CASE STUDY: DFDS FERRIES

CHARTERER-LED RETROFITS

Charterers are asking for—and are willing to pay for—more energy efficient vessels.

After successfully retrofitting its own fleet with energy efficiency technologies, Danish shipowner DFDS, which operates Ro-Ro, Ro-Pax, and cruise ferries, requested similar upgrades on the two vessels it charters from Swedish shipowner Ellingsen. A bundle of retrofits was deployed on each of the vessels that resulted in 15–22% fuel savings per ship—avoiding approximately nine tons of fuel usage per ship per day. This forms part of DFDS's entrepreneurial approach to improving the performance of its fleet of 37 vessels, totalling 314,017 deadweight tonnes.

OPPORTUNITY

Demand in the Nordic states for low-carbon shipping is rapidly increasing, especially among ferry companies, which have a much higher profile outside the industry than other market segments. DFDS began retrofitting its own vessels because the performance and specifications of its vessels were not optimised for the routes that they travelled, and the vessels therefore required more fuel and more money to operate. After successfully completing the retrofits of its vessels, DFDS began the process of retrofitting the two vessels it had on long-term time charter from Ellingsen.

SOLUTION

In 2014, DFDS made the case for energy efficiency retrofits to Ellingsen, the owner of two of the three vessels that it charters, namely, Hafnia Seaways and Corona Seaways. Hafnia Seaways and Corona Seaways, sister vessels that sail the same route year-round, are Ro-Ro cargo ships built in 2008 with a deadweight tonnage of 11,300 tonnes (Figure 1).

Achieving the upgrades on these chartered vessels was more challenging than on the ones DFDS owned because it had to convince Ellingsen that these retrofits were not only financially viable, but were desirable, too. Convincing Ellingsen was an intensive process, made possible by the trust that the two parties had in one another as a result of having worked well together for many years. Additionally,

DFDS had to ensure that the length of the time charter was sufficient for the repayment period on the retrofit investment.

DFDS and Ellingsen decided to apply Kappel propeller blades, fairing cones, rudder bulbs, variable frequency drives, and alphatronic load curves for variable frequency to the two vessels (Figure 2).
These technologies were selected to optimise the vessels for operation on their expected trading route. They were chosen as a result of discussions with MAN Diesel & Turbo, the shipowner Ellingsen, the Oresund DryDocks shipyard in Sweden, and the vessels' classification society, the American Bureau of Shipping. DFDS and Ellingsen decided to apply all of these technologies simultaneously, during the vessels' regular dry-docking period, which was extended slightly in order to conduct the retrofits. Continuous monitoring equipment provided by GreenSteam was installed on both ships, in order to observe the savings from the retrofits.

To finance this project, DFDS and Ellingsen developed a mutually beneficial financial model in which they added a shared savings retrofit clause to their existing charter party agreement, which detailed how the retrofit investment and fuel cost savings would be divided between the two companies. The investment from DFDS came from the company's regular cash flow. Both companies intend to recoup their investments entirely through the resulting fuel savings.

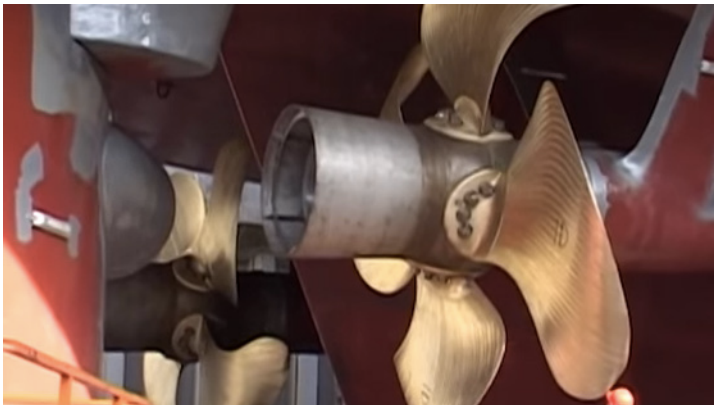
RESULTS

The application of these technologies has delivered 15–22% fuel savings on both of the vessels. This ensures a reasonable repayment period and cost-effective compliance with any potential carbon regulation. DFDS suggests that there is overwhelming evidence that oil prices will rise again; the only question is when. It therefore makes sense to explore such technologies given that today's vessels will still be in operation in five to ten years.

Figure 1: Corona Seaways leaving the Oresund DryDocks shipyard

Figure 2a: Application of Kappel propeller blades in dry dock

Figure 2b: Rudder bulb and Kappel propeller blades in dry dock



About Carbon War Room

Carbon War Room (CWR) was founded in 2009 as a global nonprofit by Sir Richard Branson and a group of like-minded entrepreneurs. It intervenes in markets to accelerate the adoption of business solutions that reduce carbon emissions at gigaton scale and advance the low-carbon economy. CWR merged with Rocky Mountain Institute (RMI) in 2014 and now operates as an RMI business unit. The combined organization engages businesses, communities, institutions, and entrepreneurs to transform global energy use to create a clean, prosperous, and secure future. The combined organization has offices in Basalt and Boulder, Colorado; New York City; Washington, D.C.; and Beijing.

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