

The background of the top half of the page is a photograph of a welder working on a large, circular metal component. Bright sparks are flying from the welding point, creating a dramatic, high-contrast scene. The metal is a dark, reddish-brown color.

# Yardtech presents **DAMEN SHIPREPAIR HARBOUR & VOYAGE**

The YARDTECH logo is located in the bottom right corner of the image. It features the word "YARDTECH" in a bold, white, sans-serif font, with "MARINE SERVICES S.A." in a smaller, white, sans-serif font below it. The logo is set against a blue background with a white wavy line at the bottom.

**YARDTECH**  
MARINE SERVICES S.A.

## *DAMEN's H&V*

- Long track record
- 24/7 on-site and on-voyage ship repairs and Disinfection service
- From steel works to electrical and automation repairs and from piping works to machining works
- Our service offering includes the repair, supply and installation of glass reinforced epoxy systems
- One point of contact
- Quick response time
- Minimal downtime
- A total service offering through our partners and subcontractors
- A back-up of repair yard facilities

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(glass fiber reinforced epoxy) pipe  
systems

# Services provided by Damen Shiprepair Harbour & Voyage

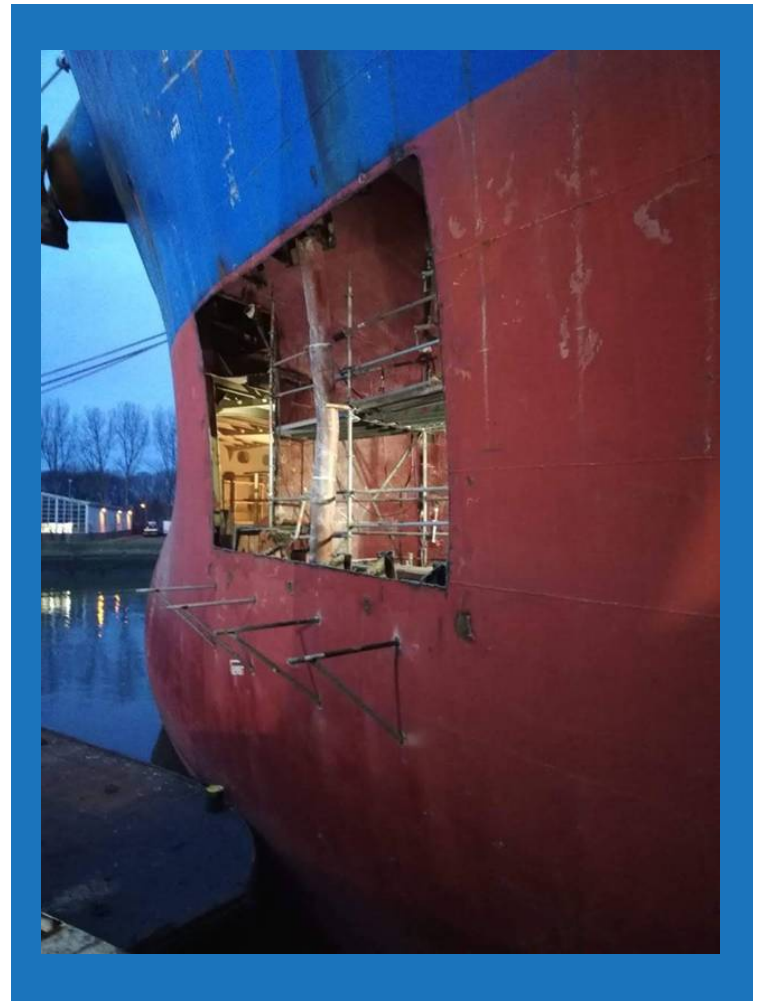
## Port & Voyage Repairs

Keeping your vessel operational with minimum of down-time DSHV's riding squads are available 24/7 all around the globe providing tailor made service on client demand.

Cost are extremely important, nowadays. Securing the contracts / charters, are not so easy, anymore. For this, you can concentrate on your vessel / charter, while we will take care of the operational part of the vessel tailor made.

Damen Harbour & Voyage brings the riding squad towards your vessel, wherever, whatever, however. DSHV provides service in order to minimize downtime. Short response windows making DSHV being on-site within 24 hours (in most cases), offering a 24/7 service.

Damen H&V crew can tackle a wide range of service from fixing a leaking valve to complex steel repairs. Works performed while the vessel at anchor, alongside, during loading or unloading, and even during voyage. The following repairs to cargo holds, piping, cell guides and even shaft generator bearings can take place while the vessel at port or going back in operation.



“Your one stop  
service provider,  
keeping your  
vessels on track”

## Services provided

- All above water repairs
- Steel repairs
- 3D Scanning and scrubber / BWT installation
- Pipe repairs / delivery and installation
- Mooring/Panama chocks upgrades
- Vessel crane repairs
- (Anchor) Winch repairs
- From simple to complex damage repairs / services
- Renaming of vessel name its logo and home port
- Bow thruster removal / installation & Propulsion repairs
- Underwater cleaning & Underwater survey



## *De - / Mobilizations (continued)*

DSHV regularly deliver services for mobilization and demobilization work for the Industry Globally. We understand that on any de-/mobilization time is money; the inherent financial consequences for schedule overruns in de-/mobilizations are significant.

From our ideally located basis we have the capability to service all kinds of vessel mobilization and demobilization at any port within 24 hours at 365 days a year.

Our wide and varied workforce can be utilized to combine engineering, supervision, welding, fabrication, machining, blasting, painting and installation for any number of applications, from the smallest frame to the largest subsea pipe laying reel units for Industry leaders in the offshore and subsea markets.

## *De - / Mobilizations*

Both during the design phase and throughout the entire lifecycle of a vessel, you should have a continuous focus on the suitability of your asset for current and future operational needs.

We are an experienced partner in the field of mobilization and demobilization of vessels, pontoons & barges for specific jobs or large projects.

DSHV's experience in this market is enormous, vessels such as PSV, OSV, Seismic-, Dredging-, Jack-Up (Wind Turbine) Installation Vessels and (crane) barges have been mobilized.



“Wherever you are,  
Whenever you need us,  
DAMEN GROUP is there”



## *Installation and Management of Scrubber / BWTU*

To perform correctly from the start, Scrubber or BWTU system should be installed according to best practices as per classification rules & regulations.

Based on experience Damen Harbour & Voyage can provide clear guidance that speeds up and secure the installation process. Saving money by avoiding corrections at start-up and during operations.

### *Benefits*

- Installation of a system in accordance type approval
- Experience a system with limited down time
- Mitigation of modifications on the system
- Avoiding additional consequences and costs

## *Scrubber or BWTU inspection for Cost-saving insights into actual system condition*

Knowing the actual condition of the Scrubber - or BWTU system in a smart way to ensure compliance with applicable environmental R&R. The survey provides up to date insights which can minimize downtime ensuring correct working of the system.

### *What we do*

Tailor made service for inspection onboard equipment that can be performed anywhere around the globe. Ensuring service / repairs or other issues prior negative cost effective consequences.

Providing a detailed inspection report / protocol after the survey. Accordingly (in case) necessary actions. Overall, it provides a clear picture of the actual system condition. Provide tailor made instructions for crew and management.



“Our Harbour & Voyage service brings the maintenance and repair crew to your ship, wherever you may be”

### *Benefits*

- Mitigation of risks and unscheduled repairs / downtime
- Savings through planned corrective actions rather than emergency repairs
- Strong reduced operating costs.
- Improved knowledge of the crew in relation to eventually system maintenance and operation conditions.
- Tailor made upgrade possibilities for the system



## Scrubber repairs

Scrubbers, like any other piece of mechanical equipment, can break down from time to time. In the case of an exhaust gas scrubber installation, it is likely this will involve the external support equipment, pumps, pipes, valves, etc. Apart from the nozzles, there is very little that is likely to fail within the scrubber itself.

Based on the recently operational experience, what are the main challenges with scrubbers during operations? In close cooperation and agreements with OEM we have to following expertise;

Leakage, corrosion and sensor failures Leakage and corrosion of SOx scrubber overboard pipes have been reported.



“If the works do not require shipyard facilities and are urgent, or the vessel is just too remote from a convenient shipyard, or it has a timetable that cannot be disrupted, H&V is the service that delivers results while your vessel experiences minimal or even zero downtime”

## Scrubber repairs

GRE (Glass Reinforced Epoxy) / GRP (Glass Reinforced Plastic) / FRP (Fiberglass Reinforced Plastic) Pipes have high mechanical strength; however the material tends to be brittle and will weaken under strong impact.

Leak will start to occur when the GRE/GRP/FRP piping system is subjected to heavy vibrations.

We enhance our customer’s business by providing services and solutions throughout the whole lifecycle of an installation. DSHV services professionals provide qualified expertise, whenever and wherever needed.

Our Services experts can perform for example overhauling, trouble shooting, on-site and workshop repairs, in-situ machining, audits, measurement and analysis as well as upgrades and retrofits.

## Benefits

- Secure uptime
- Minimize cost of maintenance
- Find the root cause of unplanned shutdowns / failures
- Optimize processes by making sure equipment performs as well as possible
- Improve working conditions and prevent hazardous situations

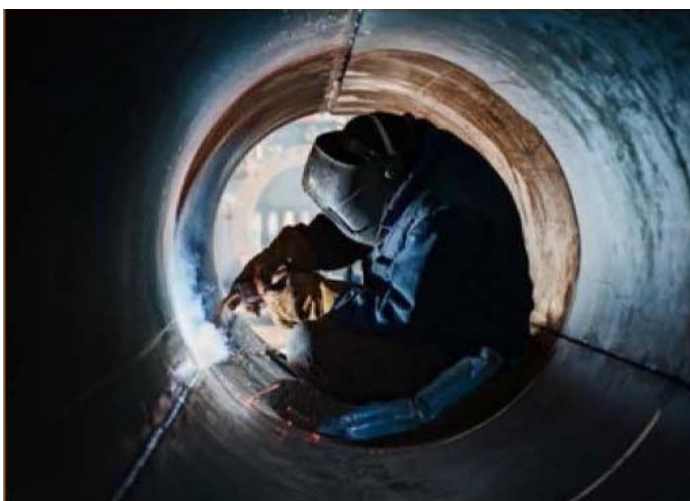


## ***Delivery and installation of GRE (glass fiber reinforced epoxy) pipe systems***

GRE systems are (in case of correct installations) saving in costs during the lifetime process, maintenance-free and light weight solutions designed to provide a corrosion-free and erosion-free operation during the service life of the vessel.

This thermoset resin system offers superior corrosion resistance together with excellent mechanical, chemical and thermal characteristics.

GRE piping is highly resistant to corrosion caused by saltwater, chemicals, residues and bacteria. Similarly, it resists external corrosion even in aggressive marine environments.



## ***Advantages of GRE compared with steel***

- No initial painting or conservation; the epoxy topcoat on the outer surface of GRE pipe components is resistant to the influences of the installation environment and an additional external conservation is initially not required. .
- Wide range of pipe systems; Fibber Glass Systems offers a complete range of pipe systems in a variety of diameters and pressure classes for many different applications. Pipe systems are available in diameters up to 1000 mm (40 inch), and standard lengths up to 12 m (40 feet).
- No contamination; GRE does not rust or scale. This prevents plugging of nozzles, valves and other components
- Ready for application for non-accessible areas by lamination, were steel products fail or not applicable.
- In case of correct installation lifetime extension and accordingly minimizing of costs see below comparison.

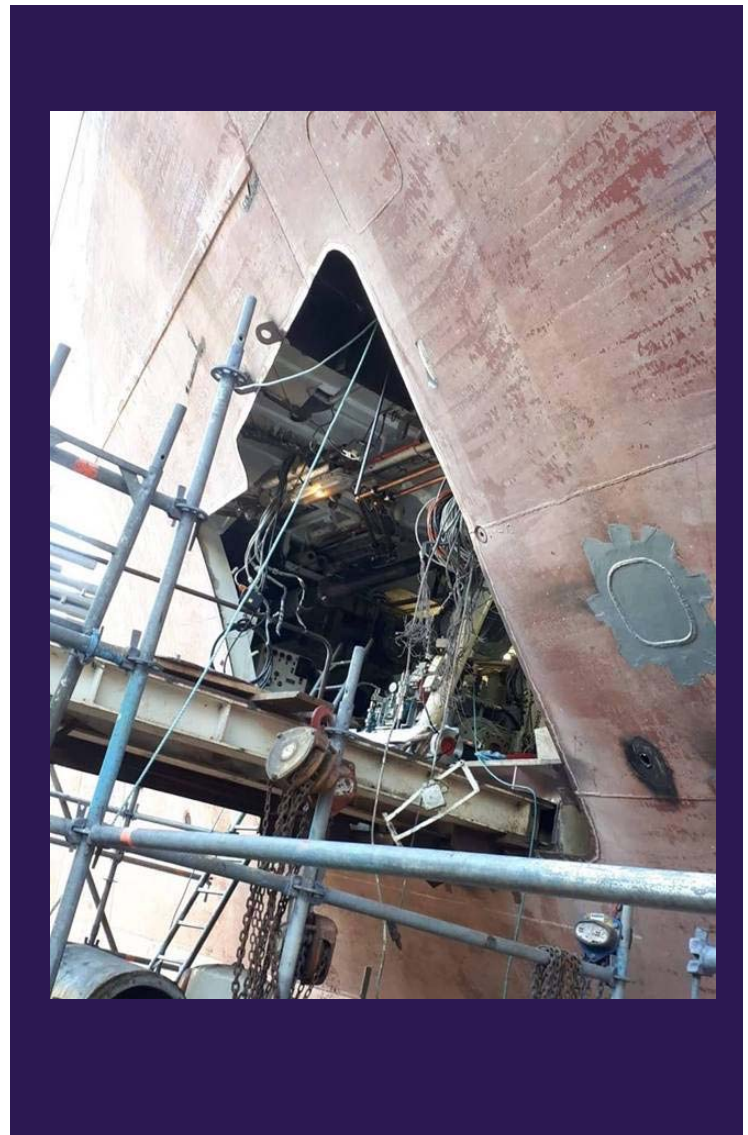
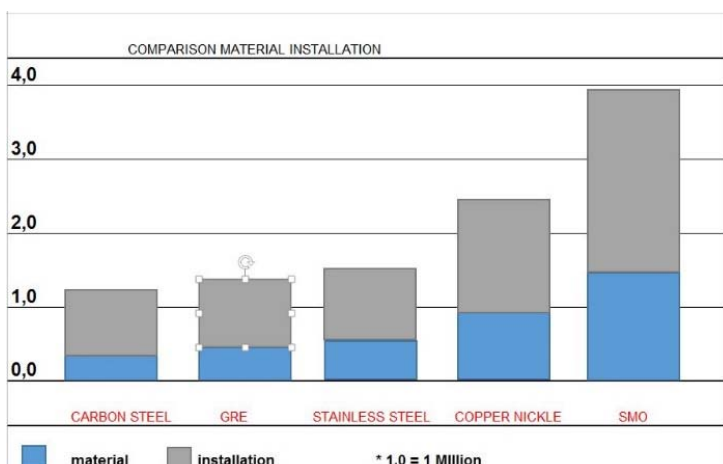


## GRE Repair

- DSHV is certified to pre-fabricate / install all brands of GRE.
- Emergency repairs of all brands of GRE pipes
- DSHV will attend the vessel globally and accordingly provide a repair / inspection / supervising report.
- DSHV can provide tailor made solutions for supervision/newbuilding / repairs / retrofit / modifications
- Specials pipe applications can be simplified by lamination.
- Tailor made stress analysis (Ceasar) in case applicable.

## Comparison material installation

- Low installation and operating costs;
- Installation costs of GRE pipe systems less costs effective than carbon steel;
- Final installation costs of systems are comparable, however the range of GRE is much bigger.
- Operating costs are reduced due to less energy needed to pump fluid through the smooth internal bore. With common installation cost will break even at 8"-10" GRE vs galvanized carbon steel pipe



## DAMEN SHIPREPAIR HARBOR AND VOYAGE



**Jozeph Quak**  
Managing Director

Harbour & Voyage

Telephone [+31 \(0\)6 12713369](tel:+31(0)612713369)  
E-mail [jozeph.quak@damen.com](mailto:jozeph.quak@damen.com)



“We are fully equipped to perform any kind of repair work and have the capability to deploy an experienced team, anywhere you might need it, guaranteeing the best possible service and highest quality repairs. Our work is fast, cost effective and meets all regulatory requirements.”



**Rinke Wesseling**  
Commercial Manager

Harbour & Voyage

Telephone [+31 6 22981276](tel:+31622981276)  
E-mail [Rinke.wesseling@damen.com](mailto:Rinke.wesseling@damen.com)

### Contact:

Professor Gebrandyweg 25  
3197KK, Botlek Rotterdam

The Netherlands

[info.dshv@damen.com](mailto:info.dshv@damen.com)

[https://www.damenshiprepair.com/  
en/harbour-voyage](https://www.damenshiprepair.com/en/harbour-voyage)

## YARDTECH MARINE SERVICES S.A.

Exclusive Agents of DAMEN SHIPREPAIR & CONVERSION Yards  
in North Europe, West Europe, Curacao and Black Sea Area

Land Lines: +30 210 4538692, 4538838

Mobile Lines: +30 6976550359, 6944146015

Fax Line: +30 210 4538663

Email: [yardtech@otenet.gr](mailto:yardtech@otenet.gr) Official Web Site: [www.yardtech.gr](http://www.yardtech.gr)

