

KEEPING CALM

BY R. BRANSOM BEAN

Perhaps not on a par with Columbus' discovery of the new world or Harrison's chronometer, but for superyacht owners, whose search for perfection has been stymied by the uncomfortable rolling of their floating palaces at anchor, zero speed fin stabilisation is a breakthrough.

First installed in 1998 aboard M/Y BOADICEA, perfect luxury now is just being able to anchor in some picturesque bay, beam on to a ground swell, without tall crystal flutes of vintage champagne crashing to the deck, along with the guests. In fact, because they can eliminate up to ninety percent of a yacht's roll and cost less than two week's charter, many builders now don't build superyachts without zero speed stabilisation.

Increasingly charterers in-the-know are telling brokers, 'Nice yacht, too bad no zero speed stabilisers, what else do you have?'

And it's easy to see why. Superyachts are gregarious vessels, tending to anchor in the same picturesque bays. Question: If you have five superyachts anchored in a bay which one doesn't have zero speed stabilisation? Clue: it's the one that's rolling, whose upper-works are slicing wild arcs in the otherwise tranquil evening air.

The two biggest manufacturers of the zero speed technology are Quantum Marine Engineering of Florida, Inc. with 115 systems in service and Naiad (owned by Vosper Thornycroft) who have sold approximately 87 systems.

'Since the word about zero speed fin stabilisation has spread throughout the yachting community, it's

difficult to find a yacht owner or prospective owner that does not insist on having the maximum in comfort,' says Mike Perkins of Quantum.

You only have to take off your shoes and have a look inside the 'average' superyacht to see that a superyacht is different. Absent are all those classical nautical oddities such as hand-rails in the passageways, er halls, lights on gimbals mounted on the bulkheads er walls, and fiddles – those clever little pieces of wood along the top edge of the table that stop dinner from sliding off in a heavy sea.

The problem is that ever since man has been going to sea for pleasure, ironically he has expended tremendous effort trying to make it seem like he was still on shore. Superyachts take it to a whole new level. Decorations and paintings befitting a stately home gracing the bulkheads, furniture and even fireplaces all enhance the illusion of being securely on terra firma – at least in port.

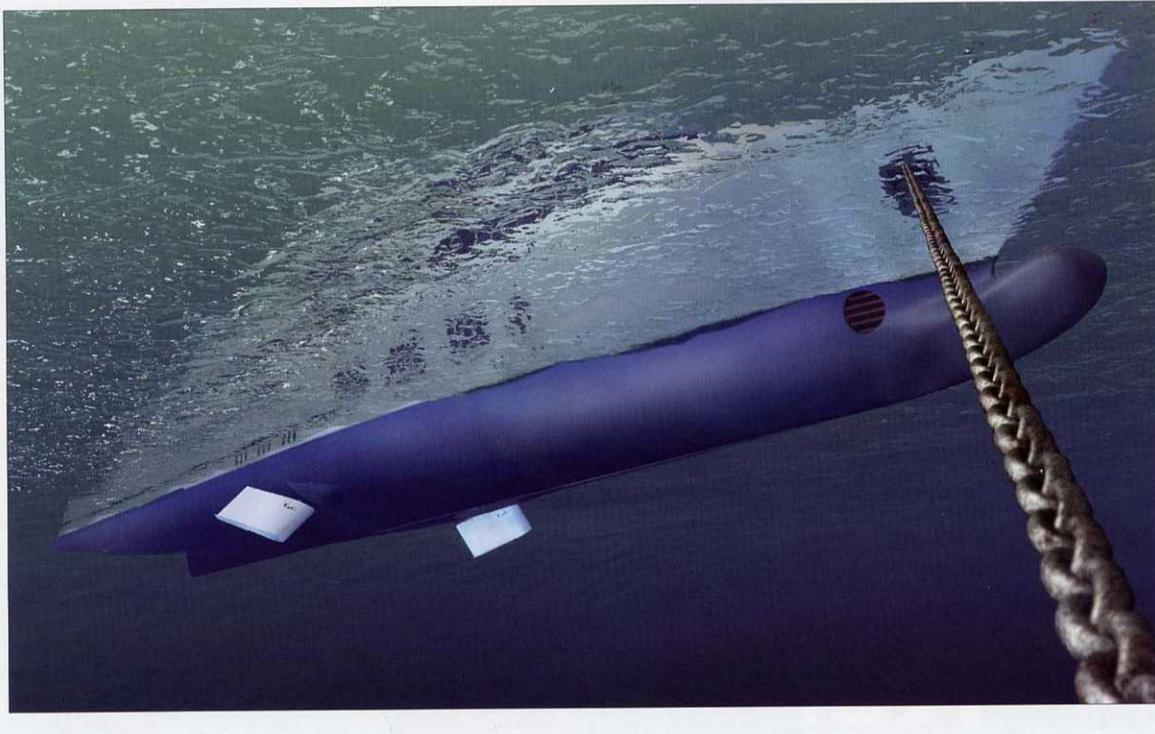
But once clear of the harbour, the sea's natural wave action takes over making a nonsense of all that. Unless all those reminders of things terrestrial are solidly welded/bolted/tied down, when the vessel begins to roll they tend to join unfortunate passengers in heap in the corner. In fact, it has been estimated that before the widespread adoption of fin roll stabilisers in commercial passenger ships just after the Second World War, (the first passenger ship credited having this stabiliser system was the Italian liner 'Conte di Savoia' in 1932) as many as twenty percent of passengers were seasick, many never leaving their cabins thinking there are

ABOVE
SUNRISE OVER
CALA DI VOLPE

PHOTOGRAPH BY
COLIN SQUIRE

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worse things than hitting an iceberg. Needless to say, today there's hardly a single passenger ship in the world without some version of fin stabilisation.

However, zero speed fin stabilisation should not be confused with ordinary fin stabilisation which is effective only when the vessel is moving. Once anchored or drifting, say to watch a whale, a vessel with regular fins begins to roll, sometimes quite violently, spilling that champagne.

This is not a problem for commercial ships. 'Ships don't make any money in port,' is an old axiom of the industry. So, unlike their superyacht cousins, commercial passenger vessels are kept moving constantly on very profitable schedules, thank you very much. Conversely, superyachts spend weeks in port, days at anchor, or hours stopped in mid ocean admiring a pod of Orcas and if there's a ground swell, you can almost hear the crystal crashing, the chef cursing and the guests...

Until a decade ago there were few practical ways for a superyacht owner to deal with the problem. The first was to check in to the nearest five star hotel.

Of those who stubbornly insisted on staying on board their expensive boats, some resorted to technology borrowed from icebreakers, anti-roll roll tanks. By moving large volumes of water from side to side, these could dampen much of a vessel's roll. But the associated tanks and piping took up vast amounts of space in a yacht, often amounting to five percent of the vessel's displacement, which in turn increased the draft and slowed her down. And, of course, tanks are almost impossible to retrofit.

For years Toppers like Nordhavn have used the humbly named 'Flopper Stopper'. Basically two large bags, one submerged on each side of the boat, each

dangling from its respective outrigger or boom they are simple and surprisingly effective on smaller boats, yes. But when it comes to superyachts, words like 'booms', 'bags', 'dangling' and just the name 'Flopper Stopper' are so, so...well you get the idea.

Recently there was a brief flurry of excitement in the industry when Mitsubishi teamed up with an Italian yacht builder to install what amounted to quite massive spinning flywheels. The idea hasn't exactly taken off.

ENTER ZERO SPEED™ FIN S

Somewhat larger in surface area but similar in appearance to regular fins, these fins usually occupy the same 'footprint' within the vessel. Underway both types function in much the same way.

The big difference is when the vessel stops, at anchor or is drifting. When regular fins stop working a zero speed stabilisation system will come into its own simply by moving independently in opposition.

The principle is like a canoe paddle held flat, with its blade a foot or so underwater and the shaft balanced on the gunwale. If you're sitting in the canoe, a sharp push down on the handle of the paddle causes the blade to rise, thus heeling the canoe (or capsizing it, if you're having a particularly bad day).

On a much grander scale, flipping a fin up on one side of a yacht has the same effect. And if you flip the fin on the other side down at the precise same moment, you double the effect. That's why zero speed stabilisation fins are larger than regular fins.

Simple, right? Well it turns out, like everything these days, the secret is in the software and timing is everything.

The system is an adaptive logic based and the system is designed to constantly monitor and adjust the

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fin response to meet the ambient conditions.

To be really effective the fins have to accelerate at the precise moment, that's the really hard bit, it's not good enough to be reactive,' cautions Perkins. The latest generation of software and control algorithms are fully proportional, and the fins respond to the sensor input to deliver the precise fin deflections to correct the roll motion.'

The hydraulics associated with the flipping motion are managed by an electronic controller which is receiving input from a roll sensor which in turn monitors the roll continuously.

The fins 'wait' at an angle approximately thirty degrees from horizontal – one up, one down. On cue from the controller, the fins begin to rotate in complimentary but opposite directions, accelerating to the required speed then directing to stop after approximately sixty degrees travel to wait to move back to oppose the next roll.

But a potential problem is that classically, hydraulic systems at anchor – a very taboo subject for superyachts – and at anchor with main engines secured other noises become much more noticeable.

Noise could originate from the hydraulic power-pack, hydraulic lines and servos and even water noise as the fins cycle outside the hull. Situating fin units in machinery spaces, away from accommodation and insulation eliminates this.

'We've had no complaints about noise,' Perkins says, 'In fact, one customer who actually slept near the fins found the gentle swishing sound barely audible, having an insomnia curing quality.'

Zero speed fin stabilisation is even being credited with offering the solution to what many think is one of the greatest challenges facing the growth of the

superyacht industry. As vessels pass 500 feet in length, and marinas give way to high rise condos, there's just no place to tie them up.

Perkins says refinement and development of both hardware and software with modification of fin shape and tweaking of algorithms continues in the never ending search for perfection.

Demand is high for new installations and retrofits. Quantum has completed 46 retro-fits over the past 5 years and has another 12 contracts for the rest of 2006. The lead time for Quantum to produce the equipment is between 5 and 9 months.

The cost for a retrofit can vary greatly depending on the size of the yacht, the amount of structural modifications (if any) required and the labour costs by the shipyard where the work is done.

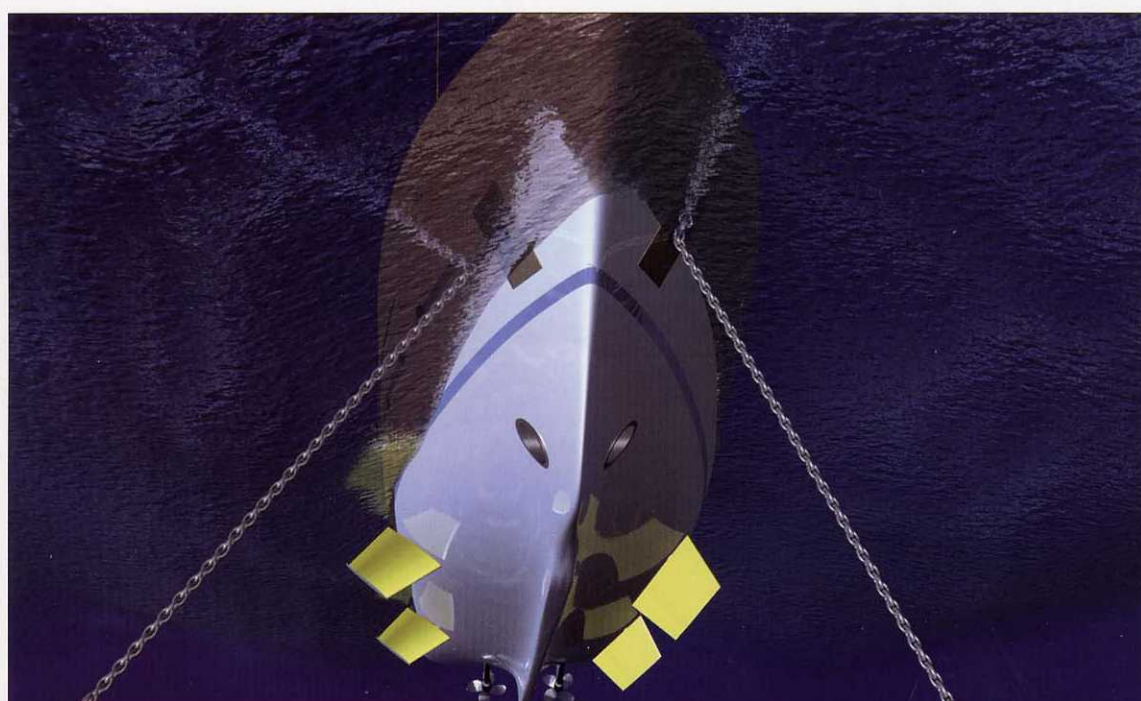
Sadly, like all good things in life, not all yachts are candidates for retro-fits. 'The limiting factor is the boat's roll period,' says Perkins.

In the end Captain Carl Sputh, Master of the yacht STARFIRE, perhaps says it best:

'Ok how about this: First day of the charter we are underway from Falmouth, Antigua, to Green Island, time 1330. Seas, one to three feet. The galley is in full swing, interior staff setting up for lunch...you know the game! Two whales off the starboard bow three hundred meters out. We slid right up on them, popped on the Zero Speed™ and watched the whales for about an hour. Not once did I think about lunch setup and not a glass broke nor was there a whimper from the galley!'

That just about says it all, perfect luxury.

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