



Make things happen. **HOBAS®**

HOBAS® Pipe Systems - Improving the Quality of Life around the Globe



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Our Mission, Values and Responsibility

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What We Do to Make Things Happen

Alongside a line of celebrated devices that human kind has invented to serve our needs arising with development and progress, pipes rank amongst the most essential innovations of and for our civilizations. The denser the population, the more our all health and wellbeing, that of our economies and not least of our environment depend on functioning piping systems: With them we transport water to and from homes, to dry areas for irrigation, from roads, tunnels and bridges for drainage, to and from industries and for producing green energy.

Over the past millenniums, people have been employing different materials for pipe systems. With the growing number of the world's population, the increasing scarcity of resources and the emanating need to tap the full potential of our devices, pipe materials have been improved and new ones were found or even created to suit the ever tightening demands and require-

ments regarding the products' characteristics. Progress accelerated most, however, over the last century, in which rapid advances in technology bore so called new materials such as plastics and composites.

As GRP (glass fiber reinforced plastics) Pipe System Producer, HOBAS belongs to the pioneers of revolutionary developments in piping of the past century. Assuming responsibility, it is our task to continue creating innovative products and systems and to respond to our customers' needs even better by providing custom-made solutions while respecting our environment.

We are proud of the fact that we actively take part in improving the quality of life around the world. Doing so, we live by our carefully chosen motto and are convinced that together, all the more, we are able to: [Make things happen.](#)



From the Idea...

For more than half a century has HOBAS been working according to its company motto "Make things happen." All began at a dye-works in Basel, Switzerland, where a group of specialists sought an alternative material for the deflection rollers used in the dyeing process. Wood had proven to be insufficient, as it was sensitive to the applied heat and chemicals, deformed over time and damaged the expensive fabrics. An ideas competition was launched predefining the necessary characteristics: light weight to preserve the bearings, a smooth non-absorbing surface and a perfectly concentric outside diameter for uniform dyeing results, ideally cost effective.

A group of resourceful mechanical engineers at the Swiss dye-works built a centrifuge and produced a roller made of glassfiber reinforced polyester resin. Although previously composite materials had only been used in automotive, aircraft and shipbuilding industries, their light weight and resistance to corrosion and chemicals also made them ideal for other applications. The innovative centrifugal casting process enabled it to meet the specifications for the smooth and consistent outside diameter, as the inside diameter of the casting mold was determined in advance. The perfect distraction roller for dyeing textiles was found.

The Swiss first manufactured rollers for their own use at the dye works in 1957 and patented the production process shortly after. They soon discovered that not only the outer surface of the rollers had special properties but also the inner layer displayed unique characteristics. One thing led to another and the first centrifugally cast pipe made of glassfiber reinforced plastic (GRP) was applied as hydropower penstock in 1961.



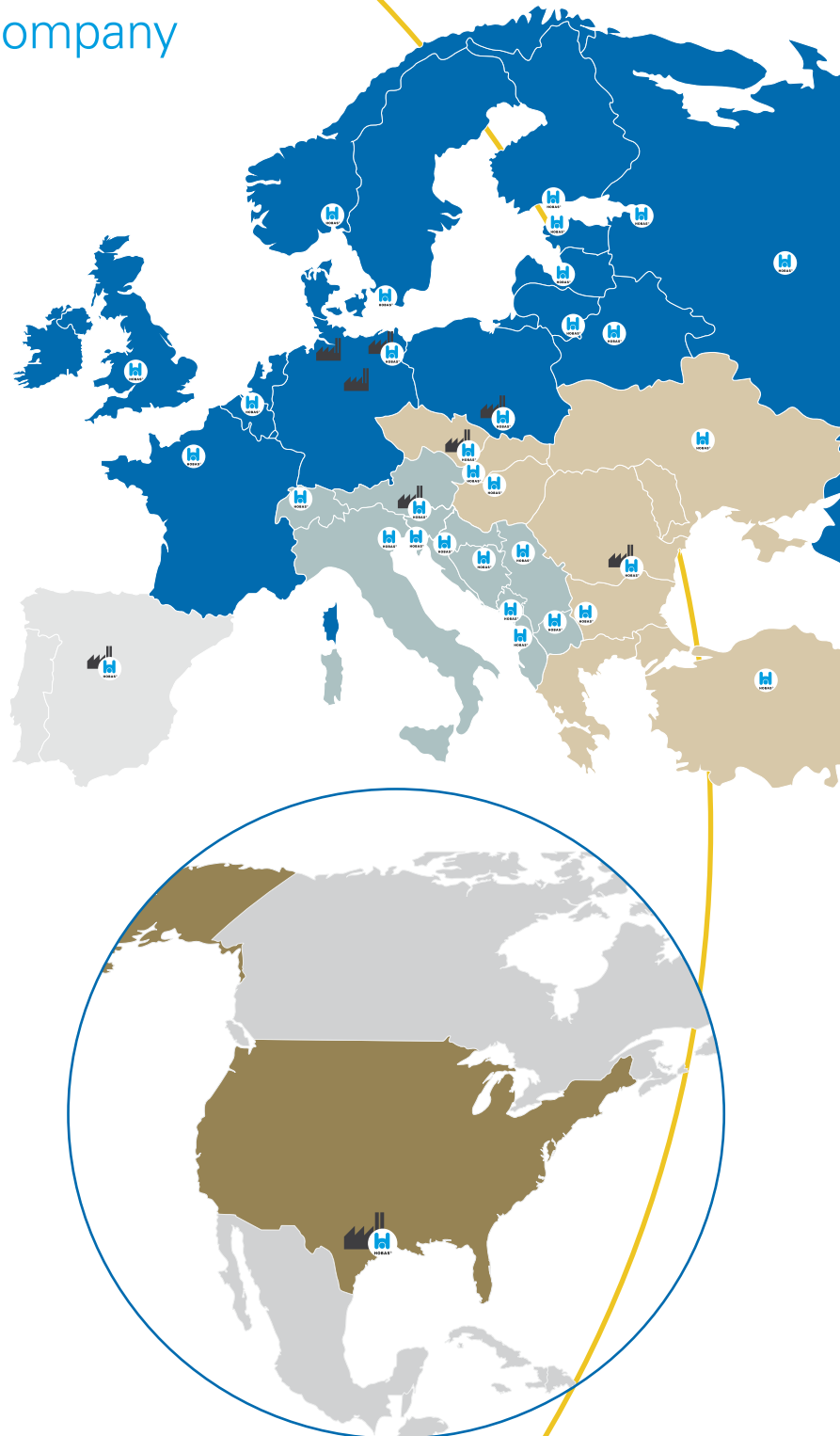
...to an International Company

Initially thought as secondary business, the production of pipes was fully automated beginning of the seventies. A little later, a pipe factory in Wietersdorf, Austria, took up the GRP pipe manufacture. Step by step, more products and tailor-made fittings were added to the assortment in the subsequent years. A new company was born: **HOBAS®**.

Today HOBAS is owned by the Wietersdorfer Group, a long-established family business with roots in the 19th century. As a leading international manufacturer of GRP Pipe Systems, we proudly look back on our fascinating corporate history and positively look forward to the future. The wealth of experience we have gained over the years and the partnerships we promote between our subsidiaries around the world are reflected in innovative customer solutions and effective project support.

We are a steadily growing company with production facilities, branch offices and partners around the globe. The network is coordinated from its headquarters in Klagenfurt, Austria.

We produce pipe systems with state of the art production technologies and market them for application fields such as potable water, waste water, drainage, hydropower and industry. With the services and support we offer from dimensioning and routing pipelines through calculations to consultancy on site, our products have been installed by a variety of methods such as open trench, jacking, microtunneling, sliplining and above ground in more than 50 countries. Totalling thousands of kilometers of pipe, the line would span the world several times.



HOBAS GRP Pipe Fields of Applications - Providing Unique Solutions for Your Individual Needs

Every HOBAS Pipe System is as unique as the project it is designed for. This is possible thanks to standard and tailor-made HOBAS GRP Fittings and Couplings that complement the broad range of available pipe diameters. The unique production process and the material's flexibility make HOBAS GRP Pipe Systems fit for practically all applications.

Ecologically aware production, externally approved high quality and durability combined with a practically infinite product range provide you with a reliable, maintenance-free smart system solution lasting for decades – for the sake of the environment and for a better living standard.



Product benefits at a glance:

- Approved high quality
- Long service life
- High corrosion resistance
- High abrasion resistance
- Elevated temperature service
- Fire retardant properties
- UV-light insensitivity
- High stiffness
- Small expansion coefficient
- Non-conductive material
- Leak free joints
- Light weight
- Fast length adjustments (shortening) on site
- Easy installation
- Superior flow capacity
- Complete system supply
- Fit for various installation methods
- Low maintenance costs
- Over half a century of experience

Potable Water

To make sure that potable water gets to you safe and soundly HOBAS CC-GRP WaterLine® Systems are widely employed for potable water networks. They have been tested and approved by water authorities in many countries such as Austria, Bulgaria, Croatia, Czech Republic, Germany, Italy, Norway, Poland, Romania, Switzerland, Turkey and the USA. Well and filter pipes, spring water shafts and storage tanks in all shapes and sizes as well as manholes for inspection are only a few of the offered elements that complete the water network from tapping to your home. The products' smooth inner surface gives bacteria no chance, reduces maintenance and disinfection costs, and retains the quality of water.

Irrigation

Irrigation means transporting water to areas with a lack of or irregularity in water supply. HOBAS CC-GRP Pressure Pipe Systems, that have a long history of being utilized to supply crops and fields with water, are produced with a wide range of different pressure and stiffness classes. The leak-free system with its smooth inner surface ensures an optimal flow capacity and significant power saving.





Sewage

Due to polyester resins that fully encase all components of the composite material, HOBAS GRP SewerLine® Systems are highly resistant to corrosive substances and therefore ideal for piping municipal wastewater. The products easily withstand biogenic sulfuric acids that often occur in large sewers and pose a threat to other materials. For particularly aggressive media, in e.g. industrial applications, we provide you with a system equipped with high performance resins or special liner material. It comes as no surprise that HOBAS CC-GRP Pipe Systems are widely utilized for sewers as well as bridge, road or tunnel drainage.



Hydropower

With their small roughness coefficient and mirror-like inside surfaces HOBAS CC-GRP Hydropower-Line Systems achieve minimal pressure loss and therefore maximal mass flow. Compared to other pipe materials the higher flow rate at same diameters results in more output. Since the pipes are often laid in mountainous and rough terrain, the durable yet light HOBAS Pipes tip the scales in the decision-making process: their easy handling reduce installation time for more cost savings.

Industry

HOBAS has been a well-established supplier of pipe systems for the industrial market for decades. The continued development and enhancement of our product range enables our products to meet even the toughest specifications demanded by, for instance, the paper and chemical industry, refineries, desalination plants, etcetera. Complete system solutions are available for e.g. cooling water systems of thermal power plants or for acid regeneration in steel pickling lines – these include static and hydraulic calculations, material as well as their installation.



Safe and Soundly Installed

HOBAS Products are used in projects all over the planet. Uncompromisingly high material and installation standards ensure that people and the environment are protected. If the potable water supply or wastewater disposal and HOBAS Products in other applications work reliably and therefore without being noticed we have achieved our goal.

But what good would excellent products be if they could not be installed just as excellently? HOBAS GRP Pipe Systems are easy to install by various methods and in different media, be it above ground, by open trench, trenchless or subaqueous.



Above Ground

Excellent resistance to UV light, a variety of stiffnesses and the small expansion coefficient are some of the reasons why our customers prefer HOBAS CC-GRP Pipe Systems for bridge and highway drainage as well as other above ground applications. Whether on suspensions, pillars or any other kind of support, the relatively light weight of HOBAS Pipes facilitate manual installation. Since above ground pipelines are visible, the coloring of the product is not to be disregarded: The naturally beige-grey pipes perfectly blend in with many constructions and may be colored with other shades to match their environment.



Open Trench

HOBAS CC-GRP Pipes are lighter than many other offered materials on the pipe market and are produced with a standard length of approximately 6 m. This facilitates handling on site so that even very narrow and deep trenches are no hindrance for a professional and fast installation. Costs are reduced as there is no need for heavy equipment and due to the compact pipe walls. Smaller diameters allow narrower trenches and finally keep excavation work to a minimum. The leak-tight and easily jointed push-to-fit couplings that are pre-mounted on one pipe end and the fact that HOBAS CC-GRP Pipes can be length-adjusted with simple equipment directly on site leads to high installation rates.

Trenchless Installation

HOBAS Pipes provide many cost saving benefits to our customers and the installer, regardless of the applied method; however, several unique attributes are ideally and inherently suited to trenchless installation.

Jacking

When pipelines need to be laid under cities or through other densely populated areas, protected natural habitats, or beneath heavily frequented roads, jacking is often chosen as least disruptive solution. Thanks to centrifugal casting, HOBAS gravity as well as pressure pipes can be manufactured with the requested high compressive strength and wall thicknesses to reliably withstand the forces to which they are subjected in the jacking process.

With their smooth, almost non-absorbing exterior surfaces, tight outer-diameter tolerances and the relatively light construction HOBAS Jacking Pipe Systems have an edge over other materials. Furthermore, long drives including even curves can be achieved, which reduces the number of intermediate stations and access pits; for example in Warsaw, Poland, where HOBAS D_e 3000 Jacking Pipes were jacked around a bend in an almost 1 km-long section with one single drive.

Relining Rehabilitation

When spot repairs on deteriorated pipelines are no longer feasible, authorities are confronted with having to decide between rehabilitation and pipe replacement. The latter solution has the disadvantage of being very costly and disruptive to urban areas where the largest sewer networks are located.

Relining is a process whereby the existing pipeline is relined with a new pipe of a smaller diameter to refurbish the original pipe for continued service. Being light in weight, corrosion resistant, easily jointed due to push-together joints and rigid to resist grouting forces, HOBAS CC-GRP and NC Line Systems are ideal for this application. A maximal mass flow is above all ensured thanks to the smooth inner surface (small roughness coefficient) and the relatively light wall structure of HOBAS Pipes.



HOBAS Production - Our Well Rounded Processes

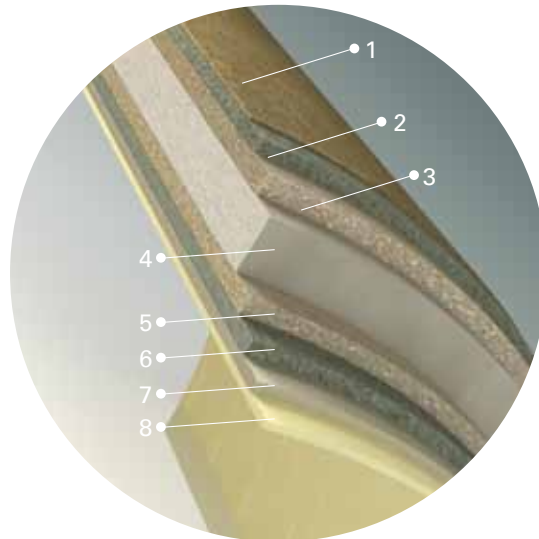
Centrifugal Casting

Many of the advantageous properties of HOBAS CC-GRP Pipe Systems can be ascribed to the unique centrifugal casting process by HOBAS. Customers' specifications and the projects' requirements regarding load and pressure capacities as well as pipe properties (e.g. chemical resistance) are met by varying the quantity, placement and orientation of the raw materials. Since the process is computer controlled, you can be sure to receive consistent high quality for each pipe we design according to your requirements.

The process is simple to explain: As soon as all basic components (chopped glass fiber, resin and reinforcing materials) are inserted in a rotating form (mold), the rotation speed of such is raised. Enormous pressure loads from 30 to 70 bar press the materials against the wall of the mold until they have fully compacted, the resin has enclosed all other components and no air remains entrapped. This guarantees a homogeneous pipe wall along the full length of the pipe. During the curing phase, the form continues to rotate assuring a perfectly concentric form.

Once the polymerization process is completed, the pipe is extruded. Thanks to the mold every single pipe of all available diameters from DN 150 to DN 3500 has a consistent outside diameter as well as smooth outer and inner pipe walls that are typical for HOBAS CC-GRP Pipes.

The three dimensional chemical bonds of the resin make sure that the thermoset pipe keeps its stability in environments with elevated temperatures. Even unexpected overloads are no problem for HOBAS CC-GRP Pipes: due to the material's build-up the pipes react with deformation.



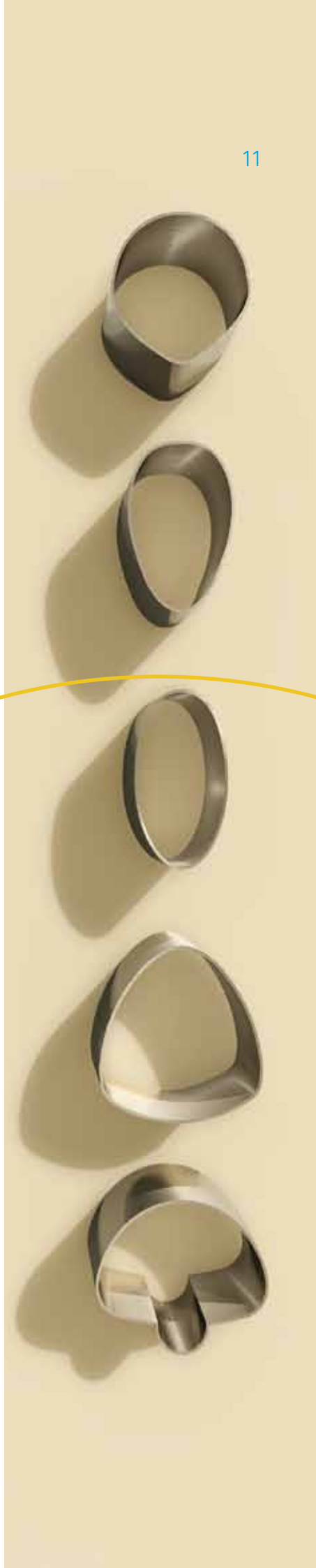
Pipe Wall Structure

- 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 Inner resin rich layer

Non-Circular Pipe Production

HOBAS Non-Circular, or NC Pipes, which are mainly used to rehabilitate deteriorated sewers by sliplining, are manufactured on a mandrel of a computerized winding facility. The winding process is conducted according to a determined standard design. This is in turn set by the customer's and/or project's requirements with regard to e.g. static design and chemical resistance specifications.

A distinctive feature of the HOBAS NC Pipe Production is the highly resinous inner pipe layer for which also HOBAS Centrifugally Cast Pipes are known. Once this layer is applied onto a release film, the actual winding of the pipe including its joint is commenced. Other than by centrifugal casting, filament winding builds the layers from inside to out and finishes with a sturdy sand-filled protection layer.





HOBAS Special Pipes and System-Building-Units - for a Complete Turnkey Solution

With our industrial pipe system production sites we are able to meet even the most highly diversified demands of the industrial sector. These facilities are specialized in manufacturing GRP and Thermoplastic Lined GRP Pipes ranging from DN 25 to 5000 for pressure classes up to 40 bar.

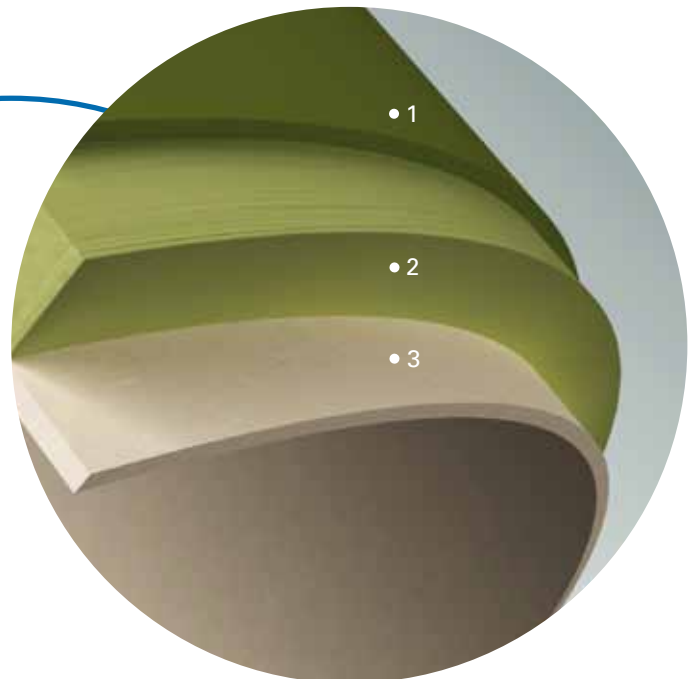
There is, however, far more to a pipe system than merely pipes and couplings. Since we do not do things by halves and in order to offer our customers complete made-to-measure solutions for practically every field of application, HOBAS Prefabricated Components may be the most individualized products concerning their forms and functions.

Water storage chambers including fully equipped service units, inspection manholes and shafts with individually fitted intake and outlet structures, to mention only a few of the tailor-made components produced by HOBAS, guarantee a fast assembly on site and are easy to transport. These special



GRP or Thermoplastic Lined GRP Pipe Wall Structure

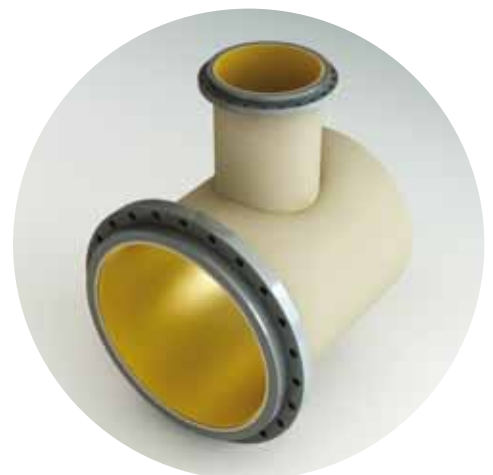
- 1 External resin rich layer
- 2 Core laminate
- 3 Internal resin rich, chemical protective or thermoplastic layer





units as well as the broad range of fittings such as bends, tees, y-junctions, etc. either consist of pipes segments, which are assembled and firmly joined with laminate or they are fabricated by wet molding, SMC (Sheet Molding Compound) pressing to fiber spray lay-up.

Due to the state of the art manufacturing techniques applied by HOBAS, components of almost any shape and size are technically feasible. Combined with CC-GRP and NC Pipe Products you can count on consistent high quality and all inherent advantages throughout your complete system solution.



Certified Quality, more than 50 Years Expertise and Continual Investment in Research and Development

A long company history, years of experience and satisfied customers are one thing, but staying successful in business, producing innovative state of the art solutions and continuing to inspire customers is quite another. We cannot afford to stand still and do not intend to; on the contrary, concerning quality and environmental care we aim to set the standards in the market. Aware of the responsibility we assume when supplying our products – for our customers, the population and our environment – we certainly do not make any promises that we cannot keep. Customers have been telling us for many years that they always come back for HOBAS Products when the need arises. This fills us with pride, for we see customer satisfaction as the key to long-term success. However, only stringent quality criteria, continual investment in research and development and honest communication will secure this in the future.

From selecting raw materials through to developing technologies and searching for new products with even better properties, our decisions are always based on achieving consistent high quality both in product design and production. Our pipe systems are regularly approved by nationally and internationally renowned institutions such as TÜV, KIWA, COMO, CSTB, DIBT, ÖFI, etc. and have gained an array of certificates complying with or even excelling standards such as ISO, EN and AWWA. However, we aim for more by continuously putting ourselves to the test. Certified local laboratories at the HOBAS Plants ensure that the finished products meet the highest customer specifications. The synergy effects created in sharing our expertise throughout the group and across national borders are reflected in impressive projects and creative solutions that win innovation awards time and again.





Being able to promise a product life cycle for up to 100 years is the result of our research and development team's dedicated work. At the central HOBAS TechCenter, which covers an area of over 1,000 m², experts continuously monitor the long- and short-term performance of the products from all HOBAS Plants, examine product improvements and develop new product lines. It goes without saying that our pipes not only undergo stringent product inspection certified to international criteria, whether stiffness, ring stiffness, abrasion, burst, strain corrosion, creep, cyclic internal pressure loading, hydrostatic pressure or longitudinal tensile stress tests under high temperatures – the HOBAS TechCenter that is certified to international standards including ISO 17025 and TÜV Süd puts all products to stringent tests.

For uniform quality the same standards apply at all our subsidiaries. Our customers can rely on consistently high quality, irrespective of which HOBAS Production Facility delivers the product. Before leaving the factory, every finished product goes through precisely defined quality control to guarantee that our customers only receive impeccable goods.

We do not shy away from the challenges posed by our business partners and the constantly changing environmental factors. Indeed, we see them as opportunities and the need to grow.



Our Mission, Values and Responsibility

Focusing on our customers and achieving the greatest possible benefit for them is very important to us. Our mission is therefore based on customer satisfaction and all our decisions are targeted on increasing benefits to you. Since we think that a mission that defines “what we do” only forms a part of a complete identity, we work and live by a set of common values that state “how we do it”. We firmly believe that treating employees, customers and also other market players fairly is the only way to remain successful in the market in the long term. Our values – decency, enthusiasm, responsibility, openness and development – are not mere lip service for us; upholding values and achieving results do not contradict each other at HOBAS. They form the basis for taking our responsibilities seriously.

Our responsibility does not end within the bounds of our business; we see the continuous improvement of environmental protection measures as part of our corporate social obligation. Based on ISO 14001, an international environmental management standard for continually

improving an organization’s environmental performance, the HOBAS Group improves 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. 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 daily lives, we at HOBAS ensure that we not only do the bare minimum required but also take every opportunity we can to conserve the natural environment.

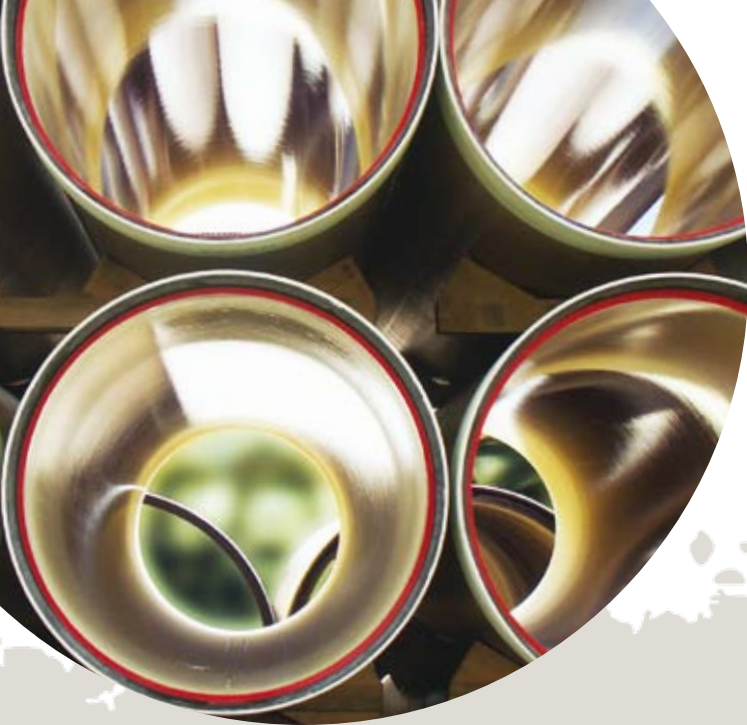
With the Carbon and Water Footprint as well as the Life Cycle Analysis of our products we are able to identify and monitor the impact we have on nature concerning our activities, products and services and can therefore systematically continue reducing emissions and water as well as resource consumption to improve the quality of life around the world.

HOBAS. Make things happen.



“We Are What We Do and How We Do It”





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HOBAS Group Worldwide

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

We develop and manufacture HOBAS Products conserving nature's resources and with respect for our environment. Visit our website to find out more about the HOBAS Environmental Policy.

