



Seakeeper 5

Following our feature on the Seakeeper 5 in issue 124, PBR have tested the first Seakeeper 5 gyroscopic stabilisation system to arrive in the UK. Greg Copp tells us how it fared ...

INSTALLED INTO A rare Hagg 36 by Osmotech, the UK agents based at Hamble Point, the Seakeeper 5 gyroscopic stabilisation system is the first stabilisation system to be fitted to a boat of this size

in the UK. Seakeeper 5 is a compact system and the first that can cater for boats from 30ft to 50ft in length with a maximum displacement of 20 tonnes. Seakeeper's previous proven range of larger M series

stabilisers were bigger and bulkier in comparison and often too power hungry for the average middleweight powerboat. Weighing just 358kg (810lb), with a footprint of 0.765m (L) x 0.757m (W) x 0.628m (H) and an AC power consumption of 1.5kW, this system can fit where larger gyro systems can't. Running on AC power, the gyro needs 2.0kW to spin up to its maximum speed of 10,700rpm. At this speed

it produces a hefty 9650ft/lb (13089Nm) of countering torque, which, it is claimed, has up to a 90% roll reduction effect. It will take 50 minutes to reach maximum speed, though it will be producing usable stabilising power within 35 minutes. Once running at maximum RPM, power consumption drops to 1.5kW, so most small generators can easily cope with it.

Like any gyroscope it strongly resists any lateral force trying to move it off its spinning axis. If you push the top of the gyro so it tilts forward in an action known as 'precession' it will exert force on the port side of its mounting. Pushing it aft will reverse this preceding effect to the starboard side. Thus, if you rock the gyro back and forth you could either induce



Hagg 36
This rare, classic 1972 semi-displacement Hagg 36 is the first boat in the UK to have Seakeeper 5 fitted.

It had no problems in keeping an even keel at 6 knots with a beam sea and will be even more effective at higher speeds.

than reactively. The limit of the fore and aft precession is determined by the amount of travel permitted by the hydraulic rams, so there is a limit to the duration of each stabilising thrust of the gyro. The speed of the precession also affects the amount of stabilising force produced, so if the gyro moves fast it will have a short but powerful effect. To reduce operating temperature and increase efficiency, the gyro chamber is a sealed vacuum, thereby removing air friction. A seawater cooling system runs through a freshwater heat exchanger while temperature sensors keep track of both the gyro motor and its shaft bearings.

It sounds like a lot of technology to fit into a 36ft boat, but Seakeeper 5 fits perfectly under the cockpit of the 1972 Hagg 36. It did require the generator to be moved, but as Osmotech told us, inevitably when you fit a gyroscopic stabiliser something has to be altered or moved. In real terms, the amount of space is small, and, being located just under a deck hatch, the noise emitted is only audible with the engines switched off. In the wheelhouse or the cockpit the sound level was certainly not intrusive, and in the forward cabins you would have been barely conscious of it. Seakeeper claim that the gyro produces just 70db of sound at source, which is credible. There is no hard and fast rule as to where the gyro has to be located. It can be fitted slightly off centre if need be, though ideally it is best located on the keel line. It is switched on via a small helm-mounted control panel. As it spins up to its minimum operating speed, a red progress bar on the display



In real terms, Seakeeper 5 is a compact system even for this 36ft Hagg and fits quite easily under the cockpit.

lets you know when you can unlock its tilting cradle, which, courtesy of its hydraulic rams, can then precede fore and aft in order to keep the boat upright. When you press the button to lock the gyro it still spins but is ineffective.

Powering out to meet a

suitably unpleasant south-westerly force 5 off Calshot, the Seakeeper was unlocked and preceding back and forth doing its job. When unlocked, you have an image of a spinning and preceding gyro on the control panel display. As I found, you are in no doubt as to



When you unlock the system via the control panel you get an image of a spinning gyro on the control panel display.



With the press of a button you can switch the system on/off and either lock/unlock the gyro.





SEAKEEPER 5 ON - With the gyro unlocked, the Hagg 36 immediately keeps an even keel. Note the beam sea passing her port quarter.

The system has the ability to assess the wave pattern in order to act proactively rather than reactively.

when it is on or off, even when underway at semi-displacement speed.

We positioned the boat beam on to the sea, put the engines into neutral, locked the gyro, and in moments we were hanging on as the semi-displacement hull got into the rhythm of a heavy roll. When it had reached its worst, the skipper hit the button unlocking the gyro and in seconds we were back on an even keel. I took a look at the gyro rocking back and forth. Most of the time it was using around half of the movement allowed by the hydraulic rams. Every now and again a big wave would hit us and the gyro would rapidly precede through a range of about 15 inches, which appeared to be around

three-quarters of its maximum travel. Beam on to a short, sharp Solent chop driven by a force 5 is a good test, especially as the system appeared to have the capacity to take more weather if needed.

Underway is when Seakeeper 5 will get used the most. It had no problems in keeping an even keel at 6 knots with a beam sea



Here the gyro is preceding forward, thereby countering roll to the starboard side.



Here the gyro is preceding aft, thereby countering roll to the port side.



SEAKEEPER 5 OFF - With the gyro locked, the Hagg 36 immediately starts to roll.

and will be even more effective at higher speeds. Something that gets overlooked is the efficiency gains at displacement, semi-displacement and planing speeds from running on an even keel, which I suspect will write off the cost of running a generator in a larger boat. Back in port it will take up to three hours to spin down from

10,700rpm, but you can simply switch off and walk away. [PBR](#)

CONTACTS

US: www.seakeeper.com
UK: www.osmotech.co.uk,
(UK South Coast agents).

SEAKEEPER 3DC

Following hot on the heels of Seakeeper 5, Seakeeper have just launched Seakeeper 3DC available from June this year. It will have exactly the same footprint and weight at 358kg, but it is powered by either 12V or 24V DC, thereby requiring no AC generator. In order to keep the power consumption down to a level that is realistic for DC on-board power production/reserves, the gyro only spins up to 6400rpm as opposed to 10,700rpm for Seakeeper 5. Seakeeper 3DC only needs between 0.5kW and 1.0kW compared to the 1.5kW to 2.0kW needed to run Seakeeper 5. This results in it producing 6000ft/lb of counteracting torque compared to the 9650ft/lb produced by Seakeeper 5. This should prove ideal for lighter boats with a maximum displacement of 10 tonnes. It will place big power demands on a DC system, so it is unlikely to be ideal for single-engine boats with limited domestic battery reserves. Engine alternator output is also something that will have to be considered, possibly resulting in a need for uprated alternators. The cost is the same as Seakeeper 5 at around £23,000 (inc. VAT).

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