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The business of boating

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USA

HOW A NEW GENERATION OF BUYERS IS DRIVING PRODUCT CHANGE

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NEW LAUNCH TRENDS

Investigating stabilisation, touchscreen technology and new products for 2021
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DUTCH DYNAMO

Market rallies as Covid lockdowns give boost to boating summer
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No more rock and roll

With better sensors, faster motors and more compact components, stabilisers are able to effectively dampen the rolling motion of even the smallest motorboats. We look at the latest developments, including a big drive to supply the sub-45ft market and to tackle pitching movement more effectively.

WORDS: JAKE KAVANAGH



Norway-based Sleipner has a boat dedicated to putting the company's latest stabiliser innovations through their paces. Some OEMs have claimed roll reduction values of up to 90% in a gentle swell



The new Seakeeper 1 typifies a trend for ever more compact units that offer gyro-assisted roll reduction on boats as small as 23ft. This type of unit is air-cooled and runs off a 12V DC battery supply. Note the small size of the unit behind the seat and the large and easily-read display (both circled)

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IT'S ALWAYS A PLEASURE to report some good news during a global crisis, and it seems that DIY home improvement and leisure marine are two sectors defying the economic fallout. People with time on their hands are fixing up their houses and rediscovering their boats. But there is a common theme to both activities - investing time and money to feel more comfortable in your environment. This is why stabilisation has become more of an issue in recent years, mainly as it becomes more attainable.

"Boating is booming," said Kelsey Albina, communications manager for US-based gyro specialist Seakeeper. "This has been an incredibly disruptive

year for everyone, both personally and professionally, but an unexpected silver lining is that more and more people have been enjoying their boats. As such, the builders are running out of inventory and in turn, we've had to 'put the pedal to the metal' to keep up with demand. It's a good problem to have when the outlook earlier in the year was bleak. When life as we once knew it is back, I hope everyone's new-found love (and time) for boating continues."

The lockdown has also been of benefit to some of the other stabiliser OEMs.

"The first few weeks were very grim," said Patrick Noor of Netherlands-based DMS. "But with the international boat show circuit cancelled, we have used the extra time to develop new products, recruit new expertise, improve our factory and upgrade our website. Now that boating has recovered we are busier than ever."

THE CHOICE

Stabilisers fall into four main types, three of which work beneath the waterline, namely trim tabs/interceptors, Magnus-effect rotors and fins. The fourth, acting from inside the hull, is the gyro stabiliser.

All have proved effective to varying degrees and are constantly being refined, particularly with plug-and-play installation and remote monitoring.

The main trends being reported are more compact and affordable units to meet the mass market and a move towards more integrated and intelligent control systems. Italy-based CMC Marine, for example, continues to develop articulating blades that work automatically with other control surfaces such as rudders and trim tabs, much as they do via an aircraft's autopilot to maintain straight and level flight.

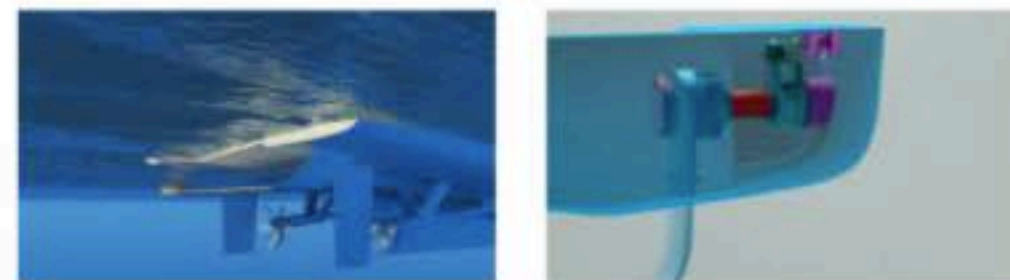
"We are seeing an increasing demand for comfort on boats," said CEO Alessandro Cappiello, who cut his teeth on stabilisation for commercial vessels, particularly fast ferries. "It has always been our philosophy to link all the control surfaces to work in unison. Charles Egan of Naiad Dynamics agrees. "Our new control system has been created around the concept of multiple types of effectors working simultaneously," he said.

The first fin stabilisers were only found in larger yachts, whose hulls had the

room to absorb the bulky and complex hydraulic systems required. Hydraulics have since been greatly refined but the arrival of compact gyros and electric actuators has opened the market right up. Several of the companies we spoke to are actively downsizing their products to meet the huge market for smaller motorboats, particularly the sports fishing sector, whilst also reducing the cost of installation and ongoing maintenance. Another big development is increasing accessibility via the Internet of Things (IoT), allowing for external monitoring, software updates and pre-cruise start-ups. A large gyro, for example, can need up to an hour to reach its optimal speed. IBI has contacted all the key players in stabilisation to hear about the latest developments.

Developments in trim tabs and interceptors

Development 1: HARNESSING THE 'BIG WING' HULL VANE'S ACTIVE PITCH STABILISER Netherlands-based Hull Vane has taken its performance-improving submerged wing to a new 'active' level by teaming with ride control specialists Naiad Dynamics.



Hull Vane has partnered with US-based Naiad to bring movement to a previously fixed-position transom foil. The new articulating vane is said to improve pitching stability by up to 45%, as opposed to up to 20% for a fixed version. Both systems have been proven to reduce the vertical accelerations and the intensity of 'bow slamming', a major cause of passenger nausea in a seaway

Easier installation

Bennett's new plug and play

THE MAJOR TREND in the trim tab/interceptor sector is to add a greater degree of control to the underwater surfaces, and also to make installation much easier, including retrofit.

One result has been three new control panels for Bennett's range of adjustable trim tabs, with a joystick for BOLT electric versions and two new 'ALL-IN-ONE' rocker switch controls. All three have built-in LED indicators for when they are deployed and an auto-retract function when the engine is switched off.

The emphasis is on quick and easy installation, with retrofitting assisted by using the same footprint as the original controllers. The original four-stud fixing bolts on the ALL-IN-ONE controls have also been replaced with a single lock nut whilst the cable connectors are all plug-and-play with a built-in relay module.



US-based Bennet Marine has recently added a joystick control to its range after many years of favouring rocker switches

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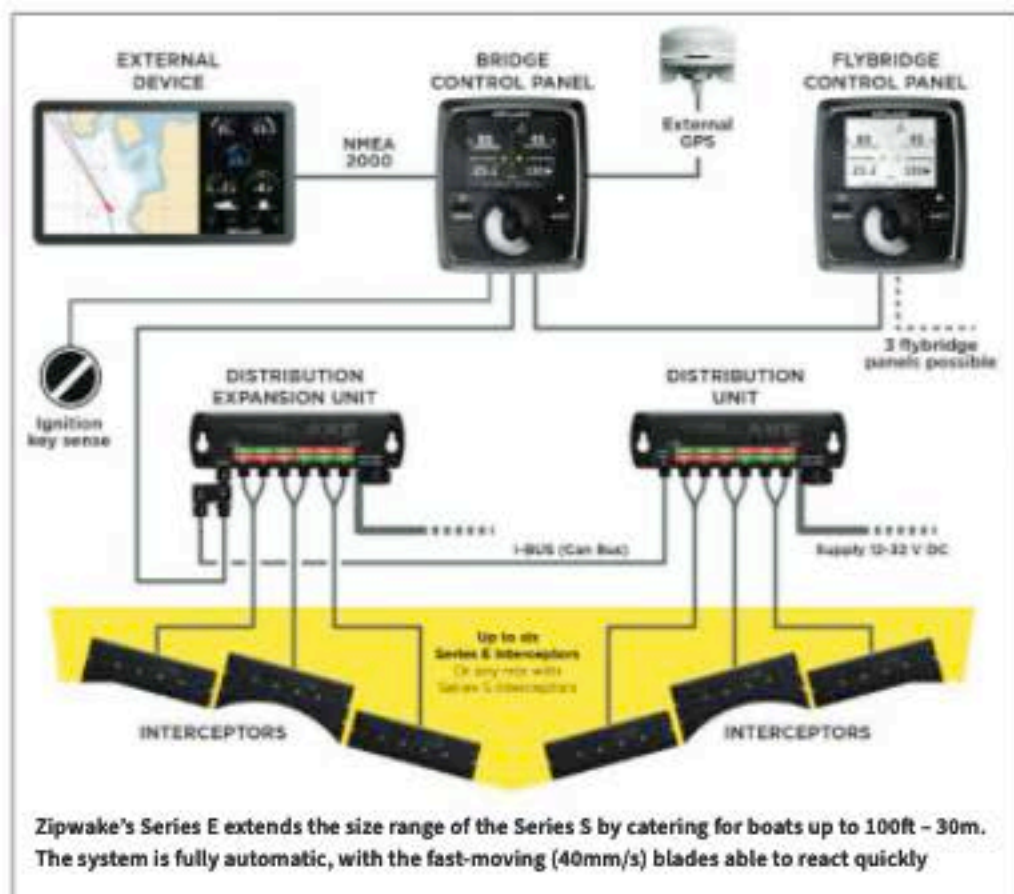
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The basic concept of the Hull Vane is to configure a fixed wing, optimised for the boat's cruising speed and attached below the waterline at the transom. When the boat is making way, the wing converts the upward flow into a forward-slanting force, providing lift and thrust. This reduces wake noise, increases speed and saves fuel.

Since then, there have been two major innovations. A standardised 'Semi-Custom' version for smaller displacement vessels, and a 'Dynamic' version that works either as a stand-alone system, or in concert with stabiliser fins.

"The fixed 'Semi-Custom' Hull Vane is aimed at a very specific market sector," explained sales director Bruno Bouckaert. "This is for displacement motoryachts of between 10m-20m and a top speed of between 12kt-14kt. This type of yacht is very common in The Netherlands, Belgium and Germany, but not so common in other countries where planing models dominate this size bracket. Apart from the gains in speed and range, the passive vane typically dampens pitching by between 10-20%."

Following a partnership with US-based Naiad Dynamics, a major manufacturer



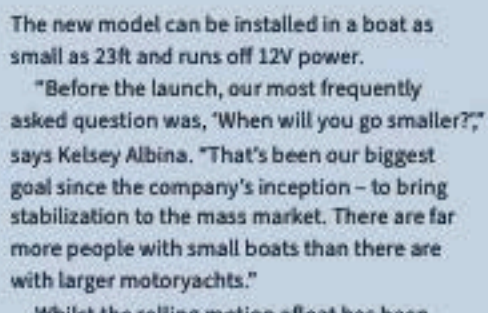
Variations on a theme - fins

FIN-ENABLED STABILISATION has evolved and adapted with three hybrid versions, as seen here. Centre: DMS Holland is developing the DMS All-in-One (not to be confused with Bennett Marine's same-name offering), which is an amalgamation of a fin and a trim tab, and which works at each corner of the transom.

Top Right: Quantum's Dyna-Foil features a high aspect, articulating foil that canals be fully retracted in the hull, ideal for ice class applications. At anchor it swings back and forth for zero speed capability, and underway it can be fully extended with minimal drag.

Bottom Right: The DMS AntiRoll system is developed from a study of the Blue Whale and mimicks the flapping of the creature's fins. The use of hybrid motors is said to require much less energy, and the foil can be retracted against the hull when not in use. This design is intended for low speed cruising superyachts over 30m, but also lends itself to sailing craft, which traditionally have little in the way of stabilisation due to the conflicting effects of the keel. The images shows the fin in its retracted position.

For US-based Seakeeper, launching the ultra-compact Seakeeper 1 model in February (just before lockdown) was a major step forward.



The new model can be installed in a boat as small as 23ft and runs off 12V power. "Before the launch, our most frequently asked question was, 'When will you go smaller?'," says Kelsey Albina. "That's been our biggest goal since the company's inception - to bring stabilization to the mass market. There are far more people with small boats than there are with larger motoryachts."

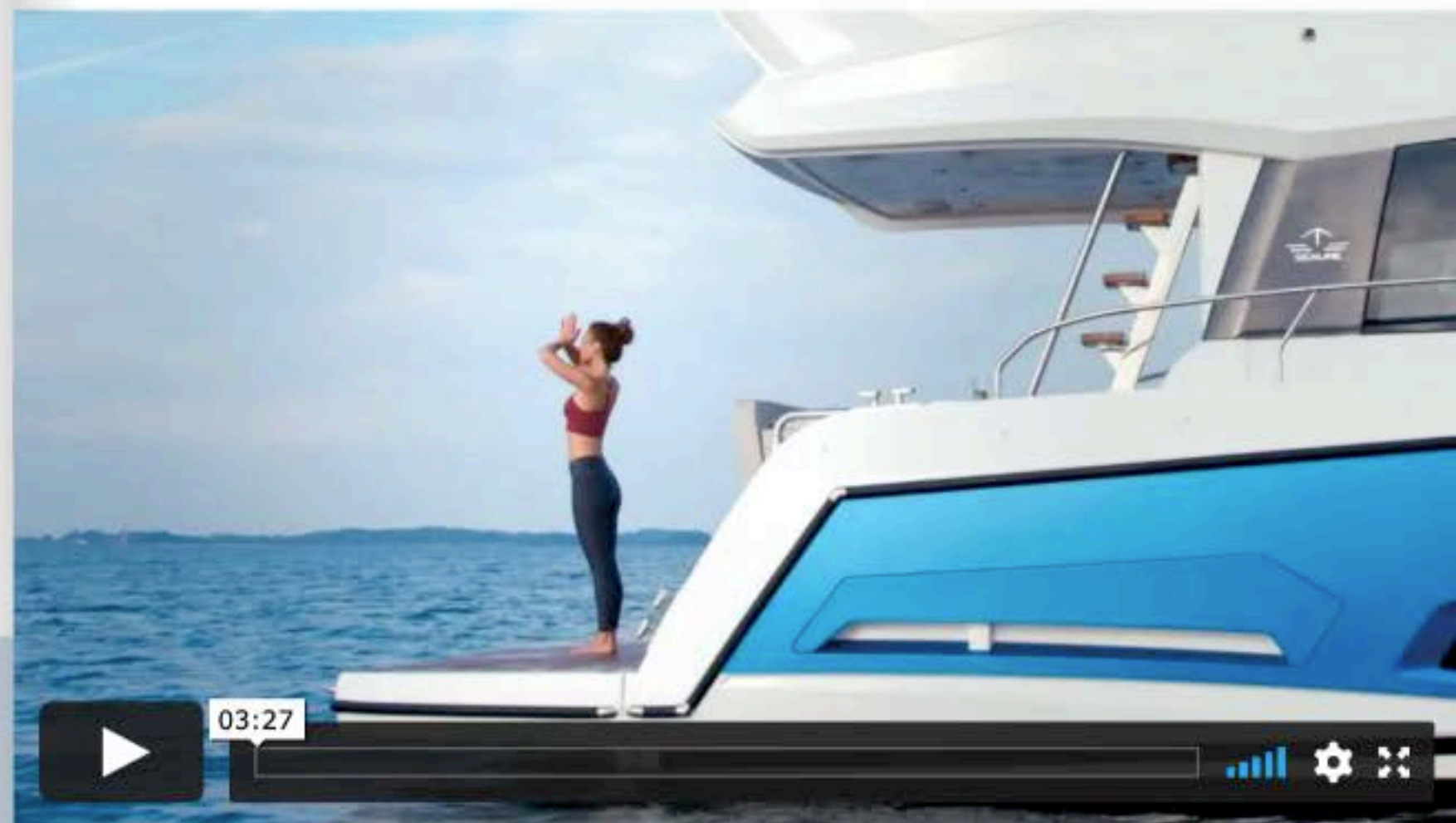
Whilst the rolling motion afloat has been largely countered by fins and gyros, pitching remains a big challenge for the industry.

"Pitching is the cause of vertical accelerations on board," says Hull Vane's Bruno Bouckaert. "It is the constant alteration of feeling heavier and lighter that makes people feel sick. Whilst roll is now largely under control, even at anchor, we believe the next big step in yacht comfort is to



dampen the pitching movement. "Bow slamming" is another thing that people find very uncomfortable due to the noise, vibrations and sudden deceleration. Independent tests have already shown that our Hull Vane system can reduce bow slamming pressures by up to 50%."

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of stabiliser fins, the new system actually articulates the hull vane in response to commands from Naiad's Total Ride Control system. A gyroscopic motion sensor can operate the Hull Vane and stabiliser fins together to dampen both roll and pitch. "The Dynamic Hull Vane is a new product and has increased the dampening effect on pitching to 30-45%, without adding resistance," Bouckaert concluded.

Both innovations are available from Hull Vane BV or its partner Naiad Dynamics.

Development 2:
CONTOURED INTERCEPTORS FOR TUNNEL DRIVES
ZIPWAKE'S NEW SERIES E

In November 2019, Swedish manufacturer Zipwake launched its latest innovation of Interceptor blades, a trim control system that is said to be 10 times quicker to respond than conventional tabs. This speed of actuation allows an automatic system to compensate quickly to any adverse roll.

The new Series E is an evolution of the smaller but proven Series S and takes the size range up to boats of between 15-30m (50-100ft). Because vessels of this size often have tunnel drives, the Series E feature an arc-shaped option to sit above the tunnel exits. This blade shape compliments the two other types, 'Straight' and 'Chine' to match different hull and transom designs. They also cater for different engine options and drivelines.

The interceptor blades are available in 600mm, 800mm or 1000mm widths, and due to economies of scale are described as 'durable and affordable.'

"The Series E actuators have a 60 mm blade stroke and blade extension rate of 40 mm/s," said Zipwake's Göran Fredin. "This performance makes it especially suitable for larger and heavier boats requiring a lot of lifting power as well as efficient roll reduction. For optimal performance the system can be expanded with up to 6 Series E interceptors (or a mix with Series S). The Series E system also allows customized allocation of control forces by setting active or inactive control of pitch, roll and yaw for each pair, port and starboard. A pair's function may also be swapped to mitigate roll-induced steering forces from another set." ➔

Types of stabilisation



European distributor for Bennet Marine Andy Scott, posing with the latest adjustable trim tabs available through MCI

TRIM TABS AND INTERCEPTORS

Trim tabs work at the very back of the boat and serve to correct a list at speed (usually caused by the boat leaning into the wind) and to bring the nose down for a more efficient angle of attack.

Interceptors are vertical blades that extend across the flow of water and have a similar effect but with much less surface area.

Recent developments have been to shape the interceptors to hug the contours of the transom, especially the outermost and chine angle and over propeller tunnels, and to have more automatic systems for trim correction at speed.



Fins are usually deployed towards the rear third of the vessel to avoid too much bow steering effect. Here, Sleipner's Vector fins offer a swept profile for optimal efficiency, both at speed and at anchor

FINS

A hydrodynamic fin protrudes from the bilge area and twists in response to sensors to counter the roll. These fins can be either hydraulically or electrically powered, although electric versions have a quicker response time so are finding favour on smaller craft. Hybrid developments have been to add retractable extenders to the fins for more surface area at anchor and less drag for better efficiency at speed.



Rotorwing offers cylindrical stabilisers that spin at up to 1,000 rpm and move in zero speed mode quickly backwards and forwards horizontally to maximise their effect. Although rotary stabilisers were originally designed for displacement boats, Rotorwing pioneered their use on semi-planing vessels up to 25kt

ROTARY

Developed from the Magnus effect where a rotating cylinder can generate lift, this type of system is successfully used in the leisure sector. The rotors are relatively small (around 1.0m-1.2m) and can rake back for reduced drag at speed. They can also retract into pockets.

GYRO

A heavy flywheel spinning at speed has a powerful damping effect on rolling motion and can also have a slight suppressing effect on pitch as well if placed in an 'advancing' mode. Gyros are most effective when the vessel is stopped or running slowly. By enclosing the flywheel in a vacuum, high speeds can be achieved and sustained for relatively little power. More efficient motors and compact housings have allowed the gyro to be greatly reduced in size for boats from 23ft upwards.

Several larger gyros work in concert on superyachts.

A cutaway view of the Seakeeper 1. Note the shaped steel flywheel and how it is suspended in a cradle. The gyroscopic forces acting on the cradle are transmitted into the hull, opposing a rolling motion. This unit is small enough to be hidden away beneath bench seats



uncomfortable

/ən-ˈkɛm(p)(f)-tər-bəl / • [uhn-kuhmf-tuh-buhl]

adjective

Having to explain why your boat still rolls.



"HONEY... WE'RE ROLLING"



seakeeper.com



Humphree solved the swimming effect of rear-facing fins by facilitating for 360° rotation in their carbon-fibre models. This allows the fins to face forward in zero-speed mode and gently pull the boat back against its anchor. However, Sleipner's rear facing fins now have an algorithm to minimise the paddle or 'swimming' effect

Developments in fin and rotor stabilisers

Despite the lockdown, several companies have told us that new products are under development and will be released soon. Here are some we can look forward to.

Development 1:
STOPPING THE ZERO-SPEED CREEP SLEIPNER'S 'ANTI SWIM' ALGORITHM Norwegian technology company Sleipner admits it is 'keeping its cards



CMC's popular Stabilis Electra design features fast-acting motors developed with the industrial robotics specialist Mitsubishi

close to its chest' but has some exciting announcements to make in 2021. The company is well known for its recent and elegantly-curved Vector fins, which won the Innovation Award at the 2019 Cannes Yachting Festival. Sleipner stabilisers and its Side-Power brand of thrusters are widely fitted to most leading motorboat brands.

Ronny Skauen, Sleipner's CEO, says that a puzzle common to all rear-facing zero-speed fin stabilisers is how to reduce the 'swimming effect' at anchor. This is where the movement of the fins act as flippers, gently propelling the yacht forward and potentially over its own anchor chain. Sleipner has been working on this issue for years and has recently made a breakthrough



Naiad Dynamics says its new fully electric roll stabilisers offer the same performance and reliability as proven hydraulic models

by devising a new algorithm for the controls. "The curved fin design of the Vector system already reduces this effect compared to regular flat fins," Skauen explained. "However, this is still one practical point where gyro stabilisers have an upside. I am proud to say that our new algorithm has dramatically reduced the swimming effect."

Harnessing the rudders

SPECIALISED RUDDER SYSTEMS have been used on ships for years, with twin rudders being particularly good at directing the propeller thrust for more efficient low speed manoeuvres. Electronic control has allowed each rudder to work independently of the other, greatly improving turning circles. They can also swing apart to act as an emergency brake. The quick and powerful response of a rudder can behave almost like the flick of a fishes tail to counter sideways movement aft.

A leader in this field is Italian-based CMC Marine, which has been working to link the rudders into a centralised system for total boat control.

"We have a four-fin/dual rudder arrangement currently on seatrials," said CEO Alessandro Capiello. "The four fins work together with a pair of electric rudders to control the entire platform. With a stern-quartering sea, for example, a lot of motion can be removed by using highly responsive rudders. This helps to avoid the snaking effect, which can be



CMC Marine's Alessandro Capiello: "By using the rudders as independent vertical surfaces you can counter not just the roll, but pitch and yaw as well"

Humphree's 24V electric rudder claims fuel savings of up to 10%, and less steering-system wear when fitted to waterjets



Shipping has long been experimenting with independently-operating rudders to assist in manoeuvres, including an emergency stop

particularly uncomfortable. By using the rudders as independent vertical surfaces you can counter not just the roll, but pitch and yaw as well."

Also harnessing the quick response of the electric rudder is Sweden-based Humphree, a company in which Volvo Penta bought a majority stake in 2016. A recent introduction has been a 24V electric rudder system which has proved particularly useful for waterjets to counter the tendency to wander at speed. Quick acting rudders can help reduce yaw, and Humphree claim fuel savings of up to 10%.

New life for old systems



DMS UNIVERSAL
Netherlands-based DMS has developed a digital control system that allows 'vintage' stabiliser systems to be brought right up to date. With extensive experience of 30-plus year-old equipment from working as part of the Naiad team, DMS has created a cost-effective upgrade system that replaces all the analogue systems with full digital control. The data is able to communicate with modern MFDs. "We have sold 10 complete systems so far, saving owners from having to fit completely new stabilisers," said Patrick Noor. "Another big advantage is that these older stabilisers can even be made to operate in a 'soft' zero-speed mode, something they were never originally designed to do. The hardware may need some new hydraulic valves to cope, but usually little else."



QUANTUM XT
Foils need more area at anchor, but less underway, so an ingenious solution from Quantum is the XT system, standing for 'Extending.' When more blade area is needed, a telescopic fin drops down from within the hollow body. The beauty of this system is that it can be retro-fitted to older Quantum stabilisers, making them more effective at zero speed.

Development 2: HARNESSING MORE POWERFUL MOTORS CMC'S DUAL-DRIVE ACTUATORS

Also filling the lockdown time with product development has been Italian-based CMC, which continues to seek to harness all available control surfaces into a single 'muscle' to flex against movement. An advance here has been the more powerful and quicker dual drive actuators.

"These actuators are really fast and give a much better response" Capiello said. "This delivers a much higher level of control."

The speed comes from the nature of the electric motors, developed with Mitsubishi and based on precision motors from the robotic manufacturing sector.

"Hydraulic controls are not so good on small roll cycles," Capiello explained. "The design of modern yachts, with their larger internal volume, is giving a roll time of about 6 seconds, but smaller yachts may only roll at 4 to 4.5 seconds, so a fast response is needed. Also, our electrical systems are also able to switch between AC and DC power. This helps to avoid having to use the generator at anchor. The power demands are really quite low, usually around 2kW. This is mainly due to new software that greatly reduces the power needed. At anchor, and in a light swell, the stabilisers can be placed in eco mode to draw from batteries alone."

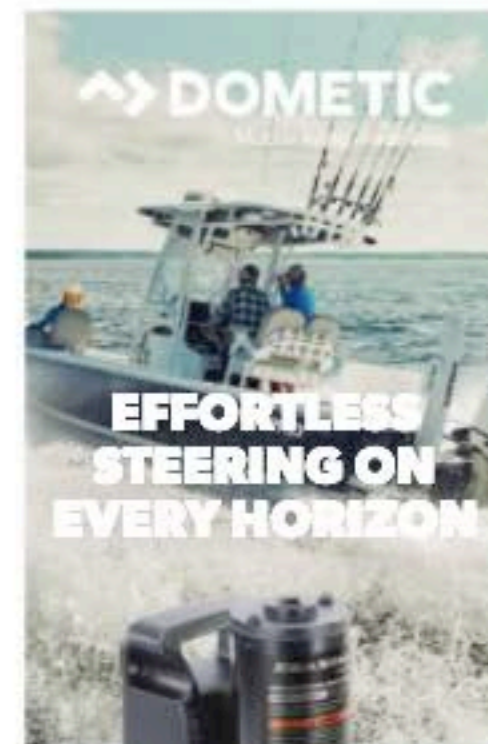
Developments in gyro stabilisers

Gyro stabilisers have proved very effective at reducing roll, converting it to a kind of benign bobbing motion instead. IBI experienced this effect during seatrials in 2019 with two leading brands, US-Seakeeper and Australian-based Veem.

A heavy flywheel spins at up to 16,000rpm and sits in a cradle that applies an equal and opposite force to the roll, pretty much cancelling it out. However, until quite recently the gyro systems were bulky and expensive, but both of those issues have since been addressed.

Because of the heat generated in operation, gyros need some cooling, and this can be done either by circulating water or air. Gyros are also becoming far more compact, frugal with power, and fully networked. As they can be placed almost anywhere on board, they are becoming popular on smaller craft where storage is limited, and where there are no other options. Adding a gyro pays back by encouraging greater use of the boat. As one owner told IBI: "I can now venture out in the kind of weather I used to avoid."

Trends we are seeing in gyro stabilisers are smaller units, with more air cooling



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with the Seakeeper 1," she said. "This is despite launching just weeks before many builders shut down due to the global pandemic. Already, it is the first Seakeeper model that had already been incorporated into multiple new boat models at the time it was launched publicly."

Trend 2: Easy install with 12V power QUICK'S COMPACT X2 MODEL

Italian-based Quick Spa has also responded to demand for smaller and more compact units, especially for the sportscruiser and sea angling market and has built on the success of its air-cooled MC² Quick Gyro system.

"Sales of gyro stabilizers are steadily increasing," said Quick Spa's president and CEO Michele Marzucco. "As such, we decided to introduce a lighter and smaller machine, always in line with the primary feature of our whole range of stabilizers: easy plug and play installation. The new MC² Quick Gyro X2 has been designed for smaller craft and being extremely light weight is perfect for center console or small day cruisers. Powered by 12V DC, there is no need for a generator, and it joins other models such as the X3, X5, X7 and X13 that are also 12V and can run from a dedicated battery bank."

Marzucco is particularly proud of the fact that every single component is manufactured in Italy, drawing on Quick Spa's in-house design team and huge factory complex. Each unit is then tested non-stop for 12 hours in simulated conditions. For the OEM, installation has been made as simple as possible.

"With steadily increasing sales, we are working flat out to meet demand, including from the fishing boat sector," Marzucco said. "Also, a large chunk of the market is driven by retrofit. We are especially growing in the USA, where our retrofit business was up by 20% in the past year. The plus of our whole stabilizer range is that it utilizes an air-cooled system and the lack of hydraulics makes it one of the most user-friendly installations on the market."

Trend 3: Easier onboard maintenance SMARTGYRO TEAMS WITH YANMAR

Italy-based Smartgyro, established in 2014, has also recognised the need to address a wider market and to reduce the cost of ownership. "The stabilization sector is booming," said sales manager Carlo Gazerro. "Comfort is of unparalleled value



Quick Spa's new MC2 Quick Gyro X2 is aimed at smaller centre-console craft and is air cooled and 12V powered

to increase the positive experience of life afloat."

With expertise gleaned from the military sector, the company currently produces two water-cooled gyro stabilizers; the SG40 for boats from 50ft-60ft and the SG80 for boats from 60ft-70ft, but it has plans for more. A recent partnership announced with engine OEM Yanmar will see complimentary engineering to expand the product range.

A key selling point is the ability to service the system without having to remove it from the boat, unlike with some of the larger competing models.

"Adding to the innovative control electronics, dynamic braking system, cooling system and vacuum flywheel enclosure, the outstanding Smartgyro advantage is that the products can be fully serviced in the vessel," Gazerro explained. "This includes a full overhaul and bearing replacement at the major service intervals. As there is no need to lift the assembly out this means less down time, significantly reduced service costs and extending the life of the product in the vessel."

Smartgyro is now preparing to launch the SG20 model for boats from 43ft-50ft (13m-15m) by early 2021, with the ultimate objective to offer a complete range of stabilizers for boats from 30ft-80ft (9m-24m). This will start with the introduction of SG10 in the near future for the lower end of the range.

"We will soon move to a new 1,000m² facility where we will be able to rapidly grow production capacity," Gazerro said. "We believe in our ability to create highly innovative gyro stabilizers and we are confident we can rapidly expand as a global company with Yanmar's support." ➔

China-based Jiwu Technology was founded in 2015, and in 2019 launched its JW-150 model for boats under 500 tonnes. This was followed in 2020 by the JW-50 and JW80. So far 200 units of the JW150 have been installed and a new office opened in the Netherlands near Rotterdam



The new Smartgyro range is said to be very easy to maintain in situ, with no need to remove the assembly from the boat for routine servicing

for easier installation, and greater use of 12V motors.

Trend 1: Going ultra-compact SEAKEEPER'S SMALLEST OFFERING TO DATE

"Our biggest news recently was the launch of the Seakeeper 1 in February 2020," said communications manager Kelsey Albina. "It's the smallest Seakeeper yet, for boats 23ft-30ft (7m-9m). And not only is it the smallest, it incorporates more differences and upgrades than any unit before it. These include a new look, flush-mount design, single cylinder brake, fastest spool-up time (15 minutes) and a new control pad on the unit we're calling the ConnectBox."

The new Seakeeper 1 joins two other models, Seakeeper 2 (8m-10.5m/up to 7.5 tonnes) and Seakeeper 3 (10.5m-12m/up to 10.5 tonnes) and Albina reports that the adoption of all the models has been remarkable.

"We've seen big strides in uptake

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Connectivity. Making sense of it all

The functionality of modern electronics means that many previously manual-only settings can now be automated, and manufacturers can have remote access to make sure the operator has set the parameters correctly. Apparent malfunctions often prove to be PICNIC problems. (Problem In Chair, Not In Computer.) One seafarer in training remarked "The cleverer my electronics get, the more stupid I become."

We have a full feature in this issue about the glass bridge and multi-function display, so here we are just going to briefly examine how these fast-acting stabiliser systems can be monitored and controlled.



Quick Spa's new QNN system ties together multiple systems with one common protocol

Trend 1: More touch screen control

The control and semi-automation of various stabiliser systems is now incorporated into most of the main MFD operating panels, although owners can also opt for a separate control panel if they wish. The emphasis does seem to be on the touch screen, rather than knobs and switches.

"Our display is something that's been continuously improving and adapting as well," said Seakeeper's Kelsey Albina. "It's required for all units except the Seakeeper 1 and is used to power the unit on and off and to lock/unlock the brake arms to stabilize the boat. The display also monitors the unit's performance, warranty hours, and other parameters. We work closely with Garmin, Raymarine and Simrad so that our app is compatible on certain MFD models of those brands."

Clear icons and ease-of-use are themes with all the control displays we have seen, with some offering more operator input than others. On the new Series E Zipwake interceptors, for example, Göran Fredin says: "Performance is supported by an innovative user interface panel with intuitive 3D controls. The system can be monitored on multifunction displays or plotters via the NMEA 2000 interface, and also supports control from other external devices."

Zipwake has developed new 3D controls that can be monitored in real time via remote devices



In some systems, complimentary products are on the same system, such as seen with Quick Spa's Quick Nautical Network (QNN).

"The QNN is a gateway able to receive all the different protocols used by Quick devices," said Michele Marzucco, president and CEO of Quick Spa. "This includes our range of MC³ Quick Gyros, anchoring system, thruster units, battery chargers, inverters and lighting arrays. This data is converted into the HTML5 protocol which can be read by all the new generation chart plotters on the market. Thanks to the plug & play connection system, the QNN is user-friendly and really easy to install."

ECO-MODE

"The greater interest being shown in hybrid yachts has made the use of 'eco-mode' much more viable," said Nick Piper, international sales manager of Rotorswing. He helped pioneer the transfer of Magnus-effect stabilisers into the high-speed

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Ronny Skauen: "Our new algorithms will greatly reduce the swimming effect common to rear facing stabiliser fins"

market, where they have enjoyed considerable success.

"More efficient motors and electronics means the stabilisers are already more energy efficient, but they now have large battery banks to draw on. At peak draw, a set of Rotorswing units will pull up to 5kW, but it is usually much less in normal operation. This means they can run off a battery bank quite happily for three or four hours without the need for a generator."

CONCLUSIONS

Despite the lockdown, the stabiliser industry has remained hard at work to dampen down the three sick-making accelerations in a boat – pitch, roll and yaw. Full control of pitch suppression, however, still remains elusive, but advances have been made. Meanwhile, stabiliser actuators are becoming smaller, quieter and more energy efficient, with greater automation and monitoring available through the marine CAN-bus NMEA networks. Older fin systems can be brought right up to date with new digital controls, whereas OEMs are strongly hinting that even more effective

solutions are in development. Lockdown has apparently been very useful for R&D.

"For several years, we have been working on two extensive stabilisation projects that are undergoing testing as we speak," said Sleipner's Ronny Skauen. "These are part of our e-Vision integration platform and product series, both of which represent huge breakthroughs in their respective categories.

"We think that one of the products could even be at the level of 'disruptive technology' (innovation that drastically alters the way industries or businesses operate). At the moment we are looking at launches of the first size models in both product series within 2021."

For CMC, Alessandro Cappiello sees a bright future with more control-surface integration, including bringing interceptors, rudders and fins all under unified computer control. "We have a lot of new applications in the pipeline," he told *IBI*. "We will have some really nice things to announce soon." **IBI**



In development: DMS WaveMaster

One of several new products under development and due to be launched soon is the DMS WaveMaster. This is essentially an automatic rim drive stern thruster that keeps the nose of an anchored yacht pointed directly into the swell. The WaveMaster activates the moment the bow deviates from head-on to a seaway by 3-4 degrees, reducing the roll by a claimed 85%. Once on the market, it will be suitable for yachts of up to 25m

LEADING OEMs – STABILISERS 2020

ABT.TRAC
Founded in California in 1986, ABT.TRAC introduced the world's first digitally-controlled stabilizer in 1999. abtrac.com

BENNETT MARINE
Founded in the US in the 50s, Bennett Marine is named after its founder Charles Bennett and is a manufacturer of remote-controlled trim tabs. bennetttrimtabs.com

CMC MARINE
Founded in Pisa, Italy in 2005, CMC manufactures a range of bow thrusters and fin stabilisers, with the Stabilis Electra system heralded as the world's first electrically actuated fin. cmcmarine.com

DMS (Dynamic Marine Systems)
Founded in Holland in 2013, DMS first introduced the AntiRoll retractable stabilizer for yachts above 30m. This was followed by the MagnusMaster rotary system, and currently in development is the All-in-One foiling system. dms-holland.com

GYROMARINE
Based in Italy, Gyromarine is a single product company founded by a group of businessmen with experience in large engineering projects involving gyroscopes. Their advanced 'driven' system is aimed squarely at the superyacht market. gyromarine.com

HULL VANE
The Hull Vane was invented by Dr Ir. Pieter van Oossanen, and is manufactured by Hull Vane B.V, which was established in 2014. Several variations of this fixed hydrofoil are available depending on the commercial or leisure application. hullvane.com

HUMPHREE
A team of specialist hydrodynamic marine engineers founded Humphree in Sweden in 2002, and Volvo penta took a majority stake in 2016. The company produces stabilizer fins, interceptor trim blades and active stabilization electronics. humphree.com

JIWU TECHNOLOGY
Based in Shanghai, China, Jiwu Technology was founded in 2015 to make gyro stabilisers for vessels of up to 500 tonnes. Following a factory expansion earlier this year, the company is now able to offer four models for boats ranging from 40-500 tonnes and has recently opened a European office. www.gyro-stabilizer.eu

NAIAD DYNAMICS
Able to trace its heritage back to 1941, Naiad Dynamics is based in Florida and is an integration of several companies that merged in 2009. The company delivers fin-based systems for leisure

yachts from 9m-85m, along with military and commercial applications. naiad.com

QUANTUM
Founded in the US in 1985 and with a brand new HQ at Fort Lauderdale in Florida, the company offers fin, rotor and foiling designs, and claims an 85% saturation of the yacht market over 55m. A new office has just been opened in Barcelona. quantumstabilisers.com

QUICK
A large marine manufacturing company, Quick S.p.A. was founded in Italy in the early 1980s, and produces a wide range of nautical hardware, with further manufacturing in the US. The MC2 Quick Gyro range of stabilisers is now available in 14 models. quickitaly.com

ROTORSWING
Founded in Holland in 2011 to develop the ideas of Theo Koop, Rotorswing manufactures the cylindrical rotor stabiliser offered with both zero speed and rake functions up to 25 knots. rotorswing.com

SEAKEEPER
Based in Maryland and with manufacturing in Pennsylvania, USA, Seakeeper builds a comprehensive range of gyro stabilisers from a 12V model for small craft (23ft - 7m) to versions for vessels of up to 85ft - 26m/100 tonnes. seakeeper.com

SIDE-POWER (SLEIPNER MOTOR AS)
Sleipner Motor AS was established in Norway in 1908 to manufacture engines and propellers. Sleipner's Side-Power brand now manufactures thrusters, stabilisers and all the associated electronics in house. side-power.com

SMART GYRO
Founded in 2014, Smartgyro is based in La Spezia (SP), Italy. The company is designing and developing a full range of highly advanced gyro stabilizers for recreational and commercial marine applications. smartgyro.com

VEEM
Established in Western Australia in 1968, Veem supplies components to the Royal Australian Navy, makes large stabilisation hydrofoils, and a range of four gyro stabilisers for vessels of up to 55m (180ft). veem.com.au

VETUS
Vetus was established in the Netherlands in 1964 and has a wide portfolio of equipment with the aim of providing completely compatible systems. A range of stainless-steel hydraulic fin stabilisers is available for vessels up to 22m. vetus.com

VOLVO PENTA
Volvo Penta produces the QL interceptor-style blade system in two versions - QL300 and QL 450 for high performance boats. The systems have an automatic levelling function. volvopenta.com

ZIPWAKE
Based in Sweden and launched in 2014, Zipwake was developed to connect own brand interceptor blades to gyro sensors for fully automatic trim control. The product is plug and play and aimed at the OEM and retrofit market. zipwake.com

“ OEMs are strongly hinting that even more effective solutions are in development ”

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