

Gyroscopic Stabilisation on workboats

<200GT

More Than Just Comfort

Gyroscopic stabilisers are normally associated with yachts or leisure vessels but I think they could see more growth in the workboat industry.

For vessels below 200GT such as CTV's, pilot boats and Multicats, reducing roll is not only about giving PAX and crew a more comfortable journey at sea. It can also improve safety, efficiency, reduce fatigue and make the vessel more attractive to charterers and the technicians who use it every day.

I had heard about gyroscopic stability previously but usually only for very small craft. I recently came across **Jiwu Gyro** while attending Marintec in Shanghai last year. They are a Shanghai-based manufacturer, who specialise in producing and fitting gyroscopes for vessels. What interested me was the range of units they produce and that they had previously retrofitted workboats with this technology. They had a small demonstrator model which showed how effective their technology was.

Why gyroscopes suit workboats

Unlike conventional fin stabilisers, a gyroscopic stabiliser does not depend on water flowing over an external fin to generate its stabilising force. The spinning flywheel produces a counteracting torque as the vessel rolls.

This means a gyro can remain effective when the vessel is moving slowly, drifting, waiting on location or operating alongside another vessel.

That low-speed performance is particularly relevant to Multicats.

Multicats spend significant periods manoeuvring slowly, holding position, handling anchors, completing mooring work or carrying out deck operations. Reduced roll could provide a steadier deck for crew, improve general working conditions and reduce uncontrolled movement of tools and equipment.

It could also be useful while supporting lifting operations, although a gyro must never be considered a replacement for the vessel's approved stability information, crane limits or weather limits.



Why stability matters on a CTV

A technician who has spent one or two hours being thrown around in a vessel does not arrive at the turbine rested and ready to work. Motion sickness can reduce concentration, increase fatigue and reduce physical performance.

During a CTV push-on, especially if weather is coming from the beam, unexpected vessel movement can increase the risk of a technician losing balance or falling before connecting to the fall-arrest system. It can also increase the chances of cargo shift for cargo/equipment on deck.

It is also beneficial to the crew onboard, during periods where crew are waiting for technicians to complete work, even small waves can make the vessel uncomfortable and roll. With reduced roll, crew would be able to complete more tasks on the vessel. This is highly desirable as CTV crew often find themselves pushed over their hours of rest due to commercial pressure which is a big issue in the CTV industry currently. Clients are always keen to push the vessel and crew to longer working days and get every minute out of them, what a lot of them fail to realise is that these crews often have a lot of paperwork and maintenance to complete. With minimal weather days in summer, simple tasks start to build up and overall condition and reliability can start to deteriorate.

This is where a gyroscope could be seen as highly beneficial to operations. During these long waiting periods for technicians to complete works on assets, with a more stable vessel, vessel crew will feel more comfortable to complete tasks and maintenance onboard.



Technicians influence on vessel selection

The comfort of technicians is sometimes treated as a secondary consideration, but it can have a direct commercial effect.

Technicians regularly travel on different vessels and quickly learn which ones provide a better ride. They also have internal reporting routes for identifying vessels and crews that fall below expected standards. Industry guidance recognises technician feedback and the selection of vessels that are best suited to site conditions as part of the vessel procurement process.

When two vessels can complete the same job, technicians will naturally prefer the vessel that leaves them less tired and less likely to become seasick. Over time, clients are likely to hear this feedback. This can be seen with MCS' SWATH vessels which provide great stability when underway, clients are very eager to offer these vessels long contracts due to their performance.

A vessel with better motion control therefore has more than a comfort advantage. It may become the vessel that technicians request and the vessel that charterers are more willing to hire.

Retrofitting an existing vessel

One of the main advantages of a gyro is that the equipment is contained inside the hull. There are no stabilising fins projecting externally, meaning the installation does not normally require the type of major hull alteration associated with a conventional fin system.

Jiwu states that its units can be added to existing vessels using a structural foundation on the vessel. The installation requires sufficient structural strength to transmit the stabilising torque, along with electrical power and a cooling arrangement. Jiwu does advise that the unit is normally positioned near the centre of the vessel to avoid unnecessarily affecting trim and balance.

However, this does not mean a gyro can simply be placed in any available space.

A proper retrofit assessment should consider:

- The vessel's displacement, beam, GM and natural roll period.
- Available electrical generation capacity.
- Structural loads through the foundation.
- Added weight and its vertical position.
- Access for installation and future maintenance.
- Noise, heat and cooling arrangements within the machinery space
- Flag, class and stability approval requirements.

It is also important to remember that **200GT is a regulatory measurement of internal volume, not the figure used to size the gyro**. Selection should be based mainly on displacement and the vessel's actual roll characteristics. Jiwu's own configuration process requests information including displacement, beam, GM, natural roll period, expected wave conditions and existing roll angle.

Multiple smaller units may also be an option where one large unit cannot be accommodated. Jiwu offers a range of JW-series units and states that several units can be configured together for larger vessels. Its published sea-trial examples include pilot boats, patrol boats and a 150-tonne support catamaran, although operators should request complete trial data and independently verify the expected performance before committing to an installation.

Stability is becoming a commercial feature

Workboat specifications commonly focus on speed, fuel consumption, deck capacity and bollard pull. Passenger and crew motion is often considered afterwards.

On CTVs, better roll control can mean technicians arriving offshore in a better condition to work. On Multicats, it can provide a steadier platform during low-speed operations and deck work, increasing safety. In both cases, it can reduce fatigue and contribute to safer movement around the vessel.

Gyroscopic stabilisation should not be sold as something that makes a vessel invulnerable to poor weather. It does not increase statutory stability, and it does not remove the need to work within approved operating limits.

It should instead be viewed as an additional engineering control: one which can improve comfort, reduce exposure to roll and make an existing workboat safer and more desirable to clients.

For older CTVs and Multicats competing against newer vessels, that could make a meaningful difference.