

## New gyroscopic technology reaches SA boating community

In a first for the South African boating industry, a Seakeeper gyroscopic stabiliser has been installed in a Cape Town mega yacht after a team from Seakeeper Inc undertook an in-depth training session on their range of boat stabilisers at Boating World.

The two-day training session included installation training for the Boating World technical and sales team who are the official African agents for the brand. Training was also extended to independent technicians.

Seakeeper stabilisers are designed to virtually eliminate boat roll on vessels over 30 foot. The stabilisers now come fitted on a number of new yachts that Boating World sells, including Fairline, Riviera and Sea Ray. They can also be retrofitted to existing builds as they require modest electrical power, no outside appendages, and can be installed virtually anywhere on board.

Located within a vacuum encapsulation is a flywheel which spins at speeds of up to 10,700 rpm. The gyro tilts fore and aft as the boat rolls, counteracting the movement through the powerful gyroscopic pull to port and starboard, eliminating



feelings of seasickness, anxiety and fatigue.

Suzanne Levy of Boating World says, "This computer controlled gyroscope virtually eliminates boat roll. On a recent trip out in rather unpleasant conditions I considered rather staying on shore, but was convinced to join because the yacht had a Seakeeper installed. With a simple touch of a button, the boat completely stabilised, turning the on the water experience into a pleasant one. This device truly revolutionises the boating experience – every boat owner should have one."

At IBEX this year, the Seakeeper 3 won the NMMA Innovation Award for Mechanical Systems, with technical

advancements such as touch screen display, instant-on activation, leaning post installation capability, and its modest power demands, all of which helped to reel in the prize.

The visit from Seakeeper was completed by the installation of a Seakeeper 9 on a 65-foot yacht for a client in Cape Town. Making it the first installation of a Seakeeper in South African waters.

The Seakeeper 9 is specifically designed for yachts weighing up to 30 tons and can eliminate boat roll up to 95 percent. The installation was completed in one day much to the delight of the client, who could enjoy his new enhanced yachting experience just in time for the weekend.

**95%**

*The Seakeeper 9 is specifically designed for yachts weighing up to 30 tons and can eliminate boat roll up to 95 percent.*

## 3D printed ship propeller becoming a reality

A prototype of the world's first class approved ship's propeller has been produced using 3D printing techniques. The 1,350mm diameter propeller, WAAMPeller, is the result of a cooperative consortium of companies that includes Damen Shipyards Group, RAMLAB, Promarin, Autodesk and Bureau Veritas.

The WAAMPeller was fabricated from a Nickel Aluminium Bronze (NAB) alloy at RAMLAB (Rotterdam Additive Manufacturing LAB) in the Port of Rotterdam; and produced using the Wire Arc Additive Manufacturing

(WAAM) method with a Valk welding system and Autodesk software.

The triple-blade structure uses a Promarin design and will be CNC milled at Autodesk's Advanced Manufacturing Facility in Birmingham, UK.

### Materials science

This prototype 3D printed propeller represents a steep learning curve of the understanding of material properties. "3D printed materials are built up layer by layer. As a consequence, they display different physical properties in different directions – a characteristic known as anisotropy. Steel or casted materials, on the other hand, are isotropic – they have the same properties in all directions," explains Kees Custers, Project Engineer in Damen's R&D department.

Because of this critical difference, one of the first steps was to carry out extensive testing of the material properties of the printed material to ensure compliance to Bureau Veritas standards.

It can also be said that the 400kg WAAMPeller sets a milestone in terms of 3D printing production techniques. "The challenge has been to translate a 3D CAD file on a computer into a physical product. This is made more complex because this propeller is a double-curved, geometric shape with some tricky overhanging sections," explains Custers.

### Great potential

"Material characterisation and mechanical testing have been an important part of this project. We have to make sure that the material properties meet the needs of the application.

"This technology is a fundamental change in the concept of how we make things. With additive manufacturing, you can print most metallic components that are needed in principle. There is so much potential for the future – these techniques will have a big impact on the supply chain," says Wei Ya, Postdoctoral Researcher from the University of Twente at RAMLAB.

This first prototype WAAMPeller will be used for display purposes, and planning for a second example is already underway. ♦

