

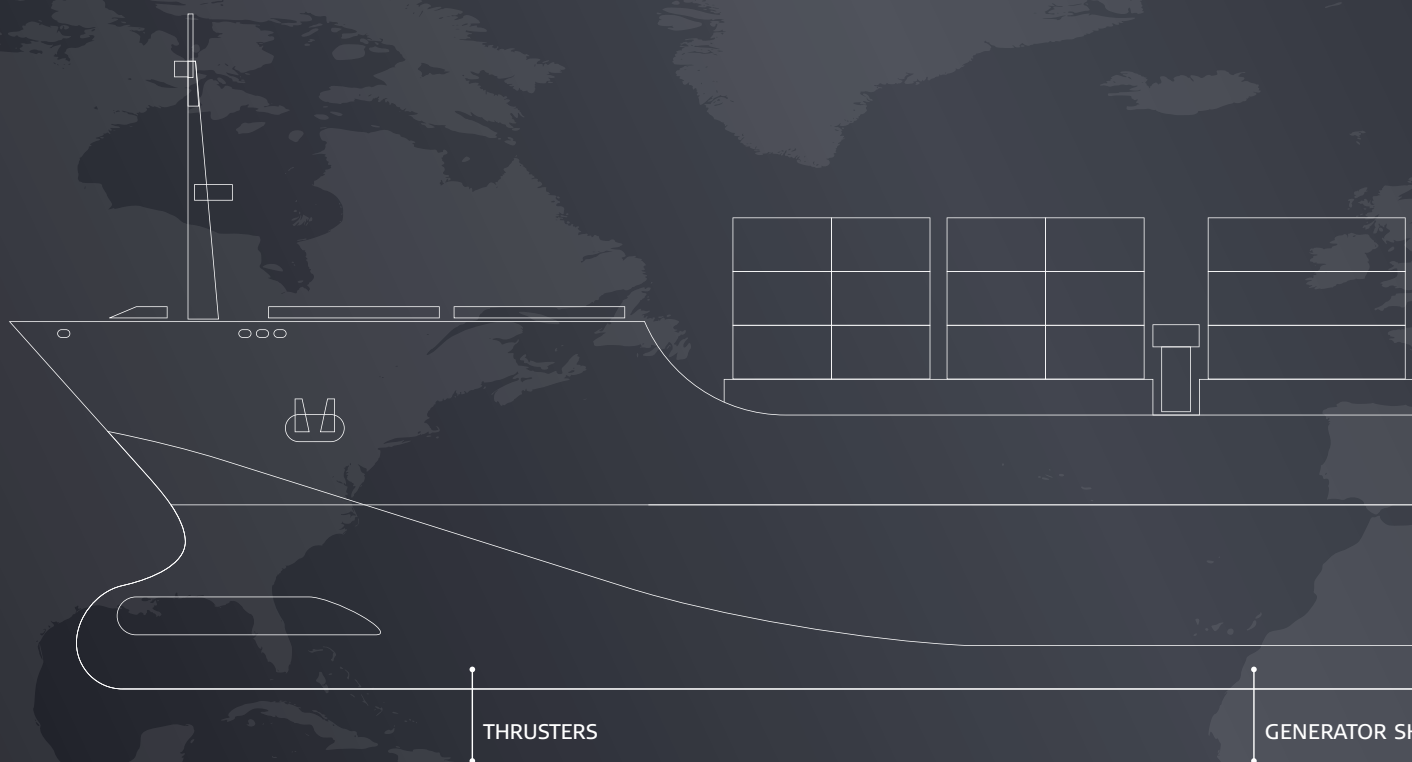


**FAST MARINE
SERVICES**

MarineShaft®

**ALWAYS PURSUE
EXCELLENCE**

REPAIR RECONDITIONING REPLACEMENT

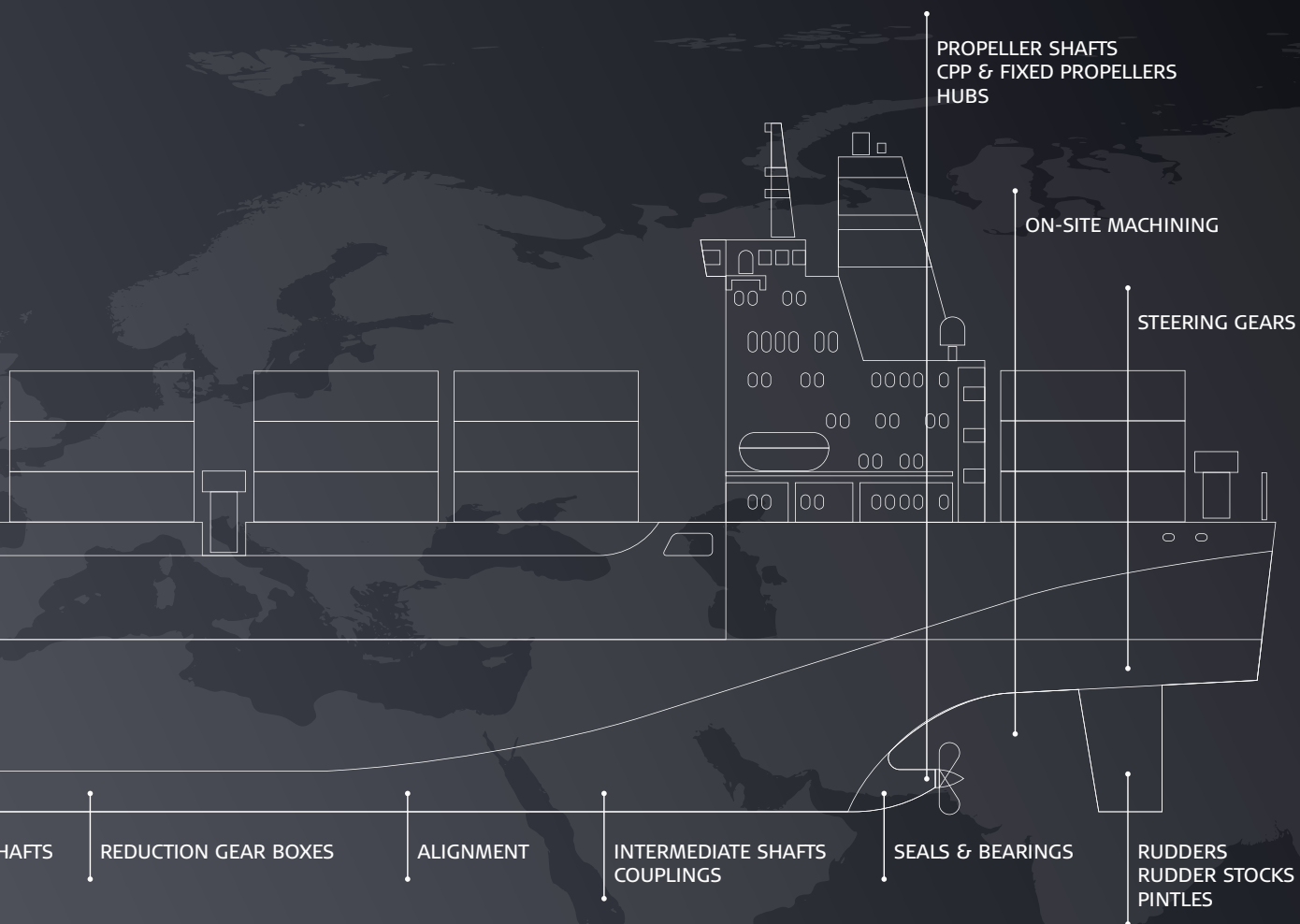


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Silvervej 6



Pier 2



WE PURSUE EXCELLENCE

MarineShaft®



LET US HELP YOU FIND THE BEST REPAIR SOLUTION

SPECIALISTS

When you cooperate with MarineShaft, you are guaranteed a professional partner with many years of experience and technical capabilities within repair of propeller equipment and rudder arrangements.

We have the experience to make the right decisions quickly, and we can ensure you that the job is carried out in the shortest possible time.

We are here to help you find the best repair solution.

THE SHAFT STRAIGHTENING SPECIALIST

MarineShaft specializes in cold straightening of propeller shafts, intermediate shafts and rudder stocks. With our unique straightening technique, we can repair and prolong the service life of vital parts with very short repair time, leaving a lower CO₂ impact compared to replacement.

COLD STRAIGHTENING

Our cold straightening technique was developed more than 50 years ago, and it is fully approved by all the leading classification societies.

MarineShaft is a modern company based on classic craftsmanship traditions.

Based in the northern part of Denmark, we have established a reliable business within class approved repairs of propeller equipment and rudder arrangements.

We are known for our fast response time, short delivery times, and best-in-class repairs, which have put MarineShaft on the world map as a reliable and professional subcontractor to shipyards, ship owners, ship management companies, navies, etc. worldwide.

Our unique cold straightening technique enables us to repair even the most severely bent shafts and rudder stocks. Bends can occur during manufacturing, after a period of use, after groundings or if the rudder or propeller strikes an obstacle.

Our workforce has many years of experience that has been passed on over the years. One of our strengths is our short decision paths. We act immediately, and we always have capacity for urgent repairs.

MarineShaft has moved through time, keeping up with new technologies. We invest in advanced welding technologies and stationary and mobile machining equipment to make sure we give you the best option.

In our business, fast repair options are vital. Damages and drydockings require a lot of work from the involved parties, and time is often critical.

With our competent and highly skilled employees we are here to help you make the right decisions.



Even the most severely bent shafts can be straightened.

CLASS APPROVAL

We work closely with the classification societies, and a certificate is issued individually on each repair.

Our cold straightening method contributes to responsible consumption and reduction of CO₂ emissions.

For every ton of steel produced, the average emission of carbon dioxide is one ton, so why replace if repair is an option.

The advantages of cold straightening are plenty:

- It is fast and cost-effective
- It is an environmentally friendly solution
- It is fully approved by all leading classification societies
- It is considered a permanent repair and equivalent to a new shaft

We can straighten shafts from 20 mm up to 1,500 mm in diameter with no limitation on the length.

All shafts are thoroughly inspected and tested for crack indications, before and after straightening. All work is carried out in close cooperation with the classification societies.

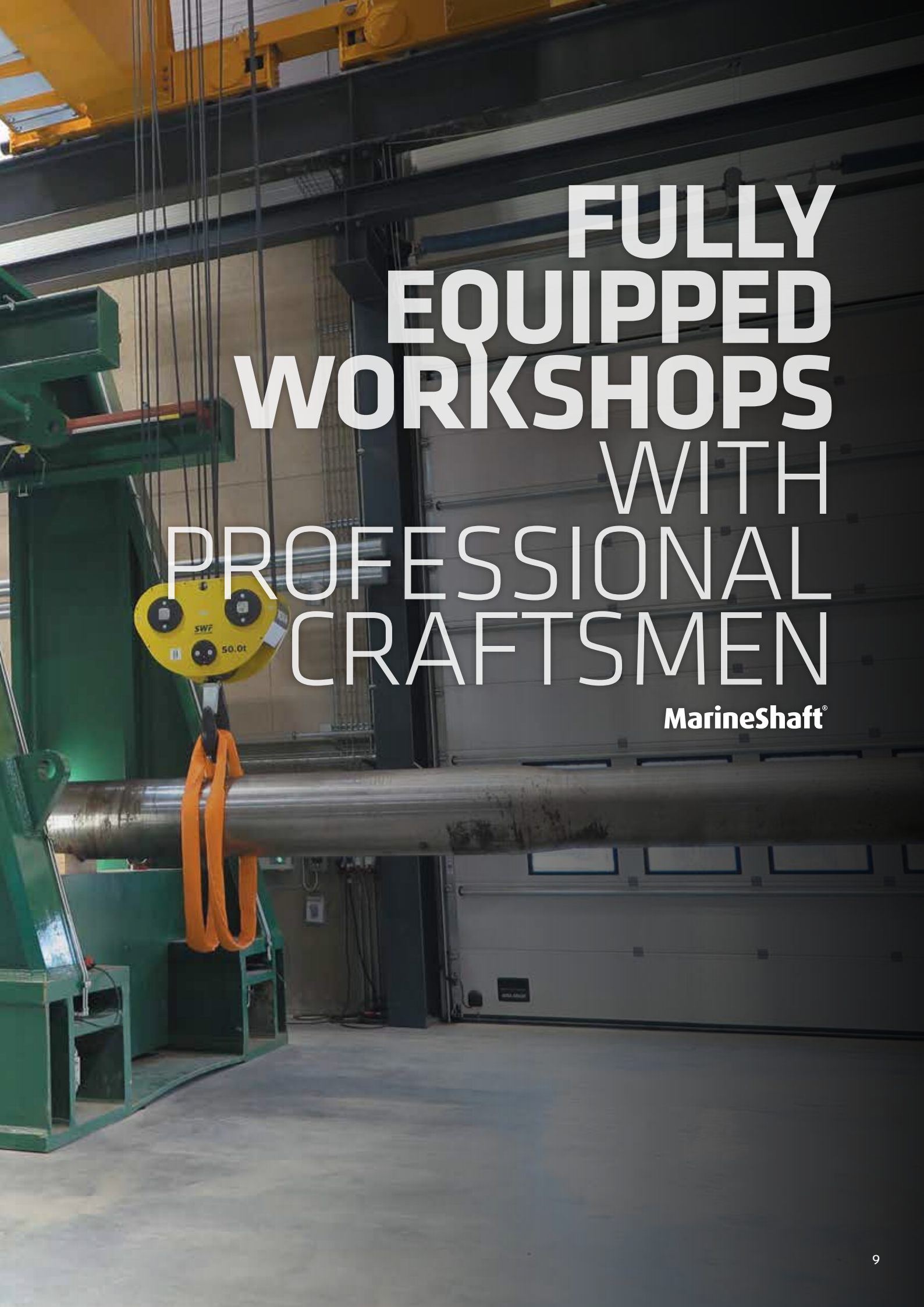
WHEN YOU THINK IT CANNOT BE REPAIRED, THINK AGAIN

Even the most severely bent shafts can be straightened. Often a better straightness than that of a new shaft can be achieved.

No matter where in the world the propeller or rudder damage occurs, a straightening is often the most cost effective solution.

After cold straightening, the result is equivalent to a new shaft - max. 5/100 mm out of line.



A large industrial workshop with a green crane lifting a large metal shaft. The crane has a yellow pulley system with the text "SWF 50.0t" on it. The shaft is long and cylindrical, resting on a green support structure. The background shows the interior of a large building with a high ceiling and various industrial equipment.

FULLY EQUIPPED WORKSHOPS WITH PROFESSIONAL CRAFTSMEN

MarineShaft®

TRUST
US WITH
YOUR **REPAIR**
AND YOU CAN
REST ASSURED,
IT WILL BE
RETURNED AS
GOOD AS NEW

MarineShaft®

RECONDITIONING OF PROPELLER SHAFTS AND PROPELLER EQUIPMENT

Do you have problems or failures with your shaft line? MarineShaft carries out complete reconditioning of propeller equipment of all makes.

REPAIR OF PROPELLER SHAFTS

MarineShaft can repair all damages on propeller and intermediate shafts. No matter what caused the damage, we have the know-how and equipment to fix your shaft problems.

Our specialists are ready to assist you with:

- Straightening of propeller shafts and intermediate shafts with class approval
- Class approved welding techniques for welding of shafts
- Raw material in stock for manufacturing of new shafts and liners
- Repair of the entire shaft line

We have lathes and milling equipment for machining of any dimension.

All our repairs are class approved.

RECONDITIONING OF PROPELLER EQUIPMENT

We provide a professional repair solution and have the expertise to carry out:

- Reconditioning of shafts
- Complete reconditioning of all kinds of marine shaft sealing systems
- Reconditioning of propeller hubs
- On-site machining of stern tubes
- Centrifugal casting of white metal bearings
- Manufacturing of new liners and bushes in stainless steel and bronze
- Repair or manufacturing of hydraulic couplings
- Dismantling and assembling of propeller equipment

If you need on-site services such as supervision, shaft alignment services, re-installation of shaft line, or other on-site machining, we can also provide you with these services.

IN NEED OF A RUDDER EXPERT?

MarineShaft®

RECONDITIONING OF RUDDER STOCKS AND RUDDER ARRANGEMENTS

No matter if you need a repair of the rudder stock alone or of the complete rudder arrangement, we have the expertise.

RUDDER STOCKS

We repair all types of damages on rudder stocks, and our repair techniques are fully class approved.

MarineShaft has class approved welding procedures and can start a repair immediately. An important factor when time is essential.

All repairs of a rudder stock include an inspection and NDT upon arrival in our workshop. We keep a large stock of liners in stainless steel and bronze for manufacturing new sleeves, bushings, etc. We can significantly reduce the repair time.

We can offer you:

- Class approved cold straightening of rudder stocks
- Repair of cracks, corrosion, or other damages by welding
- Heat treatment of rudder stocks
- Manufacturing and shrink fitting of new liners
- Raw material in stock for manufacturing new rudder stocks

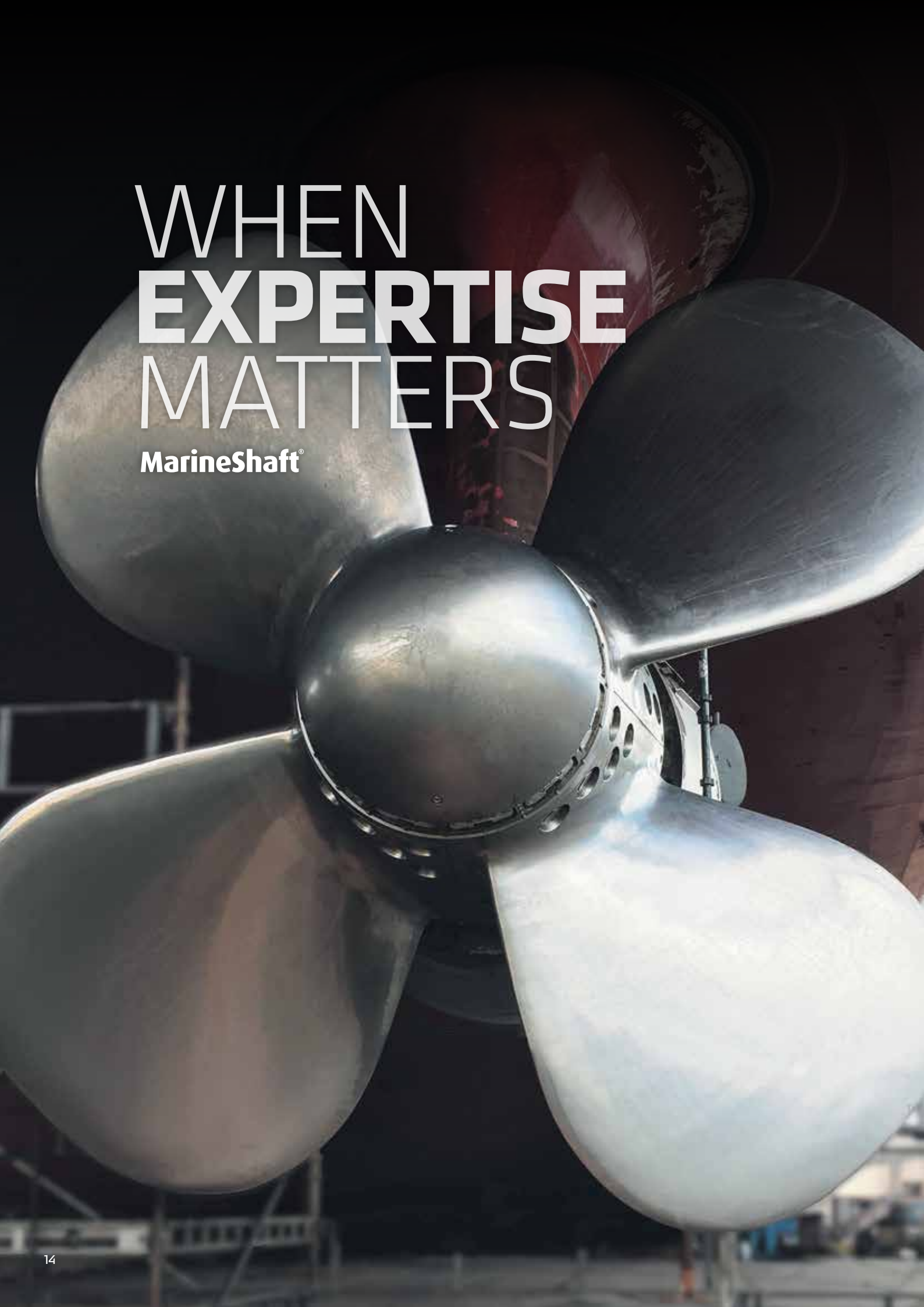
RUDDER ARRANGEMENTS

MarineShaft has extensive experience in reconditioning of rudders and rudder arrangements.

We perform the jobs in our workshop or on-site, though we never compromise on quality. Everything is as good as new after reconditioning - a faster and more economical solution.

- Line boring of rudder bearings
- Machining of all types and sizes of cones in rudder blades
- Manufacturing and reconditioning of bearings
- Renewal of complete rudder arrangements
- Renewal of rudder castings
- Mobile machining
- Complete repair solutions

With MarineShaft as your subcontractor for rudder repairs, you are guaranteed a competent subcontractor who can provide complete repair solutions and carry out all required tasks, including on-site machining and refit.



WHEN **EXPERTISE** MATTERS

MarineShaft®

RECONDITIONING OF PROPELLER BLADES AND FIXED PROPELLERS

We guarantee a fast and professional repair of your worn or damaged propeller blades or fixed propellers.

PROPELLER BLADES

We rebuild damaged propeller blades in stainless steel and bronze, and we can balance the propellers statically with specially designed digital equipment. All repairs come with approval from the classification societies.

FIXED PROPELLERS

We are familiar with propellers from all makers, and we can repair propellers of all kinds.

RECONDITIONING OF THRUSTERS

MarineShaft has developed considerable expertise in the reconditioning of thrusters.

We can machine components due to damage/wear and assist you on planned service overhauls. We also manufacture new components with short delivery time.

Our service department performs disassembly, measurement and control, and assembly of thrusters. Before starting a repair, an initial inspection of the equipment is performed in association with the involved classification society.

Before returning the equipment we carry out a final inspection and a class certificate is issued.

CERTIFIED WELDERS

We have a well-educated team of service engineers, propeller specialists, and certified welders ready to start wherever and whenever called upon.

Jobs can be carried out in our workshop or on-site. Our welders are ready to take off 24/7 alone or in teams.

We have a fully equipped container ready to be shipped out to propeller repairs worldwide.

WELDING SPECIALIST

MarineShaft has the class approval and the equipment to weld on shafts, rudder stocks, and other components.

RECONDITIONING BY WELDING

We can provide you with a fast and professional repair when a rudder stock or propeller shaft suffers from wear or corrosion. We have the class approved welding certificates to start a repair immediately, reducing the delivery time.

Our welders are certified and specially trained and work with all sorts of carbon steel, stainless steel, and bronze with different welding types such as:

TIG, MIG, MAG welding, and submerged arc welding with different types of material.

POST-WELD-HEAT-TREATMENT (PWHT)

MarineShaft carries out heat treatment of steel and welded joints at our workshop or on-site at your choice.

The thermal stress from welding influences the material in the welded joint and the surrounding areas. We carry out controlled heat treatment before, during, and after welding and thereby eliminate any unwanted changes in the structure and properties of the material.

Our heat treatment is carried out by certified technicians and using class approved procedures.

COLD PROCESS WELDING TECHNIQUES

We specialize in new cold process welding techniques enabling us to weld on high-carbon steel and other components that does not tolerate conventional welding methods.

MICRO WELDING

Micro welding can repair scratches and impact marks of several mm on areas that do not tolerate conventional welding.

With a high current 500-1650 ampere impulse, concentrated in spots of 0.2 mm per impulse, the filler metal is melted to the base metal within milliseconds.

Micro welding requires no machining afterwards - only hand finishing. Our equipment is portable and easily taken to any location.

ROBOTIC WELDING - LASER CLADDING

Laser cladding is an efficient and accurate method that guarantees 100% adhesion to the base material. By laser cladding, you can rebuild and prolong the service life significantly.

Laser cladding is performed with a numerically controlled robot, which gives us plenty of geometric repair opportunities.



The heat input is 1/10 compared to regular welding. The low heat input saves repair time of up to 2-3 days, as heat treatment for removing stress caused by regular welding is not needed.

We can repair vital parts by laser cladding, that otherwise would have been replaced. Using laser cladding you can apply a different material than the base material achieving an even harder surface of your equipment.

Advantages with laser cladding:

- 100% adhesion of the filler metal to the base material
- Welding on high-carbon steel
- Fast and accurate welding method
- The welding requires no heat treatment afterwards
- Laser cladding reduces the delivery time
- The repair can be carried out on-site
- The repair is class approved

ALWAYS
FOCUS
ON **NEW**
WELDING
TECHNIQUES
MarineShaft®

A large industrial workshop with a high ceiling and steel beams. In the foreground, a massive, rusty metal shaft is being moved by an orange crane strap. The shaft is resting on wooden blocks. In the background, there are various industrial machines, including lathes and mills, and a yellow overhead crane. The floor is concrete.

WE ONLY
STOCK RAW
MATERIAL WITH
**EUROPEAN
ORIGIN**

MarineShaft®

MANUFACTURING OF NEW RUDDER STOCKS, PROPELLER SHAFTS AND INTERMEDIATE SHAFTS

When delivery time matters MarineShaft is among the leading companies to manufacture a replacement for your shaft, rudder stock or other components with short delivery time.

BEST-IN-CLASS WORK

Our flexible organization and our large stock of class approved steel enable us to manufacture new shafts with short delivery time. We have at our disposal 3 fully equipped workshops and well-trained technicians ready to manufacture shafts of all sizes.

No matter what you need - a new propeller shaft, intermediate shaft, rudder stock, coupling, pintle, bushing or other components - we have the capacity and most probably the raw material in stock.

RAW MATERIAL WITH CLASS CERTIFICATE

For the benefit of our customers, we keep a large stock of raw material for new manufacturing. We only buy from reliable steel suppliers, and all materials come with a class certificate.

We have a large stock of class approved steel:

- Round bars in many different grades, diameters, and lengths
- Flange shafts for manufacturing of propeller shafts and intermediate shafts
- Stainless steel and bronze liners in all dimensions
- Plates for welded-on flanges
- Stainless steel round bars in different grades, diameters, and lengths
- Composite bearings
- Steel blocks for rudder castings

REAL PEOPLE PROUD TO DELIVER BEST-IN-CLASS WORK

MarineShaft®

ON-SITE MACHINING SERVICE 24/7

If you need an on-site machining service, you can entrust your machining job to MarineShaft.

ON-SITE ASSISTANCE

MarineShaft is a proven specialist in all repairs of propeller equipment and rudder arrangements, and we provide cost-effective and flexible global services 24/7.

Our on-site machining division provides a wide range of specially designed mobile equipment for any task carried out by a professional team of certified and dedicated service engineers, propeller specialists, and certified welders, who are ready to start wherever and whenever called upon.

FULL PACKAGE REPAIR SOLUTIONS

Why hire more subcontractors when one can do the job? MarineShaft can take care of your entire repair and on-site required work.

Many of our repair jobs combine work done in our workshop, followed by on-site work. No matter if you need a complete package solution or less, you will always meet a professional technician taking care of your request.

SUPERVISOR ASSISTANCE

We can offer to send our supervisor on-site to be part of the initial inspection, and to help with decision making and to be part of the repair planning.

We will follow and guide you through the entire project, and we can assist with final machining and fitting on-site.

On-site we can assist you with:

- Boring of stern tube, boring of rudder neck bearings, boring of rudder horn, etc.
- Machining of cones in rudder blades, machining of shafts, etc.
- Welding of rudder blade cones, welding of shafts
- Alignment of shaft line and rudder line
- Run-out measurement services
- Shaft withdrawal
- Disassembly and assembly/fitting
- Modification
- Grinding and polishing



WE ALWAYS HAVE THE CAPACITY FOR URGENT REPAIRS

10,000 m² fully equipped workshop facilities
with manual and CNC machinery.

QUALITY AND URGENT REPAIRS

We have vertical and horizontal lathes, both manual and CNC operated. Boring and milling machines and 4 hydraulic presses for cold straightening of shafts and rudder stocks up to a maximum of 1,500 mm in diameter.

We want to be among the best and fastest to repair or manufacture a new shaft, rudder stock, and other components.

Waiting for raw material can take up to several months. We can offer a short delivery time due to our extensive raw material stock in various dimensions and grades to meet most requests.

LOGISTICS

Sending your rudder arrangement/propeller equipment and other parts for repair in our workshop in Hirtshals, Denmark by road, sea or air is not a problem.

Transport and shipping worldwide is a part of our service. We deliver where it is needed and cooperate with reliable forwarding companies.

We are always at your disposal with a transport solution and information on shipping documents and documents for customs clearance.

CRATING

MarineShaft's carpentry woodshop manufactures customized crating, specially designed to fit your rudder stock, propeller shaft, and similar. This ensures the best possible protection while it is in transit. Our crates are made of heat-treated wood and comply with the ISPM-15 specifications.

Especially airfreight of large and heavy shafts puts high demands on the design of the specific crating. MarineShaft's many years of experience with the manufacturing of this type of packaging is your guarantee that your shaft, which has been cold-straightened to less than 0.05 mm of deflection, will arrive safely and securely anywhere in the world.

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**FAST MARINE
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