OUTHER

More than a location, it's a way of life.

September 2024

LIVING LARGE Onboard the Prestige M8

PLUS Charter in the Cyclades, Greece



INTERNATIONAL BOAT BUILDERS

Don't Rock the Boat!

Fin versus gyrostabilizers By Arnie Hammerman

ne of the pleasures of boating is being gently rocked to sleep by the ocean, but excessive rolling can ruin a boat trip. Whether at anchor, or while running, rolling can be uncomfortable and cause motion sickness in some people. To better dampen a vessel's natural roll and steady the boat rapidly, specialized equipment is available. This technology can smooth out that roll providing increased stability that adds safety and comfort aboard.

In recent times, there has been a lot of focus on gyrostabilizers as they don't require appendages that stick out of the boat's hull and are compact units that can be used even on smaller vessels. For larger boats, fin stabilizers are a proven way to dampen rolling and provide benefits whether the boat is stationary or underway. There are other stabilizing systems available, including paravanes and rotor stabilizers, but gyros and fins are the most common in recreational vessels and were the focus in a recent test.

The Test

Proper powerboat stabilization is necessary for comfort, performance, and safety. Hull form and design elements are factors that influence a vessel's seakeeping abilities and inherent stability, but even the best designed boats can be enhanced with stabilizing equipment.

Research was conducted by SEANAV, an established European surveyor, using several different vessels with different types of stabilizing equipment including fin stabilizers and gyros. The goal was to determine the effectiveness of stabilizers when used both in motion and at rest. Results will vary by vessel type, size, and differences in specific equipment, but this data demonstrates the general usefulness and performance of stabilizer systems on recreational powerboats.

At Rest

A vessel "at rest" is anchored or otherwise stationary. As for gyrostabilizers, I can personally attest to the fact that they work on at-rest vessels. While aboard a 40-foot powerboat on a rough day in Biscayne Bay, we stopped the boat sideways to the waves which were 2-4 feet. The boat began to roll uncomfortably, dipping in and out of the troughs. We then engaged the gyro, and while the boat still shifted side to side, the improvement was instantaneous and notable. I have been on other gyro tests that weren't so obvious, but in this extreme condition it really worked.

In the SEANAV test, there was a similar result on a 98-foot semi-displacement vessel while stationary using electric fin stabilizers, as shown in Graph 5.1.*



Results from the SEANAV test using electric fin stabilizers

Underway

Fin stabilizers are powered either hydraulically or electrically. When underway, testing was conducted on two similar vessels, a 118-foot, 39-ton vessel with electric fin stabilizers and a 108-foot, 36-ton vessel with a hydraulic fin stabilizer of a different brand. Fifteen runs were conducted on the same heading with waves perpendicular (beam sea) on both boats. On each vessel, three minutes per run recorded ship parameters of rolling and pitching with fin stabilizers OFF/Freefin (center) and ON/Activefin. Speeds were averaged for the multiple runs.

Testing showed the electric-powered fin stabilizers outperformed the hydraulic-powered fin stabilizers. Electric fin stabilizers typically have faster reaction times which likely helped their performance.

Fins and Gyros

Gyrostabilization for recreational vessels has become very popular. Research was conducted to find out how well gyro systems work both on their own and in conjunction with fin stabilizers on the same vessel. A 105-foot, 35-ton vessel equipped with both gyrostabilization (three Seakeeper gyros) and electric fin stabilizers (CMC Marine) was tested. Measurements were performed both with active stabilization and with the systems switched

YACHT 33MT Hydraulic	Run #	Description	Relative wave direction	Stabilization System ON/OFF	Duration (min)	Speed (kts)	Roll acceleration (SD) [g]	Diff roll acc (SD) [%]	Roll Velocity (SD) [deg/s]	Diff Roll Vel [%]	Minimum Angle [deg]	Max. Angle [deg]	Roll Angle (SD) [deg]	Diff Roll Angle (SD) [deg]
	7	Underway	Transversal to the waves	OFF	3	0	0,0043	-4,884	2,111	45,5	-5,636	5,350	1,886	39,0
	8	Underway	Transversal to the waves	ON	3	0	0,0045		1,150		-2,296	2,307	1,150	
YACHT 36MT Electric	10	Underway	Transversal to the waves	OFF	3	0	0,0053	-9,229	1,0219	31,7	-2,0819	2,6257	0,8893	44,8
	11	Underway	Transversal to the waves	ON	3	0	0,0058		0,698		-1,110	2,044	0,491	

Hydraulic versus electric power test results

off. A digital Gyroscope X SENSE MTI1 Sensor was used to measure roll activity which recorded values of roll angle, roll angular velocity, and acceleration on each run. Tests were conducted at speed, while stationary, and running with a 20-degree turn angle. Gyros were used in combination with fin stabilizers as well as separately.

Results demonstrate that electric fin stabilizers are effective at slowing vessel roll both when the vessel is underway and when stationary when used alone. In this test, gyroscopic stabilizers were most effective when stationary, but they also helped with roll when the vessel was moving. However, the fin stabilizers, when used alone, performed better than just gyros used alone.

Interestingly when fin stabilizers were combined with gyros underway, the gyros slightly counteracted the performance of the fin stabilizers.

This extensive testing demonstrates that both fin stabilizers and gyrostabilizers really do work to help control rolling whether the boat is stationary, moving in a straight line, or turning.

What is the right type of stabilization for your vessel? It really depends on the size and type of boat you have and the type of boating you do. The good news is that there are solutions out there to dampen rolling and make your boat safer and more comfortable for everyone on board. So, get yourself some stabilizers and don't rock the boat! *J*



- For Inshore & Offshore
- Smooth & Stable Ride
- **Outboard Powered**
- Fuel Efficient
- ghlights • Standard Layout: 2 Cabins/ 1 Full Head/Walk In Shower
 - Boats In Stock
 - Starting at \$1,099,000

420 Models Specifications

Length Over All - 41' 9" Beam - 14'9" Fuel – 400 Gallons Water - 100 Gallons Waste - 40 Gallons Draft - 20"

Other Models Available: 20 Center Console 320 Coupe Based In Clearwater, FL

www.arrowcat.com info@arrowcat.com 727.258.8505



WE ARE STABILIZATION



info.usa@cmcmarine.com

1 833 346 7822 (833 FIN STAB)

Fort Lauderdale, FL

www.cmcmarine.com