

# NEW MODULE CARRIER FLEET OUTFITTED WITH UNIQUE BALLAST CONTROL SYSTEM

Vard, the Norwegian shipbuilder and designer of offshore and specialized vessels, was selected for a new fleet of module carrier vessels for service on inland waterways. Vard chose CIRCOR's Allweiler AS to equip 20 of these specialized vessels with a complete pump package and a unique ballast control system.

## THE CHALLENGE

### BETTER FLOW MANAGEMENT OF BALLAST OPERATIONS

The vessels navigate shallow river systems to transport modules with high deck loads of up to 1800 tons as part of an integrated logistics system. Precision timing is essential, so a turnkey solution for handling the critical ballast operation within a pre-specified time frame was a key determinant. Vard needed a partner with the technical competence and ability to develop a new solution for handling ballast operations efficiently and with the highest levels of reliability.

"Vard's module carriers present major challenges for a conventional ballast system, even with variable speed centrifugal pumps," said Allweiler AS Sales Manager Erik Haagensli. During a full ballasting cycle, variations in suction and backpressure caused by vessels changing draft and water level in their ballast tanks may lead to fluctuations and reduced delivery flow rate.

Combined with the high flow rate (2.000 m<sup>3</sup>/h) required for such a small vessel, long and sometimes inevitable unfavorable routing of suction lines, and very tight time frames for completing the ballast operation, a smarter pump control system was imperative.

## THE SOLUTION

### AUTOMATIC COORDINATION OF PUMP SPEED AND VALVE OPENING

Pump and flow control experts across multiple Allweiler locations joined forces to develop a unique ballast control system, the CM-1000BW, a variant of the conventional CM-1000 energy efficiency solution that optimizes the operation of a vessel's main seawater cooling pumps and minimizes pump wear.

During the development phase for this project, CIRCOR's experts worked closely with Vard's engineers across a range of disciplines such as design, piping, machinery, electro-automation and project management.

The resulting CM-1000BW, with its active valve control function, enables the ballast pumps to safely operate at up to 135% of nominal flow rate during most of the ballast cycle, while preventing cavitation when adverse conditions are detected.



This is accomplished by automatically coordinating and controlling pump speed and valve opening – assuring completion of the ballast operation within the required time frame. With continuous input from flowmeters, LCD panels display requested flow rate together with true flow rate.

Using an integrated, automatic central priming unit, the quantity of air entering the system is controlled and evacuated efficiently. The vessel operators can safely carry out the cargo handling and ballast operations within the allotted time frame. The CM-1000BW is operated either locally or remotely via the vessel's integrated automation system.

## THE RESULTS

### EFFICIENT, RELIABLE HANDLING OF BALLAST OPERATIONS

More than half of the 20 vessels are already successfully commissioned and the CM-1000BW exceeds all expectations. In real-life operation, the CM-1000BW has proven capable of delivering 128% of the specified flow on average during a full ballast cycle. It also provides reduced erosion and corrosion in adjacent components and systems such as pipes and coolers onboard the module carriers.

Commissioning is carried out at Vard shipyards in Romania and Vietnam by Allweiler AS service technician Kay Kristoffersen. “The cooperation with shipyard representatives during commissioning and startup has been outstanding, and together we have managed to keep the tight commissioning schedule for all vessels,” he said.

“It has been an exciting project to work on – getting pumps, drives, valves, transmitters, the central priming unit and the CM-1000BW control system working flawlessly together to form this unique system.”

In addition to the CM-1000BW, Allweiler AS is delivering a complete pump package for the vessels, including the centrifugal ballast pump of ALLMARINE MI design. A total of 640 Allweiler pumps will be installed on the 20 module carriers, which should be fully commissioned by mid-2018.

“We hope to use the knowledge gained from this project to develop additional CM-1000 applications to serve our customer with state-of-the-art flow solutions in the future,” said Geir Olimb, Allweiler AS Sales Director.



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