

SIMONA® PE 100-RC Line pressure pipes to create an irrigation system pipeline using the ploughing method



Top: installation of SIMONA pressure pipes by means of the ploughing method; bottom left: laying out the pipes; bottom right: SIMONA PE 100-RC Line pressure pipes

In 2023, Bewässerungsverband Pütz (Bedburg), a cooperative agricultural association, introduced an efficient and cost-effective water supply system for the purpose of irrigating arable land. The innovative system, featuring smart irrigation management, spans 20 km. It is designed to provide sufficient water for local fields, especially during dry summer periods, and thus ensure high-yield harvests. Among the key requirements of this pioneering project were environmentally friendly installation as well as the durability and robustness of the underground pipeline system. The German state of North Rhine-Westphalia provided funding of 5.6 million euros in support of this lighthouse project.

The project at a glance

Project

Production of water pipeline for agricultural irrigation system featuring optimised irrigation management

Requirements

- Durable pipelines
- Reliability
- Suitable for ploughing method

Client

Bewässerungsverband Bedburg (Pütz)

Contractor

IFK GmbH, Salzburg

Technical support

SIMONA AG, Infrastructure Business Line, Kirn, Germany

Products used

PE 100-RC Line pressure pipes

Duration of project

6 months



Image, left: using the ploughing method, even long pipe sections can be laid in the shortest possible time and with significantly less environmental impact; image, centre: the ploughshare with the displacer is the so-called leading edge when it comes to underground installation; image, right: to create the extensive piping system, several pipe sections with up to 60 pipes were interconnected using the heated-tool butt welding method

SIMONA PE 100-RC LINE pressure pipes: easy handling due to low weight, even with long pipe sections

Initial situation

Due to dewatering conducted at the Garzweiler open-pit lignite mine, the groundwater level in the region is extremely low, which makes agricultural farming difficult. Irrigating arable land with the help of the public water network, availability of which remains limited because of Garzweiler, would be challenging and extremely expensive. Thus, the water needed for irrigation would have to be pumped from the southern section of the 2,400-hectare association-managed area in Bedburg to the open-pit mine in the north via a network of water pipes spanning a length of approximately 20 kilometres – ensuring that crops are supplied with sufficient water over the entire distance. In total, 2,500 hectares of arable land are to be irrigated with around 1.5 million cubic metres of water per year. For this purpose, the project includes the construction of six deep wells and a pipeline network spanning around 20 kilometres.

Task

The project involves the construction of a water pipeline spanning almost twenty kilometres. The focus is on particularly durable and robust pipes that can be operated without the need for maintenance. In addition, the pipes would have to be low in weight so as to ensure installation by means of the simple and cost-effective ploughing method. This environmentally friendly and relatively inexpensive method is the perfect choice when it comes to laying long lengths of pipeline quickly and with maximum soil protection, as displacement is "minimally invasive" (similar to a zip).

Solution

SIMONA® PE 100 RC pressure pipes: durability is one of the key features of the single-layer pressure pipes made of extruded polyethylene. They boast a service life of more than 100 years. Another benefit is their internal and external corrosion resistance, which ensures maintenance-free operation. The hydraulically smooth internal pipe surfaces reduce pressure losses over the entire service life. PE 100-RC pipes offer increased resistance to slow crack growth and are suitable for trenchless installation techniques. Thanks to their low weight, installation is simple, fast and cost-effective, even with long pipe lengths. Added to this is their high flexibility, which helps to prevent fractures of the pipe in the event of pressure surges or ground settlement. Last but not least, the polyethylene pipes are recyclable and thus resource-friendly.

SIMONA PE RC 100 pipes

Properties

- High stress crack resistance in sand-bed-free laying
- Robust pipes due to high resistance to point loads
- Superior resistance to slow crack growth
- Certified to PAS 1075, Types 1 and 2
- PE 100 RC Type 2 (additional): 10 per cent identification layer for visual inspection of the pipes during construction

Fields of application

- Sand-bed-free laying
- Trenchless pipe laying:
- Pipe bursting method
 - Horizontal directional drilling
 - Ploughing method

Laying technique

Ploughing method

Product range PE 100 RC Line

- DA 32 to 1,200 SDR 17
- DA 32 to 1,200 SDR 11

Further information

SIMONA AG

Infrastructure Business Line
Phone +49 (0) 67 52 14-0
infrastructure@simona-group.com

IFK GmbH

Siezenheimer Str. 29A
A-5020 Salzburg,
Phone +43 -662-439594-0
office@ifk.at
www.ifk.at