

IN 2014, DUTCH company Rederij Doeksen was awarded a 15-year contract for public transportation across the Wadden Sea, a UNESCO World Heritage site. From next year, the company will begin its transition to LNG with the delivery of two pioneering ro-pax ferries, employing pure gas engine technology from MTU and currently under construction by Strategic Marine in Vietnam.

The lightweight ferries, which will enter service in April 2018, will be the first LNG fuelled ferries in the Netherlands and the first ferries in Europe equipped with pure gas engines under development by MTU and its parent company Rolls-Royce Powersystems.

As early as 2000 Rederij Doeksen, which now transports nearly 750,000 passengers a year on the Wadden Sea, had considered the possibilities of using LNG for future ferry designs. But the reliable supply of LNG to the port of Harlingen - an absolute condition for a reliable ferry service - was still uncertain. Later a study by Energy Valley - a partnership of the European Union, numerous provincial and regional government institutions and the Dutch Gasunie - had shown that LNG would be a suitable fuel for use in the sensitive environment. And when in June 2009 the Wadden Sea was awarded World Heritage status by UNESCO, it was clear that cleaner propulsion sources were needed. The Wadden Fund, which invests in initiatives and projects that enhance the ecology and sustainable economic development of the region, awarded Doeksen a grant of €1.21 million for its ferry project.

Doeksen's new vessels had not only to meet environmental but also economic requirements. The company also needed flexibility to adapt to seasonal changes in operations; enhanced efficiency and lower operational costs; better quality passenger experience;

Pioneering project to protect precious heritage

A ground-breaking project coordinated by Rederij Doeksen will see the introduction of the first LNG-fuelled ferries in the Dutch protected environment of the Wadden Sea. By **Paul Melles**, managing director, **Rederij Doeksen** and **Mark Schiller**, CEO, Strategic Marine.

and an enhanced image as a service provider. An intensive two-year research study with Damen Shipyards Group, subsidised by INTERREG (a European funding agency for innovative and sustainable projects) and the Inland Shipping Innovation Foundation, proved that a lightweight, round-bilged catamaran hull form could provide the best propulsion efficiency given the fully loaded 14 knot speed requirement on the 21nm, shallow water route.

STABLE HULL FORM

The catamaran hull form provides stable, safe and spacious ro-ro platform and passenger accommodations. Despite the limited draught there is no need for internal ballast tanks to keep the catamaran stable in all loading conditions. This reduces the yearly fuel and maintenance costs (in ballast tank upkeep) substantially.

Doeksen established that single-fuel LNG was the

most practical and economic viable energy source for the new ferry design, its route and sailing profile. The new single-fuel MTU gas engines will be mechanically linked to highly efficient contra rotating azimuth thrusters from Veth Propulsion, providing a simple, efficient and reliable propulsion package.

After an extensive tender procedure Doeksen signed a contract with Strategic Marine to build the two innovative environmental friendly ferries. BMT Nigel Gee was contracted for naval architecture while Vripack designed both the exterior and the interior of the vessels. Dutch company Marine Service Noord (MSN) from Hoogezand will supply the entire design of the LNG fuel system. The gas system is built entirely in the workshop in Westerbroek and will be transported to Vietnam, where it will be installed in the vessels. The final commissioning of the entire LNG plant will be undertaken by MSN in the Netherlands. ▶



The two LNG-fuelled catamaran ferries offered some unique design challenges for owner Rederij Doeksen and builder Strategic Marine