



Non-Welded Piping Solutions for Marine



Customer environment

Customers

GS-Hydro's non-welded piping systems are used in a number of applications in the marine market. Typical users of non-welded technology in the marine industry are dredgers, RoRo / RoPAX vessels, container ships, cruisers, trawlers, tugboats, ferries and other vessels, where highly reliable hydraulic systems are continuously needed. One cornerstone of a reliable hydraulic system is a clean and leak-free piping system.

An example of a customer segment where GS-Hydro piping systems are frequently used is dredgers. Dredging is a very demanding process for any type of equipment. The handling of sand, salty water and other materials sets specific requirements both for equipment and piping. Having highly reliable piping system and clean hydraulic oil in systems, extends the lifetime of the equipment despite harsh working environments.

Demanding working environment

The marine market creates several challenges for equipment, systems, ferries and vessels.

Weather conditions vary from beautiful sunshine to stormy ice-cold winds. Equipment and piping systems are designed and built to cope with most difficult conditions.

At the same time users and owners have expectations that ferries, vessels and boats can be operated 24/7, which leaves no room for system failures or long service interruptions. Service friendly piping systems allow shortest possible maintenance break to maximize uptime and maintain revenue streams.

Environmental aspects are becoming more and more important and are recognized through reliable leak-free operations. Every company is concerned with their operating environment and tries their best to protect seas, rivers and lakes that they operate in.





GS-Hydro technology benefits

Added value for customer

Revenue

Increase Customer's Revenue

- Increased uptime
- Higher revenue and profits
- Faster start-up of operations
- Improved quality through engineering
- High quality products
- Deep understanding of classification requirements
- Increased hydraulic system lifetime due to fewer component failures and operational stoppages

Risk

Eliminate Risks

- Reduced schedule risk
- Reduced financial risk
- High quality products
- Improved quality through engineering and prefabrication
- Professional project management
- Reduced risk of contractual penalties
- Reduced resource risk through machining
- No welding quality risk

Efficiency

Improve Efficiency

- Increased operational efficiency
- Decreased installation costs
- Minimized on-site work through prefabrication
- No need for post welding X-ray testing
- No need for acid cleaning
- No need for welding requirements



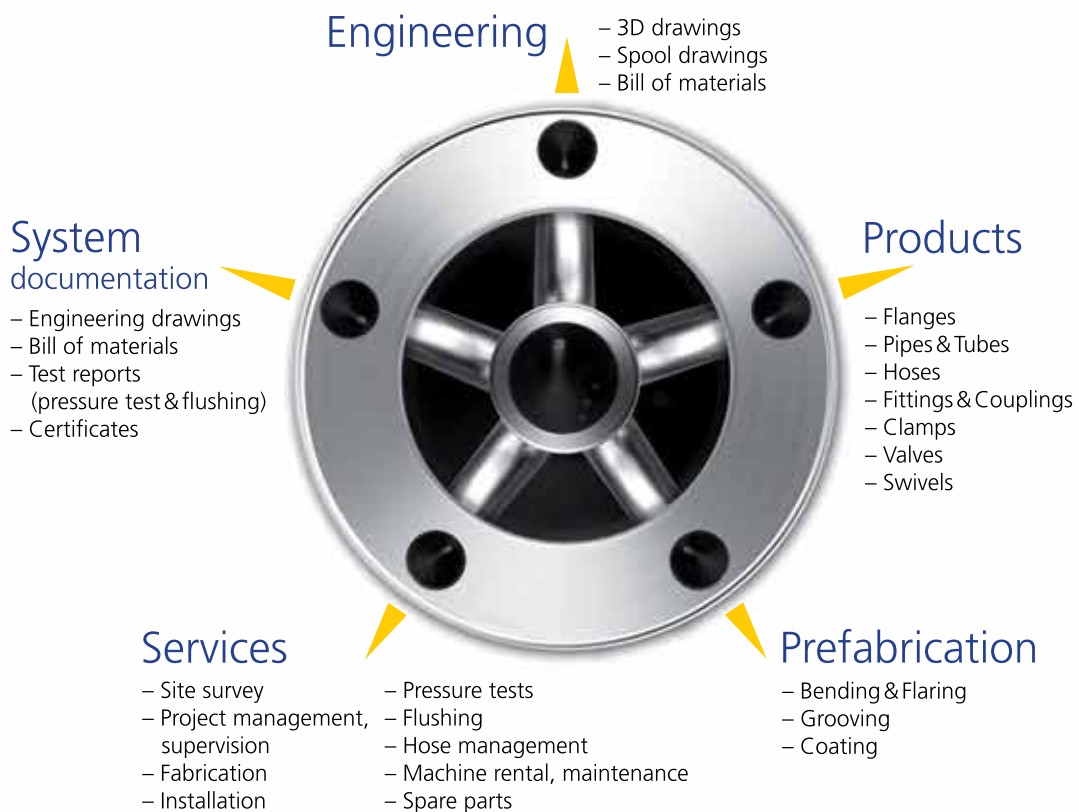
Optimal piping solutions for all marine installations

The GS-Piping System has been fitted onto more than 7000 ships all over the world. With over 40 years of experience the GS-Piping System has demonstrated its benefits for customers around the world. In addition to high pressure hydraulic and air applications, the GS-Piping System is also ideal for onboard low pressure piping systems such as seawater, fire water, air and sewage piping systems.



GS-PIPING WITHOUT WELDING™

Complete piping systems



Engineering

GS-Hydro can provide all engineering services. We can work together with the customer's engineering services or can use 3-D models provided by customer to develop detailed spool drawings. The earlier we start working with our client, the easier it is for our customer to achieve their business goals, reliable high pressure piping system for their marine needs.

Products

All products (pipes, flanges and fittings, hoses and hose couplings, valves and clamps) are high quality products and have all relevant certificates. GS-Hydro's wide product offering enables our customers to choose the ideal solution for different needs. We can offer materials from carbon to stainless steel and to specific alloys as galvanised or painted coatings, just to mention a few.

Prefabrication

Using prefabrication helps to reduce the amount of on-site work and thus reduces cost and minimises hassle on a customer site.

Services

GS-Hydro has over 40 years of experience offering non-welded piping solutions for marine customers globally. Over that period of time we have gained extensive experience working with this very special customer segment. GS-Hydro is continuously and actively seeking opportunities on how to better serve our customers across the globe.

System documentation

Maintenance of the system is important to our clients. Good system documentation is a cornerstone when lifetime service is considered. For example GS-Hydro provides system design drawings, spool drawings, material lists and test reports. This is our typical documentation package provided to our customer in conjunction with piping system delivery.



Non-welded GS-Hydro technology

The ORIGINAL GS-Piping System consists of three flange systems, which allow piping systems with working pressures from 10 to 690 bar and pipe diameters between 16 and 600 mm to be assembled without welding. The Retain Ring and 37° Flare Flange systems are used for high and intermediate pressure connections and the 90° Flare Flange connection for low pressure applications.

In addition to the original GS-Hydro products, we are offering a wide selection of fittings, hoses and hose couplings. A complete product and service offering gives GS-Hydro a great position in the market, serving different kinds of marine customers and their unique needs.

Quality of operations, products and customer solutions are critical business drivers for GS-Hydro. The company manufactures, sources and delivers only components and materials, which have all the relevant certificates needed for different customer segments. In project sales, the quality management system also covers projects and services for piping system implementations.





- ✔ Certified quality system (ISO 9001:2008) in place
- ✔ Full materials traceability
- ✔ High quality materials and manufacturers

Approved by numerous classification agencies

ABS American Bureau of Shipping

DNV GL DNV GL Group

LRS Lloyd's Register of Shipping

BV Bureau Veritas

RINA Registro Italiano Navale

RS Russian Maritime Register of Shipping

NKK Nippon Kaiji Kyokai

KR Korean Register

DOT Department of Transport Marine Directorate

TÜV Technische Überwachungs Verein

NORSOK for offshore

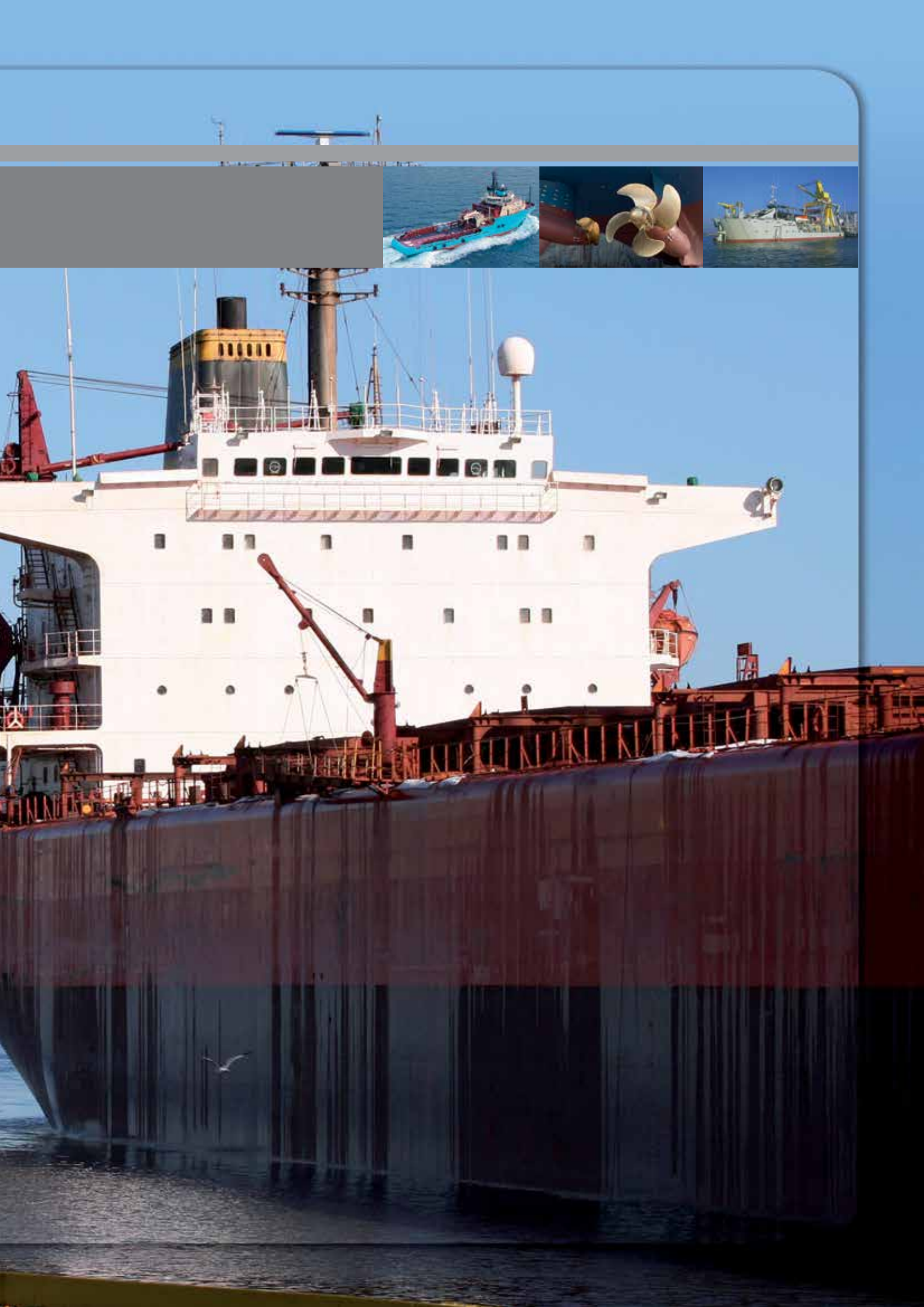


Partner you can trust

GS-Hydro is the world's leading supplier of non-welded piping systems. Operations began in 1974 with the commercialisation of an innovative flange system, which allowed the rapid and secure connection of pipes without the need for welding. Investing in continuous product and systems development, GS-Hydro now offers the broadest range of non-welded piping solutions in the market. Our core technology has been validated in thousands of applications for over three decades and has been taken to virtually every corner of the globe.

- Global presence through 14 subsidiaries and selected partners
- Headquarters and production facility in Italy
- Over 40 years of experience in non-welded piping technology
- Tens of thousands of piping systems installed around the world
- Provider of GS-Hydro original non-welded flange technology





GS-Hydro is the original provider of non-welded piping solutions with numerous benefits for a wide variety of demanding applications. We create value together with our customers by providing innovative fluid transfer solutions which enable safe operation, reduced environmental impact and lower total cost of ownership. We deliver our piping and hose solutions globally in more than twenty-five countries through own companies and partners.



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