

igus Participates in Green Revolution for Shipping

Maintenance-free bearings from igus chosen for new wind-assisted propulsion system

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/EINPresswire.com/ -- Eco-friendly technology from a sailmaker in Spain is poised to revolutionize the shipping industry with systems including maintenance-free plain and radial deep-groove ball bearings from igus.

Based in Barcelona, Bound 4 Blue, S.L. (bound4blue) has designed wind-assisted propulsion systems (WAPS), which reduce fuel consumption by up to 40 percent for more sustainable and economically efficient shipping. igus®, the Germany-based manufacturer of specialty plastics, contributed critical components to bound4blue's systems: maintenance-free, corrosion-resistant bearings, which keep operating costs down.

Rigid sail systems

The International Chamber of Shipping has set the ambitious goal of climate neutrality for the industry by 2050. In response to this and other climate initiatives, bound4blue has developed two autonomous rigid sail systems designed to be integrated onto a wide range of vessels. The innovative plan will dramatically curtail environmentally harmful emissions from global shipping.



Picture PM1822-1; The plain and radial deep groove ball bearings from igus withstand even rough seawater while protecting the environment thanks to lubrication-free dry operation. (Source: igus® GmbH)

[The bound4blue](#) WINGSAIL® and eSAIL® systems are mounted on the deck of a ship and automatically align with the wind - similar to a classic sail. These complementary propulsion systems reduce the main engine power required and deliver fuel consumption and pollutant emissions reductions of up to 40 percent. The company ensures a payback period of under five years.

The collapsible WINGSAIL uses the same aerodynamic principles as an airplane wing to create lift and reduce drag. The eSAIL is based on active boundary layer control using suction, allowing it to provide 6-7 times more lift than a conventional sail.

The initiatives by bound4blue to reduce harmful emissions are in response to IMO 2020, a focus by the International Maritime Organization to improve air quality, preserve the environment and protect human health by limiting the sulfur content in the fuel oil used on ships.

Eco-friendly and cost-effective

Several challenges faced the bound4blue engineers. The design team sought to keep maintenance costs low, but at the same time, all components would need to withstand high loads, salty seawater, high humidity, and changing temperatures for years at a time.

Maintenance-free bearings from igus played a critical part in solving this dilemma. For the gear shafts and support rods of the sails, the engineers at bound4blue chose cylindrical plain bearings from igus' iglide® series. Unlike metal bearings, these polymer bearings do not corrode even in direct contact with seawater and require no added lubrication. The specific material chosen for this application, iglide X, is characterized by very high-temperature resistance and high compressive strength. The bearing can be used in extreme hot or cold environments, withstanding temperature extremes from -100 to 250°C.

For their pilot system, a sensor instrument for measuring atmospheric pressure, bound4blue selected radial deep groove ball bearings from igus' xiros® series. These xiros B180 bearings consist of four mainly injection-molded components: inner and outer rings made of high-performance plastic and a stainless-steel cage and balls. Requiring no added lubrication, the bearings are resistant to seawater and can be used in temperature ranges between -40 and +80°C. They are 60% lighter and up to 40% more cost-effective than comparable metal bearings. The bearing is frequently used in handling systems, conveyor systems, process technology, and process engineering.

Minimal maintenance

The minimal maintenance requirements of the bound4blue systems mean that ships can continue to meet their standard dry-dock schedules. Additionally, fuel consumption and harmful emissions will be drastically lowered without added operating costs.

Specifying materials for maritime applications is particularly difficult for engineers. Systems must withstand high loads, seawater, and high humidity without frequent repair. All the materials on the bound4blue sails, including the igus bearings, withstand the harsh ocean environment. The wind-assisted design of bound4blue sails can be integrated onto new or existing vessels.

For more information about iglide self-lubricating plain bearings from igus, click [here](#).

For more information about xiros self-lubricating ball bearings from igus, click [here](#).

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ABOUT IGUS:

igus GmbH develops and produces motion plastics. These self-lubricating, high-performance polymers improve technology and reduce costs wherever things move. In energy supplies, highly flexible cables, plain and linear bearings as well as lead screw technology made of tribo-polymers, igus is the worldwide market leader. The family-run company based in Cologne, Germany, is represented in 35 countries and employs 4,900 people across the globe. In 2021, igus generated a turnover of €961 million. Research in the industry's largest test laboratories constantly yields innovations and more security for users. 234,000 articles are available from stock and the service life can be calculated online. In recent years, the company has expanded by creating internal startups, for example ball bearings, robot drives, 3D printing, the RBTX platform for Lean Robotics and intelligent "smart plastics" for Industry 4.0. Among the most important environmental investments are the "chainge" program – recycling of used e-chains and the participation in an enterprise that produces oil from plastic waste.

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