

Synthetic rope challenging traditional steel

Designer and manufacturer of engineered synthetic ropes, Cortland, has been working closely with tug and barge company Foss Maritime which operates in some of the harshest and environmentally sensitive waters known to towing

For certain applications, the use of synthetic lines, as an alternative to traditional steel design, is growing in popularity in the maritime industry.

While wire rope is still used on many vessels, particularly for planned ocean tows, the benefits of using synthetics have not only been well-documented, but are also put into practice every day by vessel crews in the harbour and for emergency situations.

Stuart Janke, vice-president of global sales at global ropes and accessories specialist, Cortland, said: "Vessel operators seek strength, durability and ease of handling from their lines. Modern tug operations are fast-paced and the workload is varied, so synthetics must stand up to the test. They must be designed to perform as equal to or better than steel in every application."

Cortland has been working with tug and barge operator Foss Maritime to supply its high performance synthetic Plasma[®] lines. These lines, which the company says are highly suited to tugboat operations, are extraordinarily strong, yet light enough to float, and easy enough for even a small crew to handle.

Founded in 1889, Foss is now the largest tug and towing company on the US West Coast. A clear message that has been indoctrinated throughout the company's long history is that 'you don't skimp on your rigging'.

Loren Skaggs, manager of marketing and communications at Foss, said: "Only the best



▲ Cortland's Plasma line being used on a tug alongside a vessel

equipment has gone into our largest tanker escorts in the fleet, **Lindsey Foss** and her sister ship, **Garth Foss**."

The 155ft (47m) tugs boast Cortland synthetic lines for escort duties. Armed with enhanced fire-fighting capabilities and two enormous diesel engines producing a total of 8,000hp, they work, patrol and respond to emergency situations from their base in North Puget Sound.

Unlike synthetic lines, a common problem with steel wire is weight. At times, personnel need the support of lifting gear to handle it safely and efficiently. There are also risks of recoil and maintenance requirements due to corrosion or fish hooks. Synthetics are not only safer, but they offer greater flexibility both in design and use, and can be moved faster with less manpower.

Cortland says that according to marine

◀ A Foss tug uses Cortland synthetic rope for an emergency tow in the North Pacific

towing companies, Plasma lines have resulted in significant time and cost savings. The lightweight nature of synthetics also has the potential to increase safety for workers. Cortland's customer feedback has shown that businesses can typically accomplish double or even triple the number of jobs with the same line versus wire ropes.

Vessels in the Pacific Northwest are regularly called on to perform highly challenging work in environmentally sensitive areas, often in busy shipping lanes and in very rough weather; therefore the right type of line is mission critical.

Skaggs said: "Container ships are not getting any smaller and we remain at the mercy of the seas, so equipment has to stand up to a range of factors, both natural and manmade. As always, health and safety is our highest priority."



“One of the most dangerous things that can happen on a tug is a snapped hawser. Our procurement teams must carefully select suppliers for lines as they are a critical piece of equipment for daily work and can be a life-saving tool in an emergency.”

Over the years, Foss has tried many different fibres, constructions and suppliers of lines to find the one that would work best for its demanding applications. The company is now increasingly using Plasma lines for its escort assist and project work. The lines are used to provide increased flexibility and manoeuvrability in shallow water applications.

Plasma lines are manufactured to a patented design using advanced HMPE fibre construction and, in testing, have better internal abrasion resistance when compared to alternative rope. This means they can withstand high levels of tension and stretch while maintaining their integrity. This design results in a firmer, rounder profile.

While Foss deploys synthetic lines across its US fleet and in locations globally where appropriate, Capt Igor Loch Jr, VP marine assurance/designated person ashore at Foss, explained that the company’s preferred methodology for planned ocean tows remains by chain bridles, surge chain and tow wire.

He said: “Among operators, this is known as a proven solution ideal for safety and security of tows in all weather conditions.”

Synthetic replacements are not currently

considered as a viable replacement for this application; however, Foss has found a niche use in emergency response towing. “Due to their lightweight design, floating characteristics and equal strength-to-size profile versus wire rope, synthetic lines are ideal tools to connect to a ship in heavy weather where passing a wire rope is impractical. The North Pacific has some of the busiest shipping lanes and ports in the world, but weather and sea conditions can be among the harshest,” said Capt Loch.

Previously deployed by Foss Offshore USA, Cortland’s synthetic lines have been praised by the company for their capabilities in storm conditions, where large, stricken vessels have been secured and safely returned to port using Plasma lines.

Janke added: “We are exceptionally proud of the workmanship that has contributed to a line designed and manufactured for worst-case scenarios. We have feedback from our customers that it has made the difference in potentially catastrophic circumstances, and performed when most needed. It is up to manufacturers to continually drive processes and material to improve, and prove to the maritime market that these lines can be called on time after time.

“A towline can be a crucial lifeline and, whether used inshore or at sea, we have seen what they can do. We’re currently working with shipping companies and vessel owners to understand how we can best serve them



▲ Plasma line being used on a tug

in the future.”

There is a way to go until synthetics are considered a replacement for steel wire in every application, but in combination with other equipment their performance should never be underestimated as a safer, less labour intensive and reliable alternative.

Cortland’s synthetic line products have been used in tug services and emergency tows for some of the largest vessels in the world, including container ships. The company is currently bolstering its product range with specialist synthetic lines, developing new hardware to supplement these and most importantly, maintaining dialogue with those in the field, creating the solutions required.



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