### **MAN Energy Solutions**

Future in the making



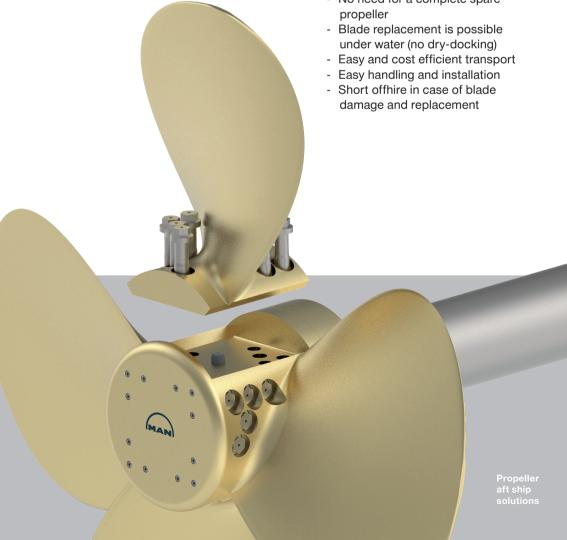
# MAN Alpha **FPP**

### Fixed pitch propeller with replaceable blades

New built-up propellers: As part of our continuous development and constant strive for improving designs, handling and performance - a next generation FPP with replaceable propeller blades is launched.

### Benefits at a glance

- High efficiency and low noise
- Robust inherent pyramidal design-strength principle
- Spare propeller blades can be handled as spare parts
- No need for a complete spare propeller



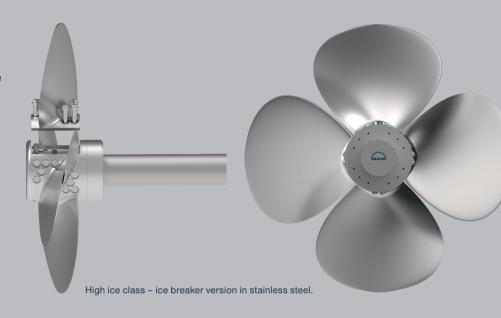
## **MAN Alpha FPP**

### Fixed pitch propeller with replaceable blades

### Tailored, compact and reliable

The propeller and hub are tailor-made for each specific propulsion plant in order to minimize the hub diameter, the length and the weight.

Mechanically, the propeller is designed by use of the pyramidal strength principle, meaning that blade foot, blade bolt connection, hub and propeller shaft connection are stronger than the blade itself – making the propeller very robust and very reliable for withstanding possible extreme impacts in rugged operation.



### Characteristics of the propellers

### High performance and savings

Superior propulsive efficiency, due to compact hub design and highly efficient hydrodynamically optimized propeller blades. Blade manufacturing accuracy is higher than for monoblock FPPs, and the thrust performance equals current high-efficient FPPs – and results in minimal fuel consumption and reduced exhaust gas emissions.

### Hub design - small and sleek

Hub and blade designs with small hub/propeller diameter ratio reduce weight, intertia, and raise efficiency. Streamlined design with blade screws burried and protected in the blade foot – and no waterflow distortion e.g. in high-speed applications.

2- to 7-bladed versions are available and the rear end propeller hub cover can be combined with EcoCap (propeller hub cap fins) or alternatively with fairing cone for EcoBulb (rudder bulb) installations.

### Flanged hub/shaft connection

The bolted principle with a fast and easy hydraulic tensioning procedure secures safe handling and a continued robust and reliable hub/shaft junction.

### Flexibility and reduced downtime

The propeller is ideal, in case of risks for replacement demanding situations e.g. for operation in ice-packed areas, waters with increased risk of contact with bed rock, rubbel, debris or wires – and vessels where long dry docking downtime is critical in case of blade damage.

#### Ideal for highest ice classes

The blades, bolts, hub and shafting – rubustly designed to the pyramid strenght principle – are matching extreme class requirements up to the highest polar ice classes. Standard blade/hub materials are NiAl-Bronze and stainless steel.



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