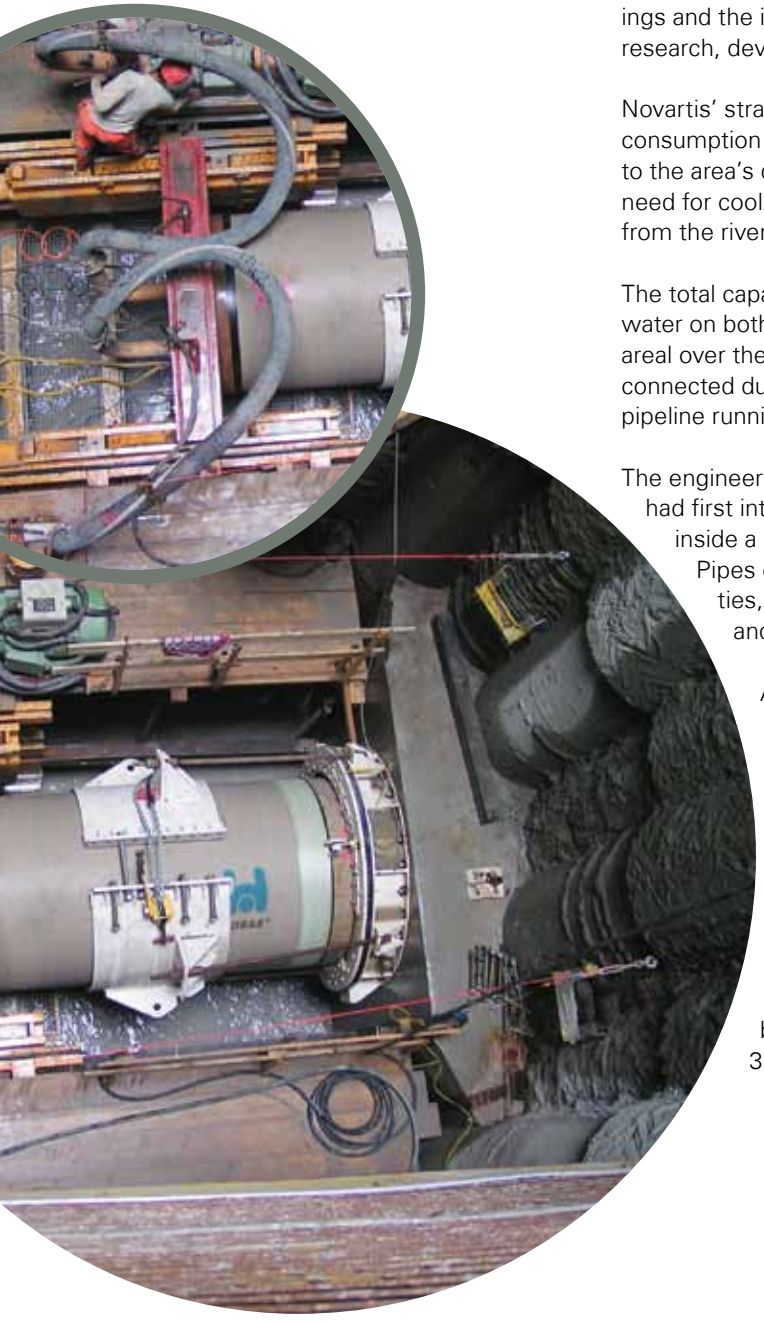
Curved Pressure Pipe Jacking

Jacking **HOBAS®** Pressure Pipes beneath the River Rhine, CH

Novartis is one of the leading suppliers of innovative pharmaceutical products. The group operates in more than 140 countries worldwide and is strongly rooted in Switzerland.



Currently, the company is turning the industrial complex of the St. Johann Areal in Basel with its research and production facilities, office buildings and the international head quarters into a state-of-the-art center for research, development and management.

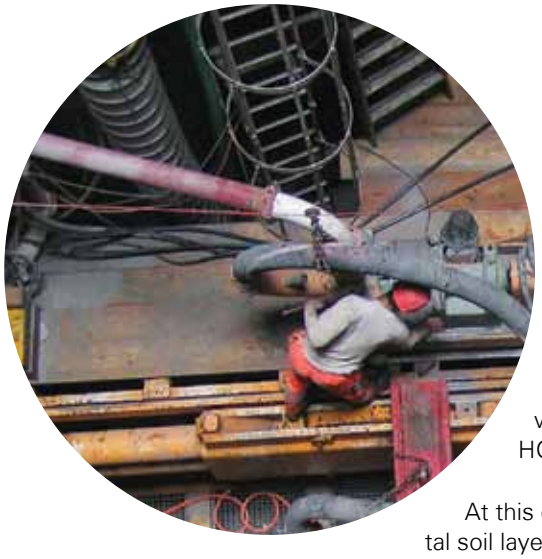
Novartis' strategic aim regarding sustainability is to reduce the energy consumption of the new buildings to a third of the former premises. Due to the area's development as well as alternative energy systems, the need for cooling water will increase over the coming years. Purified water from the river Rhine is used for this purpose.

The total capacity of the present purification plants for general service water on both sides of the Rhine will cover the increasing demands of the areal over the next 10 to 15 years. However, both plants first had to be connected due to altered technical requirements. This was realized with a pipeline running under the Rhine.

The engineering company Rapp Infra, who was in charge of the project, had first intended a double pipeline where a pressure line would run inside a reinforced concrete jacking pipe. Since HOBAS CC-GRP Pipes can be produced to unify both, pressure and jacking properties, Rapp Infra was soon convinced by the economic advantage and shorter construction time.

A further advantage was that the Swiss constructor Implenia dealing with jacking installation has already worked very closely with Product Managers and Technicians at HOBAS Switzerland and Germany and was thus already acquainted with the specialists' proficiency and the products' advantages.

Following thorough research and comparison of the various bids, HOBAS received the order and delivered the first jacking pipes mid-April 2009. Jacking and receiving pits for the pipes were excavated and retained by concrete bored pile walls. The main jacking pit was no less than 32 meters deep.



This great depth was required to avoid underground water courses (high groundwater table of over 20 m) and putting the Rhine water at risk. The pipeline runs under the Rhine with a safety margin of 6 m between the top edge of the HOBAS Pipe and the bottom edge of the river bed.

At this depth, it was possible to drive through one horizontal soil layer whereas traversing different formations beneath the Rhine would only have posed additional risks for what was already a highly complex project. As the receiving pit lay at a depth of 28 m, the pipes were driven four meters uphill over the length of 433 meters – another critical aspect that was easily overcome with the help of HOBAS Products.

Another requirement regarding installation was the curved jacking route. The reason for this was the border between Switzerland and France. If they had jacked in a straight line, they would have crossed the border into France. They therefore pushed the pressure jacking pipes in a curve with a radius of 1000 m.

In this project in Basel, pressure jacking pipes with the pressure class of PN 10 and an outside diameter of 1499 mm were used. As if all these incredible challenges were not enough, building contractor Implenia installed some 24 to 30 m of jacking pipes per day and completed the project in record time of one and a half months.

Without the excellent work by Implenia and outstanding cooperation and coordination between sales representatives, engineering, production and shipping departments in the various HOBAS organizations such top performance would not have been achieved. All parties involved can be truly proud of their contribution and satisfied with this unprecedented reference project.

Year of Construction
2009
Construction Time
1.5 months
Total Length of Pipe
433 m
Pressure Class
PN 10
Stiffness Class
SN 160000
Diameter
D_e 1499,
wall thickness 79 mm
Installation Method
Jacking
Application
WaterLine®
(cooling water)
Client
Novartis Basel, CH
Contractor
Implenia AG, CH
Advantages
Jacking under the Rhine with high groundwater level, direct jacking of pressure pipes, very short construction time, injection nozzles, special logistic preconditions

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