

Increase operating days

Enhance deck safety & speed

Minimise sea sickness



*Heavy duty gyro stabilizers for
commercial & defence applications*





The latest technology in stabilization

Wave motion is one of the few external forces which has the capacity to negatively impact the operating envelope and profits for offshore boats, regardless of the size of vessel.

What's more, even the most sheltered harbours can suffer unpleasant wave induced motion, that can reduce crew performance, deck safety and increase the time it takes to perform essential tasks.

A VEEM Gyro installation can significantly increase the operational availability of these vessels, maximize working revenue, improve

scheduling certainty, and increase crew endurance, performance and comfort. After years of research and development we are delighted to be able to offer our customers the opportunity to join the stabilization revolution that is the VEEM Gyro.

Reflecting our unwavering passion for beautiful design and representing a combination of both engineering and manufacturing excellence, the new range offers a genuine revolution in performance compared to existing stabilization systems.

What is a gyro stabilizer?

The VEEM Gyro is an actively controlled vertical axis gyro stabilizer delivering excellent rolling motion attenuation while the vessel is at anchor or underway.

It consists of a flywheel mounted in a gimbal frame allowing two of the three possible rotational degrees of freedom.

Because a gyro's roll stabilizing torque is created by the rolling motion itself, there is absolutely no time delay, or lag, between the wave induced rolling motion and the

stabilizing torque produced by a natural precession gyro stabilizer.

The VEEM active control system maximizes roll reduction as sea and vessel running conditions vary. With active control, a smaller unit can provide the same performance as a larger, passive gyro system. The active control system also ensures that VEEM Gyro is safe to operate in all conditions.

Enhance deck safety & security

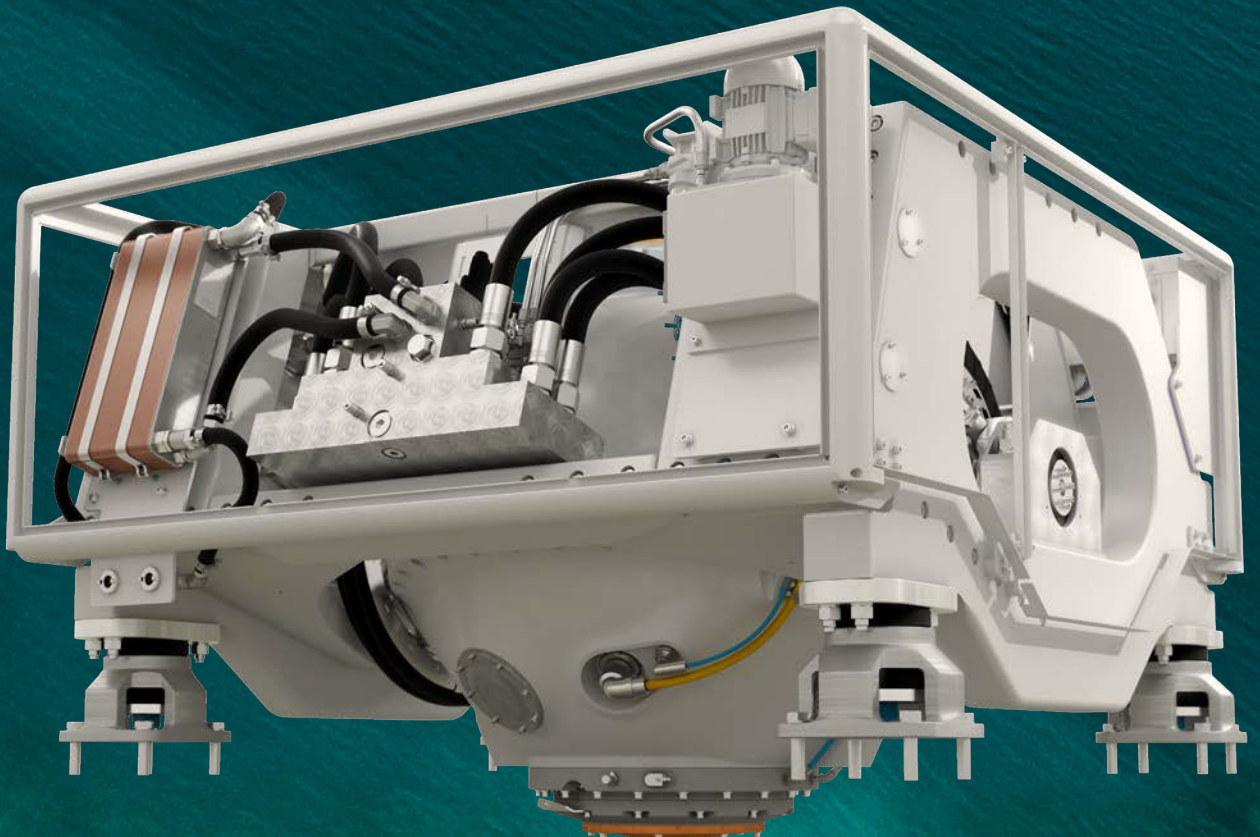
A VEEM Gyro will significantly improve deck safety and speed by removing the vessel's rolling motion while underway or at anchor. Less motion will reduce crew sea sickness, reduce fatigue and improve efficiency. Further benefits of a more stable vessel are: increasing crane operating envelopes, maximizing weapons accuracy and achieving safer tender launching and docking alongside fixed and floating facilities.

Increase operating days

When profits, project completion dates and construction quality are at the mercy of weather patterns and wave motion, a VEEM Gyro will work to significantly reduce and eliminate downtime due to uncontrollable vessel rolling. This results in increased operating days throughout the year. For Ferries and other passenger vessels - this means more trips and more passengers. For offshore vessels this means continued operation and more effective crew operation.

Minimize sea sickness

By eliminating wave induced rolling motion that causes sea sickness, the VEEM gyro ensures crew members, troops and passengers are comfortable, experience less fatigue, are safer on board and perform more efficiently and effectively both on board and after leaving the vessel.



Defence

Patrol boats and mine hunters spend a large proportion of their operational time at low speeds where traditional fin stabilizers do not work effectively. A VEEM Gyro can significantly improve a vessel's operability and the crew's endurance, performance and comfort. Not only do VEEM Gyros provide excellent roll stabilization whilst underway, they work even better at low speed, at rest, while drifting or at anchor.

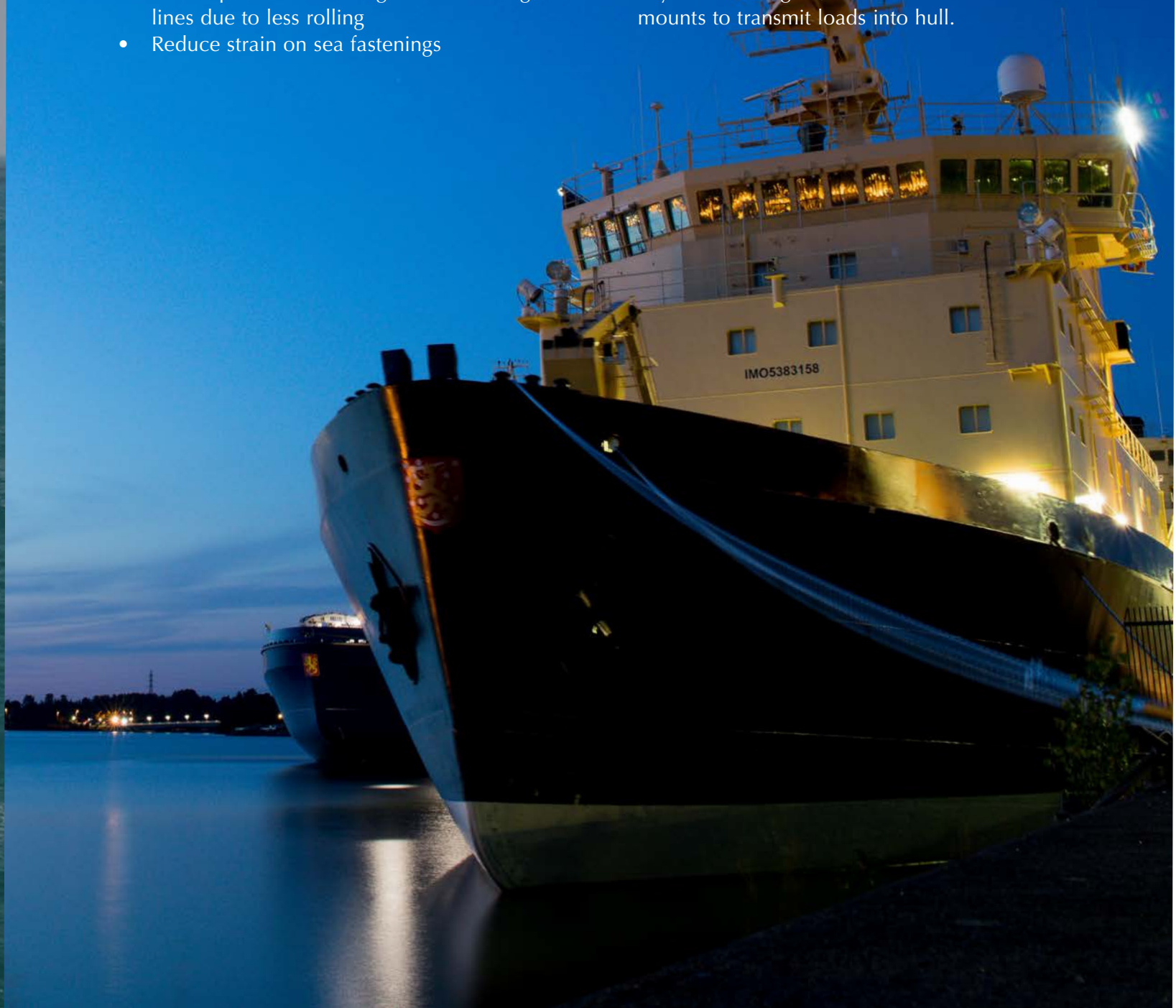
- Increase safety of tender launching
- Increase ability to launch and retrieve at rest
- Maximize availability of the fleet
- Improve crew performance via reduction of sea sickness
- Maximize weapons accuracy
- Improve safety and efficiency of all operations at sea
- Remove need for external roll fins
- Eliminate risk of fin grounding, net damage or weed snagging
- Reduce subsea acoustic signature
- Increase access to shallow littoral patrol areas
- No dry-dock requirement for maintenance



Offshore

Offshore working vessels carry out critical operations at sea both underway and at rest. A VEEM Gyro installation can significantly increase the operational availability of these vessels, maximize working revenue, improve scheduling certainty and increase crew endurance, performance and comfort. Client teams will experience significantly increased comfort.

- Safer docking alongside fixed and floating facilities due to significantly reduced rolling
- Safer, faster deck operations
- Increase crane operational envelope (especially for side mounted cranes)
- ROV tracking without having to maintain head to sea
- Reduce thruster and propeller aeration due to rolling
- More options for heading when handling lines due to less rolling
- Reduce strain on sea fastenings
- Increase crew comfort and eliminate sea sickness
- Decrease crew fatigue leading to better performance
- Happier, more comfortable client teams
- Augmented heave compensation systems performance (VEEM Gyro works with heave comp systems without any need for integration or tuning)
- Can be located off center line (CL), at any vertical height. Just needs structural mounts to transmit loads into hull.



Ferries

When ferries spend time traveling at low speeds or are carrying out stationary passenger transfer, they will experience rolling and pitch which can significantly reduce passenger and crew comfort. A VEEM Gyro will significantly improve the comfort of passengers and crew on board, virtually eliminating sea sickness.

- Maximize your market share with the most comfortable service
- Increase operating capacity in bad weather
- More routing options due to reduced rolling
- Increase passenger comfort through virtual elimination of sea sickness
- Safer docking alongside wharfs and barges during passenger transfer
- Increase crane operational envelope (especially for side mounted cranes)
- Reduce thruster and propeller aeration due to rolling
- Reduce strain on sea fastenings
- Decrease crew fatigue leading to better performance
- Options for more passenger services on board



Pilot boats & tugs

Due to the very nature of their operation, pilot boats and tugs spend much of their life operating across the swell and wave motion or within the wake field of large ships. Transfer of pilots is a dangerous but necessary operation performed in most weather conditions. The ability to significantly reduce the roll of these vessels will significantly improve safety and speed of operations. Being able to stay on target for tugs lowers costs of repair to shipping hulls due to damage.

- Faster and safer delivery and retrieval of pilots
- Safer docking alongside fixed and floating facilities due to significantly reduced rolling motion
- Improved crew performance on board
- Increased comfort and sea sickness elimination for staff on board
- More options for heading when handling lines due to less rolling
- Increased manoeuvrability due to reduction in rolling motion
- Reduced damage due to faster, more accurate tug placement
- Reduce thruster and propeller aeration due to rolling
- Reduce strain on sea fastenings



The most advanced and powerful gyro stabilizers

CONTINUOUS USE

VEEM Gyros provide significantly higher stabilizing torque and angular momentum than any other stabilization product in the market.

Unlike its competitors, the VEEM Gyro offers significant roll reduction in rough sea conditions and delivers up to 95% roll reduction at anchor and underway.

EFFECTIVE AT HIGH SPEEDS

Recording significant roll reduction at speeds of even 40 knots, the VEEM Gyro units have been built to withstand even the roughest conditions - with high pressure hydraulics, a significantly longer bearing life and self-regulating software.

WHISPER QUIET

Emitting an extremely low 57 dBA on some models, the VEEM Gyros have reset the sound level benchmark for gyro stabilizers. This opens up a variety of mounting options including outside the engine room.

ECO MODE

VEEM Gyros also feature an energy saving mode for quiet night time operation, so you and your guests can enjoy a peaceful sleep while the gyro reduces the roll and operates quietly in the background.



NO DRY DOCKING EVER

VEEM Gyros are fully maintained inside the vessel. This means no dry-docking for maintenance or even a complete overhaul - ever. Long-life bearings means maintenance costs will be significantly reduced.



WEB-BASED, ADVANCED TOUCH-SCREEN SOFTWARE

All VEEM Gyros are able to be web connected to allow remote phone support, data download and diagnostics. This can be managed at VEEM's Support Base and/or by the owners team.

INCREASED SPEEDS AND EFFICIENCY 'AT REST'

Choosing a VEEM Gyro instead of fins almost always comes with the gift of increased max speed, and reduced fuel burn. The weight of the gyro balanced against the drag of the fins is a net gain for the yacht.

HEAVY DUTY BEARINGS

Long life bearings (12,000 - 60,000 + hours) and other components mean that your yacht will withstand rough conditions and perform perfectly for longer. VEEM Gyro has the lowest through life maintenance costs of any stabilization system.

Roll reduction performance

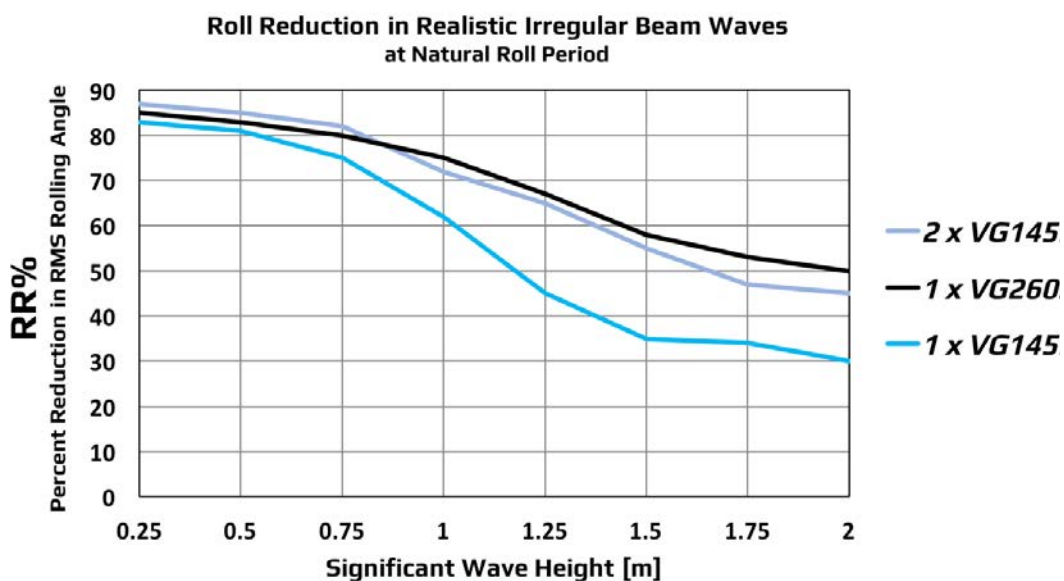
VEEM Gyro provides a simple performance prediction for a project considering various possible gyro installation options. Once the level of required roll reduction is understood and agreed, a detailed rolling motion numerical simulation report is generated. This detailed report is prepared using VEEM's proprietary numerical simulation tool called GyroSim. Expected roll motion reduction across a range of wave periods and wave heights is presented on a single color contour plot.

Gyro sizing calculator

The performance prediction chart below presents the expected roll motion reduction in realistic irregular beam seas at zero speed, in waves near resonance. Roll reduction is the percentage reduction in RMS roll angles when the gyro is active. The significant wave height is the wave height that an experienced mariner will observe. Technically it is the average of the 1/3rd highest waves.

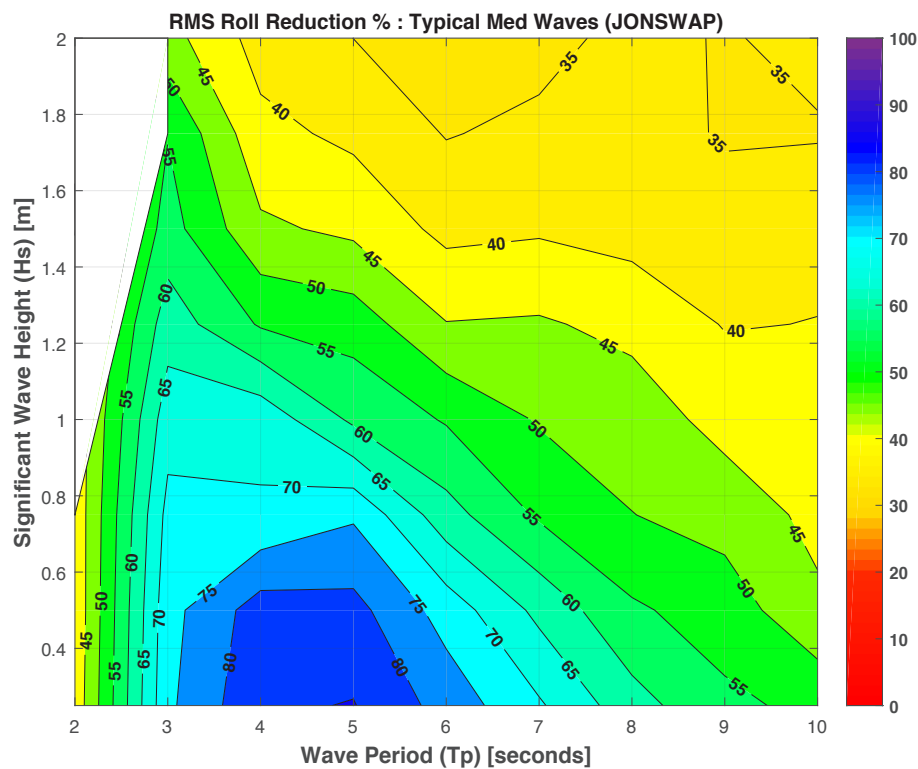
Either the JONSWAP or Bretschneider realistic irregular wave models can be used. The JONSWAP model is typical of waves on the North Sea, whilst the Bretschneider model is more suited to open ocean waves with long fetch. The peak wave period used in the wave model is the natural rolling period of the vessel. When the wave period approaches the vessel roll period, 'resonant rolling' results. This causes the largest and most uncomfortable rolling motions, which lead to seasickness, discomfort, loss of productivity and increased risk.

Multiple potential gyro installations are charted together on this simple chart to allow selection of candidate installations.



Numerical rolling motion simulation

The chart below has been created by running a large number of irregular wave time domain simulations of the vessel in various combinations of wave height (Hs) and wave period (Tp). The percentage reduction in RMS roll angle for each time series signal is then calculated until an array of data is available for all wave heights and periods on the chart. The percentage RMS* roll angle reduction (RR%) achieved by the VEEM Gyro is then plotted as contours.



To discover what roll reduction is expected on any given day, a vertical line should be drawn from the wave elevation period on the horizontal axis and a horizontal line from the significant wave height (Hs) on the vertical axis. Where these two lines meet, the predicted roll reduction can be read from the contour colour at that point.

The wave period presented is the 'peak' period from the wave spectrum used to generate the wave time series in the simulation. The wave height is the 'significant' wave height used to generate the wave elevation time series in the simulation. The 'significant' wave height is defined as the average of the 1/3rd highest waves that occur during the simulation. Traditionally, this is considered to represent the wave height that a professional mariner will report by observing any given sea condition.

* RMS or 'root mean squared' is a measure like an average for a dynamically oscillating signal.

New Model

The VG120SD

The VEEM Gyro 120SD (Super Duty) is the most advanced and powerful stabilizer available for smaller super yachts and small commercial work boats. As a single unit installation, it is suitable for vessels with displacement between 50 – 130 tonnes. Due to its rugged construction and clever software, the VG120SD is able to operate efficiently in small waves, but continue operating as wave environments grow to rough (when you need it most). Installation is simple, saving huge amounts of vessel integration cost. Multiple units can be installed for larger vessels.

| | | | |
|---------------------------------|---------------|----------------------|---------------|
| Rated Stabilizing Torque | 120 [kN.m] | Mass | 2755kg |
| Angular Momentum | 52 [kN.m.s] | Run/Startup | 11 - 16 ekW |
| Length | 1.63m (64.2") | Rated RPM | 4800 |
| Width | 1.56m (61.4") | Cooling Water | 30 - 60 [lpm] |
| Height | 1.15m (45.3") | Noise Running | 57 dBA |



New Model

The VG145SD

The VEEM Gyro 145SD (Super Duty) is the most advanced and powerful stabilizer available for smaller super yachts and small commercial work boats. As a single unit installation, it is suitable for vessels with displacement between 75 – 145 tonnes. Due to its rugged construction and clever software, the VG145SD is able to operate efficiently in small waves, but continue operating as wave environments grow to rough (when you need it most). Installation is simple, saving huge amounts of vessel integration cost. Multiple units can be installed for larger vessels.

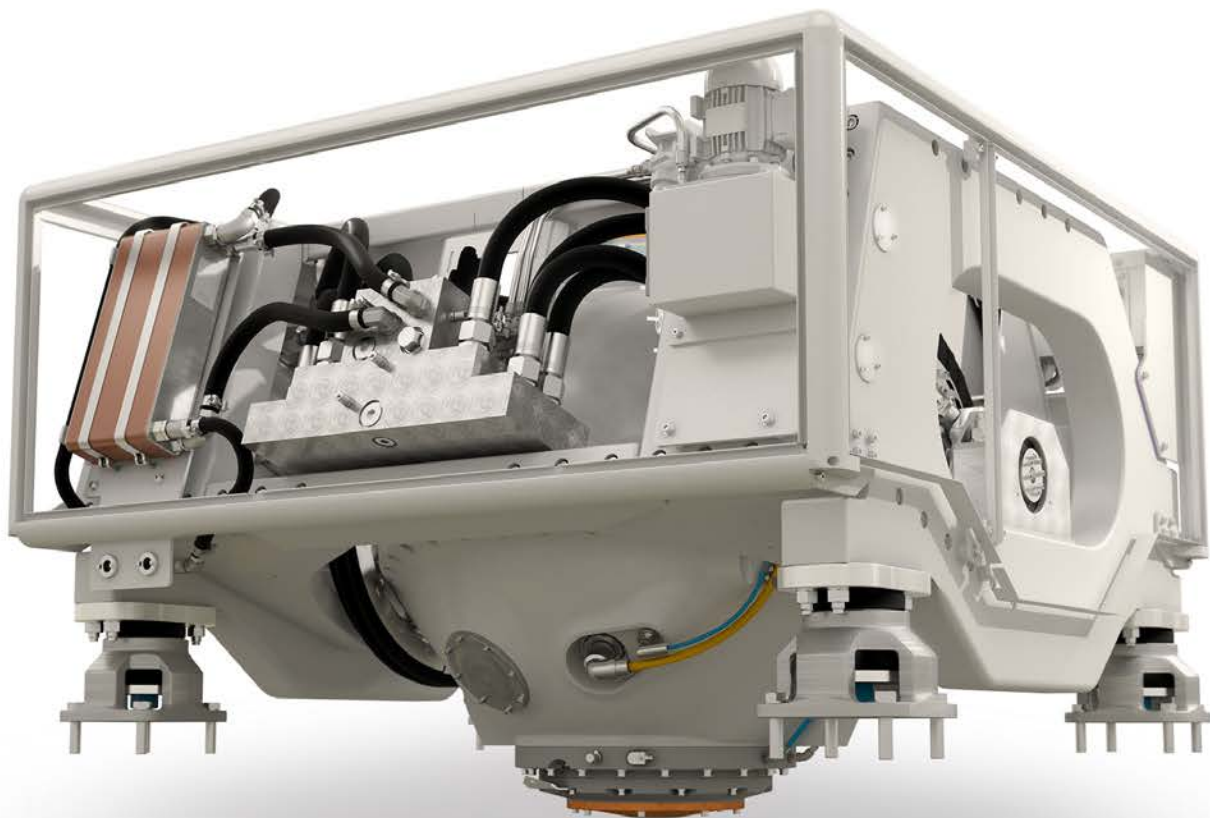
| | | | |
|---------------------------------|---------------|----------------------|---------------|
| Rated Stabilizing Torque | 145 [kN.m] | Mass | 3000kg |
| Angular Momentum | 70 [kN.m.s] | Run/Startup | 11 - 16 ekW |
| Length | 1.63m (64.2") | Rated RPM | 4800 |
| Width | 1.56m (61.4") | Cooling Water | 30 - 60 [lpm] |
| Height | 1.15m (45.3") | Noise Running | 57 dBA |



The VG260SD

The VEEM Gyro 260SD (Super Duty) is the most advanced and powerful stabilizer available for medium super yachts and commercial work boats. As a single unit installation, it is suitable for vessels with displacement between 100 – 300 tonnes. Due to its rugged construction and clever software, the VG260 is able to operate efficiently in small waves, but continue operating as wave environments grow to rough (when you need it most). Installation is simple, saving huge amounts of vessel integration cost. Multiple units can be installed for larger vessels.

| | | | |
|---------------------------------|--------------|----------------------|----------------|
| Rated Stabilizing Torque | 260 [kN.m] | Mass | 5650kg |
| Angular Momentum | 100 [kN.m.s] | Run/Startup | 25 - 35 ekW |
| Length | 2.1m (6.9') | Rated RPM | 3000 |
| Width | 2.07m (6.8') | Cooling Water | 70 - 120 [lpm] |
| Height | 1.47m (4.8') | Noise Running | 61 dBA |



The VG1000SD

The VEEM Gyro1000SD (Super Duty) is the most advanced and powerful stabilizer available for large super yachts and commercial work boats. As a single unit installation, it is suitable for vessels with displacement between 300 – 900 tonnes. Due to its rugged construction and clever software, the VG1000 is able to operate efficiently in small waves, but continue operating as wave environments grow to rough (when you need it most). Installation is simple, saving huge amounts of vessel integration cost. Multiple units can be installed for larger vessels.

| | | | |
|---------------------------------|--------------|----------------------|-----------------|
| Rated Stabilizing Torque | 1000 [kN.m] | Mass | 20.1 tonnes |
| Angular Momentum | 520 [kN.m.s] | Run/Startup | 70 - 110 ekW |
| Length | 3.4m (11.1') | Rated RPM | 1940 |
| Width | 3.1m (10.2') | Cooling Water | 125 - 200 [lpm] |
| Height | 2.44m (7.9') | Noise Running | 69 dBA |



About VEEM LTD

Founded in 1968, VEEM Ltd is a high technology manufacturer of marine propulsion and stabilization systems, operating from its dedicated head office and production facility in Western Australia.

VEEM revolutionized fixed pitch propeller technology for boats and yachts with their Interceptor™ propellers and continues to pave the way for new technologies in the marine sector with the VEEM Gyro.

The VEEM Gyro will change the way the super yacht industry thinks about roll stabilization.

Want to learn more?

To learn more about the VEEM Gyro and which model is right for your vessel, visit veemgyro.com

Talk to one of our authorized global sales agents:

AMERICAS

Halo Iron Works

Joel Kmetz
joelk@haloironworks.com
+1 941 720 6784

CROATIA

DUING d.o.o

Dubravko Simic
dubravko.simic@duing.hr
+385 51 682 492

IRELAND, UK AND SCANDANAVIA

Sure Marine

Jonathan Shaw
jonathan@suremarine.eu
+44 7714 826843

ASIA AND OCEANA

VEEM Ltd

Dan Fisher
danf@veem.com.au
+61 (0)411 887 306

ITALY AND SOUTHERN EUROPE

VEEM Ltd

Luca Signorini
lucas@veem.com.au
+39 329 5980595

MIDDLE EAST

Exalto Emirates

John W.R.Paul
jwp@exalto-emirates.com
+971(0) 6 545 3366

HONGKONG

Foilborne Engineering

Paul Chow
paulchow@foilborne.com.hk
+852 9195 6860

NETHERLANDS AND NORTHERN EUROPE

Ship Motion Group

Jan Bruggeman
jan@shipmotiongroup.com
+31 850 02 18 10

www.VEEMGyro.com

VEEM Gyro is a VEEM Ltd product.
22 Baile Rd, Canning Vale, Western Australia 6155
Telephone: +61 8 9455 9355