PROPULSION DRIVE

KONGSBERG

ELECTRICAL POWER SYSTEMS

Active Front End drive

KONGSBERG Maritime water-cooled frequency converters are specially designed for marine installations where special demands regarding ambient conditions is required, as well as high-power density. Kongsberg Maritime water-cooled frequency converters are based on the “active front end” technology to avoid harmonic distortion, and can transfer power in both directions.

Our robust, integrated electric propulsion system solutions can be optimised for different operational modes on a wide range of vessels, saving fuel and reducing emissions. Matching the right system to the vessel and its operating profile is the key to minimising fuel consumption and emissions.

A large number of vessels have operational profiles that can be split into a number of modes, where the power required is significantly different. The challenge for the designer is maximising efficiency in each mode, so that fuel consumption and emissions can be minimised.

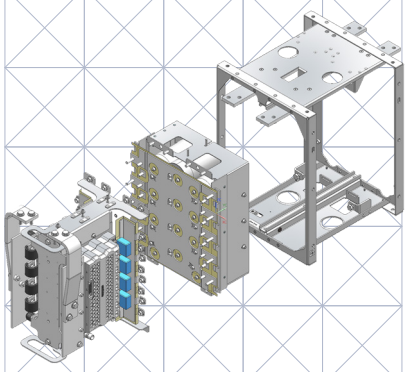
KONGSBERG Maritime electric propulsion systems are transformer-less with variable frequency motors on a fixed frequency network. This means they are lighter and take up less space.

BENEFITS

- No need for phase shift transformers and will therefore save space, weight and installation costs
- Low harmonic distortion
- 4 quadrant power flows with adjustable limits for motoring and generating gives short ramp times in both directions
- User friendly with graphical HMI interface and alarm history recording and data loggers.

Functions

- Fieldbus interface
- Anti-spin/adaptive power limit
- Rpm, torque or power control of motor
- Open loop/closed loop easy change-over
- Several load reductions/control input options
- Power factor correction or constant power factor
- Load control and load reduction integration option
- S-ramps, programmable ramps and constant power ramps options
- Motor control for induction motor, synchronous motor and permanent magnet motor
- Redundant system both on AFE and motoring, possible to operate with reduced output
- Easy commissioning, I/O testing and standardized parameter settings, without advanced motor tuning



SAFETY AND SERVICABILITY

The cabinet front has no air grills or other openings. The design minimizes maintenance and improves safety. All components are available from the cabinet front and easy service and replacement of service parts is obtained by an optimised cabinet design.

The design of the power stacks allows safe and easy replacement which can be handled by one person without requiring any special aid. The chassies remain fixed in the cabinet while the phase cells can be removed individually as one unit. All bolts are accessible from the front side and a sliding mechanism facilitates easy removal.

Reliability

The drives use internationally recognized world-class brands for electrical components, which ensures stable quality and availability throughout the lifetime of the installation. Our marine drives are carefully assembled, inspected and tested to ensure customer satisfaction.

Support

Drives integrated with KONGSBERG K-Chief IAS have increased options for remote assistance.

KONGSBERG Remote Services is a tool for Kongsberg certified engineers worldwide to connect to an installation upon customer request, providing direct remote diagnostics and support via secure and encrypted channels. Our Global Customer Support organization is available 24/7 to provide prompt responses, technical expertise and assistance worldwide.

TECHNICAL DATA

Rating

Input voltage:	690 V
Input frequency:	47 - 63 Hz
Rated output current:	1160 A
Rated output power:	0 - 0 kW
Output voltage:	0 - 690 V
Output frequency min/max:	0 - 60 Hz

Cooling system

Cooling type:	Water (max. 40% glycol)
Water inlet temp (ship side):	5-38°C
Heat loss to environment at rated load:	1.3 kW
Heat loss to water at rated load:	37.4 kW
Pressure drop heat exchanger:	0.9 bar
Cooling water flow rate (at max 5 bar - ship side):	165 l/min

Environmental Conditions

Humidity:	max. 95%, no drip water, no condensation
Air quality:	No corrosive gases
Mechanical particles:	No conductive dust allowed
Ambient temp.:	Min. 0°C (No Frost), Max. 45°C

Construction

Colour:	RAL7035
Vibration dampers:	Yes
Drive weight:	2389 kg
Drive dimensions (HxWxD)[1]:	2138x2472x791 (mm)
Cooling rack dimensions (HxWxD)[1]:	2177x768x822 (mm)
Minimum clearance required:	800/20/20/200/20 (mm)
Power connection entry:	Bottom
Auxiliary cables entry:	Bottom
Cooling water entry:	Right side
Enclosure:	IP 54
EMS emission:	According to IEC 61800-3
Built according to:	Class 3

[1] Dimensions include vibration dampers. Cooling rack dimensions are in addition to drive dimensions and are, as a standard, placed at the right hand side of the drive cabinet. This includes pump, heat exchanger, three-way valves etc. for the internal cooling interface to the drive.

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