

BY FINN BRUUN

INNOVATIVE DANISH SHIPDESIGN

The innovative ship design company Knud E. Hansen A/S, headquartered in Elsinore and with office at Lindø, has experienced its best year ever and continues at full speed with an incredibly wide range of activities worldwide from an oil recovery vessel which can almost sail in a puddle to retrofitting of cruise giants and advanced ventilation systems for efficient chemical tankers.

A quite unique range of activities and great flexibility and innovativeness make the ship design company Knud E. Hansen A/S something special, which was confirmed in April when Knud E. Hansen A/S was awarded the Shippax prize for the ro-ro ship of Bahri Abha, which was designed in Elsinore.

- Knud E. Hansen A/S operates within a wide range of marine and offshore activities and we work all around the world. I think Knud E. Hansen A/S was the only Danish company with activities on all seven continents last year. I do not think even Maersk achieved this. We were also in Antarctica working on two projects, Managing Director Finn Wollesen says.

Knud E. Hansen A/S was founded in 1937 and has always been in the lead. Till the late 1980s,

Knud E. Hansen A/S was probably world leader in passenger ships in both the ferry and cruise businesses. Worldwide, Knud E. Hansen A/S was number one. And this is also the approach being pursued today.

- We had some tough years in the 1990s when the company lost pace because a proper succession was not made, but we picked up speed after the year 2000, with ro-ro ships, non-corrosive chemical tankers and wind turbine installation vessels and being the first to make jackup vessels which are used in connection with installation of large wind turbines. The very first of them, Resolution, was designed by us for Mayflower, Finn Wollesen says.

- The next generation is the Swire-ships Swire Orca and Swire Osprey, which are both our

design, and which sail for a Danish shipping company currently. In general, we are very active in the area of offshore and offshore wind. We are designing a number of projects in the ice class because the melting ice means that it is beginning to be feasible to sail places you could not sail before. There will be new rules regarding how to operate in the Arctic and the Antarctic, and we are well prepared for that development.

In another field where the company has been doing well for the past 10-12 years is conversions: - We have been doing a good deal of work for Stena, which includes extension of existing ferries, so they can sail other routes, including upgrading with extra deck. In fact, we have examined the entire fleet, because we have been involved in all of their projects. Among other things, we have converted Saga Sapphire, previously a

Pullman Tour ship. A project completed last year at the Palermo yard. So, conversions is something that we are also very successful in, Finn Wollesen says and mentions that Knud E. Hansen A/S has been divided into segments. One of the specialties here is HVC, heating, ventilation and air conditioning.

-The largest project we are working on right now concerns British aircraft carriers, where we have been involved in the design of air conditioning since 2008. Our client is a major German air ventilation company. But we also are also doing a considerable amount of ventilation work in the offshore business. And for a large number of small ships, where we assist ventilation companies with their design, often as a buffer for their own technical departments. Cruise ships in the U.S.

- In our USA office, we focus greatly on the two major cruise lines, Royal Caribbean and Carnival. They provide a constant flow of work - everything from assistance in connection with small conversion projects; machinery may need to be moved or we need to update their safety plan.

But, in addition to cruise lines, the U.S. office will also focus on offshore in the Gulf of Mexico when we get a little further ahead.

- We have deliberately placed those of our office which are outside Denmark where our customers are - unlike many of our competitors who have placed offices in low-cost countries to save costs. We have offices in London, the Faroe Islands (here are no other consultants than us), Australia (due to offshore in Western Australia), Piraeus, Greece (ferries and the entire Mediterranean).

LINDØ

- Furthermore, we have an office at Lindø, which supports Western Denmark and the shipbuilding activities at Lindø, including Faryard. We are located at the shipyard in Lindø Industrial Park, where there are many activities. We have chosen the location at Lindø because we have succeeded in employing a number of people who lived in the area, but who were not interested in moving to Elsinore. So today, our second largest office is in Odense, which attracted employees, enabling us to support Western Denmark and the island of Funen fairly quickly.

- The Lindø office co-operates with the main office in Elsinore. All our offices work closely together with Elsinore, and if an office experiences a decline in the number of local jobs, that office will be connected to projects in Elsinore. Odense works in exactly the same way as Elsinore. We have a platform offering prompt assistance to local areas, Finn Wollesen says. The innovative projects also include designing a floating power plant for a Danish company. - It is a wave system, which is flowing in the sea off Nakskov, and which has now entered the next stage after the testing of the prototype has begun. We are in the process of full-scaling.

- Our project for the Saudi shipping company Bahri was nominated as the best design in ro-ro. We are very proud of this. It was a much optimized design. The ro-ro market has been a great success for us over the past few years. In the magazine "Significant Ships", two of our designs have been nominated. This is CMN from France. And two years ago, Pacific Orca was also in "Significant Ships", the head of ship design says, also highlight-





ing that Knud E. Hansen A/S has designed the ships to sail on Fogo and Change Islands near Newfoundland.

- They will be built in Romania and will be delivered to the Government of Canada in approximately two years. They are ice-class ships and they are a bit special because of the tough nature of the area.

ENERGY SAVINGS

Knud E. Hansen A/S puts a lot of work into energy optimization these days.

- We have had huge projects with Carnival Cruise Line concerning energy savings. Mainly concerning ventilation. And we are also looking at energy savings for other shipyards:

- You can simply cut off the bow and put up a new bulb. A great deal has happened because the speed of ships has been reduced. The hull is not optimal for the lower speed and therefore it pays to change the bow and get a better hull shape. We have done this for several shipping companies. Also concerning trim optimization, we have made low energy

studies, meaning how ships are to perform in various trims according to whether a ship carries a cargo or not or has different gravity loads. It pays to trim the ship differently depending on the draft and measure what is most optimal trim is.

The design company's range of activities also includes platforms and drill ships. Currently, Maersk Galant is docked at Fayard. This is a project where we are also very much involved with design and calculation of a number of conversions, he says.

- A few years ago, we created a complete concept, an arctic drill ship for an American shipping company, Frontier Drilling. The financial crisis put a stop to the project, but we are on the market of drilling ships and we are working on projects, Finn Wollesen says without saying who the client is.

Another project related to oil is a small oil collection vessel, SWORC, designed by Knud E. Hansen A/S.

- It is a light craft that can pick up oil in coastal areas. Originally, the idea was for Denmark to have a plan for such a situation, but there is no political will to make a decision, so nothing happens. But we have built one vessel in order to be prepared for the future. The problem with an oil spill is that if you fail to get booms out in time, and the oil will float into shallow water, and you can only stand on the beach and wait to be able to scrape it up. For each ton of oil, 13 tons of sand must be removed. But this small vessel - it is a catamaran - can sail at 30 cm and can collect oil in plastic bags which are dumped between the hulls. This means that the bags can be collected by a tractor, for instance, the next day. It is possible to skim 400 kg at a time, and then it dumps the bag. In that way, it can be avoided that many tons of oil end up on sandy beaches and you can therefore save wildlife and prevent pollution and loss of revenues from tourism.

- If you placed ten of them in Denmark, it would be possible to reach any coastline within 2-4 hours. The political plan says it should be done, but there is chaos between municipalities, the



Shippax Prize went in 2014 to Knud E. Hansen of the Saudi ro-ro project Bahri Abha.

Royal Danish Navy, the Marine Guard, and politicians, he points out.

Knud E. Hansen A/S is looking to the future with great optimism:

- The financial crisis was an advantage for us at first because many shipping companies predicted that yards would be put under pressure and become desperate for work, so a lot of tender designs were put on the shelves in order to be able to purchase cheap vessels when the yards were ready to lower prices. Those who have bought at the lowest prices will be successful over the next 20 years.

- But no one knew when the bottom was reached, and there is only one who buys the cheapest ship, so we began to feel the crisis. 2009 and 2010 were ok, but 2011 and 2012 were a little hard on us, while 2013 was our best year ever. So, we are hopeful, Finn Wollesen says. In addition to North America, he also has hopes for the Chinese market, where Knud E. Hansen A/S has had two successful projects:

- In China, you have to win confidence, and we have, so when they get their next projects, we believe that we will be involved.

Knud E. Hansen A/S has clients who have been co-operating with Knud E. Hansen A/S for 40-50 years.

- Among those is Stena, which supply a constant flow of projects. Also Canada is and has always been a great market for Knud E. Hansen A/S. For instance, in the beginning of 1965, Ralph Misener placed a design order with Knud E. Hansen A/S for ships. The new ship was to be the largest in the fleet in terms of capacity and the company's first independent bulk carrier with a deck-installed system for self-reading. Knud E. Hansen A/S is bidding for the same type of vessels for another Canadian shipping company, and at the same time, two KEH-designed ships are under construction, while contracts are being made regarding chemical tankers and multi-purpose vessels. Along with energy optimization, these projects also help pull Knud E. Hansen A/S forward.

- But even if you have certain goals or targets, unexpected things will suddenly emerge. All of a sudden, a ship-owner, who is used to working with us, has a project that needs to be finished

the day after tomorrow. Therefore, contracts are often traded from day to day. A company like ours rarely has a full book of orders for more than 3-6 months. We have had some very long projects, which are nice to have – among others the British aircraft carrier. But often we have only had a horizon of one month. Our employees are fortunately very flexible, Finn Wollesen states and adds that Knud E. Hansen A/S is its very own brand.

- Our company has 70 employees representing 15 different nationalities. Knud E. Hansen A/S is very multi-ethnic and it makes things very exciting when you have learned to deal with it, Finn Wollesen says. Finn Wollesen also points out that employee resources are a challenge today, because there is a fight to attract the most experienced employees.

- In principle, it means that we are constantly recruiting and employing senior machine engineers and senior ship engineers with ship design experience, Finn Wollesen says.

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3 - 2014



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