



MAN ENERGY SOLUTIONS

Propulsion power and propeller & aft ship systems.

MAN Energy Solutions
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For many decades the MAN Energy Solutions organisation has designed, manufactured, supplied and serviced complete propulsion packages, main engines, reduction gearboxes, propellers and propulsion control systems for the navies and coastguards worldwide.

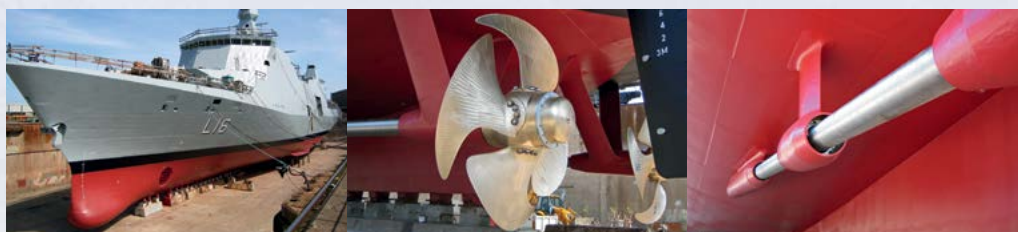
The various ship applications span from small Coastal Cutters, Supply and Inspection Vessels

– to large and powerful Offshore Patrol Vessels, Command Support Vessels and Frigates.

For recent Royal Danish Navy vessels, MAN Energy Solutions has supplied key propulsion equipment such as: MAN Alpha Propellers for 3 multi-role Frigates (IVER HUITFELDT class), MAN Alpha Propellers for 2 Frigates/Combat Support Ships (ABSALON class) and

MAN main engines, Renk gearbox and an MAN Alpha Propeller for 3 Offshore Patrol Vessels (KNUD RASMUSSEN class).

Continued on back...



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Continued from front page...

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Product examples for navy applications:

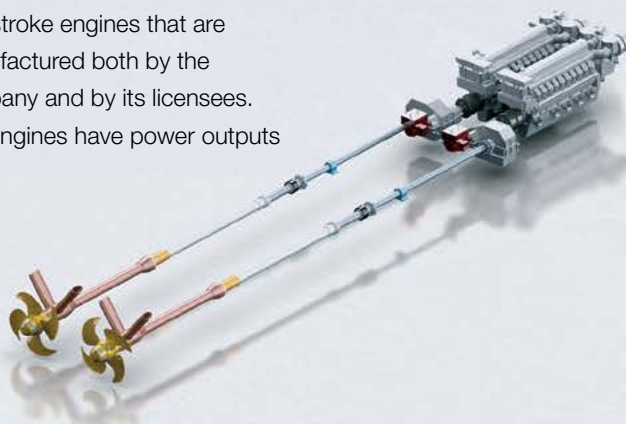
- CP Propellers for shaft power up to the 50 MW range – with 4 or 5-bladed designs
- Propeller blades of conventional high-skew profiles or high-efficiency Kappel 2.0 tip fin designs
- Propeller blades of conventional high-skew profiles or high-efficiency Kappel tip fin designs
- Various water lubricated tail shafts and stern tube systems
- High- and Medium-speed engines of the 175G and V28/33D range - with outputs up to 10,000 kW per engine

Special propeller expertise:

- Shock excitations and military standards
- Propeller hydro acoustics
- Underwater radiated noise
- Logistic support packages

MAN Energy Solutions is the world's leading provider of large-bore diesel engines and turbomachinery for marine and stationary applications. It designs two-stroke and four-stroke engines that are manufactured both by the company and by its licensees. The engines have power outputs

ranging from 450 kW to 87 MW. The product range is rounded off by gas and dual-fuel engines, turbochargers, CP propellers and FP propellers including complete marine propulsion systems. Customers receive worldwide after-sales services marketed under the MAN PrimeServ brand. The company employs around 14,000 persons at more than 120 international sites.



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