

# SAVINGS ONBOARD

## IMPORTANT GERMAN SHIPPING COMPANY OWNERS CHOOSE ELECTRONIC PUMP CONTROL FROM CIRCOR



**CM-1000 saves energy and maintenance costs already on board of several container ships.**

In 2014, the German ship owner Hapag-Lloyd started to equip nine ships of the 13,200-TEU Hamburg Express container class with the CIRCOR SmartTechnology CM-1000 Series intelligent sea water cooling system controller. Recently, Hapag-Lloyd announced that the retrofit work will continue throughout 2015 with another 15 vessels of Colombo Express, Prague Express and Vienna Express container class.

The CM-1000 Series system controls the flow rates of a vessel's sea water cooling pumps based on the temperature of the system's fresh water and the vessel's current cooling needs. The system enhances shipboard sea

water cooling pumping efficiency while lowering operating and maintenance costs and maximizing uptime for greener, sustainable operation.

The company's container ships provide regular freight service between the Far East and Europe. As they pass through various climate zones, the temperature of the sea water – used for cooling – can fluctuate by 20 °K and more. Another key variable in operation is slow steaming which also reduces cooling needs. Application of the CM-1000 Series system controls the cooling system's seawater pumps by varying their speed to precisely match the volume of pumped seawater with current requirements.



**CM-1000 module installed in engine room.**

According to Hapag-Lloyd senior superintendent Lars Voss "We expect to save about 850 MWh per vessel per year. This satisfies our Ship Energy Management Plan, which we use to reduce energy consumption and improve the environmental compatibility of our ship operations."

The system's variable speed drive (VSD) feature will reduce energy consumption by up to 58 percent. When the CM-1000 Series system's Active Valve Control (AVC) feature is applied, energy consumption may be reduced by up to 85 percent, and up to 97 percent in periods when cooling demand is significantly low. With AVC, the pump speeds can be significantly reduced, while preventing operation below the minimum pressure level of 1.2 bar, even on lower speeds.

When VSD is applied, energy consumption is only 2x58 kW instead of 2x138. Application of the AVC reduces usage from 2x138 kW to 1x51 kW and, potentially, 1x10 kW in low demand periods. The potential savings for this ship owner: Approximately 16 tons of fuel oil per ship per month.

Operational cost savings of the sea water pumps could be as high as 85 percent overall, with reduced consumption of electrical power accounting for the largest portion. The system's AVC regulates the seawater outlet valves of the seawater cooler and automatically adapts the characteristic curve to ensure the pumps are run consistently at the ideal operating point, thereby avoiding cavitation.

These latest installations build on a prior success story for the Smart Technology CM-1000 Series. In 2013, another German ship owner – Reederei Stefan Patjens GmbH & Co. KG – elected to retrofit its 5,000TEU Maersk

Drury container ship with CIRCOR's Smart Technology CM-1000 Series. The result: variable speed operation that provided energy savings on the vessel's main sea water pumps of approximately 70 percent, increased system uptime and safe, consistent pump operation and performance.

Patjens believes that installation of an intelligent sea water system controller may allow future new build vessels to be equipped with smaller generator sets, thus saving additional costs for equipment and allowing for overall greener operations.

"We started with the CM-1000 Series to get experience with such equipment," said Heino Eckerich, technical director, Reederei Stefan Patjens. "We hope to be prepared to install these for potential new building. We can offer to our customers in the future the energy savings as an ability to save fuel and minimize costs. Additionally, we believe that this capability allows us potentially to operate for a longer time between overhauls, resulting in less downtime."

"In general, CIRCOR made it quite simple," he said. "The installation was done without interruption of the sailing vessel and because the system operation is performed automatically, no special attention is required. The crew was fully briefed prior to actual implementation for easy integration of the system into the vessel's standard routine."



**CM-1000 module on a seawater pump of the Allweiler® MA Series.**