

## **Shallow Draft Thrusters for DP Applications**

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### **Abstract**

HRP has made a multitude of studies to try and meet today's demands for D.P. thrusters, both azimuthing and fixed (tunnel-type) thrusters.

With the increased demand for D.P. vessels, not only new-building but also often existing ships are being converted to D.P. ships and especially on the latter cases, availability of space could present a real limitation to powering the ship to meet the requirements.

Based on the commercially standard range of HRP thrusters, HRP has performed both in-house and external studies, including those with MARIN Wageningen, to develop possibilities to decrease the overall sizes of thrusters without breaking through practical limits to guarantee the performance.

The thruster models that HRP highlights and focuses onto are especially:

- Retractable azimuthing thrusters using the MARIN developed and tank-tested High-Power Density propellers;
- Shallow Draft azimuthing thrusters, HRP's latest invention on the subject of a fully 360 degrees steerable thruster with an inboard propeller that eliminates grounding dangers altogether and dramatically limits the consumption of inboard space;
- Other applications and future plans on of where thrusters will be In 10 years from now.

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