Damen makes an impact on ice

Damen Shipyards Group has won a contract to build an ice ferry for eastern Canada. It also has the LNG and electric markets in its sights, as its director of ferries Henk Grunstra told Rebecca Moore

DAMEN Shipyards Group has been firing on all cylinders recently within the ferry market. As well as developing fast ferry and LNG-driven ferry prototypes, it has also recently scooped a contract to deliver two ice class ferries that will operate in harsh weather conditions in eastern Canada.

The provincial government of Newfoundland and Labrador has awarded Netherlands-headquartered Damen the construction of two 80m, 14 knot ropax ferries, which will operate on the Fogo Island-Change Islands service and the Bell Island ferry service. Able to carry up to 200 passengers and 60 vehicles, the ropax ferries are due to be delivered in September 2015 and February 2016. The investment is part of the local government's vessel renewal programme. The first ferry will replace the ageing *Captain Earl Windsor* vessel.

Damen's proposal beat more than 10 others for the construction of the ferry. Government representatives visited Damen headquarters and its shipyards. "They got a good feel of what they would get when they went to visit our Galati shipyard, which is where the new ferries will be built, and I think they thought that we were the most favourable in terms of quality," said product director of ferries, Henk Grunstra. "At Damen, we are not necessarily the cheapest. We do not want to offer the best price, but the best ferry at the best value for money, and so we do not go for lower cost. Instead, we want to be on time and on budget."

As well as visiting the shipyard where the ferries are to be built, local government representatives viewed some ferries previously built by Damen for the Texel-Den Helder service in the Netherlands. These ferries were built in 2003-2005, are capable of holding 350 cars and 750 passengers and are propelled by a diesel–electric propulsion system.

The design of the ferry for eastern Canada is by naval architects Knud E Hansen of Denmark and has been delivered to the shipyard. At the time of writing the yard was in the process of finishing the design check. The vessel needs to operate in ice that varies between 40cm and 60cm in thickness, which means that ice and cold are the key challenges when it comes to building the vessel, Mr Grunstra said.

Damen is not new to building vessels for such conditions. It has built passenger ferries for icy conditions before - although not for the 1A Super class ice conditions for which this vessel type is being built -and has recently built a cargo ferry for the Swedish Coast Guard that is constructed to 1A Super class standards. "So this is not new to us," said Mr Grunstra. The shipyard is also not new to the east coast of Canada. It has licensed its Spa 4207 patrol boat design to Irving Shipbuilding for the local construction of mid-shore patrol vessels for the Canadian Coast Guard, and also recently delivered two high-end pontoons to a Canadian operator for deployment at a large offshore project in Newfoundland and Labrador. However, this is Damen's first ferry project for the east coast of Canada.

Enlarging on the challenges of ice and cold, Mr Grunstra said that there needed to be a lot of heating in the vessel for all water systems, including the ballast water. "It is not just accommodation that you need to think about. All the systems need to stay warm to operate on every day of the year, including winter, so this is a very important issue," he explained. The ferry will use a waste heat recovery system to mop up excess heat from the engines. There will also be electrical and oil fired heating.

The vessels will have a bell-shaped hull that is specially adapted to ice. While not an ice breaker, it has similar characteristics. Each vessel will be driven by two azimuth propellers, with the manufacturer of these still to be finished. It will also have a diesel-electric propulsion system and will have three generators but will be able to operate on only two, so there is always a spare if an engine breaks down.

Damen said that together with the Newfoundland and Labrador provincial government, it was exploring more opportunities for becoming closely involved in both the local community and the further development of the shipbuilding industry in the region.

Indeed, this is a strong strategy for the shipyard. Mr Grunstra said: "We do not just finish the boat and send it off. We do things afterwards as well and help clients establish a ferry system." A case in point is the recent delivery by Damen of a fast ferry for the Cape Verde islands. The company delivered one vessel three years ago to the start-up Cabo Verde Fast Ferry operator and recently delivered the second vessel to the company. But Damen's services amounted to more than this. Mr Grunstra said: "We assisted the client with setting up a new ferry system in the islands. We helped them with financing, maintenance services,

A mock-up of the ice class ferry. Heating will be a major issue

training of crews - everything. We helped ensure that there was a good start-up. This was vital, especially in the Cape Verde islands, which are very remote. Cabo Verde Fast Ferry is also a completely new set up, established through private equity, so these people started from scratch. We are interested in helping these types of clients to become a great success."

Singling out the challenges, he said that it was very difficult to travel between the different Cape Verde islands and that before these ferries came into service, people used local fishing boats. "Therefore there was a great need for transportation," Mr Grunstra said. The local government has now also stepped in to help the ferry company.

Damen has several other ferry projects on the go, or recently completed. It is building a ferry for Vancouver transport operator Translink. The company runs three SeaBuses, from central Vancouver to the north shore. One of the older vessels has become redundant and will be replaced by the new ferry that Damen is constructing. Made of aluminium, the ferry has capacity for 398 passengers and has four azimuth thrusters. It should be ready for delivery this summer. Mr Grunstra said that Damen was focused on trying to minimise noise and vibration, so that there is a higher level of quality compared to the previous ferries.

This, too, is a very strong part of Damen's overall strategy. It carries out its own research and development (R&D), and every vessel that the shipyard builds is tested. Tests are wide-ranging and include noise and vibration. The R&D department has developed many techniques, including insulation methods, to help combat this problem. Mr Grunstra said: "We have developed certain fibre combinations and the resilient mounting of equipment – not just using simple rubber underneath, for example, but using the right kind of rubber underneath. We also look at the connection of equipment and piping. You really have to teach your people how to do all this. The R&D department is there from the start and gives the benefit of their knowledge from the very early stages." They check the whole design and give a list of recommendations for the operator, who