



# Hammerodde & Dueodde

The beginning of May saw the arrival of two new 13,900gt ro-ro ferries on BornholmsTrafikken's route between the Island of Bornholm, the Danish port Køge near Copenhagen and the Swedish port Ystad. *Hammerodde* and *Dueodde* were delivered from the Dutch shipyard Merwede at the end of April following a short build schedule. "Merwede was BornholmsTrafikken's obvious choice," said Mattijs Faber, Merwede Shipyard's commercial manager. "It was the only shipyard boasting a proven design for the type of ropax ferry that the Danish ferry operator had in mind, and it was capable of delivering within the very constrained time frame of only 11 months."

The vessels now run alongside the Austal-built high-speed catamaran ferry *Villum Clausen* on this route. Bornholm is a fairly small island with some 44,000 inhabitants, the islanders representing 30 percent of BornholmsTrafikken's annual passenger volumes. "Clearly, tourist traffic is very important, yet it only peaks during the holiday periods," Mr Faber said.

He added that: "*Hammerodde* and *Dueodde* are a further development of an extremely successful vessel design of which a number in different configuration have already been built by Van der Giessen-de Noord for principals in Italy, England, Ireland and China. This in-house design is perfectly suited for the transport of large numbers of trucks, cars, coaches and passengers between relatively small ports, subject to draft and length limitations."

The 125m ferries will replace the two ropax vessels currently operating the service. One of the existing vessels trading the route, *Jens Kofoed* has now been sold. The other, *Povl Anker*, remains in the BornholmsTrafikken fleet and will be painted in the company's new livery. The 1978-built

Two new ropax ferries from Merwede Shipyard now serve a route connecting the island of Bornholm to the mainland of Denmark and Sweden, and offer operational flexibility with the ability to either run as a pure freight ferries or as combined car/passenger vessels

*Povl Anker* will substitute for the other vessels during their annual refits and will also offer extra capacity during peak periods on the Rønne-Ystad and the Rønne-Saßnitz routes, the latter route being reopened by BornholmsTrafikken after Scandlines bowed out last year. *Povl Anker*, together with *Hammerodde* and *Dueodde*, will also deputise for the fast ferry *Villum Clausen* when fast crossings are cancelled due to poor sea conditions or docking of the vessel.

The vessels are flexible from an operational point of view. They can act as pure freight ferries or as combined car/passenger ferries. Both vehicle decks have seven 3.10m-wide lanes for trailers athwartships, with a total lane length of 1,248m. This total length is suitable for about 92 trucks or any mix of trailers and cars. All cargo is accommodated on the two main vehicle decks, deck 3 and deck 5.

The aft part of deck 3 has a 5.20m free height. The permissible axle load is 15 tonnes at 1.36m spacing or a single-axle load of 26.3 tonnes (solid rubber tyres). Reefer socket plugs have been fitted on decks 3 and 5 (underneath the accommodation section), to allow carriage of reefer containers and/or reefer trailers.

Deck 3 offers 645m lane length and deck

5 has 620 lane-metres. The vehicle decks are equipped with lashing pots located on the trailer lane separations. The lashing pots are suitable for use with hooks and elephant foot fittings.



HAMMERODDE & DUEODDE	
<b>Operator</b>	BornholmsTrafikken
<b>Builder</b>	Merwede Shipyard
<b>Hull material</b>	steel
<b>Length, oa</b>	124.90m
<b>Length, bp</b>	115.10m
<b>Breadth, mld</b>	23.40m
<b>Design draft, mld</b>	5.30m
<b>Scantling draft, mld</b>	5.60m
<b>Deadweight at design draft</b>	2,883 tonnes
<b>Deadweight at scantling draft</b>	3,437 tonnes
<b>Gross tonnage</b>	13,906gt
<b>Speed</b>	18.8 knots
<b>Total trailer lane length</b>	1,248m
<b>Trailer lane width</b>	3.10m
<b>Free height over lanes</b>	4.90/5.20m
<b>Passenger capacity</b>	400
<b>Cabins</b>	20 x 1-berth 36 x 2-berth 4 x 4-berth
<b>Reclining seats</b>	256
<b>Flag</b>	Denmark
<b>Classification</b>	LR, +100A1 RoRo Passenger Ship, Ice Class 1C, LMC<UMS<NAV1.

The vessels comprise all-welded steel construction featuring a bulbous bow and transom stern.

Access from shore to deck 3 is provided by a stern ramp/door and access from deck 3 to deck 5 by means of a hoistable ramp.

Decks 3 and 5 are strengthened with longitudinal frames and transverse webs. Longitudinal frames are also fitted in the hull's bottom section and side shell from deck 3 to deck 7. Transverse frames are applied in the sides below deck 3 and

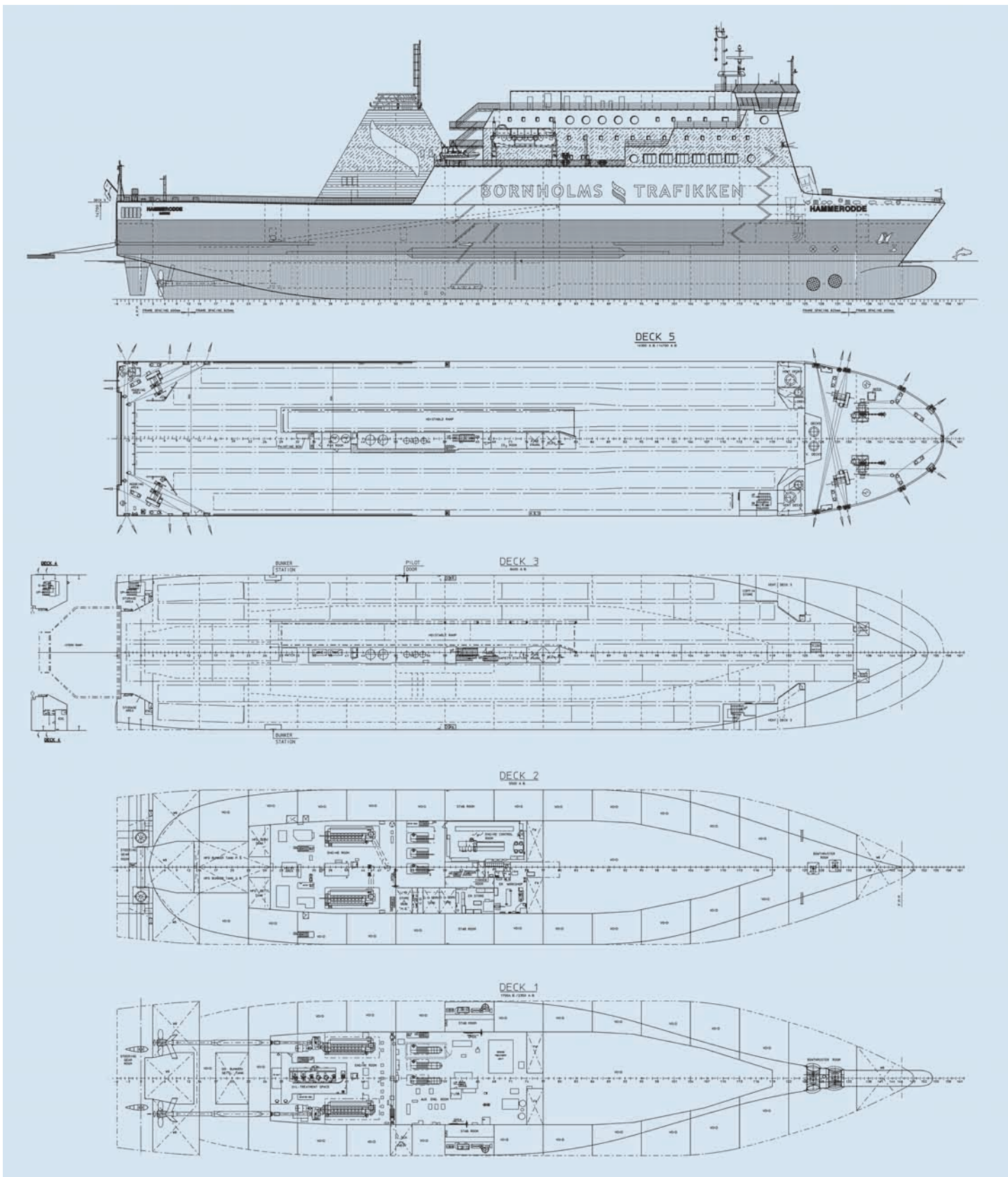
above deck 7, and the fore and aft ship section. The flat bulkheads are strengthened with vertical stiffeners. The hull of the vessel is reinforced for ice class 1C conditions.

Roro access equipment has been delivered by Swedish company MacGregor. The equipment includes one stern/ramp door, one internal hoistable ramp leading from deck 3 to deck 5, one pilot door, and one bunker door.

The ship can carry up to 400 passengers, which

gives BornholmsTrafikken additional service, and provides all-weather backup for its high speed service. In addition to reclining seats, passengers are accommodated in 20 single cabins, 36 double cabins and four 4-berth passenger cabins, each with private sanitary facilities.

On deck 7 of *Hammerodde* and *Dueodde* there is a cafeteria area with 50 seats, a children's playground, the reception area, a shop and public sanitary spaces. Furthermore, 256 reclining





seats are provided in a non-smokers school lounge (57), a non-smokers viewing lounge (91), an allergy lounge (48), a pet lounge (30) and smokers lounge (30). Additional seating for 100 people has been provided in cabins with convertible sofa-beds. "The owner expects that the foreseeable future will demand a larger passenger accommodation, and for this purpose the vessels have been prepared for future enlargement of the accommodation to 770 passengers," Mr Faber said.

"Although the vessels are conventional displacement ships, their design incorporates several technical innovations to ensure that they handle well and safely under all weather conditions," he said. "They have been equipped with state-of-the-art navigation aids, they carry active stabilisers, and have two powerful bow thrusters and in-line high-lift flap rudders to ensure a high level of manoeuvrability. The complete design is made for safe operation with minimum manning. Many functions are automated, and even the mooring system makes use of hydraulic vang instead of conventional ropes."

Directional control of the twin-screw vessel is with two Tenfjord electro-hydraulic rotary vane steering gears, one for each rudder, from Rolls-Royce. The steering gears are electronically controlled to ensure synchronism of the spade rudders and independent operation of each rudder. The rudders have a maximum rudder angle of 45 degrees to both sides. The time of turning the rudders from 35 degrees at one side to 30 degrees at the other side at service speed is 28 seconds with one pump running, and 14 seconds with two pumps running.

To optimise passenger comfort during crossings the vessel is equipped with one set of Fincantieri folding-type fin stabilisers. The fin stabilisers reduce roll to 90 per cent at a wave slope of 3.5 degrees and at a speed above 18 knots. They are controlled from the bridge and their operation is fully automatic.

The heavy-oil propulsion plant consists of two MaK 9M32 medium-speed non-reversible diesel engines, each having a maximum continuous rating of 4,320kW at 600 rpm. Each main engine drives a CP propeller via a Jahnel reduction gearbox. The two propeller stern tubes are fitted with Supreme sealings complete with



*Hammerodde can carry up to 400 passengers and has 256 reclining seats available*



*Roro access equipment has been delivered by MacGregor and includes one internal hoistable ramp leading from deck 3 to deck*

white IHC Lagersmit metal bearing bushes. Drive transmissions include Vulkan RATO super elastic couplings.

The vessels have a service speed of 18.8 knots at 90 per cent MCR with a 15 per cent allowance of propulsion power for sealoading and active fin stabilisers. A total propulsion power of 6,670kW was measured on the outgoing shafts under trial conditions with stabilisers active.

Electric power is derived from three MAN Holeby 6L 16/24 gensets, each developing 515kW, and emergency power is from a 260kW MAN D2866 LXE201 genset. At sea, electric power is supplied by one of the 1,160kW PTO alternators. During manoeuvring electric power for the bowthruster unit is derived from the two auxiliary alternators. The complete electrical installation has been provided by Croon TBI techniek.

Fuel oil and lube oil treatment is provided by Alfa Laval equipment and includes: two self-cleaning separator systems for heavy fuel oil; one self-cleaning diesel oil separator; one lube oil separator; booster pumps; and fuel oil heaters. Treatment of engine room bilge water is with a bilge water separator fitted with automatic oil drain equipment.

The central heating system is of a closed type heated via a heat exchanger from the thermal oil system. Two circulation pumps, one running and one standby supply the accommodation heaters, domestic hot water calorifier, preheater high temperature fresh cooling water system, and the bilge water separator.

Both ferries are equipped with a SAM Electronics monitoring and control system. The design is de-centralised with operating points in the control room, near the main engines, in the valve control station and at the safety station. The bridge is fitted with an alarm annunciator, and in addition to the standard alarm and monitoring functions, the system includes software for bilge/ballast valve control.

*Hammerodde's* and *Dueodde's* life-saving appliances include: two 150-person partially enclosed motor lifeboats, seven 35-person

inflatable liferafts stored in GRP containers, one six-person rescue boat and one six-person fast rescue boat combined with the MOR.

The vessels' fire-fighting equipment includes a seawater fire-fighting system, a CO<sub>2</sub> fire-extinguishing system, a drencher system for the ro-ro spaces, and a sprinkler system for the accommodation. The CO<sub>2</sub> total flooding system protects the engine room, engine control room, workshop and bow thrusters room. The emergency alternator room and galley ventilation uptake are protected by separate CO<sub>2</sub> bottles. There is local protection for main and auxiliary engines, boiler front and separators.

In accordance to GMDSS requirements *Hammerodde* and *Dueodde* have been fitted with a comprehensive range of communication systems and navigational aids. The equipment was delivered and installed by Alphatron. **FT**

OUTFIT	
<b>Main engines</b>	2 x MaK 9M32
<b>Output</b>	2 x 4,320kW at 600 rpm
<b>Gearboxes</b>	Jahnel
<b>CP props &amp; bowthrusters</b>	Wartsila Propulsion
<b>Flexible couplings</b>	Vulkan
<b>Gensets</b>	3 x 515 kW MAN Holeby 6L 16/24
<b>Fuel oil separator</b>	Alfa Laval
<b>Ride control system</b>	Fincantieri
<b>Steering gear</b>	Rolls-Royce
<b>Roro equipment</b>	MacGregor
<b>Anchors &amp; anchor chain</b>	Schmitt Anchors
<b>Deck machinery</b>	Bröhl
<b>Interior design</b>	Steen Friiss
<b>Ceilings</b>	Dampa
<b>AC &amp; ventilating system</b>	Heinen & Hopman
<b>Elevators</b>	Airborne
<b>Fire-fighting equipment</b>	Inglasco Fire Systems
<b>Liferafts</b>	Viking
<b>Monitoring &amp; control</b>	SAM Electronics
<b>Bridge equipment</b>	Alphatron, Kelvin Hughes, Obsermet, Yokogawa, McMurdo