

CONVERSION – UPGRADING YOUR VESSEL

More and more owners and yards are contacting our service team about converting original configurations to Becker Rudders. The manoeuvring and efficiency performance of the original configuration often falls below expectations or has shown poor results during vessel operation. One of the major problems causing damage to rudder blades is cavitation. As the inventor of the twisted rudder, Becker Marine Systems has developed individual solutions to avoid rudder induced cavitation and reduce cavitation consequences caused by propeller tip and hub vortices.

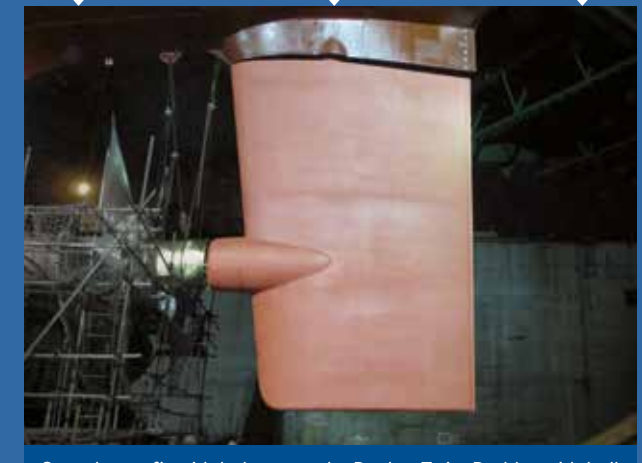
When it comes to manoeuvrability, reliability, efficiency and cavitation avoidance, Becker combines experience with new technologies such as CFD to develop the optimal solution for operators. We are the top choice to provide the perfect rudder replacement. Together with the customer, the Becker Service Team will analyse the individual requirements. Becker's design and CFD team is skilled in providing the best solution to simplify installation and fulfil the customer's expectations in terms of manoeuvrability and efficiency.



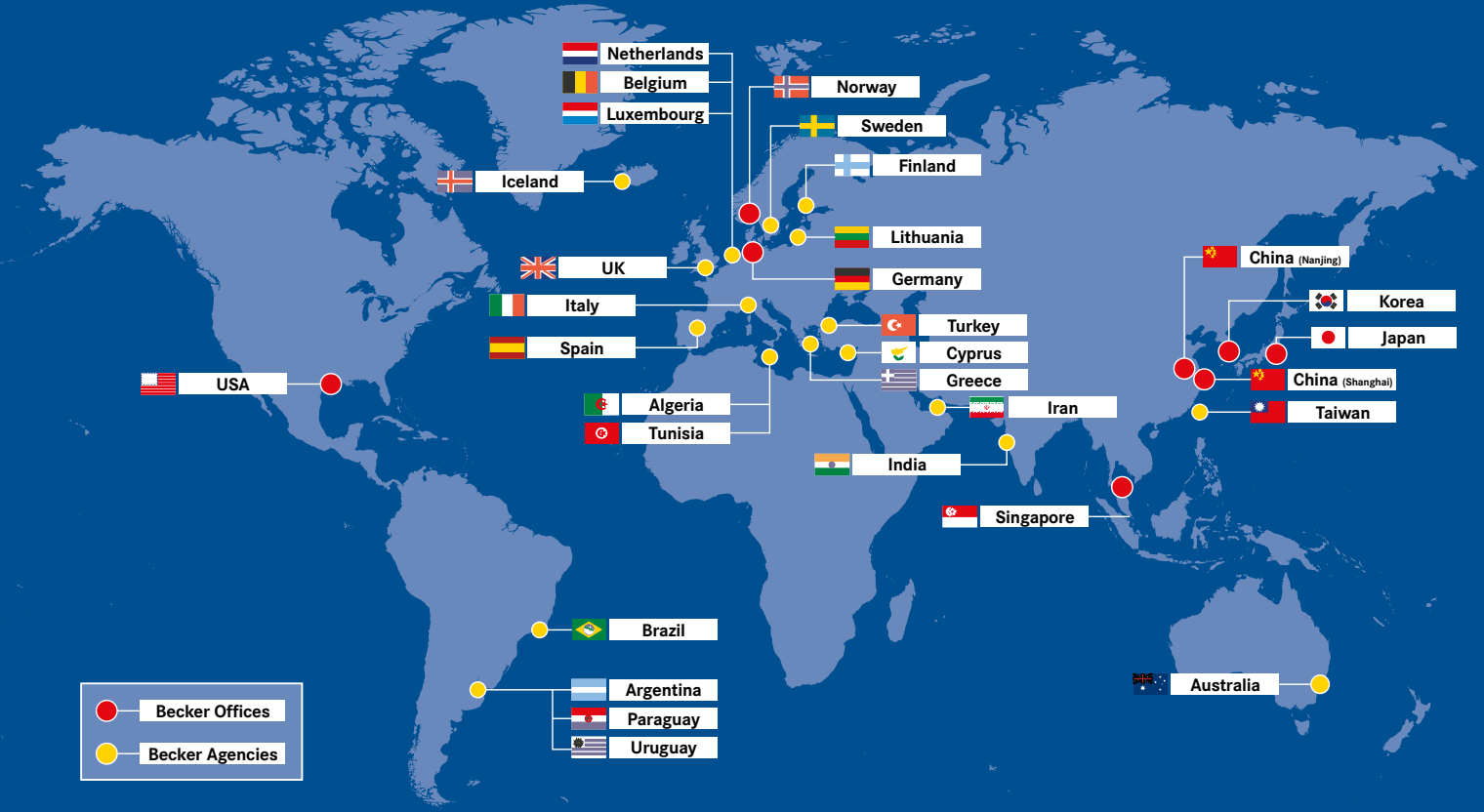
The old rudder on a vehicles carrier



Installation of an optimised hub cap designed by Becker



Complete refit with hub cap and a Becker Twist Rudder with bulb



SERVICE CONTACT

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SERVICE & REPAIR – WORLDWIDE, 24/7

Becker Marine Systems is the world's market leader in state-of-the-art rudder, energy-saving devices and nozzle systems. Our technical team combines their efforts and experience in designing reliable, robust and well-performing manoeuvring and propulsion systems.

With thousands of systems installed, and many of them already in service for decades, it is vital to us to provide you with the best

possible after-sales service. Whatever the query or problem you may have regarding your vessel, our service team of experienced supervisors and technical experts are there for both planned maintenance and emergency repairs of Becker or non-Becker products. With seven of our own offices stocked with spares and staffed by service technicians and more than 20 agents, Becker Marine Systems is represented all over the world. The Becker Sales & Service Team is available worldwide on a 24/7 basis.

BECKER AND NON-BECKER SPARE PARTS

The relationship with our clients does not end after delivery. After sales services have always been important to us. In order to guarantee the best service, we ensure delivery of original spare parts – with the shortest delivery times.

Many standard Becker spare parts are available in stock. Thanks to our network of production facilities in Europe and Asia, tailor-made spares can also be quickly delivered to locations across the world. This service is not restricted to Becker products: our service team is looking forward to your enquiry about spare parts for non-Becker rudders.



MANOEUVRING TRAINING

Adding a Becker manoeuvring system provides positive results to the handling characteristics of any vessel. To get the most out of this benefit Becker offers Manoeuvring Training that allows captains to understand the difference of these systems over standard rudders.

These courses can be tailored to the needs of the customer and can be set up for large groups or one on one. Basic courses focus on emergency manoeuvres, berthing, un-berthing, crabbing and optimised course keeping. With the mastery of these concepts your captains will gain added confidence and ensure safe operations of the vessel.

We also offer our manoeuvring training course as a simulation which offers the opportunity to compare the performance of different rudders on the same ship with unchanged conditions. Various ship types (e.g. twin screw ferries, tankers, container vessels, etc.) are already available as digital models and can be modified to simulate the performance of a Becker rudder based

on our CFD calculations. It is of course also possible to generate a simulated vessel based on your own data. Your captain's knowledge can be improved in a safe environment.



RUDI – REMOTE UNDERWATER DIGITAL IMAGING CAMERA

The RUDI camera system is a digital device our sales and service team uses to capture underwater pictures and videos of the ship's propulsion system when in action under any sea conditions.

The RUDI system is a very effective and useful tool for inspecting and investigating propulsion systems during operation. Unlike normal maintenance methods, RUDI enables the monitoring and archiving of all underwater events in real time. This SD or HD video material makes it possible to analyse the propulsion system, help solve problems such as vibrations or cavitation or prepare the next dry docking in terms of the required labour input and the estimated time at the shipyard. RUDI is not a fixed installation. It is a mountable device which is removed after operation. Our customers face no time losses because installation and removal of the device takes place during loading and unloading at port.

On request we would be happy to write up a final report combined with hydrodynamic analysis.

