Gas Lines on the Safe Side with HOBAS® GRP
Open Trench and Trenchless Solutions in the Czech Republic and Poland

A special medium requires special treatment. Gas for instance requires special caution and safety measures. Requirements which are perfectly fulfilled by HOBAS GRP Protective Pipe Systems: They ensure tightness; have a high load capacity and offer a long service life. And, as projects in Poland and in the Czech Republic show, they can be installed by both trenchless and open trench methods.

Brno, Czech Republic. In the context of the expansion of the Avion Shopping Park in Brno-Dolní Heršpice it became necessary to relocate a steel high pressure gas main, DN 500 in diameter. During its inspection the operator Jihomoravská plynárenská a.s. had discovered signs of corrosion probably due to the installation and surrounding wet soil. This was no surprise as the pipeline is situated nearby the Svratka River so that fluctuations in groundwater level slowly but surely cause the steel to corrode. Playing safe, the operator decided to protect the gas main with a pipeline that is watertight and highly corrosion resistant. The possibility to extend the parking and storage surfaces of the shopping center some time in future had to be kept open as Brno’s first shopping park has been growing ever since its establishment in 1998. This meant the protective pipes would also need to provide appropriate load capacity. Searching for a suitable material that would fulfill these two main requirements, the client found the optimal solution in HOBAS GRP Pipe Systems.

The new steel pipes were welded one after the other and consequently pulled into the prepared HOBAS Protective Pipeline. RACI plastic spacers kept the gas carrier pipe perfectly aligned within the GRP containment system. Thanks to the smooth inside surface of the HOBAS Pipe this could be done swiftly and without complications. Pipe sections of 25-m-length were this way prepared at a time which were then, one after the other, lowered into the pipe trench with the help of nothing but the constructor’s excavator – thanks to the comparably light-weight GRP material. Here the inner steel gas main was welded to the already installed part and the GRP pipe was simply slid into position and pushed into the coupling that is delivered readily fixed to one pipe end. The
HOBAS System’s FWC couplings with their elastomer rubber gasket are indeed a further plus as they not only facilitate the assembly thanks to simple push-to-fit mounting but also accommodate angular deflection while remaining tight – a perfect feature that helps omit costly fittings on gently curved routes. Once a pipe section had been completed the ends were capped with a rubber seal to keep the line clean.

A total 156 meters of HOBAS Protective Pipe DN 700, PN 1, SN 10000 were this way successfully installed during September 2011 and ensure trouble free, safe service for the next decades.

**River Warthe, Poland.** A technically, in terms of installation, challenging protective pipeline project was initiated by the company Warszawskie Przedsiębiorstwo BETA in October 1998 in Poland. It comprised the jacking of a twin pipe under the Warta River. Two paralleling lines, 105 and 108 m in length, were executed 50 meters from each other. The 3-m-long microtunnelled HOBAS Jacking Pipes have a diameter of 2047 mm and a wall thickness of 70 mm.

What was the purpose of the undertaking? The to date most modern guided drilling technique and CC-GRP Pipes were employed to overcome an obstacle presented by the Warta river on the construction route of the Yamal-Europe Pipeline, that transports pressurized gas from the Siberian Yamal Peninsula all the way to Germany. In addition to the two steel carrier pipes, 1450 mm in diameter, the GRP pipes should also accommodate a fiber optic cable.

Drilling was conducted in 13 meters depth, 7 meters below the river bed. Despite the large clearance between pipe and river, microtunneling was executed under pressure reaching a level of 1.5 bar due to deep groundwater. The challenge was increased by the diverse geological structure: While the starting pits on one side of the river were surrounded by clay, the receiving pits were situated in in permeable soil (sand and gravel). The contractor was forced to seal the soil around the latter to prevent too much water from running into the pit. If this were not enough, the temperatures fell to as low as -25° degrees which was no problem for HOBAS GRP but made installation arduous for manpower.

In addition to standard jacking pipes, HOBAS supplied also CC-GRP Pipes equipped with nozzles through which a lubricant is pumped between the outer wall of the pipe and the surrounding soil during microtunneling. The low roughness coefficient of HOBAS Pipe Systems alone requires low jacking forces; by adding a lubricant the average force could in this case be lowered to an equivalent of approximately 250 tons.

The job was successfully completed beginning of 1999 meeting all requirements set by the investor, who happily looks back to over 10 years of service.

**Project - Poland**
- **Year of construction:** 1998/99
- **Total length of pipes:** 213 m
- **Pressure class:** PN 1
- **Diameter:** D₂ 2047
- **Stiffness class:** SN 32000
- **Installation method:** Jacking
- **Advantages:** leak tight system, suitable for trenchless installation, low necessary jacking forces

**Project - Czech Republic**
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- **Total length of pipes:** 156 m
- **Pressure class:** PN 1
- **Diameter:** DN 700
- **Stiffness class:** SN 10000
- **Installation method:** Open trench
- **Advantages:** leak tight system, high corrosion resistance, non-conductive material, long service life

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Protective pipes from steel have long been the first choice in pre-insulated pipeline engineering. They are however vulnerable to corrosion, particularly stray current corrosion (SCC). HOBAS GRP Pipes present a remedy for this problem – the Polish heating company SPEC, for instance, has realized this and has been using GRP for over a decade.

In 1998, for the construction of a pre-insulated heating distribution pipe under Wołowska Street in Warsaw, the Warsaw Heating Company SPEC S.A. decided to search for an alternative that would withstand high static loads, that can be installed via trenchless methods and is also insensitive to stray currents. The choice fell on HOBAS GRP Pipes; the glassfiber reinforced polyester pipes are dielectric and not only meet the requirements set by SPEC but offer numerous additional convincing benefits.

Centrifugally cast HOBAS GRP Jacking Pipes 324 mm in outside diameter were installed to accommodate the DN 150 heating line. To facilitate the jacking procedure HOBAS Poland delivered the standard 6-m-long pipes readily cut into 1-m-sections. The admissible jacking force determined by HOBAS equaled 30 tons. Not least thanks to the pipes’ benefits such as their smooth outer surface, however, the highest force recorded during implementation did not exceed 20 tons. Due to the non-disruptive trenchless installation method the works could be conducted during normal traffic conditions.

Since 1998 HOBAS Pipe Systems have been employed in about 90 heating pipe projects in Poland – aligning all delivered GRP pipes this would result in an 11-km-long line. Most of the projects have been realized in Warsaw and its surroundings. The pipes, mainly DN 300 to DN 1800 mm in diameter, are often installed in open trench and are therefore designed with a stiffness SN 10000; in many other cases they were realized with a higher stiffness suitable for trenchless installation.

Currently, HOBAS Protective Pipes are installed beneath Kasprowicz Street in Warsaw for the client SPEC DALKIA Warszawa. This job was initiated along with the construction of Marie Skłodowskiej-Curie Bridge as the existing district heating network in the dense underground infrastructure needed to be restructured. HOBAS GRP Products were a natural choice due to their outstanding parameters which facilitate the installation despite the heavy traffic in the city and allow a relatively thin pipe cover. The tight project schedule was a further key factor which let the client opt for HOBAS. Construction works at Kasprowicza Street commenced April 10 and are planned to be finalized in June 2012.

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Corrosion Protection with HOBAS® Protection Pipes
An interview with Stefan Scheiflinger (SCS), Head of Innovation Management and Application Development, HOBAS Engineering Austria.

What are protective pipes used for?
SCS: Protective pipes are used to protect sensitive utilities such as e.g. pipelines. There are various reasons for which protection is used: for example as extra precaution and protection against mechanical damage on e.g. gas pipelines, to protect the environment when transporting dangerous mediums or to maintain structural safety for roads or buildings above the pipe if the carrier alone does not provide enough load capacity.

What makes HOBAS Pipes so suitable protective pipes?
SCS: HOBAS Pipes have a long service life and are highly resistant to permeability. They can be adapted to suit every external load and are therefore very robust regarding deformation, ruptures and cyclic loads. The outstanding corrosion resistance of GRP products and their light weight are further advantages that make HOBAS Protective Pipes many a clients’ first choice.

For which applications fields are HOBAS Pipes especially suitable?
SCS: HOBAS Pipes are particularly often used when protective pipes are laid via the trenchless method jacking. Thanks to centrifugal casting GRP pipes can be produced with various stiffness classes in addition to the mentioned characteristics and are therefore favored jacking pipes. They are also often used to go beneath railways. GRP Pipes are nonconductive and insensitive to magnetic fields and resulting corrosion. If the carrier pipe (e.g. gas pipeline) is made of metal, the systems provider HOBAS offers adequate corrosion protection from the own portfolio.

What exactly is corrosion protection by HOBAS?
SCS: The aim is basically to protect the carrier pipe from corrosion in the long term. Corrosion protection fixed to HOBAS Protective Pipes is based on the principal of cathodic corrosion prevention with sacrificial anode. Since the sacrificial anode is made of metal less noble than that of the carrier pipe, possible corrosion first attacks the sacrificial anode and the carrier pipe is effectively protected. Sacrificial anodes are screwed into prepared sockets and conductively connected to the metal pipe. On jacking pipes, these sockets can even have a double function: to inject bentonite as lubricant and later on to hold a sacrificial anode.

Which advantages does using sacrificial anodes have?
SCS: The carrier pipe is in a simple way and over a long period of time protected against corrosion; regular maintenance or even unearthing the pipe is unnecessary.

Do you have further questions about protective pipes or corrosion protection by HOBAS? Send an e-mail to stefan.scheiflinger@hobas.com.
Protective pipes from CC-GRP are often employed to protect potable water pipes and sewers running beneath busy roads, but most often crossing a tramway or railway. Here they hold a dual function: On the one hand they protect the carrier pipe from static and dynamic loads and on the other they facilitate rehabilitating or replacing old lines by means of trenchless installation.

Hungary
In Miskolc, a project to develop the urban infrastructure has been implemented with the financial support of the European Union. This involved among other things the renewal and establishment of tramlines. Due to the upgrade and extension of public transport, the existing ductile iron potable water pipes below the surface had reached their structural limits. The client therefore decided to protect them with a HOBAS Casing. Reasons for his choice were above all the products’ excellent properties: corrosion resistance, long-term tightness, long service life and – especially important for this project – a high load bearing capacity. Calculations showed that HOBAS Pipes SN 10000 would provide enough stiffness to reliably protect the potable water pipe running beneath the new tramlines and roads for decades.

Czech Republic
Also the Czech Republic has been opting for HOBAS Pipes to protect water supply lines. The existing potable water pipe in the Region Ostrava, for instance, runs beneath highly frequented railways and could no longer hold out against the dynamic loads. The client set about looking for a suitable pipe material with high static and dynamic load capacity and which is insensitive to aggressive soils and other negative influences from the former mining area Ostravsko-Karvinská.

HOBAS GRP Pipes are being installed in the Region Ostrava for more than 20 years. Thanks to their corrosion resistance and relatively thin wall thickness but high stiffness they presented an ideal solution also in this project.

USA
Sometimes, HOBAS Casings do more than protect the carrier pipe inside them. In Charlotte, North Carolina, for instance, they were
installed to protect a raw sewage main and a petroleum pipeline. The casings were necessary at crossings of an existing pipeline which transports jet aviation fuel directly to Charlotte-Douglas International Airport. HOBAS GRP Pipes were chosen as a casing pipe to protect the petroleum line from interactions with the existing metallic pipeline. Jacking and hand-mining beneath the petroleum pipeline went smoothly. The City of Charlotte was provided with a nonconductive casing pipe material that does not harm the petroleum pipeline through stray current. The GRP casing is a structural solution which will provide a lifetime of corrosion free service.

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HOBAS Casings protecting both a raw sewage main and a petroleum pipeline in North Carolina, USA.
From Chile to Australia, from Russia to South Africa: More than 1,500 trade and business professionals from over 30 nations visited the HOBAS Stand at the IFAT Entsorga 2012 in Munich.

From May 7-11, HOBAS drew numerous experts to the company’s 156 m² booth at the IFAT Entsorga, the leading international trade fair for water, sewage, waste and raw materials management. The main eye-catcher at the fair was the new DN 3600 Jacking Pipe. Other highlights were the spectacular HOBAS NC Pipes and a Potable Water Tank filled with bottles of HOBAS Spring Water, as well as many interesting discussions and new promising contacts.

With approximately 125,000 visitors from 200 different nations the IFAT Entsorga 2012 set a new record. 2,939 exhibitors from 54 countries presented their products on the 215,000 m² exhibitions space of the world’s biggest trade fair of its kind. The next IFAT Entsorga in Munich will take place on May 5-9, 2014.

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The HOBAS Booth at the IFAT Entsorga 2012

Stunning: The DN 3600 Jacking Pipe

The „Tour d’IFAT“ initiated by the company HTI also stopped over at the HOBAS Booth
HOBAS – perfection to the last detail...

...not only in terms of water supply

Spectacular NC Exhibits at the HOBAS Booth

Detailed model of a HOBAS Potable Water Tank

Austrian tidbits tickled the visitors' palates