Issue 2/2014

PipeLine

HOBAS®

Shafts and Storage Systems

HOBAS® GRP Pipe Systems

Custom-tailored Stormwater Overflow Systems for Combined Sewers

The collection and discharge of storm- and wastewater represents a daily challenge for wastewater facilities and municipalities. In combined systems, domestic, commercial, and industrial sewage and stormwater are all transported to the wastewater treatment plant by one shared sewer. Due to an increase in heavy rain events, sewers are frequently surcharged and wastewater treatment plants reach their capacity limit. For the system to operate flawlessly even at peak times, stormwater retention basins are installed at suitable points. In combination with overflow structures, they regulate the water quantity to be led to the wastewater treatment plant. The retention basins serve as temporary storage from which the wastewater is gradually discharged.

HOBAS offers two alternatives to conventional retention basins: the HOBAS CSO (Combined Sewer Overflow) Chamber, a modular overflow system for combined sewers with low-maintenance solids separation, and GRP storage systems.

HOBAS CSO Chamber

In cooperation with the CVUT University Prague and in compliance with the EU Water Framework Directive 2000/60/EC, HOBAS developed a particularly efficient GRP overflow system for combined sewers: The HOBAS CSO Chamber separates solids from liquids very efficiently and directs them to the wastewater treatment plant, while the cleaned part of the water is discharged into the receiving water course.

Every single HOBAS CSO Chamber is made to measure. Compared to conventional sewer overflow systems, the HOBAS CSO Chamber provides numerous advantages: Its cleaning performance is much better even at low flow

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HOBAS CSO Chamber
Year of construction
2013
Total length of pipe
30 m incl. throttle and pumping shaft
Pipe specifications
DN 1600, SN 5000 and 10000, PN 1
Type of installation
Open cut
Application
Sewer system
Client
Wasser- und Abwasser-zweckverband Eichsfelder Kessel
Designer
Ingenieurgesellschaft für Wasserwirtschaft mbH Dipl.-Ing. Klaus Kunter
Building contractor
Tief- und Meliorationsbau GmbH
Advantages
Modular and compact structure, quick and easy installation, additional storage function, custom-tailored solution

rates, production time is very short, installation quick and easy, operation problem-free, the unit requires only little space and excavation – and not least, it helps protect the environment considerably.

The first HOBAS CSO Chamber was installed in 2007. Up to now, several projects have been realized in Slovakia and the Czech Republic. The first HOBAS CSO Chamber in Germany was implemented in Thuringia in fall 2013. The products' numerous advantages convinced the client and the designer – instead of the originally planned concrete structure, they opted for the new HOBAS Technology. Apart from the CSO Chamber, HOBAS also supplied the pipework as well as the pumping station for the throttled outlet leading to the wastewater treatment plant.

HOBAS GRP Storage Systems

Storage systems are employed when the installation of open retention basins is not possible due to space limitations (e.g. in city centers). Both products operate essentially in the same way: In events of heavy rainfall, the incoming water is first accumulated, then throttled and led into the subsequent sewer system. Leftover deposits of suspended solids in the sewer are washed out with the next rain and conveyed to the wastewater treatment plant. Thanks to the very smooth inner surface of HOBAS GRP Products, the sewer system is practically self-cleaning and requires hardly any maintenance. A practical example for such a storage system is the project Heidelsteinstraße in Fulda, Germany. Since the stormwater and sewage system was overburdened and in urgent need of rehabilitation, a new combined sewer was to be built and connected to a HOBAS GRP Storage System DN 3000.

Storage System Heidelsteinstraße
Year of construction
2012
Total length of pipe
55 m
Diameter
DN 3000
Stiffness class
SN 10000
Pressure class
PN 1
Type of installation
Open cut
Application
Storage sewer
Contractor
Josef Gehring GmbH & Co. KG, Fulda
Building contractor
Abwasserverband Fulda
Advantages
Low wall thickness, quick installation, light weight

The installation of the originally designed concrete structure proved to be too costly, which is why GRP was chosen as an alternative. Apart from the overflow structure, the whole storage system is made of GRP, i.e. even the throttle and connecting structure as well as the intermediate shaft. The 3.5 m difference in height on a length of approximately 8 m represented a particular challenge when connecting the overflow structure to the adjacent stream. No problem for HOBAS Experts though: The difference in altitude could be easily compensated by means of a swan-neck bend with an angle of 45°. The completely prefabricated modules were easily installed and connected to the combined sewer. At the beginning of 2013, the construction works were completed to the satisfaction of all parties involved.

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HOBAS® Tank for New Incinerator Plant

Emergency oil leak tank DN 1200 installed in open trench in Vantaa, FI

When a Finnish energy company planned an emergency oil leak tank for a new incineration plant, they were aiming at a reliable high-quality product. HOBAS had the solution: A CC-GRP Tank DN 1200 was delivered, tested for leak-tightness and successfully installed within merely two days.

Based in the city of Vantaa immediately to the north of Finland's capital Helsinki, Vantaan Energia OY is one of the country's largest energy companies. In 2011, the company started with the construction of a new incinerator plant, which shall comply with the country's stringent environmental requirements. The incinerator plant will produce enough heat and power to serve the entire capital Helsinki and its surroundings.

A part of the project involved the installation of an oil leak tank next to a heating oil tank, which will feed the incineration plant's gas turbine. The turbine will keep the power and heat production stable even at varying amounts of combustibles. The investor placed a number of demands on this emergency tank: It should be easy to install underground, reliably leak-tight and able to bear high loads from trucks and heavy machinery. HOBAS had the ideal product for these requirements.

In summer 2013, HOBAS Poland supplied a CC-GRP Oil Leak Tank DN 1200, 12 m in length, with an inspection shaft DN 800 and a submersible pump. Thanks to the particularly corrosion and chemical resistant inner liner, it can handle very corrosive fluids and oil mixtures. The tank was delivered in two units and laminated together directly on site; its absolute leak-tightness was tested by HOBAS Experts. After only 48 hours, the HOBAS Emergency Tank was successfully installed and ready for use. The client was very satisfied with his decision and the project's quick and professional implementation by HOBAS Poland.

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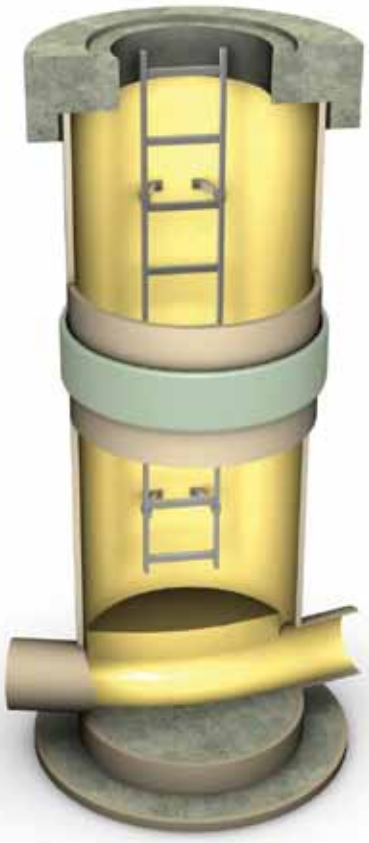
Year of construction
2013
Construction time
2 days
Diameter
D_e 1229 / DN 1200
Pressure class
PN 1
Stiffness class
SN 5000
Application
Emergency tank for incineration plant
Installation method
Open cut
Client and contractor
Vantaan Energia OY
Advantages
Easy installation, reliably leak-tight, able to bear high loads

Benefits of HOBAS® GRP Shafts & Manholes

HOBAS Shafts and Manholes complement HOBAS Pipes and Fittings creating an end-to-end top quality, corrosion resistant system with a service life of at least 50 years.

Thanks to the production process, the shafts and manholes can be custom built to meet the requirements of a wide variety of applications. They may also be used for access, inspection and maintenance but also for ventilation, throttling, pressure releasing structures, pumping stations, or well chambers. Clients have a large range of diameters to choose from, usually between DN 800 to DN 3600. Depending on the function of the special fabricated piece, it may consist of a GRP pipe, a GRP channel, a prefabricated shaft base (excepting tangential shafts), which is tailored to suit connections and equipment. On demand, the base can be equipped with an anti-flotation measure.



HOBAS® *Standard Manhole*

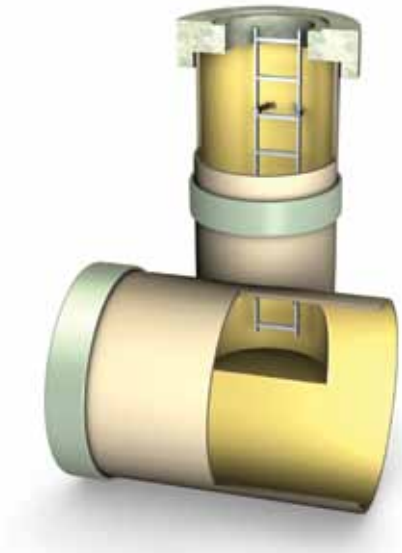
What HOBAS Shafts and Manholes all have in common is their **corrosion resistance**: They are completely **seamless** and therefore highly corrosion resistant on their in- as well as exterior. Like all other standard products by HOBAS also the shafts are fit for wastewater with a pH value from 1 to 10 and an operating temperature of 35°C. The GRP structures are highly resistant to the sulfuric acid generated by microbiological activity and hydrogen sulfide gas.

HOBAS GRP structures considerably **reduce** construction time and ultimately the **overall costs** due to the products' comparably **low weight**, which requires lighter/smaller equipment (e.g. for lifting), and their **quick assembly**. Apart from this, HOBAS Shafts and Manholes can be **delivered ready-to-use** with integrated GRP channel at the bottom, fitted ladders, intake and outlet structures, bends, pumps, and other required equipment. This further decreases construction time and keeps requirements at the construction site to a minimum. Moreover, almost any imaginable **shaft depth** can be achieved within a matter of **only a few hours**: Further pipe segments are simply stacked on top of each other and joined via pre-mounted FWC couplings with full-width EPDM gasket.

Summing up the main advantages of HOBAS Shafts and Manholes, one can say that the contractor receives the **benefit of time** and the owner corrosion resistant design that lasts a **minimum of 50 years**.

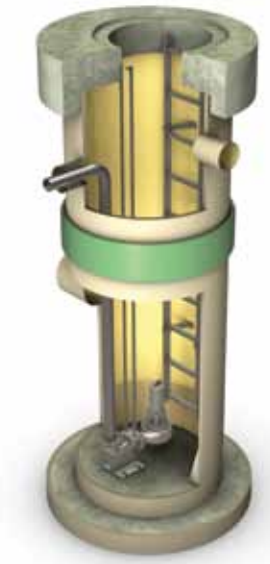
Read more about HOBAS Shafts and Manholes on our website.

Should you be interested in manhole renovation click HERE.

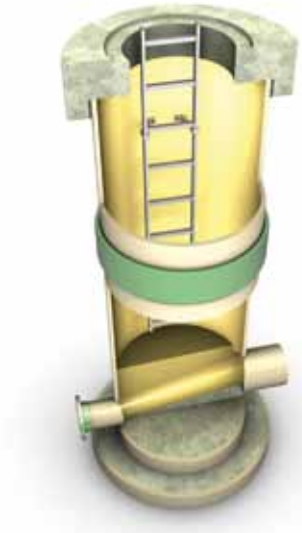


HOBAS® *Tangential Manhole*

HOBAS® *Utility Shaft*



HOBAS® *Pump Shaft*



HOBAS® *Pressure Release Shaft*

General benefits of **HOBAS®** Shafts and Manholes:

- Low weight
- Seamless construction
- Quick and easy installation – short construction time
- High corrosion resistance on the in- and outside
- Excellent hydraulic properties
- Connectable to other materials
- Delivered as ready-to-use component – reduction of risks at construction site
- No further protective coatings or sealing required
- Complex customized structures possible
- Pump shafts, well chambers, sewer overflows, etc. available

Double-Function HOBAS® Water Tank

HOBAS® CC-GRP Tank for potable water and fire fighting water installed in Látkovce, SK

In 2012, the operators of a new agritourism business in the Slovakian town of Látkovce were in need of a tank with two 15 m³ chambers, which should be used as potable and fire fighting water reservoir. The required product should be of high quality and quick and easy to install. Due to the project's strong environmental focus, the harmonious interaction of technology and nature as well as a long lifetime were also important criteria.

Based on positive experiences and successfully implemented tank projects in the past, the assigned construction companies turned to HOBAS Slovakia. The team reacted promptly and offered a solution for the water tank with HOBAS Pipes DN 2400/2000, PN 1, SN 5000.

The HOBAS Potable and Fire Fighting Water Tank was delivered in transportable units and assembled directly on site within no more than three hours. HOBAS Experts then tested the finished storage tank for leak-tightness. Merely five hours after its delivery, the reservoir was ready for use.

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Year of construction
2012
Construction time
5 hours
Diameter
DN 2400/2000
Pressure class
PN 1
Stiffness class
SN 5000
Installation method
Open trench
Application
Tank for potable water and fire fighting water
Client
Agrotourism center in Látkovce
Designer
Ing. Ján Gašparik, Ing. Eva Volleková
Constructor
Stavaxes s.r.o., Creativ s.r.o.
Advantages
Low weight, easy and fast installation, environmentally friendly product, long lifetime

HOBAS® Storage System as Part of a Highway Drainage System

Nine Tanks Ensure Safe Journeys in Poland

In recent years, Poland has seen a great number of road construction projects. Special attention was paid to the missing A4 highway sections connecting the Polish-German with the Polish-Ukrainian border. Once completed, the highway will be about 670 km long. HOBAS Retention Tanks ensure efficient drainage on important sections.

To provide safe roadways, stormwater has to be drained quickly and efficiently from the surface. A well thought-out drainage system ensures the safety of travelers and prevents damages to the road. Tanks play a key role in this, for they temporarily store a surcharge of water. One of the biggest projects that employed GRP tanks was the construction of highway A4 in the south of Poland. Two lanes in either direction divided by a wide median were built, making also a provision for a third lane. Tanks for storage and equalizing pressure with a pumping station were integrated at several points of the drainage system. This was necessary due to the environmental requirement that stormwater on the 9.32 km highway section needs to be collected and discharged in a closed system.

A total of 9 tanks with a capacity of 266 to 854 m³ each were delivered. The storage tanks' size was chosen to match the expected water volume including also a possible surcharge of 10% and some extra volume for emergency situations. They comprise 2 to 3 pipes DN 3000, 13 to 61 meters in length. The delivery also included inspection manholes.

In this project, the investor opted for HOBAS GRP Pipes to ensure a long service life and the required mechanical strength as well as a smooth in- and exterior for low maintenance. The contractor valued the flexibility regarding the deliveries that made it possible to complete the installation on time.

The tanks were installed between July and December 2011. Thanks to the light weight of the GRP units and their push-on FWC joints, the storage systems were assembled within 1-2 days only.

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Tweet

Year of construction
2011
Installation time
1-2 days per tank
Diameter
DN 3000
Pressure class
PN 1
Stiffness class
SN 10000
Application
Stormwater retention tanks
Installation method
Open trench
Client
GDDKiA
Constractor
Budimex S.A.
Advantages
Light weight, modular construction, quick installation, flexible deliveries