

PIPE & FITTING SYSTEMS

HDD-installation of PE pipes with OD 55.1 in (1400 mm)



RECORD-BREAKING INSTALLATION IN SPREEWITZ, GERMANY

Project:

- Country: Germany
- Year of Installation: 2016
- Product: PE 100-RC Sureline
- Dimension: 1400 mm (55.1 in) and 1200 mm (47.2 in), SDR 17
- Medium: Water
- Pressure: 50 psi

Initial Situation

For a large-diameter, twin-pipe culvert underneath the Spree River in Germany, AGRU PE pipelines with ODs of 1400 mm (55.1



The high flexibility of the AGRULINE pipes allows for changes of direction without fittings.



But even these experts had never before laid a PE pipeline with an OD of 1400 mm using the horizontal directional drilling process.

in) and 1200 mm (47.2 in) were installed trenchless. Supplied by FRANK GmbH and manufactured by AGRU, the subcontracting company, Visser & Smit Hanab, installed the PE pipeline by applying a horizontal directional drilling process. For a project of this size, it is a truly a new world record!

The brown coal for the Schwarze Pumpe Power Station is excavated in a nearby opencast mine in Nochten. Because the brown coal stratum lies below the natural groundwater table, the water table also needs to be lowered. Two parallel underground GRP pipelines are used to transport the groundwater and mine water from the mine to the mine water processing plant. The two pipelines crossed the Spree River on a pipe bridge close to the town of Spreewitz.

Problem

In 2010, 2012 and 2013, several floods close to the pipe bridge near Spreewitz resulted in a pipe rupture at a GRP bend in the Nochten Water Pipeline. Repairing the existing GRP pipelines would have been time-consuming and made an excessively high impact on the brown coal mining, which can only operate without the pipelines for a few days. Furthermore, the complex repair of the damaged section would not rule out the risk of further damage to other sections around the pipe bridge.

Design and Planning

It was determined that a new installation using the horizontal directional drilling method with pipes made from PE 100-RC



The AGRULINE pipeline adapted itself precisely to fit the exit angle of the borehole as the pipeline was being pulled in.

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was the easiest and most economic solution to implement. Pipes made from PE 100-RC are permanently resistant to corrosion from the transported mine water and, given their high flexibility, wash borings with small installation radii are also possible. Any ground subsidence that occurs can be absorbed by the permissible deformation of the pipes without the danger of damage as a result of cracks or breaks. AGRU pipes made of PE 100-RC meet all the requirements and are tested and approved in accordance with PAS 1075 for trenchless laying techniques.



See how the reamer in the foreground cleared the way for the PE 100-RC pipeline.

In this particular instance, the benefits of the horizontal directional drilling method included the relatively minor impact on the environment and the least amount of underground construction work requiring drainage. Being approximately 21 ft below the bed of the Spree meant that piping in the section of the wash boring would need a wall thickness of SDR 17.

The Record-Breaking Wash Boring

Once the borehole had the required diameter along its entire length, the prefabricated and tested PE pipeline could be pulled back through. The biggest challenge came right at the start: the giant pipeline had to be threaded into the borehole. For this, the construction team lifted the section of pipeline closest to the borehole, while at the same time pulling it towards the hole. The 1400 mm (55.1 in) thick pipeline slid into the drilling fluid in the borehole trench and, thanks to



A world premiere successfully completed.

its great flexibility, automatically adapted itself to fit the exit angle of the borehole precisely. It was possible to complete the record-breaking wash boring successfully -- and to the relief of all those involved.



Visser & Smit Hanab threaded the 72 ft long AGRULINE large-diameter pipelines under the Spree without any difficulty, setting a new record.