

ZF Marine Increases Focus on Total Propulsion Solutions for Tugs, OSVs and Workboats

ZF Marine is part of the recently formed Industrial Division of the worldwide ZF Group and is a leading global provider of complete propulsion systems to the marine industry. Managed from its headquarters in Padova, Italy, ZF Marine has 14 plants located in Italy, Germany, The Netherlands, United Arabian Emirates, Turkey, USA, Brazil, China, Indonesia, Singapore, and Taiwan with 1,470 employees and sales of 247 million Euros (2010).

The company supplies propulsion systems and components for all types of vessels - motor yachts, patrol and coastguard craft, high-speed ferries, tugs, OSVs, workboats and other commercial vessels - in a power range from 10 to 14,000 kW. The ZF product portfolio includes a comprehensive range of transmissions (reversing, non-reversing and hybrid), propellers (controllable and fixed pitch) together with associated shafts, seals and bearings, POD-drive systems, steering systems and CANbus-compatible electronic control systems, azimuth thrusters, tunnel thrusters, bow thrusters and sail drives.

In addition, as befits a true propulsion systems specialist and 'one stop shop' for worldwide customers that include shipyards, design offices, engine manufacturers and vessel owners, ZF Marine has to maintain a deep in-house knowledge of the many relevant and critical marine engineering developments. Just some of these include hydrodynamics, propeller design, propeller foundry, system engineering, electronics design, transmission design and production, steerable thruster design and production.

Since 2009 the company's Commercial Craft business has been expanding in various ways. On the product side this has seen the frequent addition of new transmissions, and also the complete renewal of its range of controllable pitch propellers.

Following its acquisition and integration of HRP- Krimpen last year, ZFMarine can also address previously untapped markets by supplying all types of commercial craft requiring high maneuverability, from tugs and offshore supply vessels to river-going ferries and all others requiring tunnel thrusters. Aside from tunnel thrusters there are new ranges of steerable thruster systems available including well- and deck-mounted azimuth, bow, shallow draught and retractable models.

At the same time as increasing its propulsion solutions capability, the company has been expanding its network of sales and service offices worldwide in order to cater to its customers' needs for efficient propulsion systems for all types of vessel. A recently established network of Commercial Craft Competence Centers and Sales & Service Hubs now supports its 500 or more local sales offices. This enables ZF Marine to provide crucial local customer service in a timely and efficient manner.

ZF Marine's ranges of total propulsion solutions for tugs, OSVs and workboats are growing all the time. Here are some of the most recent developments:

ZF CP KS-Series Controllable Pitch Propellers

The KS series of Controllable Pitch Propellers (CPP) combine propulsion efficiency and ease of installation with state-of-the art technology. The new series are compact, feature a reduced hub/prop diameter ratio for better hydrodynamic efficiency and are designed for easy maintenance.

The hub has a hydro-dynamically improved shape, leading to better fuel efficiency of the vessel, compared to traditional hub designs on the market. Assembly and servicing is simplified, as access to internal components is possible from the back of the hub.

All controllable pitch propellers in the ZF CP KS Series have double sealing between hub and the propeller base, with improved sealing efficiency.

The range of available propeller hubs covers 20 models allowing matching of propellers precisely to any customized propulsion solutions.

The ZF CP KS controllable pitch propellers are available up to 7,75 m diameter with hub diameter of 1,55 m, with custom designed propeller blades to maximize efficiency and can be matched to engines from 350 kW to 16.000 kW.

Azimuth Thrusters and Tunnel Thrusters

The ZF AT azimuth thrusters are available for a power range from 200 up to 2700 kW in a variety of configurations, such as well mounted, retractable, deck mounted and counter rotating – both as Z-drive or L-drive.

The ZF TT tunnel thrusters are available for a power range from 100 up to 2000 kW, either as Z-drive or L-Drive units.

These units can be matched either to medium-speed diesel engines or to electric engines.

The propellers from ZF matched to these units can be fixed or controllable pitch propellers.

The ZF SDT series of shallow draught thrusters are a perfect match for special applications, where the depth of the water is limited and traditional propulsion systems can't be employed.

These thrusters can be matched to medium speed engines or electric engines in a power range from 100 up to 850 kW and are available as Z-drive or L-drive.

ZF W11000 transmission

The ZF W11000 transmission family, available in reduction (NR) or reverse-reduction versions, is designed for continuous duty, commercial application with engine powers up to 2840 kW (3800 hp) at 1600 rpm and a ratio range from approx. 2.0 to 7.5 maximum input speed can reach up to 1800 rpm.

Several PTO (Power Take Off) and PTI (Power Take In) options are available as well as a "get home" device and either manual or automatic trolling for slow-speed operation. An internal or external shaft break option can also be fitted.

ZF W17000 transmission

For the long-established ZF W17000 transmission range, a primary top-mounted PTO (Power Take Off) is now available for transmitting powers of 1,152 kW (live), or alternatively 972 kW (clutchable). There is a secondary PTO driven by the intermediate shaft (live or clutchable) for powers up to 972 kW. The latter has been developed for use also as a PTI (Power Take In) for use with auxiliary propulsion electric motor (as an emergency "Get-Home" device).

Alternatively, it can be used for power transmission to the CPP actuating pump. Finally, to complete the PTO family for the ZF W17000, a "PTO 1" is available as a live PTO running at engine speed, with a maximum capacity of 459 kW.

A integrated shaft brake helps to make the vessel more maneuverable, reducing the response time during ahead/astern movements.

ZF's W17000 gearbox series includes numerous models, for example, ZF W17100 and ZF W17200, offering a higher ratio range (up to 7.2:1) compared to the base model.

ZF 9300 PTI – “hybrid ready” transmission

The “hybrid-ready” ZF 9300 PTI is part of ZF Marine’s new 9000 transmission series which is available in several different configurations including parallel offset (vertical and horizontal), down-angle and vee-drive. Through the unique PTI configuration and the use of standard components it is possible to create highly efficient hybrid propulsion solutions, allowing the highest flexibility when customizing an installation.

This product family is an important milestone towards environmentally-friendly marine propulsion systems whilst allowing significant fuel savings. It is suitable for installation in all types of tugs, OSVs and workboats powered by engines up to 3700 kW (5000 hp) at 2100 rpm. Depending on the application, these are available with light alloy or cast iron housings. Various accessories are offered, including PTO, trolling valves and trailing pumps.

The new “spur gear” option allows for increased design flexibility and an enhanced ratio range, maintaining an extremely competitive compact design. Generally speaking the ZF 9300 PTI transmissions allow ratios in the range from 2.978 to 18.825 when driven through the PTI. Configuration can be with or without spur gear.

The basic transmissions allow for ratios from 3.034 to 5.185, driven through medium speed diesel engines.