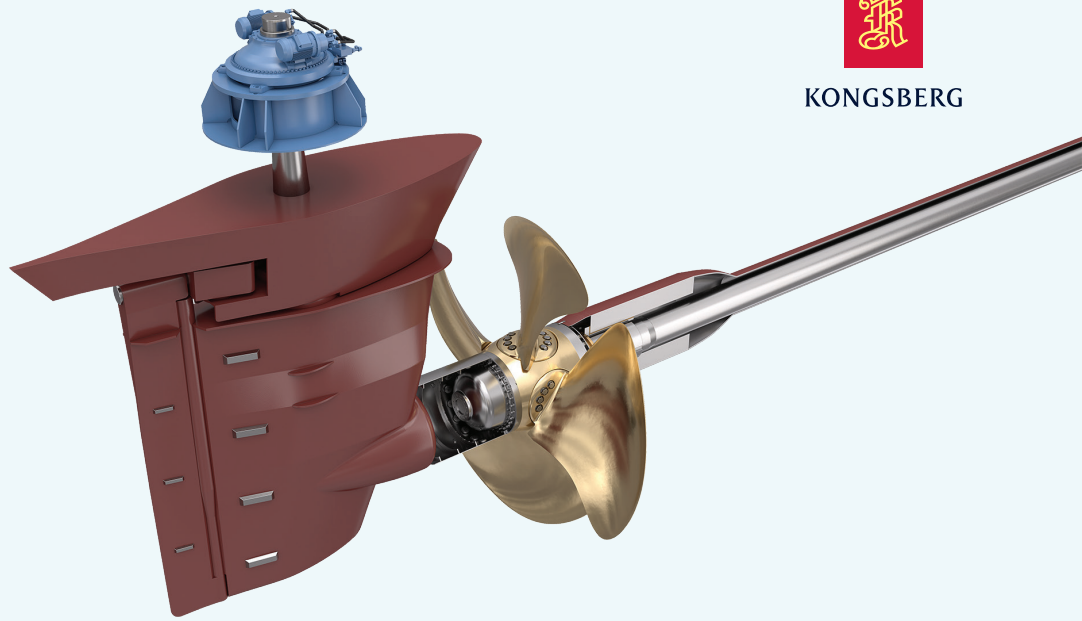


# PROMAS



KONGSBERG



## PROPELLER MANOEUVRING SYSTEMS

### PROMAS

#### SUPERIOR ENERGY EFFICIENCY AND FUEL-SAVING CAPABILITIES

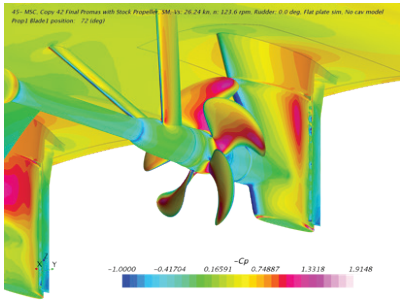
The latest development of PROMAS is a significant product improvement. Design improvements, test and operational experience has made a significant step change in efficiency gain when comparing to similar looking systems. It has shown the importance of looking at all components together to gain maximum improvements resulting in several percents. The design upgrades involve a simplified installation process, Installing PROMAS will make it easier to comply with current and coming stricter regulations regarding emissions.

#### PROMAS system – Superior advantages

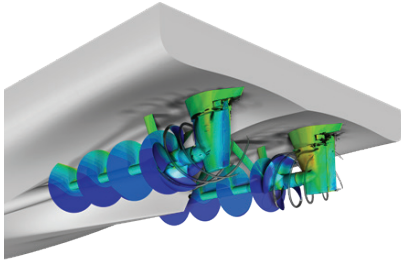
PROMAS is an integration of the propeller, hub cap, rudder bulb and the rudder into a hydrodynamically efficient system. The hubcap is fitted to the propeller's hub and leads the water flow onto a bulb that forms part of the spade rudder. The rudder has a twisted leading edge that is optimised for the flow from the propeller. Furthermore, this converts into an additional forward thrust of the swirling energy in the slipstream that is usually lost. The bulb also optimises the hydrodynamic properties by reducing the creation of vortices and hub drag. This makes the system more efficient in propulsion thrust and consumes less energy.

#### ADVANTAGES

- Reduced fuel consumption
- Short payback period
- Environmentally friendly solution
- Customised to the operational profile
- Can be equipped with nozzle for high demanding thrust
- Robust design
- Designed to simplify the installation procedure
- Available extensive reference lists
- 24/7 global service and support



We predict the performance with the latest technology



Robust and customised solution

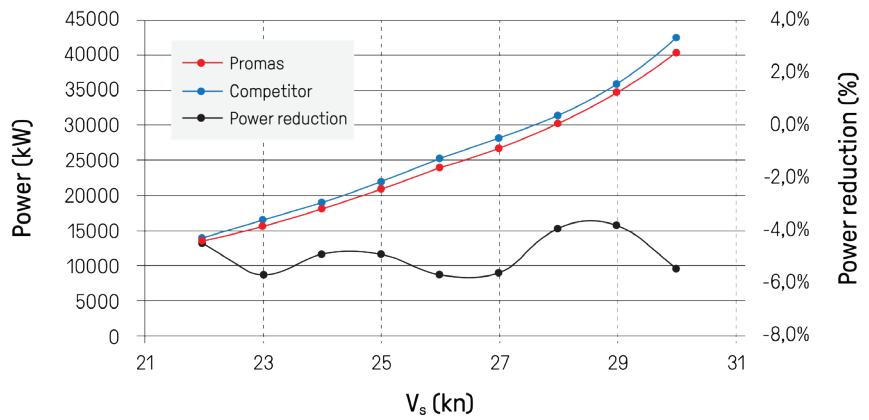


Available with four- or five-bladed propellers to fit the operational vessel profile. The rudder is twisted to reduce the risk of cavitation and increase propulsive efficiency and manoeuvrability. It is also possible to equip the rudder with a robust extension flap for improved manoeuvrability.

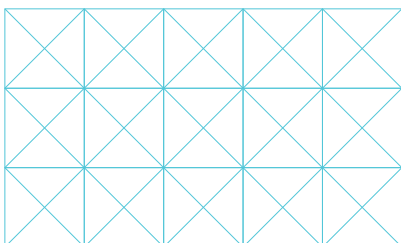
The results of the PROMAS system are increased propulsive efficiency of about 6-8% depending on the application, reducing fuel consumption and emissions. With 6-8% less in fuel per year results in considerable savings in expenses. This means that there is an opportunity to save high fuel costs, increase the vessel's operational range, simplify installation and easier to comply with current and future regulations. Additionally, PROMAS can be equipped with a nozzle for vessels that need enhanced effects in thrust.

### High speed RoPax vessel

Data from Self-Propulsion test



"Typical result from model test of Kongsberg PROMAS system compared to a competitor, 4-6% fuel savings over the tested speed range."



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