

# Shaft-in-Shaft Rehabilitation & Shaft Renovation

Effective Rehab Methods by HOBAS®

Around 1 million out of the approximately 10 million shafts incorporated in Germany's sewer network need rehabilitation. Reasons for this are: leaking ring joints, damaged brick walls, corrosion and defect connections, channels or benching. For such cases, HOBAS offers two effective and economical methods, which can be conveniently executed in short construction time: HOBAS Shaft-in-Shaft Rehabilitation and HOBAS Shaft Renovation.



DE09SHL\_Schockwitz 1: New GRP Shaft lowered into existing shaft



DE09SHL\_Schockwitz 2: One-piece CC-GRP Shaft for Shaft-in-Shaft Rehabilitation

## HOBAS Shaft-In-Shaft Rehabilitation

A concrete shaft DN 1200 in Schockwitz near Halle for example was severely damaged and statically no longer stable due to corrosive sulphuric water. After an extensive comparison of alternatives, the Salza Sewage and Water Board (Abwasserzweckverband Salza) decided that HOBAS Shaft-in-Shaft Rehabilitation was the most suitable solution in both technological and economic terms. With this method, a new CC-GRP Shaft is placed into the existing structure to reestablish its static stability. The shaft is as good as new without having to take the old one down.



DE09SHL\_Schockwitz 3: Minimal loss in cross-section

The advantage of HOBAS ShaftLine Products is the minimal loss in cross-section, for they are not only relatively light walled, they moreover can be produced at variable lengths and with a wide range of diameters. Consequently, the cross section is reduced by only a few millimeters. The one-piece seamless CC-GRP Shafts are suitable for very deep structures as well. Due to their low weight, they can be installed with the help of light construction equipment only, which is an important point regarding cost saving.



DE09SHL\_Schockwitz 4: Fitting a concrete cone onto the shaft

A further advantage of HOBAS Shaft-in-Shaft Systems is that the GRP Shaft Channels need no sub-form. This ensures a trouble free implementation of all required radii and bends for the connections. The gap between the new shaft and existing pipes is bridged using small pipe segments which are permanently fitted and sealed with GRP laminate without creating ridges in the channels. In the end, the laminate is once again completely sealed, the annulus is filled with liquid concrete mortar and the shaft's superstructure is restored. The concrete cone which in this project was supplied by a local builders' merchant, is sealed with laminate to ensure corrosion resistance. After fitting the concrete cone on top of the shaft, it is covered and the road repaved. The result: A permanently corrosion resistant and statically fully stable shaft.

### HOBAS Shaft Renovation

HOBAS Shaft Renovation is considered whenever a shaft is affected by corrosion but nevertheless statically stable. Some of the original shaft's functions are maintained and only damaged sections are reconditioned. The Salza Sewage and Water Board (Salza AZV, Abwasserzweckverband) opted for this relining method in 2009 to rehabilitate several concrete shafts DN 1000 in Salzmünde near Halle, Germany, with HOBAS GRP.



DE09SHL\_Salmuende 5: The GRP lining perfectly seals the old shaft

The prefabricated flexible GRP components provide a fast and non disruptive installation regarding traffic and are therefore optimal for urban areas. Moreover, the assembler can easily arrange the components in order for them to precisely correspond to all given shaft requirements on site. The shaft wall is then lined with a flexible HOBAS GRP Shaft Rehabilitation Pipe by effortlessly rolling it together until it fits through the 625 mm diameter of the standard shaft opening. All butts and edges are subsequently laminated with GRP and



DE09SHL\_Schockwitz 6: No de- and repaving required

thus completely sealed. Only a part in the upper area of the shaft remains clear to be able to fill the annulus with fluid concrete mortar. Once accomplished, also this part is sealed with GRP laminate.

HOBAS Shaft-in-Shaft Rehabilitation and HOBAS Shaft Renovation are two flexible and efficient restoration methods. Established in no time the new shafts provide reliable service over decades.



Make things happen. **HOBAS®**

|                             |                                                                                                                                                                                                 |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Year of Construction</b> | <b>2009</b>                                                                                                                                                                                     |
| <b>Project Length</b>       | Shaft                                                                                                                                                                                           |
| <b>Pressure Class</b>       | PN 1                                                                                                                                                                                            |
| <b>Diameter</b>             | DN1200                                                                                                                                                                                          |
| <b>Stiffness Class</b>      | SN 10000                                                                                                                                                                                        |
| <b>Installation Type</b>    | Shaft-in-shaft rehabilitation                                                                                                                                                                   |
| <b>Application</b>          | ShaftLine                                                                                                                                                                                       |
| <b>Client</b>               | AZV Salza                                                                                                                                                                                       |
| <b>Contractor</b>           | LTR Tief- und Rohrleitungsbau                                                                                                                                                                   |
| <b>Advantages</b>           | Leak tightness, high corrosion resistance, minimal loss in diameter, easy and fast assembly, permanent static stability, variable options for connections, little maintenance and long lifetime |

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|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Year of Construction</b> | <b>2009</b>                                                                                                                                                                                                                      |
| <b>Project Length</b>       | Shaft                                                                                                                                                                                                                            |
| <b>Pressure Class</b>       | PN 1                                                                                                                                                                                                                             |
| <b>Diameter</b>             | DN1000                                                                                                                                                                                                                           |
| <b>Stiffness Class</b>      | SN 10000                                                                                                                                                                                                                         |
| <b>Installation Type</b>    | Shaft renovation                                                                                                                                                                                                                 |
| <b>Application</b>          | ShaftLine                                                                                                                                                                                                                        |
| <b>Client</b>               | AZV Salza                                                                                                                                                                                                                        |
| <b>Contractor</b>           | LTR Tief- und Rohrleitungsbau                                                                                                                                                                                                    |
| <b>Advantages</b>           | Rehabilitated sections are friction-locked to the existing structure; leak tightness, no de- and repaving, easy and quick installation, dimensioned to fit through standard shaft openings, little maintenance and long lifetime |