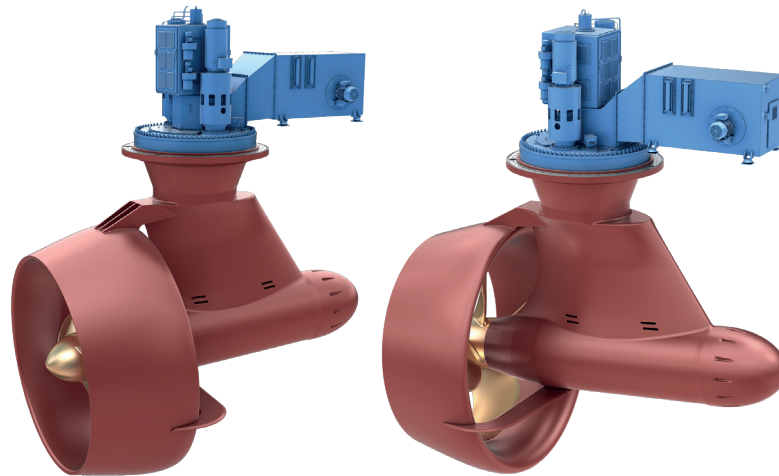


ELEGANCE DUCTED POD



KONGSBERG



KONGSBERG PROPULSION SYSTEMS

Elegance ducted pod

With permanent magnet motor technology for optimal system efficiency and compact design. High efficiency nozzle for high bollard pull and free running performance. Optional underwater mounting, for wide range of applications.

KONGSBERG ducted ELEGance pods provide propulsion units for precise and efficient vessel operation. It has a built in permanent magnet electric motor for optimal efficiency over a large speed range, combined with an excellent hydrodynamic design developed by the well renowned Kongsberg Maritime Hydrodynamic Research Centre. This pushing, ducted type has been fitted with the KONGSBERG high performance Inno duct nozzle.

The ELEGance propulsion system combining pods and KONGSBERG frequency drives and control system, will provide exact and effective propulsion and manoeuvring for a broad range of vessel types.

The ELEGance pod units builds on KONGSBERG long tradition and experience from pods and mechanical thrusters that goes decades back. This has been refined by implementing the latest permanent magnet motor technology into the units.

The pods has been shaped to hydrodynamic excellence through extensive CFD analysis and model scale testing. With a well-proven and durable electric steering arrangement, a clean and exact steering of the units with minimal energy use can be provided.

A new integrated hull fitting interface allows a compact head-box to be used, minimising the hull drag and improving hull efficiency. The design provides means for replacement of the complete units, including the steering gear, for ease of maintenance. Alternatively, seals and bearings can be replaced in situ when in dry-dock, even without removing the complete pod.

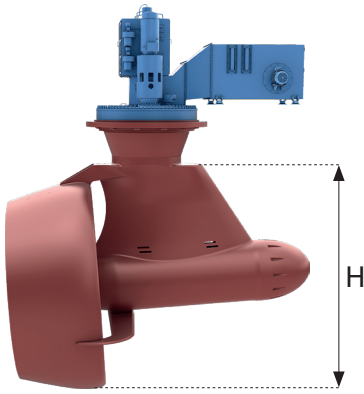
For maximal availability, the complete units are designed for underwater mounting, based on the long experience of underwater mounting of azimuthing propulsors and larger pods.

For the maintainability of the units, much focus has been put into safe operation and long service intervals. To achieve this, the ELEGance pods are designed with several layers of redundancy on critical and hard-to-reach components, while the service points are positioned for easy access.

The ELEGance pod system is also available with a pulling type with an open propeller, for applications where high efficiency at higher speed is demanded. For specification of the pulling, open propeller version, see separate fact sheet

OWNER/OPERATOR BENEFITS

- High cargo capacity due to small inboard footprint
- High propulsion system efficiency allows:
 - Reduced total installed power generation requirements
 - Reduced total fuel consumption and exhaust emissions
- Low noise and vibration levels
- Low oil content and VGP compliant multi barrier seal system
 - Very low risk for environmental impact
- High manoeuvrability

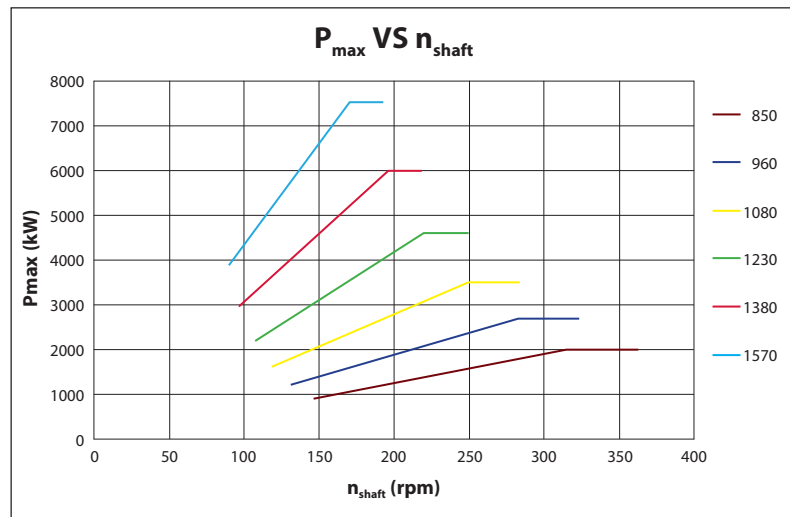


Elegance benefits

- A variety of electric system and drive alternatives to provide an optimal solution for each application
- Permanent magnet motor technology for optimal electric efficiency and compact design
- Combined cooling by air and surrounding sea water provides high efficiency and compact air cooling cubicle
- Optimised drive/motor and hydrodynamic design for excellent overall efficiency
- Adjustable design to provide optimal adaption to hull for each vessel
- Innoduct™ nozzle design for high bollard pull and free running efficiency
- VGP compliant Anti-Pollution Seal System to ensure environmental safe operation
- Hydrodynamic Research Centre to support customer in hull/pod optimisation
- Easy access of all service points and long service intervals of main components
- Safe and easy fitting of units to hull without heavy lifting equipment
- Underwater mounting and maintenance feasibility
- Strong operational support. Both for system monitoring and maintenance

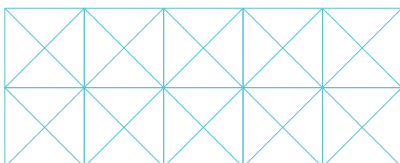
SHIPYARD AND CONSTRUCTION BENEFITS USING PODS

- Flexible machinery arrangement
- Modularised design
- Simplified vessel machinery installation
- Simplified hull form and structure
- Reduced installation time and cost
- Fewer components
- Reduced shipyard/sub-supplier co-ordination



SIZE	850	960	1080	1230	1380*	1570*
Power, BP [kW]	1600 2000	2150 2700	2800 3500	3700 4600	4900 6000	6300 7500
Propeller diameter [m]	2.4	2.8	3.2	3.6	4.0	4.5
Shaft speed, BP [rpm]	255 315	225 285	200 250	175 220	160 194	145 170
H [mm]	3250	3750	4300	4850	5400	5950
BP [tonnes]	32 37	44 50	57 65	74 84	96 108	123 136
Approx. weight [tonnes]	29	37	50	65	85	110

*Dual Winding motor



Kongsberg Maritime
P.O.Box 483, NO-3601
Kongsberg, Norway

Switchboard: +47 815 73 700
Global support 24/7: +47 33 03 24 07
E-mail sales: km.sales@kongsberg.com
E-mail support: km.support@kongsberg.com