

# FLOW-ALIGNED RUDDERS



## LEVERAGING THE OPPORTUNITIES THAT TECHNOLOGY BRINGS

When considered as part of a fully optimised propulsion package, well-designed rudders can have a notable impact on fuel consumption and maximising boat speed, as well as directly reducing noise, vibration and cavitation levels.

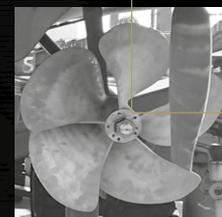
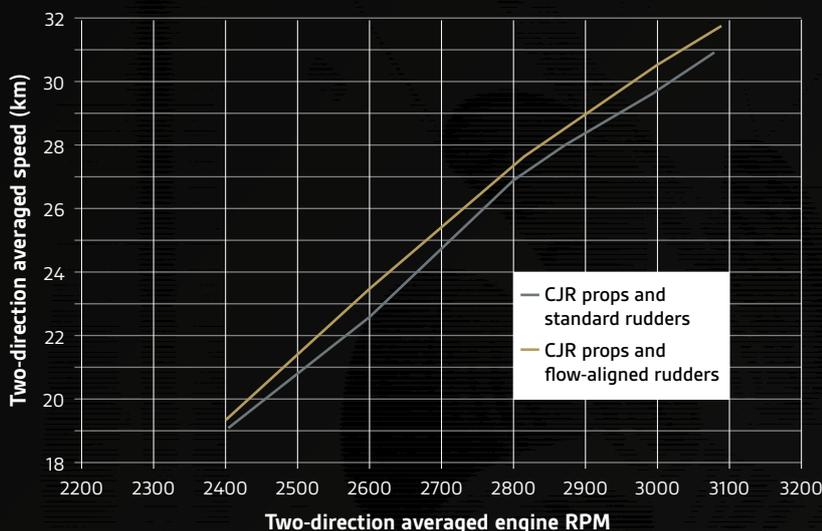
Although traditionally motor yacht rudders are straight, they operate in an area of uneven water flow directly behind the propellers. As a result, a suction pressure peak can form at or near the leading edge of the rudder. Not only does this pressure negatively impact vessel performance and fuel consumption but it is also where cavitation is more likely to occur.

Through another unique CJR innovation, we're able to accurately simulate these forces for any vessel and can predict how they would impact the propulsion system's performance. With this comprehensive understanding, we're able to design a rudder with a unique, optimised profile – one which is perfectly aligned with the propeller flow angles along the entire span. This 'twisted' design reduces the suction pressure peaks and, in turn, minimises cavitation and related vibration; it also reduces vessel resistance and increases overall vessel performance.

## KEY FEATURES

- Up to 2kts increase in speed compared to top straight rudders.
- Optimised profile of each rudder, not an off-the-shelf approach.
- Significantly improved propulsive efficiency, with no impact on vessel manoeuvrability or steering performance.
- Reduced rotational losses and minimised drag provide the potential to increase top speed by up to two knots.
- Power savings provide the opportunity to reduce engine load by up to 3% at the same RPM, in turn significantly reducing fuel burn.
- Lower suction pressure peaks to reduce cavitation, noise and vibration, improving both ride comfort and rudder lifespan.
- The potential to downsize the steering rams to save weight and cost.
- Manufactured to any classification society rules, including all IACS societies.

## 50' SPORTS CRUISER GAIN IN BOAT SPEED WITH FLOW-ALIGNED RUDDERS COMPARED TO STANDARD 'STRAIGHT' RUDDERS



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