



Made in Germany
with over 60 years
of experience

THE EXPERT IN FIBRE REINFORCED PIPE SYSTEMS

INDUSTRY

POWER PLANTS

MARINE & OFFSHORE

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COMPETENCE
GREEN-SHIPING
FLEXIBILITY

COLLAPSE-RESISTANT
SOLUTIONS
COST-EFFECTIVE

www.fiberdur.com

KNOW-HOW
MAINTENANCE-FREE
QUALITY
LONG-LIFE
WEIGHT-
SAVING
CORROSION-RESISTANT
CREATIVITY

MADE IN GERMANY WITH
OVER 60 YEARS OF EXPERIENCE

SOLUTIONS TO OUR NEEDS

BENEFITS OF GRP

- **Corrosion-free**
- **Additional coating inside/outside not required**
- **Smooth inner surface, low flow resistance**
 - surface roughness inside the pipe remains low over the years
 - less pump power required
 - smaller pipe diameter at a same flow rate for many application
- **Light material**
 - weighs only 25% or less compared to steel pipes
 - no heavy equipment required for installation
- **High chemical resistance**
- **Cathodic protection not required**
- **Technically proven and reliable for over 60 years**
- **Low cost**
 - lower installation costs than for steel pipes
 - maintenance-free system
 - very profitable in the long term, long life cycle
- **Low thermal conductivity**
- **Wide range of piping systems, suitable potable water (certified by NSF)**



COMPANY - TURNKEY SOLUTIONS

Fiberdur® has been one of the European market leaders in the field of glass fiber reinforced pipe systems (GRP) for the industrial, marine & offshore and power plant sectors.

Since the sixties we have been manufacturing, we have been providing tailor-made engineering services to major companies around the world, with a focus on quality, on-time delivery and solution-driven processes.

Design, development and project management team have the knowledge, experience and dedication to design solutions to your needs.

Our solutions are durable and reliable without compromise, Fiberdur GRP piping systems are the result of innovative technology and high-quality craftsmanship.

AREAS OF EXPERTISE

PRODUCT- AND SOLUTION-ORIENTED CONCEPTS



CUSTOM MADE ENGINEERING



HIGH QUALITY PRODUCTS



FIBERDUR SERVICES



PROFESSIONAL TRAINING



LOGISTICS



GLOBAL COOPERATION OF EXPERTS

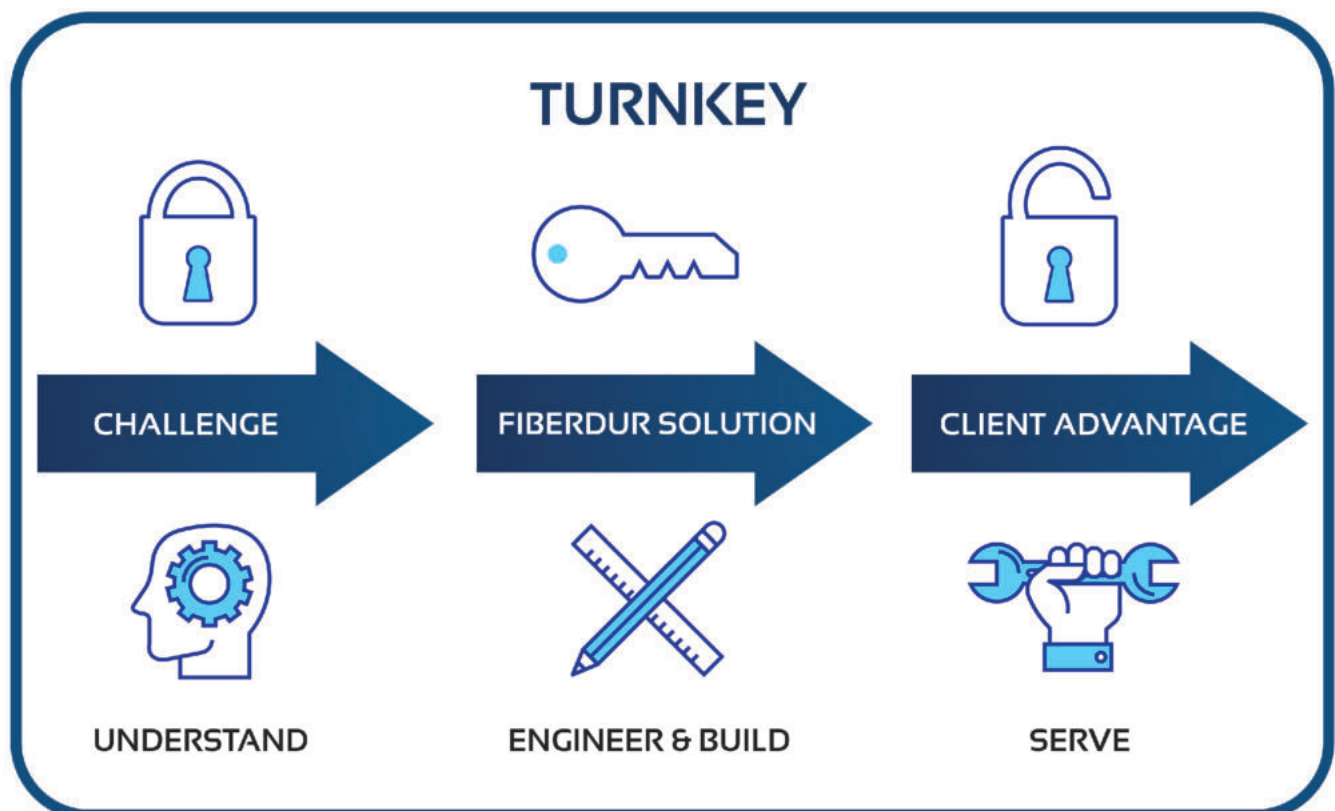
CUSTOM MADE ENGINEERING

- Evaluation of starting position
- Pipe **design** and **calculations**
- Pipe stress calculations (Caesar II, Pipe 2)
- **Isometrics** / Material take off MTO
- Technical drawings (**AutoCAD**, **Inventor**, **PDMS**, **Bentley MicroStation**, **CADMATIC**)
- Assembly drawings / **3D** models
- Pipe **connection technology**
- Review of **pipe support concept**



Decisions in favour of systems and components of GRP are always taken based on special technical and/or economic advantages compared to conventional solutions.

Each inquiry has to be checked and assessed individually to work out the best solution. This calls for the close co-operation during planning and design. Qualified experts are disposed to help in all phases of work right through to commissioning.

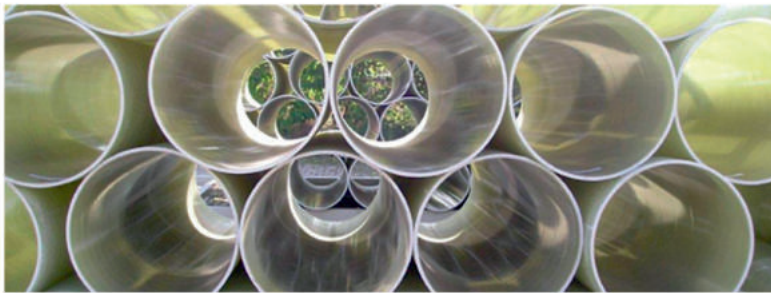


HIGH QUALITY PRODUCTS

- Fabrication of complete pipe systems
- Custom made or standard components
- Prefabrication of spools
- Design and supply of pipe clamp systems



Fiberdur® represents over 60 years of successful experience in design and manufacturing of GRE (glass fibre reinforced epoxy) and GRVE (glass fiber reinforced vinylester) pipe systems. Our filament wound pipes are available in the standard product range with nominal diameters of 25-2000 mm for pressures PN 10 and PN 16 (nominal pressure). Other pressure classes are available on request. The automated production process is followed by hot curing, which ensures high and constant mechanical strength.

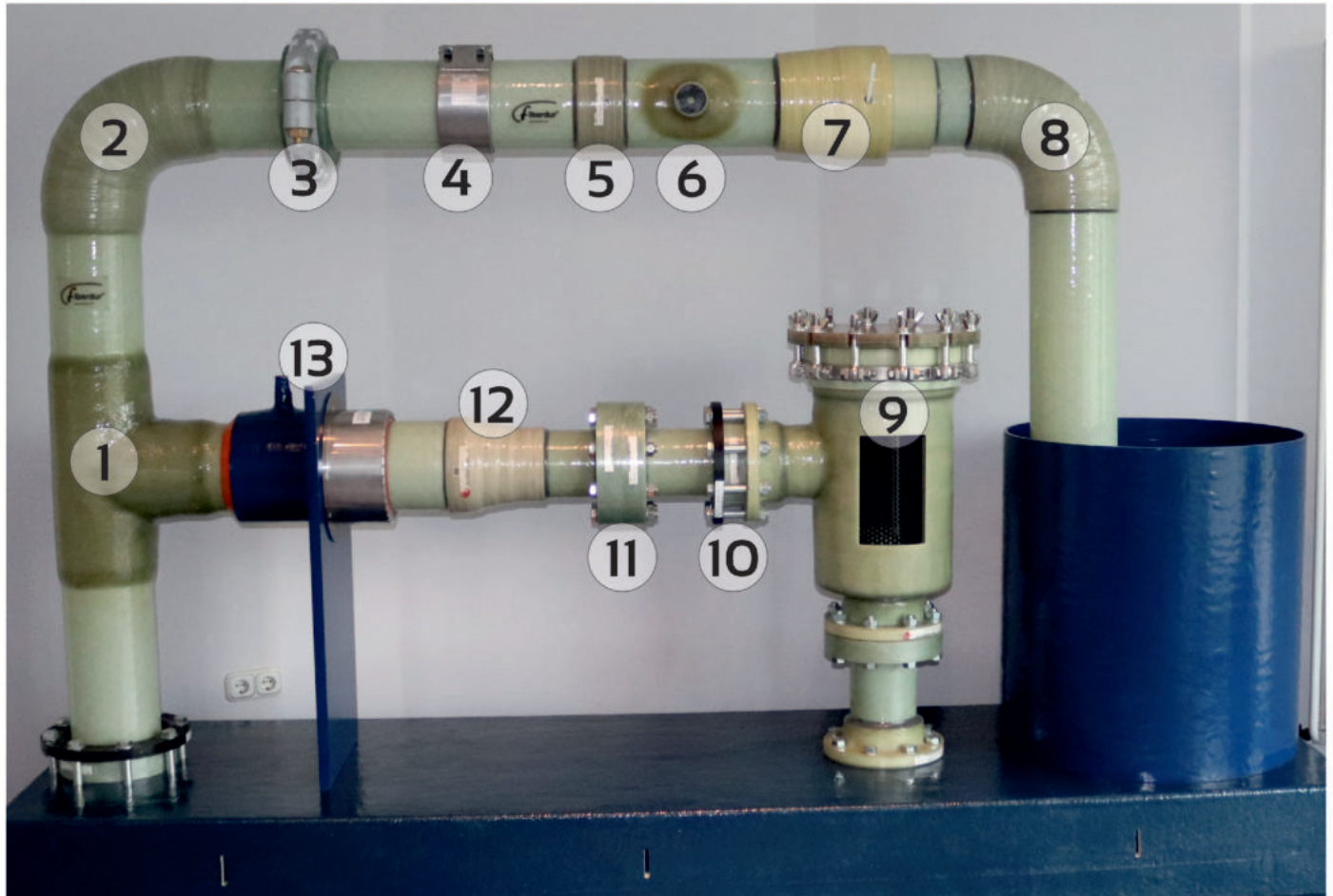


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TYPE OF JOINTS

Fiberdur® pipe systems offer a wide range of jointing systems such as bonding, laminating, flanging (collar and loose flanges and heavy-duty flanges), rubber gasket lock joints and mechanical couplings and strainers are available.



- | | |
|----------------------------|--------------------------|
| 1 T-piece | 7 Rubber seal lock joint |
| 2 Elbow (laminated) | 8 Elbow (bonded) |
| 3 Fibertaulic connection | 9 Strainer |
| 4 Teekay connection | 10 Collar+loose flange |
| 5 Adhesive bonded coupling | 11 HD flange |
| 6 Threaded sleeve | 12 Reducer |
| | 13 Bulkhead penetration |

FIBERDUR SERVICES

- Project management
- Installation, supervision, and commissioning on site
- Immediate processing of repair requests
- Consultation with classification societies



Our range of services extends from professional project management and implementation support to ensure the success of the project through on-site support. In addition, we take care of urgent repair work worldwide to guarantee that your GRP system works properly and economically. We find a suitable solution for your specific task as quickly as possible. Do you need advice on GRP-specific topics or do you have to deal with the requirements of the class societies when converting your system?

Give us a call, we will be happy to help you with our know-how!

PROFESSIONAL TRAINING

- Supervision and trainer team for global activities
- Theoretical education
- Hands-on training
- Onsite training
- Fiberdur ISO 14692 bonders and laminators certificate



Pipe systems have to meet high standards of performance. Temperature, pressure, chemical resistance, and installation are determinants as to which material to choose. Fiberdur offers the possibility to learn more about the installation of Fiberdur pipe systems at either our locations or on-site.

Correct installation of GRP material is an important point. Due to this reason, Fiberdur[®] has an own supervisor and trainer team which can provide you with different solutions. You can get a complete installation training (bonding & lamination) through our trainer team including a theoretical as well as a practical part. Passing theoretical and practical exam, your personel get an official Fiberdur[®] ISO 14692 certificate and is qualified to install pipes and fittings. Furthermore, we can provide you a Fiberdur[®] supervision on-site during your installation. This option will lead to an easy, fast, and successful installation of our Fiberdur[®] products.

LOGISTICS

- On-shelf availability of all major diameters and sizes
- Just-in-time and in the correct quantity logistics
- Shipping on a most cost-effective solution
- Handling of dangerous goods for all shipping methods
- Managing customs formalities



GLOBAL COOPERATION OF EXPERTS

- Teaming up with the best
- Qualified global technical partners
- Innovative and proven long-term relationships
- Efficient coordination to provide turnkey solution
- Feasibility studies
- Technical and economic evaluation Capex/Opex



MARKETS & APPLICATIONS

In virtually every industrial operation there is a requirement for pipe systems. They carry oil and fuel, raw materials, coolants, chemicals, water, liquid or gaseous by-products, and very often finished or semi-finished products, from fertilizers to foodstuff.

Each application has defined performance properties within specific diameter sizes over differing transport length and in particular environment and installation conditions. A pipe system can be buried underground or exposed to weathering, it can be in a static structure like a refinery, or a mobile one such as a ship, it may be rigid or it may need to provide for a degree of flexibility.

Get in contact with our engineering team we will prepare a suitable solution based on your needs! Let us support you with our GRP know-how, we will work out a suitable solution based on your needs!

MARINE & OFFSHORE

The marine environment is, by its nature, highly corrosive. Any dry dock operation is a costly matter for both ship owners and operating companies. Glass fiber reinforced pipe systems provide a state-of-the-art solution against corrosion. **Fiberdur®** pipe systems blend the advantages of composite materials, such as lightweight, easy installation, and excellent durability, and have proven to last the lifetime of the vessel. Our pipe systems are corrosion resistant against seawater, minimized adhesion of algae, and are maintenance-free.

Due to the new legislation of the International Maritime Organization (IMO) many ships need to be equipped with scrubber units to ensure cleaner air and less SOx & NOx. **Fiberdur®** designs and manufactures special pipe systems for these applications and has more than 40 years' experience in flue gas cleaning. The light weight and long-term resistance have made **GRP**, the material of choice for scrubber equipment.

Materials used on offshore installations are faced with extremely high requirements.

Our GRP products are designed to cope with these demanding environmental conditions, remain structurally stable and maintenance-free throughout the life of the installation. As a manufacturer, we guarantee the durability of our systems and avoid unplanned additional costs for our customers.

MARINE & OFFSHORE

TYPICAL APPLICATIONS

- Seawater Cooling Lines
- Seawater Bilge and Ballast Water (incl. BWT systems)
- Fire Fighting Lines
- Condensate Lines
- Sounding and Ventilation Lines
- Black and Grey Water Lines
- Potable Water Lines
- Tank Cleaning Lines
- Jet-Water Lines
- Crude Oil Washing Lines
- Heeling Lines
- Scrubber Lines
- Pool Drainage Lines
- Cargo Lines
- Inert Gas
- Sewage
- Sanitary Drains and Auxiliary Lines
- Cooling water lines
- Flue gas cleaning systems
- Drain pipes
- Fire fighting lines
- Pool lines/exhaust air lines



INDUSTRY

Piping systems in the industrial sector are subject to corrosion and acid resistance, abrasion resistance, and reliability. Detailed knowledge of industrial processes and technological expertise is required to ensure the economically long-lasting operation of the piping system with the right design in combination with high-quality workmanship and installation.

The areas of application are wide-ranging and poor design can become a source of danger very soon. When it comes to GRP pipeline construction, you can rely on many years of cross-industry expertise of our specialists.

As a solution provider, we guarantee with our highly qualified and experienced employees a reliable, safe, and economic result from one source for every project, no matter how challenging.

Our solutions have been used for over six decades in a wide range of industries such as chemical and petrochemical plants, steelmaking, environmental and water treatment plants.



POWER STATIONS

Energy technology companies engineer systems of the future and ensure the implementation of the energy transition with a mix of technologies. All the systems used, have the goal of securing the energy supply, being sustainable and economical.

With our fully recyclable products, solutions and services, we support all energy technology companies and make our contribution to the transition to a more sustainable future.

Our systems are used, for example, in power stations, nuclear power plants, wind farms, and waste incineration units. With its pipe systems, Fiberdur® is one of the few suppliers worldwide licensed for nuclear power plants.

TYPICAL APPLICATIONS

- Cooling water lines
- Fire extinguishing lines
- Chemical lines
- Acid pipes
- Suspension lines
- Spray lances
- Process water lines
- Wastewater lines
- Desalination lines
- Potable water line with NSF approval (USA)



QUALITY

Fiberdur® is the world-copyright commercial name of the quality glass fiber reinforced products which we have been supplying for more than fifty years.

A wide product range of piping systems made of glass fiber reinforced plastic, backed by solid engineering know-how ensures our ability to cope successfully with the technically evermore challenging tasks of both today and tomorrow. The advantages provided by Fiberdur® products are due to decades of experience with glass fiber reinforced pipe systems, manufacturing techniques adapted to raw materials, and a comprehensive quality control system according to DNV ISO 9001:2015.

Systematically carried-out checks and tests ensure the continued high quality standard of Fiberdur® products. The application of standard test procedures is of central importance in the design, quality control, and technical specification data gathering for our GRP-products. In this way, the key properties of the raw material are systematically controlled.

In addition, we use our own laboratory for incoming goods inspection and carry out destructive End-of-Line (EOL) tests.

This ensures that no product is supplied unless it meets the specification details outlined in the Fiberdur® catalogue or the customer's specification.

Also, our production is subject to a strict quality control system, according to the relevant EN-DIN standards and ISO 14692.

FIRE ENDURANCE

Fibermarine® pipe systems can be applied onboard ships as per IMO resolution A.753 (18) Fire Endurance test Level 3.

The following standards are applicable:

- FTP Code for Fire Test Procedure
- Fire Endurance L3 according to IMO Resolution A.753 (18)
- Flame Spread according to ASTM D 635
- Flame Spread according to IMO Resolution A.653 (16)
- Smoke and Toxicity test as conducted by QINETIQ



APPROVALS

- NSF (Potable Water Certification)
- CE 0036 (Pressure Equipment Directive)
- DVS2220 (Training and Examination of plastics laminators and adhesive bonders)
- ISO 9001:2015 (Quality Management System)





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