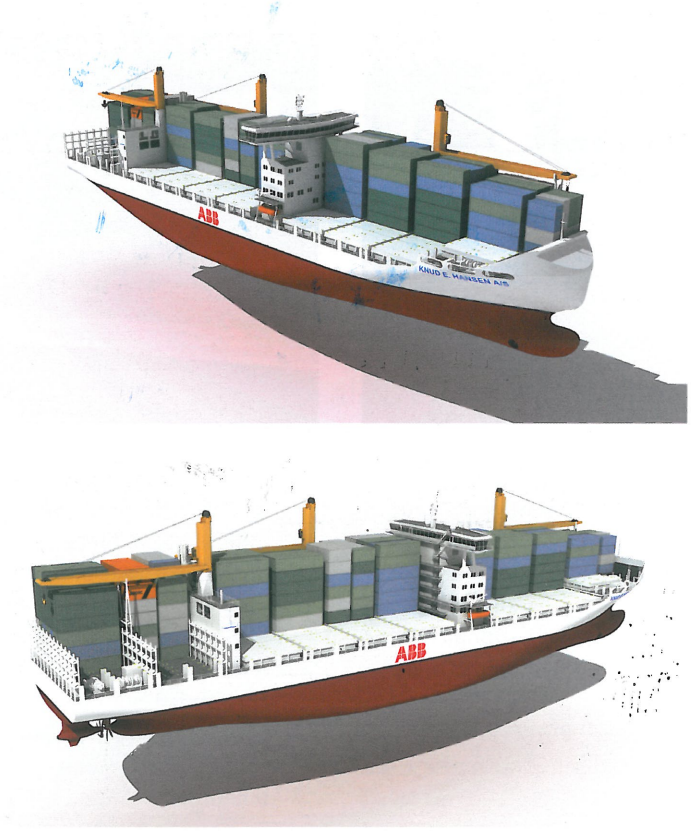
NOVEL **2000TEU** CONTAINER FEEDER VESSEL

DANISH NAVAL Design and Marine Consultancy Knud E Hansen A/S and joint venture partner ABB have developed a highly fuel efficient 2000TEU container feeder vessel.

The design will, it is claimed, deliver excellent fuel economy, reduced environmental impact, reduced need for water ballast, slow-steaming potential and flexible transit speeds, loading flexibility as well as increased container capacity including higher than usual reefer capacity.

Propulsion efficiency is boosted by an electrically driven counter rotating ABB Azipod unit, which is fitted behind the directly driven main propeller. The power balance between the main propeller and the Azipod is approximately 65/35%, and as the Azipod can be turned 360°, the vessel will have high manoeuvrability, reducing or eliminating the need for tug assistance in port.



Two views of the feeder containership design

Smaller main engine

Compared to a vessel with a conventional diesel-direct propulsion system the main engine has been considerably down-sized, and with a correspondingly smaller propeller diameter in combination with a low shaft line, ballast water to submerge the propellers in light loaded conditions is generally not necessary. At 18kts the main engine with its shaft generator will deliver the entire propulsion power including the electrical power for the Azipod unit, the hotel load and the reefer containers. Additional auxiliary power is only necessary if higher speeds (up to 21kts) are required or if an exceptionally large number of reefer containers are carried.

Three auxiliary engines with a total electrical power output of approximately 8000kW are arranged in an auxiliary engine room, which is completely segregated from the main engine room.

With the main engine stopped, the vessel is able to navigate with a speed of more than 13kts on auxiliary power and the Azipod alone, which provides a very high degree of redundancy and more than sufficient 'return to port' capability.

The vessel will feature an ABB Onboard DC grid system that ensures engines will be run at their optimal load at any cruising speed from 2 to 21kts, enhancing fuel economy and providing the option of highly flexible transit speeds, including slow steaming, which is not the case for the majority of feeder vessels today.

The vessel, optimised for calling in Bangkok, has an overall length of 172m and a beam of 30m. Deadweight at the Bangkok-max draught of 8.2m is approximately 18 300t, while it is approximately 28 400t at the fully loaded draught of 10.5m.

The midship position of the narrow deckhouse provides significantly better vision from the bridge and allows approximately 15% more containers to be carried on deck than on conventional feeder vessels with the deckhouse located aft, while maintaining crew comfort in bad weather.

HFO tanks have been arranged in a simple, square block below the deckhouse in order to minimise the need for trim compensating ballast water and changes of trim during a voyage. Additionally, the tanks are segregated from the sides and the bottom in preparation for Clean Design Class notation.

Space has also been prepared in the engine casing for scrubbers or a SCR system so that the vessel can be adapted for navigating in Emission Control Areas. The vessel is even prepared for zero-emission port calls, because containers holding batteries can be stored on the aft deck and connected to the dc grid.

Container capacity

Five tiers of high-cube containers can be stacked in the holds and six on the hatches. In the gearless version the vessel will carry up to 1448TEU on deck and 668TEU in the holds corresponding to a total high-cube capacity of 2116TEU.

As designed, the reefer capacity below deck is 438TEU (or 258FEU), and with three tiers on the hatches and four on the aft deck the capacity on deck is 746TEU (or 370FEU), giving the vessel a total potential reefer capacity of 1184TEU (or 628FEU). But with 8000kW of auxiliary power installed, access to the reefer units is practically the only limiting factor for the number of reefers that can be carried, so the capacity on deck may be further increased by higher lashing bridges aft and/or lashing bridges between the hatches.

The high container capacity in combination with the fine hull lines and very efficient propulsion system gives the vessel a fuel economy 15 – 25% better per TEU than typical feeder vessels of similar size.