

Finnish finesse in the ice

Finland has enhanced its tanker escort capabilities with the delivery of two new purpose-built tugs for Fortum Oil and Gas Oy Shipping, Ukko and Ahti. The new vessels are unique amongst escort tugs in that they have a significant icebreaking capability. Designed by Beacon Finland as multipurpose escort/harbour tugs, the vessels have been awarded both the 1A (heavy) ice class and escort tug notations by DNV. They are able to provide a year-round tanker escort service in the Gulf of Finland and the Finnish archipelago where temperatures down to -25_C and an ice thickness of 35-40 cm for prolonged periods are typical during the winter months. Commencing in 2002, Ukko and Ahti have escorted all loaded tankers over 40,000 dwt through the Porvoo and Naantali fairways leading to Fortum refinery terminals in southern Finland.

The tugs operate in the indirect mode, tethered to the tanker and positioned behind it. If the tanker's steering gear or propulsion system should fail for some reason, the tugs can either guide the vessel or stop it completely within a short distance. Providing the tugs with the ability to fulfil this role posed challenges, not only because of the winter ice cover but also due to the fact that the fairways of the Finnish archipelago are narrow and have many twists and turns. Furthermore, the seabed is rocky along most of the length of the waterways.

The new vessels are not only the first ice class 1A escort tugs, they are also the first powered by the azimuthing stern drive (ASD) concept to achieve DNV's escort tug notation. Each of the new tugs is provided with a Wartsila Vaasa 32 6LR LNE main engine and a pair of Ulstein Aquamaster azimuth thrusters, each with a 2350 kW input power rating (1845 kW in ice operation). The arrangement provides the tugs with a bollard pull of 72 tonnes. Other features include Karmoy constant-tension winches and Navintra navigation equipment.

Also, the ability to transfer ballast water quickly enables fast and effective trim/draught changes and improves the tugs' sea keeping qualities, even when escorting tankers in the indirect mode. Such transfers also serve to keep the forecastle dry which helps prevent icing, enhancing the vessels' ice going and terminal operation capabilities.

In addition to escort duties, the new tugs are able to provide normal terminal assistance duties for visiting tankers of all sizes. They also have fire fighting and oil spill response capabilities; can perform emergency towage operations in Gulf of Finland; and are able to assist with ship-to-ship cargo transfers.

Fortum Oil and Gas has used icebreaking ASD tugs to actively escort tankers arriving in the fairways leading to its Finnish refinery terminals since 1993. Experience with these vessels revealed that there was a need for tugs with an improved specification to meet the demanding conditions associated with escorting tankers in these waters on a year-round basis. Ukko and Ahti have been provided to meet the challenge.

Abnormally long and heavy ice conditions this past winter postponed the official escort trials in ice conditions, but when the ice cover began to melt this spring Ukko and Ahti underwent full-scale ice testing. The tests confirmed the good performance of the tugs both in high-speed, i.e. +10 knots, escort work and in harbour, icebreaking, ship-to-ship transfer assistance and towage applications. Tests in up to 0.85 metres of level ice and in ridge ice with thicknesses exceeding the tugs' draught were successfully completed. At no point were the tugs forced to a stop by the ice. A high degree of redundancy is provided for the two new tugs, which were built by Astilleros Armon in Spain. In case of any "single failure", the tugs will retain 50 per cent of their propulsive power.