

ENGINE ROOM & PROPULSION

Magnet technology switch to marine sector

Finnish technology supplier The Switch is targeting 200 per cent growth in the marine segment over the next five years building on the success of recent orders, its acquisition of Wärtsilä Drives and the financial muscle of Japanese parent company Yaskawa Electric Corporation.

The Switch believes its permanent magnet (PM) and frequency converter technology can have the same transformational effect on marine as they have had in wind, where the company is a preferred industry supplier providing PM generators and full-power converters to wind turbines worldwide.

Its largest low voltage (690V) PM generators installed have a capacity of 8.6MW out of a total installed capacity in excess of 13GW.

PM machines, in conjunction with frequency converters, convert mechanical energy into electric power that can then be utilised for onboard systems and equipment.

The Switch's PM shaft generators can be used to create cost-effective electricity and save fuel, while vessels utilising electric propulsion can optimise fuel consumption and access predictable and flexible power.

In addition, The Switch's frequency

converters deliver reliable and accurate speed control, making them ideal for tugs and other vessels operating in varying environments and speed ranges, and perfectly suited to the demands of dynamic positioning systems.

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"They provide accessible, affordable and

easily integrated energy for the demands of all future systems while, crucially, lowering fuel consumption and emissions.

"This means owners can operate greener ships and comply with tightening environmental regulations."

Since entering the marine sector in 2013, The Switch has won more than 20 orders for its PM shaft generator technology, with first deliveries scheduled to take place later this year.

In July 2014, Yaskawa – a €3.3bn turnover business – became the sole owner of The Switch which, in turn, paved the way for the company's acquisition of Wärtsilä Drives in November last year.

Koli said: "That move was crucial. It gives us competency in specialised megawatt-class power drives alongside a test centre and manufacturing facilities in Stord, Norway.

"It means we are now a specialised provider of drive trains that are engineered specifically for the marine industry.

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Range of turbochargers injects increased performance

Injection technology specialist and Rolls-Royce subsidiary L'Orange has introduced a new range of high-performance turbochargers for large diesel engines as well as gas and dual-fuel engines used in the marine and offshore sectors.

The German company says its new ZR turbochargers offer more power, reduced fuel consumption and fewer emissions. They are designed for engines from 500kW to 10,000kW by differing the size of the compressors, turbine wheels, pressure ratio and volume flows.

L'Orange's ZR range was developed in collaboration with fellow Rolls-Royce Power Systems subsidiary MTU Friedrichshafen and the company says that by developing turbochargers that work as part of a

harmonised system, the needs of a wide variety of customers can be met.

It also believes the new products fill a significant gap in the market for operators needing high performance upgrades for large diesel engines.

Olav Altmann, L'Orange head of sales, said: "High performance, low consumption, reduced emissions and good interaction between all units even under highly transient engine operation conditions – the requirements placed on engines are almost identical everywhere and they are increasing steadily. A single component cannot entirely address them, whereas harmonised systems can.

"Thanks to the turbocharger's diverse product family, we can meet different customers' needs without compromising

on performance or efficiency. Since the turbochargers and other L'Orange components are perfectly matched, they can be superbly integrated into the engine's overall package."

Adding turbochargers increases the engine power and the efficiency of the combustion process. With the drive of the compressor coming from the engine's own exhaust gas, the energy of the exhaust gas is used and the necessary power for the charge exchange coming from the engine is reduced.

This effect increases the efficiency of the engine further on. To cope with conditions at sea – as well as at altitudes of 4,000m and in low and extremely high external temperatures – the ZR turbochargers have sealing and bearing points that are thermally isolated and can be water-cooled if needed.

L'Orange has its headquarters in Stuttgart, with other manufacturing operations in Germany as well as plants in the US and China. The company employs more than 1,000 people worldwide.

Bronze age propeller

Finnish company TEVO has developed a bronze propeller for 1A Super class vessels operating in Arctic conditions.

The three-year development project showed the bronze propeller was an efficient and cost-effective alternative for ships operating in ice compared to steel propellers.

Diesel dominance set to continue

The value of the global market for marine gen-sets is predicted to rise by 20 per cent between 2016 and 2021, driven by a growth in shipbuilding and more stringent controls on emissions.

Research firm MarketsandMarkets, headquartered in India, estimates that the sector will rise from US\$4.5bn in 2016 to US\$5.4bn by 2021, with the Asia-Pacific region accounting for much of the growth as the beleaguered shipbuilding industries

of China, Japan and South Korea start to recover.

While diesel fuel marine gen-sets will continue to dominate the market, they will lose market share to natural gas and alternative fuel versions mainly driven by new, lower targets on emissions. Despite that, diesel fuel gen-sets will remain popular, thanks to safe fuel storage and their longer engine lifespan and lower maintenance costs compared with other fuel types.