



## Becker Mewis Duct®: Exceeding High Expectations

INVENTED 2008, LAUNCHED AND FIRST INSTALLED 2009, ORDER EXPLOSION 2010 AND 2011



*The Becker Mewis Duct® was “born” only three years ago in our Research & Development department as a 3D computer model and today has already conquered a very strong position in the market of energy-saving devices for the shipbuilding industry. This article aims to give you an update of the ongoing success story of our new product.*

Developed for full-form ships, the Becker Mewis Duct® allows either a significant fuel saving at a given speed or, alternatively, for the vessel to travel faster for a given power level. It is tailor-made and consists of two strong fixed elements mounted on the vessel: a duct positioned ahead of the propeller together with an integrated fin system within. The duct straightens and accelerates the

hull wake into the propeller and also produces a net forward thrust. The fin system provides a pre-swirl to the ship wake which reduces losses in propeller slipstream, resulting in an increase in propeller thrust at the given propulsive power. Both effects contribute to each other.

The significant energy-saving potential of the Becker Mewis Duct® has been convincingly demonstrated with the example of the new 57,000 t bulk carrier *AS Vincentia* (sister ship of the *AS Valeria* shown above) for the German Ahrenkiel Group. The vessel has a length of 189.99 m, a width of 32.26 m and a design draught of 11.30 m. During installation in October 2010 we embraced the unique opportunity... *(continued on next page)*



## Becker staff member: **Walther Bauer**

BMS HAMBURG – DIRECTOR SALES



Walther Bauer joined the team at Becker Marine Systems in March 2011 as the new director of the Sales and Projects Department. His technical background includes mechanical engineering. Mr. Bauer has been in the marine business for over 20 years and was last employed at a German shipyard as

the head of engineering. His decision to join the team at Becker was an easy one because he believes in their technical experience and reputation. Mr. Bauer's goal is to bring in his experience and his network of contacts to form a sales and projects team that is an even more supportive partner for our valuable customers than it is today.



## Becker Mewis Duct®: Exceeding High Expectations

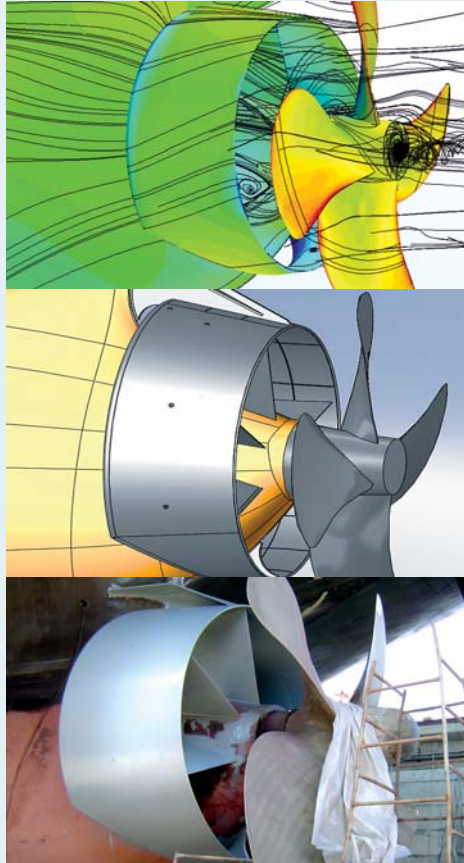
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(continued from page 1)

...to test the brand new vessel with and without the Becker Mewis Duct® installed – with similar test parameters (sea/weather/ship condition). The comparison of both sea trials confirmed the promising results of Becker's CFD projections and the HSVA model test with actual fuel savings of around five percent. The Ahrenkiel Group indicated their approval of our product with the order for the three other units in this series to be also equipped with the Becker Mewis Duct®.

Due to the number of propulsion tests for vessels made with and without the Becker Mewis Duct® we can state an average fuel saving of 6%. In combination with a suitable Becker Rudder, the propulsion improvement and fuel saving could be further enhanced to up to 8%. Compared to other types of fuel saving devices this is a very good result.

The reliable concept with a fuel savings guarantee for suitable vessels offers significant benefits for the environment by reducing the emission of NO<sub>x</sub> and CO<sub>2</sub>. Based on the predicted and measured power reduction of the ships, the 24 Becker Mewis Duct® that were in operation by the editorial deadline for this newsletter have already saved over 11,000 t CO<sub>2</sub>.



Advantages of the Becker Mewis Duct®:

- Return on investment in about 1 year
- Proven fuel savings up to 8%
- Reduced greenhouse gases (GHG)
- Improved propulsion
- No moving parts, no service necessary
- Retrofits and newbuilding
- Reduced vibrations and pressure pulses
- Installation time approx. 4 days

The sales success of the Becker Mewis Duct® speaks for itself. Since its first installation in 2009, 118 orders have already been placed, of which 24 have already been installed. Here are some order highlights of the Becker Mewis Duct®:

- 1 unit:** 3,700 dwt tanker, Wilson Ship Management
- 4 units:** 82,000 dwt bulk carriers, Ciner Denizcilik Sanayi ve Ticaret A.S.
- 2 units:** 74,700 dwt tankers, OSG Ship Management Ltd.
- 5 units:** 286,000 dwt VLCCs, BW Fleetmanagement Pte. Ltd.
- 1 unit:** 37,500 dwt tanker, Stolt Tankers B.V.
- 1 unit:** 57,000 dwt bulk carrier, PACC

## Hot news from Norway: Odfjell Management AS orders Becker Mewis Duct® for chemical tanker fleet

Odfjell Management AS and Becker Marine Systems have signed an agreement to equip Odfjell's chemical tanker fleet with the Becker Mewis Duct®.

Odfjell manages 55 tankers and is highly motivated to find ways of saving fuel and optimising its fleet. Becker Marine Systems is proud to be chosen to join their optimisation program with the Becker Mewis Duct® to enhance the propulsion efficiency of the Odfjell fleet.

Odfjell and Becker agreed to start with the 37,500 dwt and 40,000 dwt chemical tankers as pilot projects to evaluate the performance of the Becker Mewis Duct®. Marintek in Trondheim was contacted to carry out extensive model tests for both ship series. The tests were performed at different draughts and ship speeds to

analyse the overall performance of the Becker Mewis Duct®. Upon concluding the final tests, the Norwegian model basin determined power savings of 6-7% at design condition. All in all the tests showed impressive reductions of required shaft line power in a wide range of ship speeds and draught conditions.

Becker's design team made sure that the Becker Mewis Duct® could be installed in a short time without impact the existing ship aft steel construction and without dismantling the propeller. The first unit was fitted on board the 37,500 dwt chemical tanker *Bow Flora* in March 2011 during regular dry docking; the second Becker Mewis Duct® for Odfjell will follow during the dry docking of the 40,000 dwt chemical tanker *Bow Sea* this spring – further retrofits will follow soon.



*Bow Fortune*, sister ship of *Bow Flora*

## Order highlights: Becker Marine Systems products

### GREENPEACE



Greenpeace International has signed a contract with the German-based shipyard Fr. Fassmer GmbH & Co. KG for the construction of the *Rainbow Warrior III*. The motor sailing ship has a length of 58.0 m, a beam of 11.3 m and a draught of 5.0 m. Becker Marine Systems entered into the contract for the delivery of a full spade rudder with NACA profile. This rudder profile is optimised for both sailing and the option of switching to engine-powered propulsion. Because of the special requirements Becker Marine Systems designed a support arrangement to transmit the rudder forces with a low installation height. Delivery is scheduled for 2011.

### DFDS GROUP



The Danish DFDS Group has ordered the newbuilding of two Ro/Ro vessels with a freight capacity of 3,000 lane metres or, alternatively, part of the capacity of 342 TEU for container usage. The vessels with a length of 195.0 m will be built by the German shipyard P+S Werften in Stralsunde, with delivery scheduled for the first half of 2012. Becker Marine Systems has been awarded the order of twin TLFKSR Twisted Flap Rudder systems for each vessel. The rudders are designed in cooperation with the propulsion manufacturer and fitting them with a special bulb for maximum efficiency of the propeller-rudder arrangement is being considered.

### BERGEN GROUP FOSEN

In February this year Becker received an order from the Norwegian Bergen Group Fosen for delivery of a twin Becker Flap Rudder system for an offshore construction vessel (OCV). This ship will be owned by Volstad Maritime from Aalesund in Norway. Normally OCVs are equipped with azimuth drives, but this ship will have the traditional and reliable combination of twin screws and flap rudders. In cooperation with Kongsberg Maritime AS, Becker will also install the new Becker Intelligent Monitoring System (BIMS) to measure and monitor rudder forces in real time, feeding the DP system with precise rudder performance data for station keeping and heading.



### ULSTEIN



At the end of last year, Becker secured a contract with Ulstein Verft AS in Norway for the supply of Heracles Rudders for two SX134 seismic research ships for Polarcus Ltd. The 88.0 m long and 21.0 m wide ships will have a max. speed of 15.0 kn and have the highest ice class, 1A super. In combination with the diesel electric drive, the rudders will form a high efficiency propulsion system that provides ideal track following capability during operation. This order is a continuation of two previous orders with Ulstein Design and Solution AS for their SX133 and SX134 designs for Polarcus Ltd, built at Dubai Drydocks in 2009 and 2010. The forerunners showed outstanding performance during sea trails and operation.

### HYUNDAI HEAVY INDUSTRIES

The German ship owner Hapag Lloyd has placed orders with Hyundai Heavy Industries (HHI) for the newbuilding of four new 13,200 TEU vessels and has also upgraded six previous orders to the same capacity. The first vessel of this series will be equipped with the Becker Intelligent Monitoring System (BIMS). The following nine vessels will be ready for later BIMS installation. The ten ships are scheduled for delivery between mid-2012 and the end of 2013 and will have a length of 340.0 m, a width of 48.2 m and a design draught of 14.50 m. Besides BIMS, Becker Marine Systems will also deliver 82 m<sup>2</sup> TLKSR® Twisted Rudders for each vessel.



### SAMSUNG HEAVY INDUSTRIES



Samsung Heavy Industries (SHI) placed an order for the delivery of Schilling® KSR Rudders with a rudder area of 50 m<sup>2</sup> each for seven single screw Aframax shuttle tankers for a South American charterer. Becker's vast expertise for large high lift full spade rudders for this vessel type was requested by SHI to comply with today's shuttle tanker manoeuvrability standards. Approx. two thirds of the global shuttle tanker fleet that has been built since 2000 are and will be equipped with rudders by Becker Marine Systems – and that number will go up even further due to Becker's fruitful and continuous research and development in this specialised market.



## Historic Ship: SeaFrance Nord Pas-de-Calais



SeaFrance Nord Pas-de-Calais is a freight ferry owned by SeaFrance and operated on their Dover to Calais route. The vessel was built in

1987 as Nord Pas-de-Calais by Chantiers du Nord with hull no. 325 for Société nationale de chemins de fer français (SNCF) as a multi-purpose passenger and Ro/Ro ferry for lorries and railway vehicles.

In 1996, Nord Pas-de-Calais was renamed SeaFrance Nord Pas-de-Calais, operating for SeaFrance as a freight ferry between Dover and Calais. The faithful vessel is still in service today, equipped with a Becker FKSR Flap Rudder that guarantees the necessary

manoeuvrability for the channel route and the daily harbour operations. In 2012, the ferry will celebrate 25 years of service – the Becker team wishes its crew continued smooth sailing.

### SEAFRANCE NORD PAS-DE-CALAIS

Length (loa).....	160.08 m
Breadth .....	22.41 m
Draught.....	5.94 m
Gross tonnage.....	13,727 GT
Service speed .....	22.5 kn

## Service: Conversion of Thomson Dream

### REFITTING 26-YEAR-OLD CRUISE SHIP WITH TLFKSR TWISTED LEADING EDGE FLAP RUDDERS

Becker Marine Systems was awarded the order for delivery of new rudders for the cruise liner Thomson Dream (ex Costa Europa). While docking at Blohm+Voss Repair at the end of October 2010, the twin screw vessel was equipped with state-of-the-art rudders (TLFKSR Twisted Leading Edge Flap Rudders with KSR support).

The cruise ship with a length of 243.2 m and a width of 29.73 m was originally built at the German Meyer Werft with hull no. 610 in 1985. Becker Marine Systems supported the installa-

tion of their delivered twin TLFKSR Rudders with a commissioning engineer and a supervisor for higher-level tasks – such as fitting the rudder blade to the rudder stock.

After the yard docking Captain Ben Lodemann, Becker’s manoeuvre trainer, assisted the captain of the vessel in order to get the best performance out of the new rudder system, right from the beginning of the “New” Dream of the seas.

In the next issue: *Mein Schiff 2*

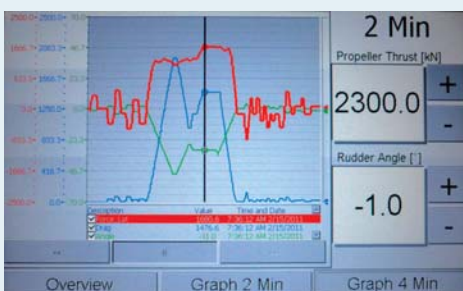


## New: BIMS - Becker Intelligent Monitoring System

### RUDDER FORCE MEASUREMENT SUPPORTS IDEAL OPERATION



To improve manoeuvrability and support of computerised DP + AP systems there is the need for in-time, direct or indirect measurement of rudder forces, which allows a continuous determination of generated lift and resistance. A force measuring arrangement (using the current rudder force as input for a DP or AP system) can significantly reduce or even eliminate manoeuvring hysteresis. In a first approach rudder force measurement arrangements will be applied to full spade rudders – a mechanically and statically determined system. For offshore vessels and operations the input data and interfaces for DP systems have been adjusted in cooperation with the leading DP system supplier, Kongsberg Maritime. Bringing together the extensive know-how of two companies, the combination of Kongsberg DP systems and Becker rudders equipped with BIMS ensures improved and safer DP operations.



### IMPRINT

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### EXHIBITIONS 2011

	Nor-Shipping, Oslo, Norway, German Pavilion, C01-01a, 24 <sup>th</sup> -27 <sup>th</sup> May 2011
	Inmex, Mumbai, India, German Pavilion 29 <sup>th</sup> September - 1 <sup>st</sup> October 2011
	Kormarine, Bexco, Busan, Korea, German Pavilion, 26 <sup>th</sup> -29 <sup>th</sup> October 2011
	Marintec, Shanghai, China, German Pavilion, 29 <sup>th</sup> November - 2 <sup>nd</sup> December 2011