

# Folding a winch in three

Mark Jessup, of Seattle-based Markey Machinery's Sales & Marketing department, outlines to *IT&O* the thinking behind the company's latest winch – adapting proven technology to meet customer needs.

John Colle of Colle Towing, and Barry Snyder of Signet Maritime, have been loyal Markey customers for many years. So when they met with Markey's VP of Sales, Scott Kreis, they hoped he would be able to offer something new. The three had been in discussion regarding a new winch for vessels to be used for the Colle/Signet joint venture in support of Chevron's LNG facility in Pascagoula, Mississippi.

In previous meetings, the discussion had been about Markey's DESF-48-200, an electric hawser winch with a 200hp below-deck drive that had been used very successfully in a similar application in support of Cameron LNG. However, it had become clear that both owner and operator wanted a Markey system, but not at the expense of all the available space under the winch. Markey's offering had to be an 'all-above-deck' solution.

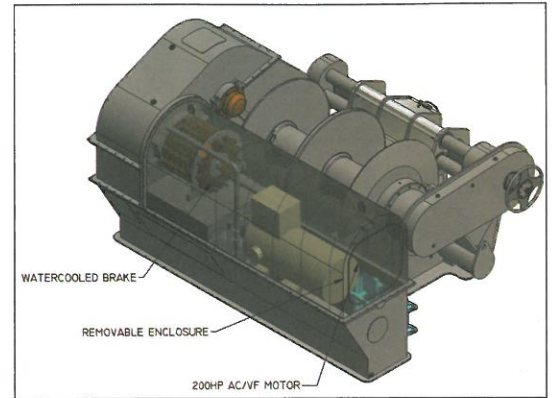
Kreis had come prepared. Producing drawings and renderings, he outlined a new version of a proven technology, the DESDF-48-200 electric class III hawser winch. The 200hp high-performance, three-speed electric hawser would have a divided drum, each drum having a capacity of 213m of 72mm diameter synthetic line. The winches would be rated for 202 tonnes (1984kN) of continuous line pull, and offer a maximum light-line speed of (282m/min). Along with automatic Render/Recover capabilities, the unit would have adjustable line tension and line scope (length) set-points, and a dynamic high-speed water-cooled slip-brake, with holding capacity to 308 tonnes. The constant tension control would allow for full hands-free operation, with active line-tension monitoring during all winch activities. Moreover, the whole unit would be above deck.

Markey was successful in securing the order, while Colle and Snyder were assured that they would get the equipment they desired. And, with the recent shipment of the first of two units, Markey has crossed yet another threshold in the development of asymmetric render/recover (ARR).

At the time that they received the go-ahead, Markey was already involved in developing an 'all-above-deck' version of its popular DESx-48 model. The versatility of below-deck systems, particularly when required to perform at peak levels for extended periods of time, coupled with the (relative) ease of assembly and minimal service needs of the modular design, certainly made it the preferred design within Markey. Customer wishes, however, drive the industry. Below-deck solutions work well for escort tugs that do not require extra crew/storage accommodation under the winch, but for longer service intervals for the crew, more space is needed. Key customers and naval architects had made it known that Markey needed a purely above-deck solution.

The Signet/Colle opportunity propelled that effort into high speed. None of the new performance parameters or horsepower requirements exceeded past design requirements. But all of Markey's previous Type III ARR systems had utilised drive packages that were below deck.

Merely folding the drive packages up above deck would not work, as the drive would block the operator's view of the drum and line. Somehow the drive had to be wrapped in on itself, without creating an oversized deck footprint. The ultimate solution proved to be a clever arrangement of drive stages throughout the winch, base, and



Above: An 'under-the-hood' view of the Markey DESDF-48-200 Type III ARR Winch System.

motor enclosure. The drive train had been folded into thirds. Since this unit was above deck in an LNG application, it was critical to replicate the under-deck environment for the electric motor and brake. Isolated within the winch, these key components live under a 'doghouse' that is environmentally sealed, using forced air from the ship's ventilation system to maintain dry conditions while preventing explosive gases from outside entering the unit. The overall footprint was driven more by the drum size than by drive requirements, a single drum unit could be substantially downsized.

Part of the repackaging included abandoning a final time-honoured tradition. Markey pneumatic controls have historically been assembled as individual components plumbed on a panel. The DESDF-48-200 space layout favoured a switch to compact modular pneumatics directly controlled by the system's on-board controller. The system also features other innovations, such as a dual-head fairlead, allowing dual spooling on both of the split drums.

Markey president Blaine Dempke expressed pleasure with the final result. "One of my first impressions was just how quiet the gear-train was. We expect that it will carry through during operation. It is a result of what we have learned from all of the previous versions."



First Class III electric hawser – DESS-52 installed on Crowley's Response, a 7,000hp Voith Tractor tug built a decade ago. This design was based on a one-piece suspended tray deck sill mounted



Markey project engineer Ben Jordan with the next generation of Hawser winch systems – DESDF-48-200 Type III ARR Winch System