



NEW PRODUCT: BECKER TWISTED TRAILING EDGE RUDDER

A reborn rudder design

During the past few years the requirements for rudders have increasingly led to a combination of two philosophies. Today's rudders should not be just efficient or of high-lift type – the market demands a combination of both: a high-lift rudder (which in general produces higher drag) with energy-efficient performance.

To meet the demand for efficiency combined with manoeuvrability, safety and as little maintenance as possible, Becker's design team has drafted many different rudder

designs. In order to create a rudder that represents the best compromise in regard to manoeuvrability and efficiency without any drag-producing linkages, bolts or hinges, Becker's design team chose a Becker Schilling® profile for the new rudder type.

The working principal of the Becker Twisted Trailing Edge Rudder is similar to that of a standard Becker Schilling® Rudder. However, due to the rotation of the propeller, the fishtail trailing edge is only located on the side where the slipstream of the propeller

hits the rudder most powerfully. The other side is plane to reduce drag.

The fishtail design typically builds a stagnation area which is responsible for higher rudder drag. Using only half of the stagnation area of the newly developed Becker Twisted Trailing Edge Rudder, the design team was able to dramatically reduce rudder drag. Especially for vessels with a speed of up to 16 knots, the rudder is the best compromise to assure safe manoeuvring, crabbing and good transit performance.

MEMBER OF STAFF: JÖRG HAASE

Managing Director for Becker in Shanghai, Nanjing and Zhenjiang



Mr. Haase's career consists of 15 years of shipyard experience, starting as a shipbuilder and becoming a designer in 1998. Jörg Haase joined Becker Marine Systems as a designer in 2003. Just one year later he was sent to Nanjing (China) to supervise the cooperation between Becker Marine Systems and CSSC Nanjing Luzhou as Production Manager. In 2007 he became Managing Director for Becker in China and Production Manager in Asia. In 2012

Becker decided to build their first production facility in Zhenjiang. Mr. Haase was responsible for the design and construction of the workshop as well as establishing production workflows. "Without the support of the Becker team in China and Hamburg this would not have been possible", he said. In 2013 the workshop opened its gates for production. Mr. Haase is responsible for and enjoys the support of more than 80 employees in Shanghai, Nanjing and Zhenjiang.



LNG HYBRID BARGE HUMMEL: FIRST LOW-EMISSION POWER SUPPLY TO AIDASOL

The programme of technical trials for Becker's LNG Hybrid Barge HUMMEL was successfully completed, right in time for the beginning of the cruise ship season. The first low-emission power supply to a cruise ship lying at port in Hamburg took place on 18th May 2015.

In collaboration with Bureau Veritas, the overall LNG Hybrid Barge system was tested and a variety of large load impacts and load spikes were simulated. The overall load transfer of 0 to 7.5 megawatts of power was achieved well below the time of two

minutes set by the classification society. In addition, the trial generation of power for a large Hamburg-based company was already successfully tested in December 2014.

This year for the first time the HUMMEL has supplied mobile and low-emission power to cruise ships lying at port in Hamburg. Interest in the LNG (Liquefied Natural Gas) Hybrid Barge is thus already quite large. And a reason for Dutch King Willem-Alexander and Queen Máxima to stop by during their visit to Hamburg to be informed about the innovative project.

The LNG Hybrid Barge was launched in Komárno, Slovakia at the beginning of September 2014 and was christened the HUMMEL following successful passage to the Port of Hamburg.

It works like a floating power plant and, compared to conventional marine diesel with 0.1% sulphur content, emits no sulphur dioxides or soot. Emissions of nitrogen oxides and carbon dioxide are also significantly reduced. The deployment of the LNG Hybrid Barge will thus significantly improve air quality in port cities.

LNG HYBRID BARGE: AN AWARD-WINNING CONCEPT

Seatrade Cruise Award marks the fourth award for HUMMEL

Becker and AIDA Cruises won the award for the "Environmental Initiative of the Year" judged by an independent jury on 9th September 2015. "This award shows that we are on the right track with our ideas in the field of utilising "Liquefied Natural Gas" (LNG), the environmentally-friendly energy source", said Dirk Lehmann, Managing Director of Becker.

In addition to the Seatrade Cruise Award, the LNG Hybrid Barge had previously won the GreenTec "Travel" Award, the Baltic Clean



Sea Maritime Award and second prize in the 2014 German-Norwegian Business Award.

The LNG Hybrid Barge is making a lasting contribution towards improved air quality at port cities. Just this year it supplied electricity to the AIDASOL cruise ship during layovers at the Port of Hamburg. By utilising LNG, soot particles and sulphur oxides are no longer being emitted. Moreover, emissions of nitrogen oxides have been cut by 80% and CO₂ by 20%.



BECKER PRODUCTS: RECENT ORDER HIGHLIGHTS

Product: **Becker Mewis Duct®**

Ordered by: **EURONAV**

EURONAV has ordered seven Becker Mewis Ducts® (BMD) for their SUEZMAX fleet, adding to a total of 22 BMDs ordered by the Greek ship owner. Becker and EURONAV have agreed on a full-scale measurement to identify the exact energy savings of the BMD. The *Devon* will dry dock for a new hull coating and propeller polishing. After a sea trial with torque measurement at the propeller shaft, the vessel will dock again for the installation of the BMD, followed by a further sea trial – a rare and welcome opportunity for a full-scale test.



Photo © EURONAV



Photo © Canadian Coast Guard, RALion

Product: **Becker Flap Rudder (Heracles)**

Ordered by: **Jastram Engineering**

Jastram Engineering has ordered the delivery of Becker Flap Rudders with closed linkage system (Heracles) for two Offshore Fisheries Science Vessels (OFSV). The rudders will be part of a complete manoeuvring package that Jastram will be delivering to Seaspan Vancouver Shipyards. Becker's Flap Rudder has been chosen as the ideal manoeuvring system to fulfil the Polar Class 7 ice class requirements, guaranteeing top manoeuvrability at slow speed and ice conditions. The OFSVs will be classified by Lloyd's Register.

Product: **Becker Twist Rudder**

Ordered by: **Rederi AB Gotland**

An Energopac® propulsion package featuring two Becker Twist Rudders with rudder bulb will be provided by Becker and their partner Wärtsilä for a new LNG-powered fast ferry, ordered by Rederi AB Gotland. The 49,000 GT vessel with a length of 200 m and capacity for 1,650 passengers will be delivered in 2017. The first ever Swedish LNG-powered passenger ship will be operating on the Visby <-> Gotland route at a service speed of 28.5 kn. The Wärtsilä Energopac® with Becker Twist Rudders will ensure top manoeuvrability and fuel efficiency.



Photo © Rederi AB Gotland

Product: **Becker Twist Rudder**

Ordered by: **Hanjin Heavy Industries**

Hanjin Heavy Industries (HHIC) has ordered full spade Becker Twist Rudders for three 20,600 TEU container ships for CMA CGM – the largest container ships ever built. HHIC also ordered Becker Mewis Duct® Twisted for the three vessels. The orders show once more that the outstanding increase in efficiency obtained by the combination of Becker Manoeuvring Systems and Becker Energy-Saving Devices is a convincing sales argument. These orders represent the continuation of close cooperation between HHIC and Becker.



Photo © Hanjin Heavy, CMA CGM



Photo © Frontline Management

Product: **Becker Mewis Duct®**

Ordered by: **Frontline Management**

Becker Mewis Ducts® (BMD) have been ordered by Frontline Management for AFRAMAX, VLCCs and SUEZMAX tankers. The tankers will be built in China (New Times Shipyard) and Korea (STX O&S). Frontline has ordered a large number of BMDs before, underlining the importance of the energy-saving device as an environmental and efficiency measure for the big players in the market. Incidentally, these orders for Frontline's VLCCs will increase the total number of Becker Mewis Ducts® installed at the Korean shipyard STX O&S to 100.

Product: **Becker Mewis Duct®**

Ordered by: **Prime Tankers**

Greek-based Prime Tankers Management, part of Prime Marine Management and the operator of a fleet of high-quality double hull tankers, continues its successful cooperation with Becker Marine Systems with their recent order of ten Becker Mewis Ducts® for their LR1 PANAMAX tankers. All ten energy-saving devices will be installed this year. Following installation, Prime Tankers will then be operating a total of twelve tankers equipped with energy-saving devices – all except one have been fitted with Becker Mewis Ducts®.





HISTORY: SALTSTRAUM

35 years of service with a Becker Flap Rudder

The tanker *Saltstraum* was built at the Norwegian Bolsoenes Verft in 1980 for Norwegian ship owner Utkilen AS. With an overall length of 80.17 m, a breadth of 13.0 m and a draught of 5.25 m the *Saltstraum* was especially designed to serve in the challenging Norwegian coastal waters and the Baltic Sea.

This operational area requires maximum vessel manoeuvrability – and in order to meet this demand the Norwegian owner’s choice fell to the Becker Flap Rudder. The faithful *Saltstraum* is still in service today, having kept her christening name and now owned by KD Bunker of Russia.

EYEWITNESSED: CHRISTENING OF UASC BARZAN

Naming ceremony for an 18,800 TEU container vessel on 29th April 2015

One of the largest container vessels for the United Arab Shipping Company (UASC) was christened the UASC *Barzan* at Hyundai Samho Heavy Industries (HSHI) in Korea. Mr. Henning Kuhlmann, Managing Director of Becker Marine Systems, was honoured to be invited to the eventful and entertaining naming ceremony, which was followed by a tour through the vessel with an introduction of the main features by the wheelhouse captain. The UASC *Barzan*, today’s most efficient vessel worldwide, is



Picture © UASC

a brand new design for an ultra large and LNG-ready container vessel with low CO₂ emissions – the first in the world to employ

this concept. Becker Marine Systems was chosen by UASC to deliver a Becker Twist Rudder including rudder bulb and a Becker Mewis Duct® Twisted, guaranteeing a significantly improved performance that optimises the Energy Efficiency Design Index (EEDI).

One sister vessel of the UASC *Barzan* was launched in August and four more of its kind will be following shortly. The A19 class 18,800 TEU vessels are 400 m long with a width of 58.60 m.

CUSTOMER SATISFACTION SURVEY

Becker Marine Systems is constantly striving to maintain its high quality standards and to satisfy its customers in every respect. Becker also develops its own innovations as well as proposals for solutions that are desired or suggested by customers.

However, in order to do this effectively and to the utmost customer satisfaction, we need your help.

At the end of the current fiscal year, we will be generating our annual customer survey in cooperation with *GMP Gesellschaft für Marketing und Public Relations* from Munich, Germany.

It will be sent to you via e-mail using the sender address office@gmp-muenchen.de and is not spam. We would like to kindly ask you not to delete this e-mail, but take a few minutes to give us your open and honest opinion.

Only with your support and assistance it will be possible for us to constantly improve ourselves and to be responsive to your requests and suggestions. A high level of participation in the survey will help us get a comprehensive and representative result.

Thanks in advance for your support!

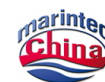
UPCOMING EXHIBITIONS

KORMARINE 2015
International Marine Shipbuilding, Chinhae

Kormarine, German Pavilion, hall 4, booth no. 4S23, Busan, Korea
20th - 23rd October 2015

EUROPORT
exhibition for maritime technology
3 - 6 November 2015
Atrium Rotterdam

Europort, joint booth with Sandfirden Technics, hall 8, booth #1105, Rotterdam, Netherlands, 3rd - 6th November 2015



Marintec, German Pavilion, hall N2, booth no. N2F31-02, Shanghai, China
1st - 4th December 2015



Work Boat Show, booth #4245
New Orleans, USA
1st - 3rd December 2015

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Schilling® Rudders are available in Japan only under the designation Becker SHARC Fishtail Rudder.