# becker marine news

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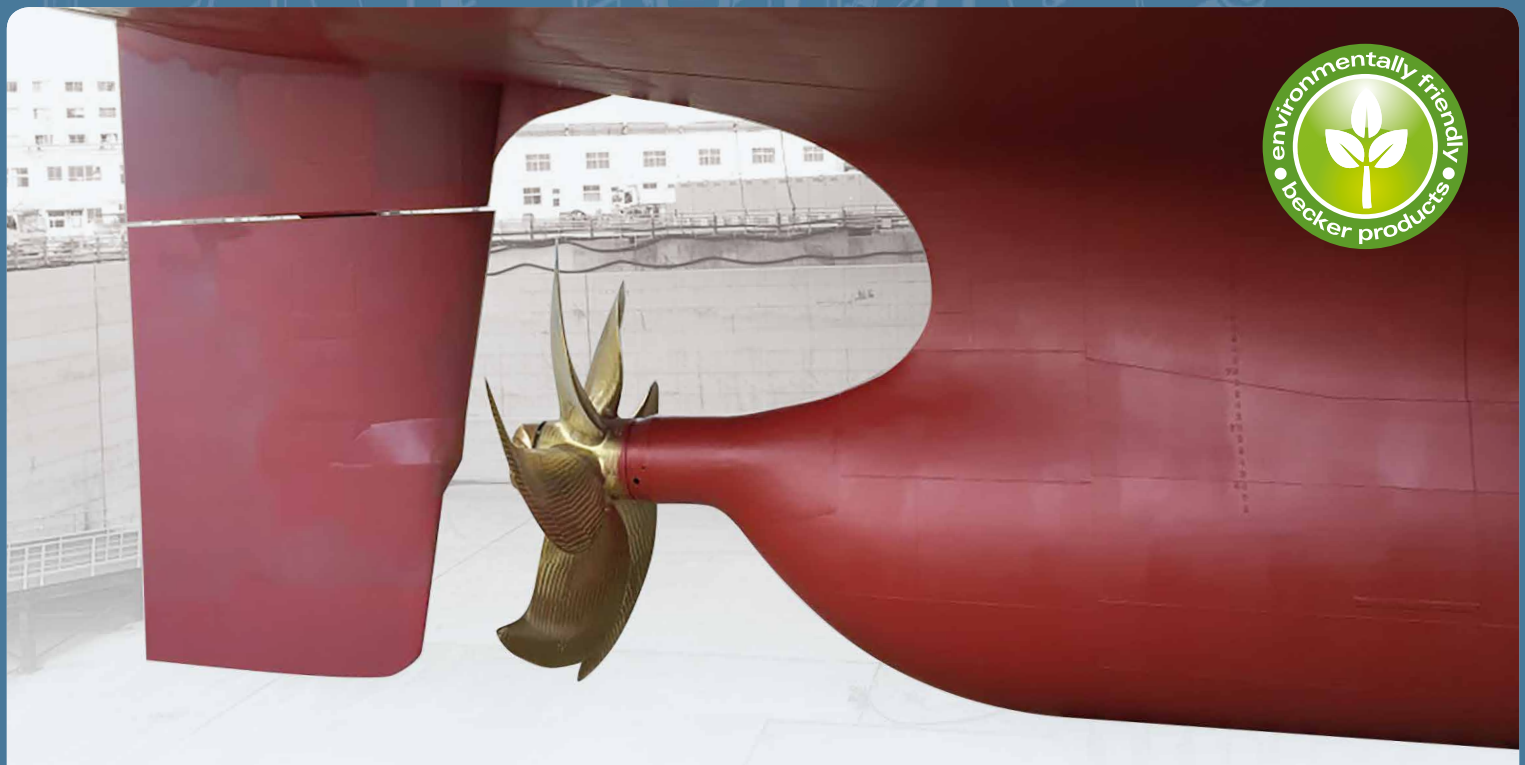


## Manoeuvring with a twist: The Twisted Leading Edge Rudder

THE BEST CHOICE FOR PERFORMANCE AND EFFICIENCY FOR FAST TYPES OF SHIPS

Since 1946 Becker has dedicated itself to improving the efficiency and manoeuvrability of all types of ships. Following in that tradition, the Twisted Leading Edge Rudder was invented by Becker a decade ago and has become standard equipment for fast vessels such as container ships, ferries, yachts and others. The twist was designed to reduce cavitation at high speed. A beneficial side effect of this was the reduction of hub vortex losses, lowering fuel consumption.

Becker Marine Systems is well-known for its rudder solutions, customised for the unique design parameters of each individual ship. To achieve this high standard of product quality it is very important for the Becker design team to be involved in the ship's design process at an early stage. Chord and leading edge length and many other paramteters need careful planning and synchronisation in order to customise the rudder for the best performance results.

In the past few years the demand for energy-efficient and environmentally friendly product solutions has grown continuously. With the know-how and customer feedback gathered by the delivery of more than 7,000 rudder systems, Becker Marine Systems has always been able to adapt and develop its manoeuvring products in line with current and future needs of the maritime industry.

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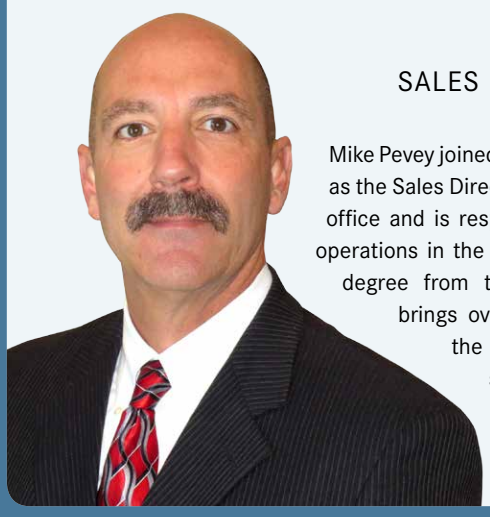

## Member of staff: Mike Pevey

SALES DIRECTOR OF BECKER MARINE SYSTEMS USA INC., HOUSTON, TEXAS

Mike Pevey joined Becker Marine Systems in October 2014 as the Sales Director for the newly created North America office and is responsible for all Becker Marine Systems operations in the region. Mike has a Marine Engineering degree from the California Maritime Academy and brings over 30 years of maritime experience to the position. Previous positions with marine service organisations have established relationships with the majority of the companies based in the region.

"I look forward to expanding the presence of Becker Marine Systems in the North America region. The Becker product offering is well respected in the maritime industry and the opportunity to further introduce it to the industry is exciting," said Mike.

Mike works at the new Becker facility located in Houston, Texas, strategically located to serve the US and Canada, focussing on the entire portfolio of Becker Marine Systems' products.

# Manoeuvring with a twist: The Twisted Leading Edge Rudder

## THE BEST CHOICE FOR PERFORMANCE AND EFFICIENCY FOR FAST TYPES OF SHIPS

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Becker's design team utilises exclusive know-how and state-of-the-art CFD equipment to minimise rudder drag, to maximise manoeuvering performance and to reduce cavitation of the rudder system at an early stage in ship design. After a thorough CFD design phase the rudder is then tested in a model basin with additional cavitation tests.

A passion for detail is the key to the on-going sales success of the Twisted Leading Edge Rudder TLKSR®. Since the introduction of the rudder more than ten years ago, Becker has received hundreds of rudder orders for container ships (ranging in from 2,500 to 19,200 TEU). Rudder orders have been placed by both shipyards (such as Hyundai, Hanjin, STX, DSIC, HDZH, Jiangnan, Imabari and many more) and ship owners (such as CMA CGM, MSC, Seaspan, CSCL, K-Lines, Hapag-Lloyd, UASC and many more).


*CSCL Globe*
19,100 TEU, built in 2014
Twisted Leading Edge Rudder
Photo © HHI

In addition to performance requirements, ship owners often operate their vessels in areas where full VGP compliance is required. Becker rudders are designed for grease-free operation, being fully compliant with USCG rules. Customers can optionally add the Becker Bearing Monitoring System to automatically measure neck bearing clearance with no underwater inspection required. Also available is the Becker Intelligent Monitoring System to measure rudder force. These add-ons enable our customers to minimise service expenses and to further increase the safety and reliability of their manoeuvring system made by Becker Marine Systems.

# Know your force: Utilising rudder force with BIMS

## MORE AND MORE SHIPS BENEFIT FROM BECKER'S RUDDER FORCE MEASURING SYSTEM

Typical BIMS display installation on a ship's bridge.

The Becker Intelligent Monitoring System (BIMS) for rudder force measurement has been successfully launched on the market and has already been installed on several ships. The BIMS provides an interface to rudder force displayed on the bridge, thus improving the safety and efficiency of the vessel's manoeuvring performance.

Nearly 10 vessels ranging from 18,800 TEU container ships to car carriers and offshore vessels are currently equipped with the Becker Intelligent Monitoring System. Another 15 vessels under construction will also be equipped with the complete BIMS package. 30 additional ships will have the BIMS rudder force sensors installed on the rudder stock, permitting subsequent installation of the complete BIMS system when the ship is in service. This makes a total of approx. 55 vessels that will be able to optimise their manoeuvring performance by utilising BIMS rudder force data.

BIMS is able to measure and display banking effects and forces on the rudder during manual steering in coastal areas and on rivers, thus improving safety by guiding the helmsman in critical situations. The rudder force display enables the crew to be aware of the rudder effect at any time during manoeuvring by indicating, for example, a rudder stall and permitting the rudder to be set at the optimum angle to achieve top manoeuvrability in any situation.

Crew feedback confirms that knowledge of rudder force is highly beneficial for improving safety and manoeuvring efficiency. The captain of a 13,000 TEU container vessel equipped with BIMS reported that the measurement of rudder force is highly accurate and that the BIMS is especially useful for gaining experience in vessel behaviour and inertia during navigation crew training.

# Order highlights: Becker Marine Systems products

## DCNS

French shipyard DCNS has won an order for four corvettes for the Egyptian Navy. One ship will be built in Lorient and the other three will be delivered as material packages for construction in Alexandria, Egypt. The corvettes are of the new DCNS Gowind design with a length of 102 m, width of 16 m, displacement of 2,600 t and a speed of 25 kn. Becker was awarded the order for twin 5.5 m² KSR-supported NACA profile rudders and steering gear. The steering gear will be delivered from Jastram as a RAM type machine. The first ship will be delivered in 2017 with the remaining three corvettes to follow in 2019.


## MEYER TURKU


Two TLKSR® Twisted Leading Edge Rudders with bulb have been ordered by the Finnish Meyer Turku shipyard for a new LNG-powered fast ferry for the AS Tallink Grupp. The vessel with a length of 212 m, a gross tonnage of 49,000 t and a service speed of 27 kn will accommodate 2,800 passengers and operate on the route between Tallinn, Estonia and Helsinki, Finland. Becker Marine Systems will deliver Twisted Rudders with bulbs for the twin screw ferry to ensure the best manoeuvrability in often challenging areas of the Baltic Sea. This new fast ferry will be first in a series of planned newbuildings and is scheduled for delivery in 2017.

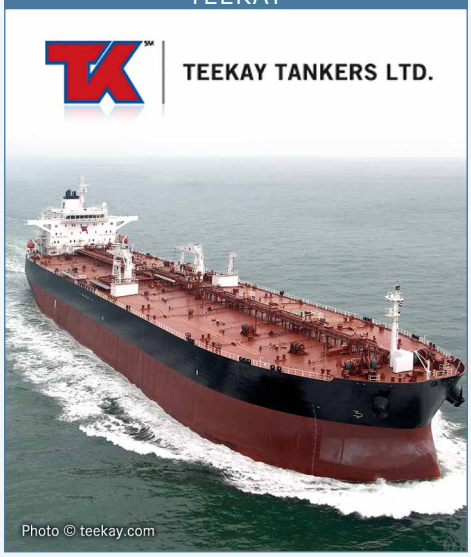
## NORWEGIAN CRUISE LINE

Becker was awarded the order to deliver a rudder upgrade for the cruise vessel *Norwegian Epic*. Built in 2010, the ship has a length of 329 m, a width of 41 m and a capacity of 4,100 passengers. It was initially equipped with full spade rudders without flap which will be replaced by Becker's Twisted Leading Edge Flap Rudders (TLFKSR) for improved manoeuvrability and efficiency. The new rudders feature a bulb/fairing propeller end cap combination. Major components such as steering gears, trunks and rudder stocks will remain to lower the costs. The conversion will be completed in autumn 2015.


## JINLING

Becker has been awarded the order for a Becker Flap Rudder for a new 9 k self-unloading cement carrier. In close cooperation with owner China Navigation and designer Shiptech, Becker has been involved at an early stage. The new vessel will replace an old cement carrier and will be operating in challenging sea conditions in proximity to New Zealand. In order to guarantee the best manoeuvrability, the ship will also be equipped with Becker's BIMS system, measuring rudder force and giving fast and direct steering feedback. The vessel will be built at Jinling Shipyard in Nanjing and delivered in 2016.


## TEEKAY




Teekay Tankers, part of the Teekay Corporation, has ordered two additional energy-saving Becker Mewis Ducts® for their fleet of 109 k Aframax-sized clean petroleum product tankers. The specialised tanker vessels were built at Hudong Zhonghua shipyard in China over the past few years. Since Teekay had already ordered the retrofitting of Becker Mewis Ducts® for four sister vessels last year, this brings the number of orders for the energy-saving devices to a total of six.

## OSG

OSG, a leading provider of global energy transportation services, delivering crude oil, petroleum products and liquefied natural gas located in the United States, continues the successful cooperation with Becker Marine Systems. After positive experiences with the Becker Mewis Duct® in service with their fleet in the past, OSG New York has placed four new orders for the delivery of Becker Mewis Ducts® for their MR (handysize) and LR (Aframax/Panamax) type product carriers. With these new orders OSG will then be operating a total of 10 tanker vessels employing Becker's top-selling energy-saving device.

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# An historic ship: *Pallet & container carrier* Lysfoss, 1991

BUILT IN 1991 FOR LYS-LINE WITH A BECKER FLAP RUDDER, STILL IN SERVICE AS THE *SKOG*

*Lysfoss* in 1991

The Lysfoss combined pallet carrier and container ship was built at Titovo shipyard in Croatia for Norwegian owner Lys-Line in 1991. Becker Marine Systems delivered a Becker Flap Rudder with King Support Rudder (FKSR) to ensure top manoeuvrability in challenging coastal waters. The vessel has a capacity of 260,000 ft³ for palleted goods and carries 56 standard sized containers (TEU) on deck. Sold in 2004 and renamed *Lys Skog* until 2009, the vessel is still in service under the charter of DFDS Logistics. Owned by Lorentzens Skibs today, she has been renamed again to its present name *Skog*.

| LYSFOSS | |
|---|---|
| Length | 101.7 m |
| Breadth | 17.0 m |
| Draught | 5.9 m |
| Tonnage | 4,529 dwt |
| Year built | 1991 |
| Yard | Titovo shipyard, Croatia |

# Service: Rudder conversion for US push boats

WILLI BECKER'S FLAP RUDDER ONCE AGAIN AN INLAND WATERWAY SALES SUCCESS

In the 1960s and '70s, hundreds of European inland waterway push boats were equipped with Becker Flap Rudders. Based on this success, the rudder was introduced and established on the market for oceangoing vessels. To meet the high demand, Becker focussed its capacity on that market. With recent oders for flap rudders for US inland waterway vessels, Becker is now returning to its river roots.

Apart from their size and propulsion power, US push boats are very similar to European river boats. All are extreme full-form vessels, designed with tunnels for the propulsion and manoeuvring equipment for optimised operation in very shallow waters.

Becker Marine Systems' experienced design team has developed a very economical flap rudder upgrade solution for the American market with and without heel pintle support for existing vessels. Main components such as steering gears and trunks can remain unchanged. The rudder upgrade kit consists of main blades, pre-installed flaps, rudder stocks and an add-on trunk for linkage actuation.

Flap rudders for more than thirty US push boats have already been ordered. Ship owners are very satisfied with the new dimension of manoeuvring performance and safety, allowing the addition of more barges in one tow, extra speed for more trips per year or "just" the reduction in fuel consumption.

Induced by strong demand from fleet operators, the Becker design team is developing an optimised solution for Becker Propeller Nozzles and flanking rudder arrangements.

# Dutch royal couple on board the *Hummel*

This year for the first time the LNG Hybrid Barge *Hummel* will be supplying clean energy to cruise ships at port in Hamburg. Interest in the 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.

"A very welcome visit since we are also working together with Dutch partners on the LNG Hybrid Barge," said Dirk Lehmann and Henning Kuhlmann, both Managing Directors of Hamburg-based Becker Marine Systems, on the occasion of the royal visit from the Netherlands. Liquefied natural gas is also being delivered in gas containers by Shell Gasnor from the "Gate LNG Terminal" in Rotterdam.

The royal couple, who had already visited companies in Schleswig-Holstein, was accompanied by Dutch Minister for Foreign Trade Lilianne Ploumen and a 20-member trade delegation. Cooperation between German and Dutch companies is intended to be further intensified and renewable energies and the maritime economy were among the issues being focussed on during the trip.

**Editor:**
Becker Marine Systems GmbH & Co. KG
Blohmstr. 23, 21079 Hamburg, Germany
Tel. +49-40-2 41 99-0, Fax +49-40-2 80 18-99
www.becker-marine-systems.com
info@becker-marine-systems.com

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## UPCOMING EXHIBITIONS

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| IAPH HAMBURG2015 | IAPH Hamburg, Hamburg, Germany, World Ports Conference, 1st-5th June 2015, hall G, stand 8, 2nd level |
| NOR SHIPPING | Nor-Shipping, Oslo, Norway, German Pavilion, 2nd-5th June 2015, hall C, C01-01e |
| electric & hybrid marine | Electric & Hybrid Marine World Expo, booth no. 7060, Amsterdam, the Netherlands, 23rd-25th June 2015 |
| INMEX SMM | INMEX SMM India, Stand #F125, Bombay Exhibiton Centre, Mumbai, India, 23rd-25th September 2015 |