



Solutions in Glass Reinforced Pipes and Materials
Part of the fibersol® Group

MARINE

Composite Pipe Systems





FiberSol

Solutions in Glass Reinforced Composite.

The company FiberSol GmbH was established in 2016 as a group of GRP (Glass Reinforced Plastic) manufacturing companies. FiberSol is a German private owned group with his head office in Hamburg and management & sales office in Eschweiler.

The group currently has several manufacturing places. The benefit behind the FiberSol Group is that we can supply our customer with high quality materials, a short delivery time and a competitive price.

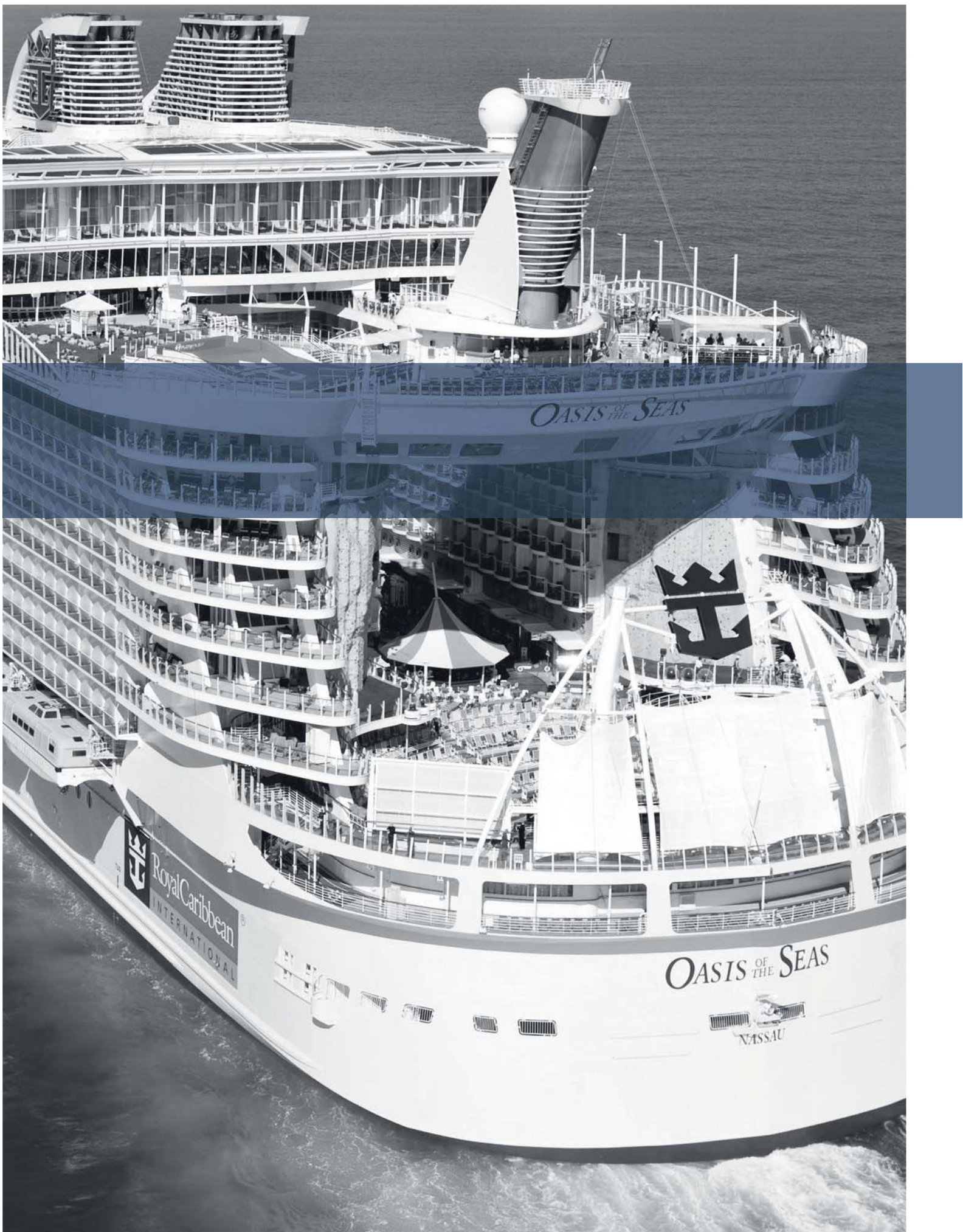
It's with this in mind that FiberSol took access and control of the different manufacturing plants, while

retaining all sales & project management functions within our German Sales Office.

All factories manufacture according to the FiberSol FiberMarine specification and are covered by our FiberSol Marine Type approvals.

The FiberSol Group has on focus to supply our customer with a high quality Solution in Glass Reinforced Pipes and Material and the complete applicable field of Glass Reinforced Plastic.







The benefit behind this holding is to supply our customer the required material in high quality and a short delivery time. It is with this in mind that FiberSol has access to and control of the different manufacturing plants and maintains short distances to Nord- East- and Mediterranean Sea for supply and shipping.

Production plant Košana



Short delivery times

A Key Point of our Offer: Flexibility



Production plant San Giorgio di Nogaro





Training and Supervision

Glass Reinforced Pipes and Fittings are strong materials but require the correct handling for connection and installation. We offer support to our customers for these essentials which involves complete training for handling, storage, prefabrication and installation which can even be held on board. The training is divided between theory and practice and upon completion the installers will be required to pass a written examination.

Each installer will receive a certificate as a FiberSol Approved Installer once the test is accomplished. We also offer support during the installation on board with a Supervisor from FiberSol who oversees the installation and is the contact person for the installation team which has the advantage of yielding a far more effective installation while cruising.

Perfect solutions

Engineering, Supervision, Customer made



Customer Solution, Prefabrication and Special parts

An Engineering Department is on site at each factory which enables the capacity to find a solution for even the most complicated requests of clients. All calculations, drawings and diagrams are undertaken with modern engineering systems and programs and once engineered, the complete system can be produced in prefabricated spools to reduce the installation time spent on board for the customer. The prefabricated spools are delivered with an adjustment length and once on board the spools can be adjusted and installed as if drawing by numbers. Every single spool is exactly marked as the drawing number.

This engineering and experience also gives us the capability to supply our customers with Strainer / Mudboxes and complicated special parts such as Manifolds.

We will find a Solution in Glass Reinforced Pipes and Materials for our customers.



Application Range and Fields

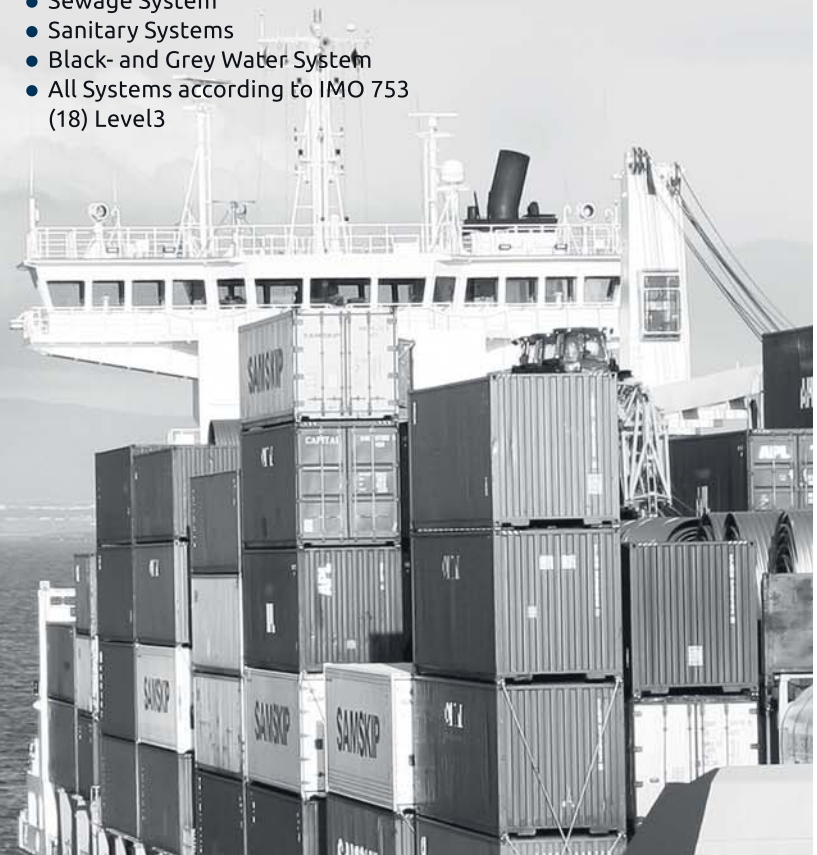
The FiberSol Fibermarine products are designed for internal pressure of 10 / 16 bar and are minimum full collapse resistance. For Ballast- and Bilge System the Pipes and Fittings are designed with a Head pressure of 30 Meter water Column plus full Vacuum which respectively is 4 bar external pressure.

Conductivity

All Pipes, Fittings, Prefabricated Spools and Special Parts are available in Conductive Material. Conductive pipes are required in explosion hazardous areas. The System is designed to prevent potentially static electrical charges and is connected to the vessel structure with grounding cables. The electrical resistance is 0,1 M Ω /m and is designed, that after installation the resistivity with respect to earth, does not exceed 1 M Ω at any point in the system.

Applicable Systems

- Scrubber-and Retrofit System
- Ballast-and Bilge System incl. BWTS and Retrofit
- Inert Gas System
- Cooling System
- Purge System
- Fire Fighting Systems
- Fuel-and Oil Transfer System
- Sounding-and Ventilation System
- Crude Oil washing System
- Pool System
- Sewage System
- Sanitary Systems
- Black- and Grey Water System
- All Systems according to IMO 753 (18) Level3



Application Range and Fields

Systems and Products



Product Range (Fibermarine and / or Fibermarine conductive)

- Pipes with socket, plain ends and / or with bell & spigot joint with double O-Ring
- Fittings with socket, plain ends and / or with bell & spigot joint with double O-Ring as:
 - o Elbows R=1,5 ND and R= 1 ND
 - o Reducers concentric and eccentric
 - o Heavy Duty Flanges
 - o Collar and loose Flange Steel / GRP
 - o Socket / Coupling
 - o T-Piece and Red. T-Piece
 - o Blind Flanges
 - o Flange adaptors
 - o Sleeve Couplings
 - o Suction bells
 - o Nozzles
 - o Saddles

Jointing methods

- Bonding connection with 2 component Adhesive
- Lamination connection for butt end- and T-branch lamination
- Flange connection even to steel Flange / Line
- Bell & Spigot (Rubber Seal lock joint) with Double O-Ring and Test Nipple
- Commercial mechanical joints such as Teekay, Dresser, V.J., Straub, etc.



Fire endurance requirements matrix according to IMO 753 regulations:

- (1) Where non-metallic piping is used, remotely controlled valves to be proved at ship's side (valve is to be controlled from outside space).
- (2) Remote closing valves to be provided at the cargo tanks.
- (3) When cargo tanks contain flammable liquids with f.p. > 60° C, ■ may replace □ or ■.
- may replace ■:
- (4) for drains serving only the space concerned.
- (5) when controlling functions are not required by statutory requirements or guidelines.
- (6) for pipe between machinery space and deck water seal.
- (7) Scuppers serving open decks in position 1 and 2, as defined in regulation 13 of the international Convention on Load Lines, 1966, should be ■ throughout unless fitted at the upper end with the means of closing capable of being operated from a position above the freeboard deck in order to prevent downflooding.
- (8) For essential services, such as fuel oil tank heating and ship's whistle, ■ is to replace ■.
- (9) For tankers where compliance with paragraph 3(f) of regulation 13F of Annex I of MARPOL 73/78 is required, □ is to replace ■.

□ not applicable
■ allowed
■ not allowed

Machinery spaces of Category A	Other machinery spaces and pump rooms	Cargo pump rooms	Ro-ro cargo holds	Other dry cargo holds	Cargo tanks	Fuel oil tanks	Ballast water tanks	Cofferdams void spaces pipetunnel and ducts	Accommodation service and control spaces	Open decks
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CARGO (Flammable cargoes f.p. < 60° C)

Cargo lines						9				
Crude oil washing lines						9				
Ventlines						9				

INSERT GAS

Water seal effluent lines		1			1	1	1	1		
Scrubber effluent lines	1	1					1	1		
Main lines										6
Distribution lines										

FLAMMABLE LIQUIDS (f.p. > 60° C)

Cargo lines						3		9		
Fuel oil						3				
Lubricating										
Hydraulic oil										

SEAWATER

Bilge main and branches										
Fire main and water spray										
Foam system										
Sprinkler system										
Ballast						9				
Cooling water, essential services										
Tank cleaning services fixed machines									3	2
Non essential systems										

FRESH WATER

Cooling water, essential services										
Condensate return										
Non essential systems										

SANITARY / DRAINS / SCUPPERS

Deck drains (internal)	4	4		4						
Sanitary drains (internal)										
Supports and discharges (overboard)	1-7	1-7	1-7	1-7	1-7				1-7	

SOUNDING / AIR

Water tanks / dry spaces						9				
Oil tanks (f.p. > 60° C)						3		9		

MISCELLANEOUS

Control air	5	5	5	5	5				5	5
Service air (non essential)										
Brine										
Auxiliary low pressure steam (≤ 7 bar)			8	8	8				8	8



BUREAU
VERITAS



Certificates

Each plant is certified by all necessary type approvals for the Marine Market incl. IMO 753 (18) Level 3 Fire Endurance Test. These certificates are approved by major authorities such as the displayed ones.

ClassNK
NIPPON KAIJI KYOKAI

CCS
CHINA CLASSIFICATION SOCIETY
中国船级社



KR
KOREAN REGISTER





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