

Powerful assistance

in more ways than one



HÄGGLUNDS

Damen Shipyards Group has worked with Bosch Rexroth and Hägglunds hydraulic drive solutions for a number of years. For example, Hägglunds solutions are used as winch drives for the tugboats built at the Damen Song Cam Shipyard in Vietnam. In TUG 2.1, the latest project with Bosch Rexroth, both the hydraulics and the commissioning were at the cutting edge.

For TUG 2.1, Bosch Rexroth provided a so-called turnkey solution, comprising not only the necessary drive components, but also the winch motor itself and the operating software. These were delivered to the Damen Song Cam Shipyard in Hai Phong, which builds powerful tugboats to assist large container ships with pilotage and mooring in ports. “You can imagine how this process generates an immense amount of force,” says Bosch Rexroth software engineer Stijn Vandenboer. “The peak load can be massive.”

Everything has to be just right

Damen Shipyards requires reliable towing winches that are driven by powerful motors. Senior designer André de Bie of Damen Shipyards is an expert in the field. “Tugboats need to get everything just right,” he explains. “We’re talking

about a boat that has to deliver 85 tons of bollard pull. To pull off a feat like that, you want the best of the best, but at a competitive price. Hägglunds motors meet both criteria. They’re beautifully compact and deliver a high amount of torque and power. They’re also mounted directly on the driven shaft, so there’s no need for gear transmission.”

Matthijs Simons, application engineer at Bosch Rexroth, seconds De Bie’s description. “Hägglunds radial piston motors are unique for several reasons. Thanks to their gearless drive, there’s less of a lag and the winch can be operated with minimal mechanical losses. These motors also offer greater protection against shock loads, and because there’s no gearbox, fewer parts are subject to wear and tear.”

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Dual function

“The dual function of these motors also plays a role,” De Bie shares. “They’re very well suited to both driving and braking the winches. You see, our tugboats also operate in swell and wave conditions. Imagine the ship you’re assisting is pushed upwards by a wave while your tugboat is being dragged down, or the other way round. The enormous force of that pull could break the mooring line, but the active hydraulic system ensures the line remains under tension. When the tension becomes too great, the winch unspools the line in a controlled manner. Once again, the hydraulic direct drive is crucial, as it allows the motors to swiftly react to any change in drive.”

Remote commissioning

Bosch Rexroth engineers usually accompany installations to their destination to assist with on-site assembly. But Covid-19 threw a wrench in the works. Enter a new strategy: remote commissioning. “We had already been discussing ways of moving from physical to digital support,” Vandenoer explains. “The pandemic simply accelerated that process. It was a bit nerve-wracking, but we work so well together that we had complete faith in the process.”

Vandenoer and Simons normally assist with the assembly of the hydraulic components, which they say fit together like Lego bricks. “We were still closely involved in assembly,” Vandenoer adds. “We supported the engineers by phone and via WhatsApp or Skype. And we were able to connect to the controls on the ship via the PLC.”

Vietnam approves

From the other side of the world, the assessment is equally positive. Phong Vu, Damen Song Cam Shipyard’s commissioning & sea trial manager, was responsible for the installation in Hai Phong. He is satisfied with the cooperation with Bosch Rexroth engineers.

“Bosch Rexroth’s people trained our engineers at a distance,” Vu says. “They made sure we knew exactly how to install the system ourselves. If a problem did arise, Bosch

Rexroth’s standby team was ready to assist. Luckily, the software worked like a charm even during the trial phase, save for a few glitches. But these irregularities, as well as some last-minute problems, could quickly be resolved thanks to straightforward communication. We’re now using the final version of the software.”

The Bentley of winches

Bosch Rexroth and Damen Shipyards have worked together for several years. “We’ve come a long way and our partnership works like a dream now,” Simons says. “The client-supplier relationship has developed into a true partnership. This project is a genuine joint effort.”

Vandenoer concurs. “We’re two different companies, but we work on one and the same project,” he says. “Damen’s people feel like colleagues to me. Even so, working together can be challenging, because Damen are always coming up with new ideas; they’re always evolving. And they won’t take no for an answer. But neither do we, really.”

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“I agree with Matthijs and Stijn,” De Bie adds. In the beginning, some consultation was really needed. We’re used to working very swiftly and flexibly, for example, while Bosch Rexroth prefers a more formal approach. But that’s also what makes Bosch a leading company in the field of hydraulics; the right supplier that offers the right products and solutions. Once the match was a done deal, we developed a fantastic system together. I would even go so far as to call it the Bentley of winches. Powerful, sporty, modern, a real sensation ... It’s got it all.”

About Damen Shipyards Group

Damen Shipyards Group is a Dutch shipbuilding concern with headquarters in Gorinchem and dozens of shipyards across the world.

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