

THE PERFECT BLEND

By Patrik Wheeler

Tugboats, long the workhorses of the maritime industry, are set to become more efficient, cleaner and, indeed, electric, following the introduction of new state-of-the-art fuel-saving technology for hybrid applications

Rolls-Royce has two new tug thruster alternatives – Dual Input and Twin Input – that allow vessels to operate solely on electric motors, boost engine power, act as generators for hotel load or charge batteries while in medium-power operation.

The compact Dual Input includes two input flanges, side by side, where the electric motor is parallel with the main shaft line. The Twin Input incorporates two input flanges (through shaft), with one on the main engine side and the other located 180 degrees on the auxiliary.

Jouni Ruohonen, Manager,

Sales Support – Propulsion, Azimuth Thrusters, Rolls-Royce, says: “Essentially, Twin Input enables power from both sides of the thruster, while Dual Input is a side shaft input via the gearbox for limited spaces that provides freedom of choice for power take-in/out speed. Both solutions can be incorporated in the Rolls-Royce SAVE hybrid concept.

“The technology in the development of a range of battery and electric hybrid propulsion systems is at the heart of these new products.”

Baydelta’s new class of hybrid tug will be the first reference for the Twin Input solution. The 100ft Z-Drive

hybrid multi-purpose azimuth stern drive (ASD) tug will be set to sea early 2019 by Nichols Brothers Boat Builders.

At 90 short tonnes bollard pull, the vessel will feature the same ship assist and tanker escort capabilities of Baydelta’s existing Valor class harbour tugs, but with multiple operational modes. The vessels will also receive Rolls-Royce 424kW electric motors, shaft generators, power management control system and Twin Input US255 azimuth thrusters.

The arrangement provides electric power to two US255 azimuth thrusters with ducted fixed pitch propellers that can be rotated 360 degrees around the vertical axis. This arrangement optimises omni-directional thrust and manoeuvrability as well as providing improved crash stop capability.

Erik Larsen, Rolls-Royce, Vice President – Tug and Fish Americas, says: “Baydelta Maritime is a long-standing customer and this order is of particular significance because it marks our first hybrid system for a tug. The tug will provide improved fuel efficiency and emissions for Baydelta. It shows

Baydelta tugs operate in the misty San Francisco bay

the market that the Rolls-Royce portfolio extends way beyond our US-type azimuth thrusters – the propulsion system of choice for this segment.

“Our US255 azimuth thrusters are ideally suited to provide the manoeuvrability and bollard pull needed for operations in larger harbours, terminals and escort applications. One of the reasons for success is the product’s ability to provide bollard pull of 90 short tonnes-plus.”

Erik adds: “The key benefit of operating these thrusters in a hybrid configuration is that it provides significantly greater operational flexibility. Typically, a tug of this size needs a power output of 2,500kW per thruster. The hybrid arrangement allows operators to achieve the same required bollard pull from a combination of smaller engine



“Twin Input enables power from both sides of the thruster...Dual Input provides freedom of choice for power take-in/out speed”

Jouni Ruohonen

and electric motor, saving on fuel in the process.”

Our hybrid system allows for the vessel to operate using full diesel, or diesel-electric. They can still achieve a bollard pull of 90 short tonnes in combined diesel-electric mode while assisting the large container ships and tankers that operate in US West Coast ports.

While in transit or loitering, the vessels can then choose to

operate diesel-electric or full electric, achieving around 7-8 knots in electric-only mode.

The flexibility provided by these types of drive systems significantly reduces Baydelta’s fuel costs and emissions, while being supplied with the same power and vessel characteristics needed for their operations – taking big steps towards a sustainable and green future for tugs. ●

To find out more about our SAVE range of electric and hybrid propulsion systems, go to www.rolls-royce.com/electric-hybrid-propulsion

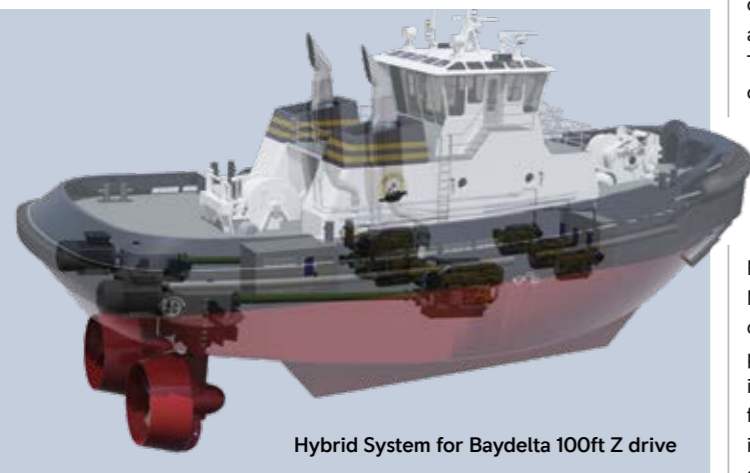
BAYDELTA TUG FACTS



100
length in feet



90
short tonnes bollard pull



Hybrid System for Baydelta 100ft Z drive