



**HOBAS**<sup>®</sup>

Top Performance Pipes  
for Toughest Conditions



## Corrosion, Abrasion, Impacts: Customized Solutions for the Most Challenging Applications

### HOBAS® Top Performance Pipe Systems

When aggressive materials are transported through pipes, their effect on the inner pipe surface can be very damaging. Depending on the medium, the pipes therefore need to be repaired or replaced quite frequently – resulting in great expenses in terms of time and costs. But it does not have to be that way: We at HOBAS have developed a pipe that puts your mind at ease.

Our CC-GRP Top Performance Pipe Systems are equipped with an exceptionally durable inner protective layer and are customized for each project individually. Our pipes are therefore suited for a very broad range of challenging applications:

- Main sewers (excellent abrasion and corrosion resistance)
- Sewers with retention function (self-cleaning effect)
- Drainage pipelines with very high slopes and flow containing abrasive materials
- Culverts (resistance to the impact of rocky, abrasive material during heavy flows)
- Efficient pressure pipelines (extremely smooth inside surface with long service life)
- Industry applications (transport of aggressive materials)

As a customer, you can rely on the following

#### Benefits:

- **Top quality – independently checked**
- **Very high self-cleaning capacity**  
(roughness coefficient up to 10 times better than standard CC-GRP)
- **Customized abrasion resistance**  
(protective layer of min. 2 mm)
- **Long-term leak-tight, flexible couplings**
- **Extraordinary corrosion resistance**
- **Very high impact resistance**
- **Comparably long service life**
- **Excellent engineering support**



## Innovative Wall Structure for Impressive Benefits

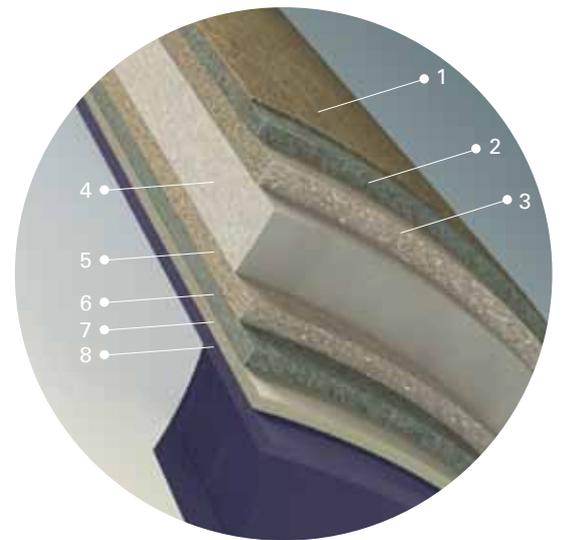
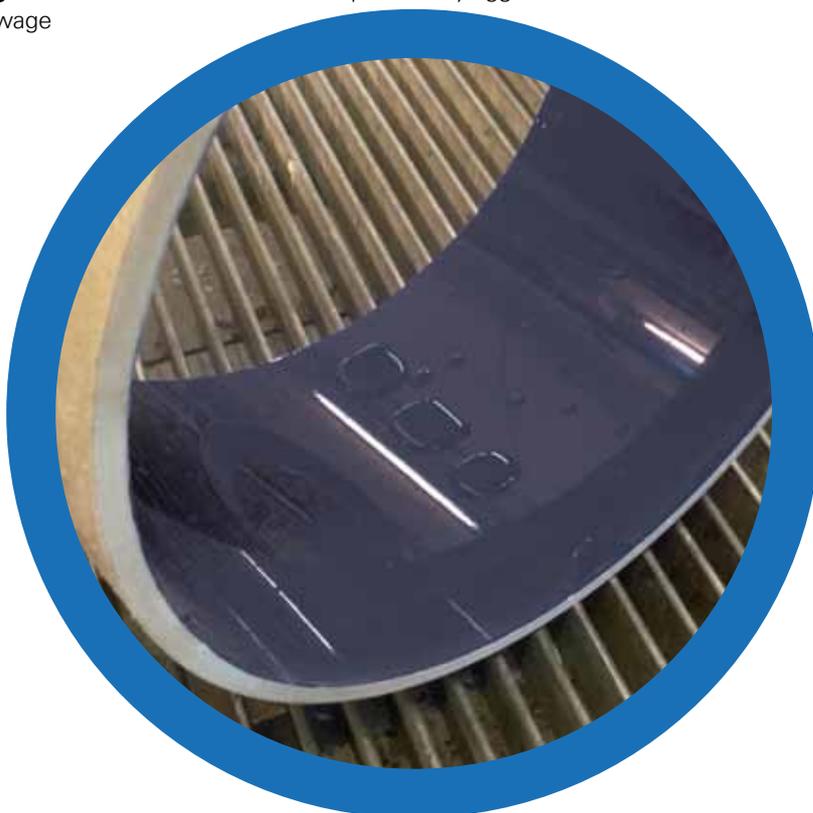
### HOBAS® Top Performance Pipe Wall Structure

The layer design of the HOBAS Top Performance Pipe Wall Structure is adapted to each project individually and suits requirements set by e.g. the conveyed medium, the installation method, the pressure class, external forces, etc. Over 60 years of experience in the production of centrifugally cast pipe systems make HOBAS your reliable partner for pipes for the toughest conditions.

### Extraordinary Benefits of HOBAS® Top Performance Pipes

HOBAS Top Performance Pipes impress with extreme durability when it comes to abrasion and impacts, and they show a unique performance in deflection and strain corrosion tests. Other benefits include:

- **Very high abrasion resistance** to safely transport even very aggressive media
- **Extremely smooth inner surface**, preventing sedimentations and ensuring optimal flow properties
- **Highly flexible inner protective layer** that withstands demanding deflection tests
- **High impact resistance** suited for the toughest operating conditions
- **High corrosion resistance** even to particularly aggressive domestic sewage



#### Typical Pipe Wall Structure\*

- 1 External protective layer
- 2 Outer reinforced layer (glass fiber, thermosetting resin)
- 3 Outer transition layer (glass fiber, thermosetting resin, sand)
- 4 Core layer (sand, thermosetting resin, glass fiber)
- 5 Inner transition layer
- 6 Inner reinforced layer
- 7 Barrier layer
- 8 Highly resistant protective layer (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. The wall structure can be customized for special project conditions.

## Production of **HOBAS**<sup>®</sup> Top Performance Pipes

### Innovative Centrifugal Casting Process Producing Customized Pipes With Customized Protective Layer

HOBAS GRP Pipe Systems distinguish themselves from other pipe materials by their composition and unique production process. They are made of chopped glass fibers, thermosetting resins, and reinforcing agents.

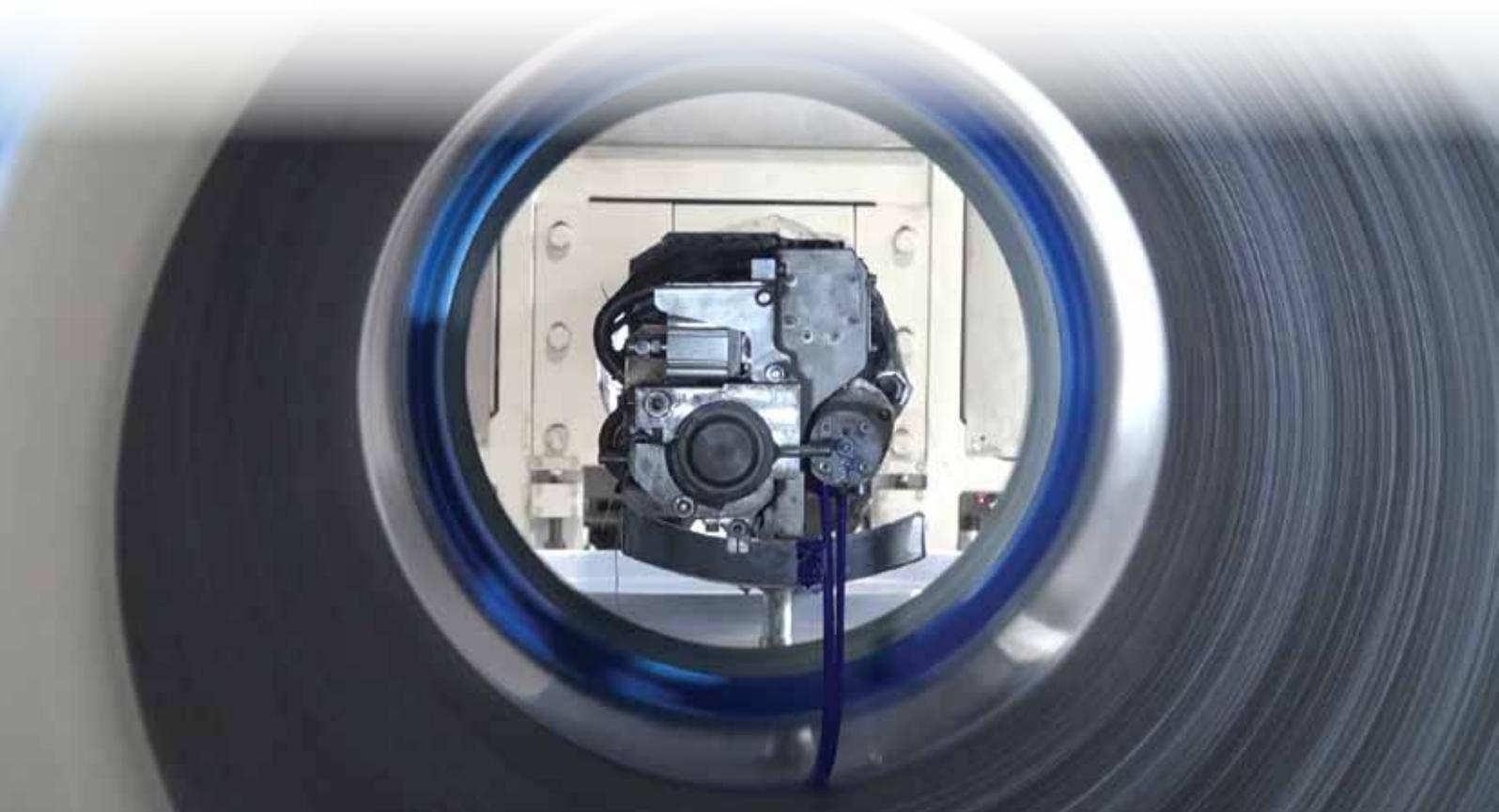
These components are enveloped by the resins that create a bond between them. Depending on the required pipe properties such as stiffness class, pressure rating, and chemical resistance, the pipe wall is constructed on the basis of a process-controlled production algorithm.

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. High centrifugal forces up to 75 g (g-force) press them against the mold wall. Any trapped gas is fully vented and the raw materials are condensed to a maximum, creating a high quality, very solid and void-free pipe wall. In the final step of production, the pipe is heated to cure (the resin hardens).

The mold rotates while this process takes place, ensuring that the pipe remains circular with an exact outer diameter and a uniform wall thickness over the entire length.

Thanks to the HOBAS Centrifugal Casting (CC) Process, the thickness of the inner protective liner is tailored to suit the pipe's designated application and enables it to withstand the most aggressive media over a comparably long period. The typical thickness of the protective layer is min. 2 mm.

The production process, however, also allows for **thicker liners** if required by the client and project. With a broad range of liner materials at hand, HOBAS is able to provide a customized selection of pipes that optimally suits the variety of applications and their individual abrasive behavior in each project.



## Highest Standards for Top Quality

### **HOBAS® Quality: Nothing but the Best!**

The quality, environmental and safety management systems in place at the HOBAS Subsidiaries comply with the latest requirements of ISO 9001, ISO 14001 as well as OHSAS 18001 and are certified by independent institutes. Uniform high quality standards are a key feature of HOBAS Products and firmly rooted in the corporate philosophy. The quality management system covers all areas in each company, including product development, quality control processes, shipping, and service – what you receive is consistent high quality without any ifs and buts.

Our comprehensive quality control program not only meets international standards but also takes special customer specifications into consideration. HOBAS holds the octagon quality mark issued by Germany's TÜV technical service and many other approvals. At the HOBAS TechCenter, which is certified to international standards including ISO/IEC 17025 and by internationally renowned institutes such as TÜV Süd, continuous quality control of incoming raw materials through to finished products is carried out by our experts and monitored by external testing agencies.



Our internal HOBAS Quality Control Program includes the following:

- Testing of raw materials
- Testing of semi-finished products
- Testing services
- Technical release for production
- Strength tests on finished products
- Visual and dimensional inspection of finished products
- Hydrostatic and hydrodynamic tests
- Calibration of instruments
- Ensuring the identification and traceability of products
- Checking of planning processes and design
- Checking of suppliers

Our HOBAS Experts at the research and development departments, application engineers and installation teams are highly qualified. State-of-the-art technical equipment and cooperation with internationally recognized institutes and experts are your guarantee for top-quality products and comprehensive service.

### Highest Standards: Tested and Proven to Work

HOBAS Top Performance Pipes are tested in the internationally recognized, state-of-the-art HOBAS Laboratory - the HOBAS TechCenter. Furthermore, we make sure that only products complying with the highest standards on the market are delivered to our customers.

Among these standards are:

- EN 14364
- EN 1796
- ISO 10639
- ISO 10467
- ISO 25780
- ÖNORM B 5161
- etc.



## Dedicated **HOBAS**<sup>®</sup> Experts for Your Project Success

### Customized Support to Meet Your Challenges

HOBAS is known for supplying complete engineered products to meet each customer's individual requirements. When it comes to transporting demanding media, one single pipe design will not suffice to suit all needs. HOBAS and our R&D teams around the globe will assist you in selecting the best pipe liner as well as the best performing GRP structure for the designated application and installation.

At the HOBAS TechCenter in Austria, one of the world's most modern centers for research and development of GRP pipe systems, our experts analyze your project's unique requirements and specify the appropriate pipe characteristics to ensure your project runs smoothly. Over 60 years of experience in GRP pipe production, top-notch research and testing facilities, and – most importantly – passionate plastics experts make sure that you receive top quality products.

HOBAS is committed to providing customers worldwide with professional support such as:

- **Technical advice** for planning, installation, and rehabilitation
- **Static and hydraulic calculations** to various regulations
- **Design and drawings** for manholes and special constructions in 2D and 3D
- **Consultancy, training and support** for contractors
- **Installation support** on site
- **Technical documentation** and information material

Our engineers are happy to assist you with feasibility studies, and accurate technical drawings are just as much part of our service as are HOBAS Pipe Consultants on site – to ensure that even the most difficult challenges can be overcome without a hitch.



## Top Performance in Harmony with Our Environment

### Environmental Protection

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 the 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.

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



Highly impact resistant pipe, Poland 2016



Top performance pipe customized for jacking installation



Highly abrasion resistant pressure pipe, Poland 2014



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