

Spin Cycle Dealing with roll leads one superyacht builder to seek an unusual solution By Dennis Caprio

If you want a sportfishing boat that doesn't roll in a beam sea, the cynic will tell you to buy a catamaran. Unless the sensibilities of yachtsmen change dramatically and embrace big cats, monohulls will reign supreme and the reduction of roll will remain one of the designer's biggest headaches. The MagnaLift stabilizer system from Quantum Controls, however, promises to ease the pain, limiting the compromises that go into the design of large sportfishing yachts.

A successful sportfishing yacht has to be fast; carry a substantial payload of stores, spare parts and fuel for extended periods of time at sea; run efficiently and have a seakindly motion. Sportfishing yachts also spend a lot

MAGNUS EFFECT:

When deployed, Quantum MagLift units develop lift as the yacht moves forward, even at very low speeds—perfect for trolling. Unlike fin stabilizers, they work just as well in reverse.

of their time at sea under slow way (trolling) or at rest, and then suddenly have to back down to chase a fish that's about to throw a hook or reach the end of its line.

The tried-and-true method for striking workable trade-offs among the yacht's conflicting requirements has been the designer's manipulation of chine beam at the stern. It's a delicate equation. Modern sportfishing yachts must be narrow enough back aft to run efficiently at high speed, yet wide enough to damp roll while they troll in a beam sea. Active fin stabilizers, the traditional roll-damping device, may reduce the degree of compromise by a little, but when the skipper has to back down on a fish, often at substantial speed, the trim tabs have to be up and stabilizer fins locked to prevent tearing them loose. Under these conditions, only the width of the hull slows uncomfortable rolling.



STABLE PLATFORM: The Quantum units on *Mary P* will fold flush into hull recesses when necessary; at that point, a computer-controlled system will activate the trim tabs for high-speed roll stabilization.

As sportfishing yachts get bigger and bigger—become, in fact, superyachts, with additional quarters for nonfishing guests who may expect a guarantee of uninterrupted pleasure—the question of roll becomes larger too. Trinity Yachts and Quantum Controls plan to solve the problem by fitting MagnaLift stabilizers to the builder's new 122-foot sportfisherman, *Mary P*, due for delivery in 2008. MagnaLift stabilizers utilize a scientific principle known as the Magnus Effect. Named for the German scientist Heinrich Gustav Magnus, who in the middle 1800s discovered the principle during his study of projectiles, the theory states that a spinning cylinder moving through space will have more pressure, or lift, on one side than on the other. A boundary layer of air clings to the surface of the spinning cylinder and pulls the surrounding air along with it in the direction that the cylinder moves forward or backward. As the cylinder spins and moves through the air, the streamlines over one side distort and have to travel faster than the streamlines on the other side. This creates the lift. If the cylinder weren't spinning, the streamlines would be symmetrical, causing nothing but drag.

The theory works in water, as well as air. And the application at sea is not new. In the 1920s, Anton Flettner, a German aviation

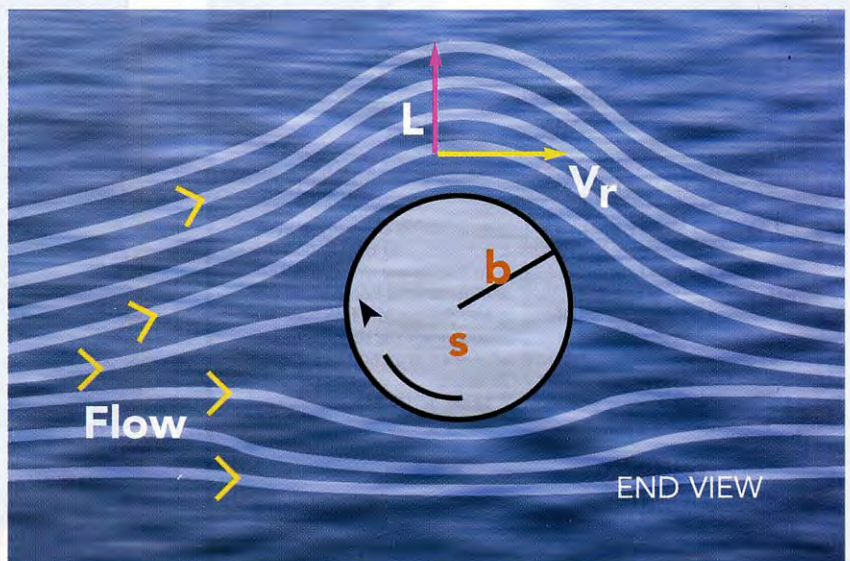
engineer, bought a schooner and mounted two 50-foot cylinders on her. Spun by electric motors, these Flettner rotors towered like smoke stacks above the deck. The faster they spun, the more lift they created and the faster they drove the ship. Tests proved, however, that the same horsepower used to

controlled system will activate the trim tabs for high-speed roll stabilization.

And the guests sipping Dom Perignon while watching the owner fight a billfish probably won't even notice. □
Quantum Controls, (954) 587-4205;
www.quantumhydraulic.com

spin the rotors would move the ship at a greater rate of speed if it had been used to spin conventional ships' propellers.

Quantum has cleverly adapted the effect to the stabilization of yachts. The Quantum MagnaLift units mount to the bottom of the hull in the same location we expect to see fin stabilizers. When they are deployed, they develop lift as the yacht moves forward, even at very low speeds—perfect for trolling. More important in the case of *Mary P*, and unlike fin stabilizers, they work just as well in reverse and are fully effective when the yacht frantically backs down on an elusive championship catch. The downside is that rotors have quite a lot of drag at high speed, so the Quantum units on *Mary P* will be retractable, folding flush into hull recesses when necessary. At that point, the computer-



LIFT AND STABILIZE: The spinning cylinder creates low pressure over the top, high beneath, causing lift.