



*The Art of Stabilization*

**FOR IMMEDIATE RELEASE**

**NEWS RELEASE**

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**Quantum Introduces it's DYNA-FOIL™ New Stabilizer System**

**Ft. Lauderdale, Florida USA – February 9<sup>th</sup> 2017** Quantum Marine Engineering and Quantum Stabilizers, Inc. are pleased to announce the introduction of an entire new fully retractable dual purpose stabilizer technology called the **DYNA-FOIL™**.

The **DYNA-FOIL™** provides exceptional roll reduction for vessels at both Zero Speed™ and underway.

The stabilizer system utilizes a unique foil design that allows for a dynamic self-induced lift for outstanding Zero Speed™ operation and a highly efficient lift to drag coefficient for superior underway operations.

Quantum, (known for pioneering Zero Speed™ stabilization in 1999), has spent several years developing the product which included extensive multiple third party testing such as the MARIN (Marine Research Institute Netherlands), this new stabilizer technology which now expands their product line and allows for more flexibility in the application of ship stabilization and ride-control.

Previously, a typical fixed fin stabilizer is limited in size to the “beam-keel” envelope (hull envelope), and should NOT protrude outside of this boundary area, therefore, it can be problematic if a ship requires very large fins. The new **DYNA-FOIL™** (along with their other recent technology, such as Quantum’s MagLift™), is not limited to this parameter, since the foil retracts completely into a full pocket or to a parallel position to the hull (non-pocketed model) when not in use.

Another benefit of being fully retractable, is in the application of ice-class vessels operating in extreme conditions where a stabilizer is required but needs to be completely stowed to avoid potential damage from contact with any ice.

**How the DYNA-FOIL™ works (for Zero Speed™):** Counter to a traditional fixed fin system for Zero Speed™, [which uses a “paddling” action], Quantum’s DYNA-FOIL™ uses the hydrodynamic lift generated by water flow over the foil from a swing action of the unit. This action creates water flow over the surface of the foil thus generating lift. The direction of swing determines the direction of lift force generated. Both the angle of attack and the swing speed are controlled variables that are adjusted to provide the optimum stabilization. While the concept is relatively simple and very similar to the principles of the Maglift™ system, the implementation and possibilities for optimization of the system are extensive.

**For Underway:** The foil is deployed at 90 degrees to the hull centerline, lift is generated much like traditional systems by articulating the foil thus changing it’s angle of attack through the water flow and generating lift. However, the **DYNA-FOIL™** has the added advantage of having a unique foil profile. This profile allows high lift force to be generated at low angles of attack but with minimal resistance; hence maximum lift with minimal drag. This coupled with the mechanical properties of the actuation mechanism (dynamic foil positioning), provide for an almost instantaneous positioning of the foil thus improving lift force timing which in itself is critical to maximizing roll reduction for minimal effort.

**Performance and Efficiency:** At Zero Speed™ can be measured by the stabilizing moment generated in kNm. In the case of the **DYNA-FOIL™** there are a number of factors that contribute to the performance and efficiency of the system providing key advantages over a traditional fin system.

1. The lever arm is much larger.

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2. The down angle positioning of the hull unit is not governed by the hull profile therefore attaining the most efficient down angle is generally possible with the **DYNA-FOIL™**.
3. Higher lift coefficients and better lift to drag ratios of the foil compared to that of low aspect fixed fin increase foil efficiencies, i.e. The stabilizer moment generated by the Dyna-Foil are up to 150% greater than those by a standard fixed fin at Zero Speed™ of the same size.

**Flexibility of Installation:** To accommodate multiple types of hull forms and mission profiles the Dyna-Foil is available in both a fully pocketed version as well as a none pocketed version.

**Pocketed:** For vessel that require ice class or have a high block coefficient where an externally mounted appendage is not desirable Quantum offers the Dyna-Foil in a completely pocketed version.

**Non pocketed:** For high speed hard chine vessels where space and weight in the vessel is critical the Dyna-Foil can be supplied in a none pocketed version. To make this version usable for high speed applications Quantum has optimized the stowed profile of the unit up to 30 Knots by way of CFD (Computational fluid dynamics).

The **DYNA-FOIL™** uses a newly designed and engineered dedicated CHPU (Compact Hydraulic Power Unit) system to power the stabilizers. This brings together tried and tested hardware with a new approach to power management and power shaving. Through the stored energy accumulators and variable motor control the CHPU can provide power to the **DYNA-FOIL™** with extremely low power cycling on the ships net.

By using an in tank submerged pump, airborne noise is reduced without the use of sound shields. Structural born noise is handled with both mechanical absorption and hydraulic suppression hardware. Each individual hull unit receives its own standalone power unit complete with touch screen for diagnostics and controls locally and remotely through any Quantum interface on the ship. This allows for complete redundancy between hull units.

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#### **About the Quantum company:**

Quantum Marine Engineering and Quantum Controls are privately held corporations which manufacture many control products for the superyacht and military industry. Some of these are the [ZeroSpeed™ \(OnAnchor™\) yacht stabilizers](#), featuring the SMC4000 controls and, our [QIS integrated hydraulic systems](#), and hydraulic [power packs](#) (HPU's). Quantum products also include the revolutionary [MAGLIFT™](#) rotary stabilizer, for zero drag at speed and maximum stability while at anchor, drifting, or [low speed travel](#), known as "loitering speed" within the military world. Another highly successful product is the [XT™ \(extendable\) fin](#) which has been one of the best performing Zero Speed™ stabilizers ever built. The system allows for a two fin system to be used in place of a typical four fin project in most applications.

Quantum supplies original equipment to yacht builders, new equipment to yards and refit projects, and upgrades to existing stabilizer systems. These systems provide a range of yacht roll stabilizers providing effective stabilization from *Zero Speed* to speeds in excess of 60 knots. They can supply custom hydraulic equipment to meet specialized requirements, and with their AutoCAD and SolidEdge capabilities they design each piece of equipment to match each vessel's characteristics and operational needs. To date, Quantum has put into service more than one thousand [ZeroSpeed™](#) and [underway](#) systems in service.

Please contact **Mark Armstrong** at [marmstrong@quantumhydraulic.com](mailto:marmstrong@quantumhydraulic.com) if additional editorial, product information or photo images are required.

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