Make things happen. **HOBAS®**

HOBAS®
Irrigation Pipe Systems

Watering Our World's Gardens

Irrigation Systems

Since water usually has to travel far to its destination, irrigation systems with poor performance may waste up to more than 50 percent of the total water before it reaches the crop. This is the case when there is pressure loss or due to bad hydraulic properties. Great potential for economical as well as ecological improvement therefore lies in the applied irrigation technology and equipment, respectively the quality of the mainline. Water can be prevented from evaporating and percolating by opting for a closed underground or above-ground pipeline instead of open ditches and canals. Closed systems furthermore help prevent erosion (e.g. on slopes), protect the environment from water containing agricultural pesticides and fertilizers, vice versa ensure that irrigation water is not contaminated and reduce maintenance costs and efforts (no clearing of weeds and alluvial material).

Choosing the right products will prove its worth regarding cost-effectiveness as a pipe is not simply a pipe of any material: Factors such as service life-time, installation, maintenance, hydraulic properties, tightness of the system, etc. play a decisive role for profitability.

Quality for Generations

HOBAS has been providing Glassfiber Reinforced Plastic (GRP) Pipe Systems for irrigation mainlines since the beginning of the 1980s. Thanks to the careful raw material choice, composition and unique production process, this composite's inherent advantages have proven their worth around the globe. From corn fields in the US to olive groves in Italy, clients have been counting on the impeccable quality of HOBAS GRP Irrigation Pipe Systems for decades.

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A Sustainable and Cost-Effective Solution

HOBAS GRP Mainlines

There are various irrigation techniques that are differentiated in how the water is distributed. The aim is however always the same: to uniformly supply fields with water in order to maximize plant quality and crop yields. From the source the tapped water is transported through so called mainlines to the valves, the lateral lines and finally the sprinklers or emitters.

Thanks to over half a century of experience in production and development the inherent benefits of HOBAS Pipe Systems offer sustainable and cost-effective water supply for up to 100 years:

Overview of your benefits

- Outstanding hydraulic properties - smooth inner pipe surfaces minimize friction and pressure loss (significant power saving in pumped systems)
- Low weight and simple push-on couplings enable high installation rates even in less accessible and demanding terrain
- Leak-tight system for maximal loss-free flow
- UV resistance
- High corrosion resistance
- Non-conducting material (installation near e.g. railroad tracks without additional protective measures)
- High abrasion resistance (inside and outside)
- The high dimensional accuracy of the outside diameter enables trenchless installations such as pipe relining and jacking
- Complete pipe system including manholes and fittings
- Variable lengths - the pipes can be easily adjusted (shortened) on site
- Curved installation by angular pipe deflection in the couplings
- Consistently high tested and certified quality (material properties, pressure testing, etc.)
- Installation possible at extremely high or low temperatures
- Compatibility with other materials
- Pipe installation via several above ground, open trench and trenchless methods (e.g. relining and jacking)
- Installation also in e.g. weak soils due to flexibility in couplings
- Approved for potable water by numerous water authorities (information on request)
- Service life up to 100 years

Testing the angular deflection in couplings

Service & Quality

Our Services

Reliability does not end with our products; it goes without saying that we will provide you with help and advice throughout your project. You can rely on our support and decades of experience in all areas including:

- Support in dimensioning and routing pipelines
- Advice on the construction site
- Drawing up a verifiable structural design to the relevant national specifications
- Support in dimensioning bedding, anchoring and thrust blocks
- Hydraulic calculations
- CAD drawings

Top Quality

HOBAS supplies customized complete systems that third party institutions as well as our experts at in-house research and development centers regularly and thoroughly test for properties, strength and load capacity.

Our products for gravity and pressure applications are available in a wide range of diameters (DN 150 – DN 3000, up to 3600 on request) and various pressure classes (PN 1 – PN 32 for relevant DN). They have gained an array of national and international certificates and approvals and comply with the standards set by European, American and other international organizations.

These include but are not limited to EN 1796, ISO 10639, ÖNORM B 5161, TÜV (MUC-KSP-A2000) quality mark and ISO 9001.

Environmentally Friendly, Please!

Committed to Environmental Protection

Our strong commitment to conservation can be seen throughout the entire product life cycle. In the production process, pipe transport, installation, operation, and above all in our everyday life at HOBAS, we ensure that we not only do the bare minimum required but take every opportunity we can to protect the environment.

The environmental management system in place at HOBAS Organizations conforms to the strict requirements of the ISO 14001 standard. We see the continuous improvement of our environmental protection measures as part of our corporate social responsibility and the HOBAS Group has therefore set itself the goal of improving its eco-balance year by year. Cost- and energy-efficient management of raw materials and production processes is a matter of course for us, as is minimizing resource use and any impact on the environment.

HOBAS Production Process

Centrifugal casting process patented by HOBAS

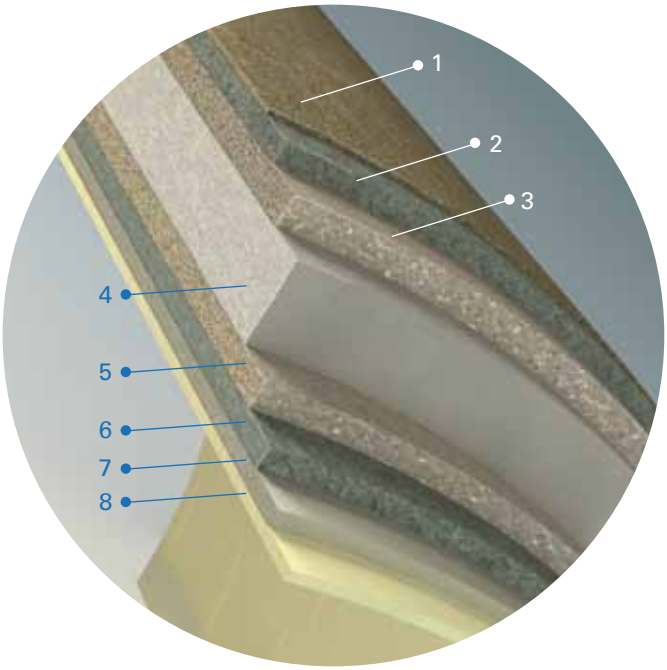
HOBAS GRP Irrigation Systems distinguish themselves from other pipe materials by their composition and the unique production process. They are made of chopped glass fiber and mineral reinforcing agents which are enveloped by unsaturated polyester resins that create a bond between them. The pipe wall is built up from the outside inwards in a rotating mold. Once all the materials have been fed into the mold, the speed of rotation is increased. Spinning at a pressure of 30 to 70 bar presses the material against the mold wall, which removes the gas, compacts and cures it. This centrifugal casting process ensures that the pipes are circular, void free and have a uniform wall thickness over their entire length.

Thanks to the three-dimensional chemical bonding of the resin as a thermoset, the pipe retains its stability even in very warm environments. One of the benefits of composite material technology is that the products' strength properties can be designed for the specific load directions required.

Last but not least, the extremely resin-rich inner layer of at least 1 mm guarantees high corrosion and abrasion resistance and features a particularly long service life. In cases where various different materials have to be used in order to meet different requirements regarding for instance load, operation and installation, HOBAS supplies a complete system from a single source – nothing but the best for our customers!

HOBAS Pipes have the following characteristics depending on the design:

Physical Properties	
Density	~ 2000 kg/m³
Coeff. of linear thermal expansion	~ 26 - 30 x 10^{-6} 1/K
Thermal conductivity	~ 0.5 – 1.0 W/m/K
Elastic modulus	~ 7000 - 15000 N/mm²
Volume resistance	> 10^{13} Ω
Surface resistance	> 10^{12} Ω
Roughness coefficient (Colebrook White)	0.01 - 0.016 mm



Pipe Wall Structure*

1 External protective layer
2 Outer reinforced layer
3 Transition layer
4 Core layer
5 Transition layer
6 Inner reinforced layer
7 Barrier layer
8 Resin-rich internal liner

*Schematic illustration of in reality seamlessly merged pipe wall construction. Layer design is adapted to suit requirements set by e.g. the conveyed medium, installation method, pressure, external forces, etc.

HOBAS® System Solutions - Your Complete Package

Irrigation Pipe Diameters

Available Diameters DN*						
150	450	750	1000	1500	2160	3600
200	500	800	1100	1600	2200	
250	550	850	1200	1720	2400	
300	600	860	1280	1800	2500	
350	650	900	1350	1940	3000	
400	700	960	1400	2000	3500	

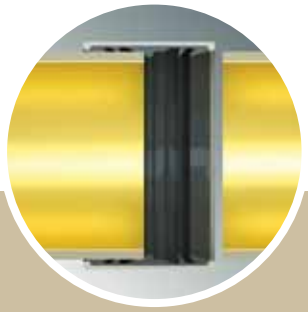
*Further sizes on request.

Pressure classes range from PN 1 to PN 32 for relevant DN; standard stiffness classes from SN 5000 to SN 10 000 (further stiffnesses on request).

HOBAS Irrigation Pipes are produced in lengths of 1; 1.5; 2; 3 and 6 meters (tolerances to factory standards). Other pipe lengths can be delivered on request.

HOBAS Couplings

FWC Couplings are used as the standard means of joining HOBAS Irrigation Pipes. This coupling model is made of glass fiber reinforced polyester resin with an integral full EPDM sleeve gasket. It means that the couplings mounted on one end of the pipe at the factory are verifiably leak proof and the pipes only have to be pushed together on the construction site. The well-designed HOBAS FWC Couplings enable higher installation rates and are used as standard for various pressure and gravity pipes.



Transversal section of a symmetrical FWC HOBAS Coupling

Supplementary HOBAS Product Samples

Tees

Bends

Tapers

Y-Pieces

Flanges

Practical Examples

Irrigation Line Rehabilitation with HOBAS in Bulgaria

Thrace is one of the most fertile regions of Bulgaria. Its climate is ideal for growing sunflowers, corn and crop, and provides optimal conditions for viniculture and Bulgaria's renowned rose cultivation. The lack of rainfall in summer, however, is bridged with a 30 year-old irrigation system which taps the rivers Striama and Pyasachnik.

At the end of 2008 the Bulgarian Ministry of Environment and Water decided to rehabilitate a 2.1-km-long deteriorated section of the concrete line near the town Rakovski. It was decided to utilize HOBAS GRP Pipe Systems DN 500, PN 6 for the products' high quality, long lifetime, excellent hydraulic characteristics, long term static properties and their simple and fast installation. Situated between an extensive wheat field and a large vineyard, the construction site could only be approached with small vehicles. The pipes' easy handling and comparably light weight thus considerably facilitated their transportation from the 15-km-far storage area.

Thanks to the outstanding cooperation with the Bulgarian contractor Lomstroy, HOBAS Bulgaria and the production facilities in Czech Republic and Romania, the first 500 m were installed within a week only and the remaining 1.6 km of the line were accomplished in merely three weeks. The contractor and client Lomstroy confirmed that HOBAS Pipes were remarkably easy to handle, not only due to their light weight but also because of their simple push-to-fit couplings and compatibility with other materials. According to the client the offered made-to-measure system solutions as well as the professionalism and commitment of the HOBAS Team are basis of the overall success.

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Project Data

Year of construction
2009
Construction time
1.5 months (incl. test)
Total length of pipeline
~ 2.1 km
Diameter
DN 500
Pressure class
PN 6
Stiffness class
SN 5000
Installation method
Open trench
Advantages
High quality, long service life, excellent hydraulic properties, long term static properties, light weight, simple and fast installation

A Simple Solution for a Complex Project in Antalya, Turkey

Construction works for the massive irrigation project ÇAYBOĞAZI to supply 13,593 ha of land stretching across 24 villages in Turkey, were initiated in 1996. The aim of the so-called Elmali Plain Irrigation project was to convert uncultivated area into agricultural land for various crops, which would improve the region's economy.

Implemented by the Turkish company Özdemir, the project was split into several stages. The first involved the construction of the ÇAYBOĞAZI dam and its adjacent structures. It was completed in 2000 and serves as water source for the Elmali Plain irrigation system which was implemented as phase two. Regarding the latter, a 28.7 km mainline with a capacity of 13 m³ per second was laid to supply the surrounding area. Including the smaller distribution lines, the network totals 503 km in length.

Although the piping system had been originally planned to be implemented with PVC and concrete pipes, 88 km of the larger diameter pressure pipelines DN 450 – 1200, PN 4 – PN 10 were finally accomplished with HOBAS GRP Irrigation Systems.

With the decision of the state body DSI (Devlet Su Isleri - General Directorate of State Hydraulic Works) to use pipelines in order to avoid water loss (e.g. evaporation) it was only understandable that the pipe would have to reflect leak tightness and reliability for decades in order to present a cost-effective investment. The optimal hydraulic properties of HOBAS Products, their light weight and therefore easy installation, long service life of up to 100 years and high corrosion resistance convinced the DSI.

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Project Data

Year of construction
2002 - 2009
Total length of pipeline
88 km
Diameter
DN 450 - DN 1200
Pressure class
PN 4 - PN 10
Installation method
Open trench

Advantages
Excellent hydraulic properties, long term static properties, light weight, simple and fast installation, high quality, long service life

Water from Mother Nature & a Little Human Intervention, USA

A tight installation for HOBAS was constructed in an environmental sensitive wetland area near Boulder (Colorado), USA, for the 75th Street Diversion & Pipeline.

In an effort to bring additional relief after the peaking drought conditions in 2002, a new supply line was installed that originates at Boulder Creek and brings 60 million liters per day of raw water through the DN 900 line to the City of Lafayette for storage. This water is stored at one of the two Goose Haven reservoirs and used to supplement the current supply.

For the 7,300 m of pipeline it was mandated the construction be environmentally sensitive; the installation methods needed to address the concerns of constructing through wetlands and designers needed to ensure that there would be no long-term adverse effect on such. Finally, there was a history of very corrosive soils in the area, making metallic piping options undesirable.

The tight tolerances of the joint systems, the history of leak-free installations and long life expectancy led to the specification of only GRP HOBAS Pipes. "We wanted a pipeline that would last for an extended period of time. HOBAS Pipes have a good track record for maintenance and durability and have a very smooth interior that allows for easy transport of sediments and small rocks in the diverted raw water." stated Aaron Asquith, Principal with McLaughlin Rincon, Ltd. of Denver.

In order to minimize the impact in the sensitive areas and to relieve the stress on the water system due to drought conditions, the project was put on fast track: The permitting allowed only 4 ½ months for construction during the winter months; construction was substantially complete by February 2003.

The pipeline project was a huge success and everyone involved from the engineer and owner to the contractors were very satisfied with the product quality, ease of installation and the timely delivery.

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Project Data

Year of construction
2002 - 2003
Construction time
4.5 months
Total length of pipeline
7.3 km
Diameter
DN 900
Stiffness class
SN 10000
Pressure class
PN 10
Installation method
Open trench
Advantages
Long service life, history or leak-free installations, timely delivery

The Rain Gets no Blame in Italy and Austria

Italy's dry spells during the summer months can no longer influence corn yields in Bacino Ronego, for about 7.9 km of HOBAS Irrigation Pipes DN 500 to DN 700, SN 10000, PN 10 were installed to transport 500 l/s from the channel LEB to 12,000 ha of fields.

Civil engineer Mascia Gaino from the consortium "Consortio di Bonifica della Riviera Berica" especially highlighted the flexibility inherent to HOBAS GRP Pipes as deciding factor for the client's choice of pipe material. The pipeline route runs through week soil and therefore called for a line flexible enough to adapt itself to settlement and soil compaction. HOBAS Couplings with their 4-lipped full-width EPDM profile absorb angular deflections while keeping the line tight. Flexibility is moreover given regarding e.g. future maintenance, extensions, rerouting and repairs of damaged pipe sections caused by for instance agricultural machinery: due to the accurate outer diameter thanks to the production process, HOBAS Pipes can be cut anywhere along their standard 6-m-length directly on site. Other than with bell and spigot jointing systems the couplings are mountable without subsequent work on the cut pipe and without wasting remaining parts.

A lack of rain also prompted an agricultural cooperative in Zwerndorf, **Austria**, to take matters into their own hands by investing in an irrigation system that would reliably compensate the lack of rainfall.

Together with the engineering office the cooperative compared several pipe materials for the mainline that would transport the water from the river Thaya in approximately 2 km of pipe to the corn fields concerned. Corrosion resistance and a long lifetime were the major criterion for a cost-efficient, sustainable solution. The excellent properties of HOBAS GRP Pipe Systems facilitated the decision between several materials. Thanks to the products' composition and design they provide a low maintenance service life for up to 100 years and certified high corrosion resistance. After around 4 months the installation of pipeline via open trench and partially sliplining to underpass a state road was successfully finalized.

Reliable and uniform water supply from the river Thaya now ensures maximal yields independent of the weather gods.

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Project Data Austria

Year of construction
2009
Construction time
~ 4 months
Total length of pipeline
2110 m
Diameter
DN 500
Pressure class
PN 16
Stiffness class
SN 10000
Installation method
Open trench, relining
Advantages
Corrosion resistance, long lifetime, cost-efficiency

Project Data Italy

Year of construction
2008
Time of construction
~ 10 months
Total length of pipeline
7.9 km
Diameter
DN 500 - DN 700
Pressure class
PN 10
installation method
Open trench
Stiffness class
SN 10000
Advantages
Flexibility of pipe system, pipes can be cut on site, easy installation, tight system

HOBAS Group Worldwide
HOBAS manufactures and markets HOBAS GRP Pipe Systems. The HOBAS network includes HOBAS production facilities and sales organizations in Europe and throughout the world.

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HOBAS

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