

## DEAR MADAMS AND SIRs, DEAR FRIENDS,

The first two cargo ships equipped with SkySails propulsion have been undergoing sea trials during regular shipping operations since the end of 2007 and early 2008. During these trials the system is first being stabilized followed by the system performance being perfected in a second phase.

Without a doubt the most important finding is proof that our system can generate high tractive forces under real operating conditions and by doing so save tremendous amounts of fuel. Our expectations were confirmed and at times we were able to reduce fuel consumption aboard the MS "Michael A." by more than 50% with the help of towing kite propulsion.

As was expected, we also had to face some technical challenges in the course of the trials. So far the SkySails-System has been unable to be employed with the desired frequency. A major reason

for this was, for example, the way the launch of the towing kite was hindered by the, to some extent unexpectedly strong, movements of the ship. This situation has since been corrected by the addition of a sea-state compensator that has already been installed on both client vessels. After two years of trial operation within the framework of SkySails research and development we recently parted with our test vessel "Beaufort". We would like to sincerely thank the ship's crew and the shipping company Briese for their great commitment and constructive collaboration. Their support helped SkySails master important steps in the development of the technology.

As sad as this farewell may be for us, there is also every reason to look ahead: Thanks in no small part to the rising cost of oil – even the price of marine fuels has gone up an annual average of 25%



over the last 5 years – the interest in the SkySails - System on the part of shipping companies continues to grow. The Wesfels shipping company, for example, has ordered SkySails - Systems for a series of three newly built vessels. We wish you much enjoyment reading our newsletter!

Stephan Wrage / Managing Partner

## SKYSAILS OUTPERFORM TRADITIONAL SAILS MORE THAN FIVE TIMES OVER

### WESSELS SHIPPING COMPANY ORDERS THREE MORE SKYSAILS-SYSTEMS



The latest measurements made aboard the cargo ship "Michael A." demonstrate how the SkySails-System delivers far more than five times the performance per square meter of sail than traditional wind propulsion systems. With the help of the wind, the 160 square meter kite generates up to 8 metric tons of tractive force – this approximately corresponds to the power of an Airbus A318 turbine engine. Depending on wind conditions, ships in the future will be able to post fuel savings



of between 10% and 35% using this auxiliary propulsion system. "Our own measurements show that we were able to temporarily save far more than half the fuel by deploying SkySails in favorable wind conditions," reports Gerd Wessels (37), managing director of the Wessels shipping company based in Haren/Ems, adding that "alternatively we were able to increase the ship's cruising speed from 10 to 11.6 knots with the help of this towing kite propulsion." The innovative and environmentally sound wind-propulsion system retrofitted aboard the 90 meter

long multipurpose cargo ship "Michael A." has been undergoing pilot testing in European waters since the end of 2007. SkySails, the Hamburg-based maker of the system, was able to compute potential average annual savings based on the findings of the pilot testing and an evaluation of the log books of 13 identically constructed ships that were also underway in European maritime waters: even in this region – which is known to have many areas of weak winds – savings of more than 15 % can be achieved. "Wind is always cheaper than oil and in the light of oil prices going up every day and new emissions regulations, more and more shipping companies are convinced of the performance capability of the SkySails propulsion," says SkySails inventor and company founder Stephan Wrage (35). Even before the pilot testing phase on the "Michael A." has been completed, the Wessels shipping company has ordered additional SkySails-Systems for its next three new ships. "For us, an investment in SkySails propulsion is not just an investment in protecting the climate, but also an investment in the future of maritime shipping that will help us remain globally competitive in the future," is how Gerd Wessels explains his decision.

Each of the shipping company's new 88-meter, multipurpose sister ships with a deadweight capacity of some 3,700 metric tons and nearly 1,500 kW of power will be fitted with a 160 m<sup>2</sup> SkySails. With favorable wind conditions, a SkySails propulsion of this size can generate up to 8 tons of tractive power. For comparison: in order to reach a cruising speed of 11 knots, these ships require approx. 11 tons of thrust. All of the new vessels that the Wessels shipping company has ordered were financed through the Oltmann Group in Leer, which provided a major portion of SkySails' seed money through private investors. Pilot testing of the SkySails-System designed to perfect the SkySails technology will continue aboard the cargo ships "Michael A." (Wessels) and "Beluga SkySails" (Beluga Shipping) until early 2009. The practical operations of the two freighters initially focus on calibration work and technical modifications to stabilize the towing kite propulsion. The second half of the pilot phase will then concentrate on extending the flight times and optimizing the system's performance. SkySails will begin series production of the towing kite system once this pilot testing is completed.

## NEW IMO RULES FOR SHIP FUELS AND EMISSIONS

### DECISION TO DRASTICALLY REDUCE EMISSIONS – RISING COSTS FOR SHIPOWNERS

Ships are the most energy efficient means of transportation. Nevertheless, the world's shipping industry is responsible for some 4.4% of the global emissions caused by human activities – with the trend heading ever upwards. The Inter-

national Maritime Organization (IMO), the United Nations regulatory body for shipping on an international level, has now responded to this development: new rules take force starting in 2010 that are designed to gradually reduce hazardous

ship borne emissions of sulfur and nitrogen oxides by the year 2020.

The ceiling for the sulfur content of ship emissions will be lowered from the present 4.5% to 0.5%. A cap of 0.1% will apply starting in 2015 for what are

called Sulfur Emission Control Areas, or SECAs, which include the North Sea and the Baltic Sea. The limits for nitrogen-oxide (NO<sub>x</sub>) emissions for ship engines having a power output of 2,000 kW or more will start dropping from 9.8 grams of NO<sub>x</sub> in 2010 to 2.0 grams in 2016. Slightly higher limits will apply for smaller ship engines.

The restrictions on emissions can alternatively be met by using cleaner fuels (distillates) or employing catalytic converters or systems to scrub the sulfur oxides, whereby experts favor the use of distillates.

One way or the other costs will rise for the shipping companies either from burning distillates, which are twice as expensive

as sulfurous heavy fuel oil, or by installing emission cleaning systems, which, in addition to the investment costs, lead to higher operating expenses such as by increased fuel consumption.

The IMO wants to adopt a resolution on CO<sub>2</sub> trading in the shipping industry by mid-2009 in order to regulate the industry's CO<sub>2</sub> emissions. Experts believe that such action will burden the shipping industry with additional emissions-based levies. One ton of CO<sub>2</sub> is currently valued at about 20 euros in CO<sub>2</sub> trading schemes. On average, one ton of ship fuel produces 3.17 tons of CO<sub>2</sub>. At today's valuation, this would make one ton of fuel about 63 euros more expensive – or

5 to 12% at the current price of fuel. The amount of CO<sub>2</sub> emitted by ships cannot be reduced by downstream filtering technologies, but only by avoiding the burning of fuel.

In light of these new developments to reduce ship emissions SkySails thus become doubly attractive for shipping companies: saving expensive fuel simultaneously reduces emissions. In the future shipping companies can employ SkySails to comply with IMO emission standards while at the same time saving money on CO<sub>2</sub>-based taxes and fees.

## DHL - "GREEN" LOGISTICS WITH SKYSAILS

### LOGISTICS COMPANY OPTS FOR ENVIRONMENTALLY SOUND MARITIME TRANSPORT WITH SKYSAILS

DHL Global Forwarding is the first logistics company having shipped project freight on the MS "Beluga SkySails". With the first commercial voyage of this newly built cargo vessel equipped with the innovative towing kite propulsion, DHL is playing a pioneering role in sustainable logistics.

Within the framework of the ship's maiden voyage, the first parts of a complete particle board factory were shipped to Venezuela by order of DHL Global Forwarding, the ocean and air freight carrier



of the Deutsche Post World Net Group. DHL considers the MS "Beluga SkySails" a forward-looking example "of how to implement environmentally sound, low-emission ocean freight transports. Shipping operations thus not only become safer and more profitable, but also the promising environmental aspects of this new system were a major factor in our

decision for this charter." Environmentally sound logistics chains are not only a central issue for DHL, but are also becoming increasingly important to the company's customers. "Two thirds of our business customers are already asking for green logistics solutions," says Claus Krüger, director at DHL Global Forwarding.

## SKYSAILS OCCUPIES NEW PRODUCTION FACILITY

PREPARATIONS FOR SERIES PRODUCTION MOVING FULL STEAM AHEAD



SkySails is getting ready to begin series production as SkySails propulsion is in the midst of pilot testing aboard the two pilot customer ships "Michael A." and "Beluga SkySails." For this purpose, the SkySails office in Wismar has been relocated from the test center at „Alter Holzhafen“ to the new production facility at „Am Westhafen“, which is also in direct proximity to the Aker Yards shipbuilding group in the port of Wismar. An area of 800 square meters is available for use, which can be expanded to 2,400 square meters as needed.

Production systems are currently being installed in the facilities. Here, at the beginning of 2009, is where the components of the SkySails steering system, such as the control pod, will be manufactured and where the system components will

be finished and prepared for delivery. The new production facility also has a testing stand that is used to improve and further develop the SkySails - System.



## „THE MAKING-OF ...“ SKYSAILS ON TV

PHOENIX CHANNEL IS TO BE THE FIRST TO BROADCAST A DOCUMENTARY ON THE DEVELOPMENT OF THE SKYSAILS - SYSTEM

This first documentary about the history and origins of SkySails will be broadcast on Phoenix television at 11:30 a.m. on the 11th of August 2008. Part of this 30 - minute program by author Thorsten Schaubrenner from Hamburg, and prepared under the direction of the Hamburg-based cross-media agency ALDEBARAN shows historical segments from the SkySails success story. The show will be rebroadcast on numerous other German television channels.

## SKYSAILS AT THE SMM 2008

After successfully exhibiting at the past three international Shipbuilding, Machinery & Marine Technology (SMM) trade fairs, SkySails will be showcasing its innovative towing kite propulsion at the SMM 2008 as well. Visitors to the stand will be able to find out everything about the SkySails-System. An original size SkySails will be on display in the Kaltmall, the area between the new halls A1 and A4. This year's SMM is being held in Hamburg from the 23rd to the 26th of September. With its 1,600 exhibitors and 47,000 professional visitors the SMM is recognized as the leading international trade fair for the shipping industry.

