIJ HEBBEN DEZE VERKOCHT AAN:



This sign at the InfraTech in Rotterdam indicated the sale of the Apollo to DALCAI.



Above: Tracto-Technik factory manager Heinz Olbrich, Dalcai owner Jan-Willem Dalvoorde, drill master Hermen-Jan Dalvoorde and Frank Meerman during the pick-up of the Apollo in Lennestadt.

## House connection with G'Bore 200S (D) PP-HM pipes ND 150 installed

In combination with the renewal of the B 236 main road in the Lennestadt village of Saalhausen the new installation of a canal was planned. In context with this there were several house connections on the agenda. In one case the house connection had to be completely re-installed. Due to a strong bend in the PVC pipe there were numerous backwaters in the sewage system, sometimes right up to the house itself.

Short pipes made of PP-HM ND 150 (170 x 12 mm), each with 450 mm lengths are to be installed. The sewage pipe is meant to be installed with 5,5% gradient over a 10 m length from the main pipe to a revision manhole. A hedge, a high quality flower bed and a comprehensive paving area had to be crossed under. The garden had only been produced shortly beforehand, so the house owner had no intention of using open trenching. That was not the only reason though, as the installation depth of 2m was reason enough to try the press-bore unit, which is really worth applying even over shorter distances.



The installation was carried out in three phases with the Grundobore pilot auger boring system:

After the precise alignment, a pilot bore was produced and the pilot rods with a triple-winged chisel pressed through the heaped, compact soil right up to the revision manhole.

Then the bore head and the spiral conveyer, with the pilot rods connected, were pulled back and rotated back into the direction of the starting pit. The transport of the loosened soil at the front was carried out with a bore spiral through the retrievable pipes, which were also supplied with the equipment, back into the revision manhole.

In the final working process the retrievable pipes were pushed with the product pipes, which had the same diameter, from the bore rig into the target pit, where they were retrieved. The house connection was completed within 6 hours.

[More on the jobsite](#)

[More on machine and method](#)



## NEW Mini-Cable winch Grundotugger for smaller pipe bursting tasks

With the **GRUNDOTUGGER** from TRACTO-TECHNIK smaller pipe bursting tasks, for example house connections, can be carried out quickly and easily at relatively small expenditure in existing bore paths. A further possibility is the installation of new pipes up to ND 150 after having created a pilot bore with GRUNDOMAT which is enlarged to the requested pipe diameter later on.

The system consists of:

1. The Grundotugger with control cable and extension frame
2. The hydraulic power unit, Type TT M9
3. The winch cable Ø 10 mm (max. 4 t pulling force) for pressure pipes from ND 25 to ND 63 or alternatively with Ø 19 mm (max. 20 t pulling force) for sewage pipes from ND 63 to ND 150
4. The cutting technology for lead and plastic pipes, stoneware, concrete
5. The installation equipment with pipe-pullers and expanders up to 200 mm Ø.

Path of the PE drinking water pipe, OD 50 x 8,3 mm, 1,4 m deep, 25 m length, installed in 1968 and in need of renewing.



### Advantages

- Application from out of small installation pits
- Low weight (no components weigh more than 35 kg) for easy transport and simple installation in buildings
- No problems when converting to various cable diameters
- Driven via mini-excavator
- Remote control for operation outside the pit
- Application of all cable lengths
- Central cable and pipe guidance - does not guide over the cable drum
- Can not get pulled tight on the cable drum
- Gripper system and smooth clamping jaws protect the cable
- Constant pulling force over relatively short bore lengths
- High stability inside the installation pit
- No special safety devices required
- Quick change holding device for mini-excavator



The cutting blade starting to cut the old pipe.



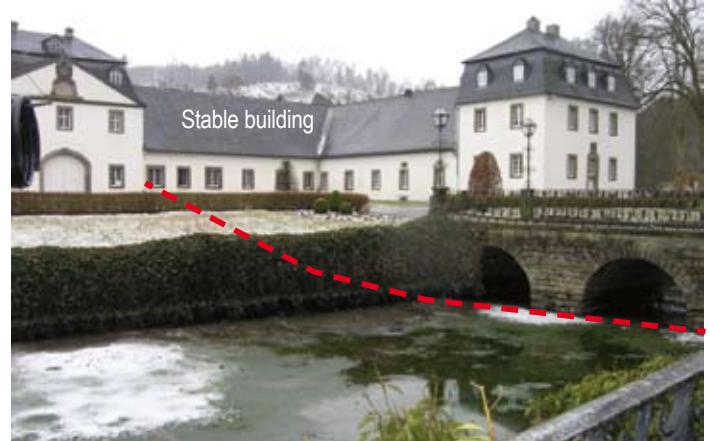
Grundotugger: new pipe arriving in the machine pit.



The new endless drinking water pipe PE 100, DA 32 x 3 mm.

## GRUNDODRILL 15 XP Installs long distance heating pipes

The Laer castle in Meschede in Germany, which was the ancestral seat of the Duke of Westphalia Fuerstenberg, is to be converted to district heating during the next heating period. The oil heater will then be switched off, but not completely dismantled. The district heating is to be supplied by a wood-fired heating station providing a heating power of 600 kW. When used to full capacity this heating station requires 2 tons of wooden chips daily. District heating pipes are being installed on the castle terrain right now. To preserve the units as well as possible, the pipes delivered in PE-endless rolls, are to be installed using the trenchless HDD drilling system.



Bore path.

The administration at the duke's stately home assigned the installation work to the company Bohrtechnik Spiekermann from Schmallenberg. They decided to apply the new Grundodrill 15 XP HDD rig for this task. The bore path runs over a length of 90 m from a forecourt beneath a 12 m wide stable building across the castle's inner courtyard, right up to the duke's residence wing, where all past and the present heating systems are situated.



Entrance to stable building.



Connection of the pipe length inside the installation pit (red spot).

In here the fitters were already busy preparing two core bores, each with a diameter of 300 mm for the forward and reverse mode of the district heating pipes through the 1,60 m thick castle wall.



The installed long distance heating pipes with both core bore holes in the cellar.

Below:  
Installation of the pipe bundle.



The start of the pipe installation can be steered and checked with a remote control directly from the installation pit.



Inside the stable building an intermediate pit was excavated. The specific feature of this bore was the fact that this intermediate pit was to be used in order to install two 140 mm district heating pipes with a PE core pipe 75 mm diameter in one direction over a length of 70 m and in the opposite direction over a length of 20 m, 160 mm district heating pipes with a PE core pipe 90 mm. Also, an empty pipe ND 63 for the control cable was to be installed.

The soil at a bore depth of 5,50 m was mainly clay-stone. The soil in the target pit area was extremely rocky, partially grown but partially filled with massive quarry stones. The MDH bore head applied was just the right choice and the pilot bore was completed in just one day.

The bore head had to work its way up over an extremely short distance of 5 m to a depth of approx. 3 m at a gradient of 30%, directly behind the water pit and just ahead of the castle wall. Afterwards the bore head could be exposed and the upsizing bores of 200 mm and 370 mm could start.

The 370 mm backreamer was also applied for the installation of the pipe bundle. Due to the very limited space in front of the castle wall and the cold temperatures, the connection of the three plastic pipes to the backreamer proved to be very difficult. On the other hand the pipe installation ran very smoothly and only took 3 hours to reach the intermediate pit. There the pipe cross-section was exchanged and the 160 mm district heating pipe and the empty pipe were connected.



The Grundodrill 15 XP required only half an hour for the remaining 20 metres.



Cross-section of long distance heating pipe.

Installation via the stable building.

Pipe installation in the intermediate pit inside the stable building.

## GRUNDODRILL 15XP

### In comparison to the predecessor version GRUNDODRILL 15X

- 50 % higher rotation performance
- Larger drill rod magazine, now with 180 m drill rod capacity
- Larger, 400 mm wide undercarriage chain = higher stability safeness
- Weight now ca. 9,3 t - previously 7,2 t = higher stability safeness
- Complete cabin instead of the simple canopied control stand
- Modern operator display instead of operator console
- Higher effectiveness and economy due to quicker drill rod loading system and higher thrust speed
- Remote diagnosis with remote data transfer via modem
- Minimal diesel consumption due to decreased maximal rpm's
- Bore data log according to GW 321

### Important technical specifications:

Torque.....	4500 Nm
Maximal rpm.....	1800 1/min
Bentonite pump.....	200 l/min
Drill rod.....	180 m
Thrust and pull back.....	147 kN
Diesel engine power.....	106 kW



Noise Emission.....	66 dB (A) when cabin closed
Total weight.....	9,3 t
Transport dimensions (LxWxH).....	6250 x 1850 x 2300 mm

## River Weser crossing: Two protection pipes each 315 mm (D)

**Jobsite:** River Weser crossing between Hameln and Hessisch Oldendorf  
**Task:** Installation of a sewage pipe  
**Contractor:** Hameln Council  
**Bore co.:** Friedrich Meier Tiefbauunternehmen GmbH  
 Rittergutstr. 29, D-31840 Hessisch Oldendorf  
 Phone: (05152) 97 64-0  
 Fax: (05152) 97 64-15  
**Bore length:** 160 m  
**Depth:** 9 m  
**Pipes:** 2 HDPE protection pipes 315 mm, in which 250 mm product pipes were later pulled into.  
**Machine:** GRUNDODRILL 15N with Mud motor (rock drilling) for pilot bore and expander: 280, 380, 560 mm and GRUNDODRILL 25N for expander 740 mm and pipe Installation in bundle  
**Soil type:** Pebbles and hard limestone; due to the soil being difficult to penetrate the GRUNDODRILL 25N was applied; because a higher torque was required for the 740 mm expander.



River Weser with bore rig in the background and the push head at the front.



Pipe lengths ready for installation.



Starting the pulling-in process.



Pipe installation completed.

## GRUNDOMAT installs new sewage house connection

**Task:** The sewage pipe of a house had be newly installed, as pipe-bursting could not be applied in this case due to the strong bend. Incursions in the 40 year old stoneware pipe had always been leading to backwater.  
**Procedure:** As a new garage had been planned to adjoin the house in any case, the sewage pipe could be opened up directly next to the house over a wide surface. First of all a new bore path was determined and the GRUNDOMAT 95 produced the pilot bore with a medium inclination of 2,8 %. This bore was then expanded with a GRUNDOMAT 180. The new pipes Ø 160 mm were then pulled in simultaneously. To stabilise the guidance of the hammer, the installation in the target pit was supported by a pulley.



Pilot bore with GRU 95:  
Adjusting to 3,8 % inclination.



In the target pit:  
Re-checking the Inclination.

**New pipe:** SL sewer pipe from egeplast PPHM, 1 m length, 160 x 9,1 mm  
**Bore length:** 12 m, depth approx. 3 m  
**Soil:** Hard clay ground with stone inclusions



GRU 180 Start mit Greifzugunterstützung.



Pushing the SL canal pipes with a hydraulically operated tensiometer.



Support by a pulley inside the target pit.



An intersection piece (grey) connects the newly installed canal pipe to the canal pipe (brown) leading from the house.