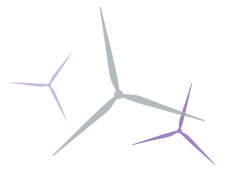


Sheringham Shoal

by Scira Offshore Energy

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NEWSLETTER



Wind farm operational, a new phase begins



Sheringham Shoal Offshore Wind Farm – now in operation.

The departure from the Greater Wash of the final vessel to work on the construction of Sheringham Shoal marks the end of an intense period of activity and the start a new operational phase, which has been in the planning for the past five years.

The floating hotel *Regina Baltica* was the final construction vessel on the site and now the only vessels to be seen will be the three permanent personnel transfer

vessels – *Eden Rose*, *Dulcinea* and *Dorothea* – working out of Wells-next-the-Sea, and the occasional larger maintenance vessel as required.

At its peak, more than 600 workers were piling the foundations, installing the turbines, laying the cables and contributing to all aspects of a wind farm's construction. Now a tightly-knit team of 60 staff will operate and maintain the wind farm as a long-term generator of renewable energy from its new headquarters just three miles south of Wells-next-the-Sea.

Like any power station, the wind farm will require on-going management, which the operator, Scira Offshore Energy will oversee. While to ensure efficient operation of the turbines and offshore substations, the 40-strong Siemens unit will undertake daily maintenance services for at least the next five years, when the service contract will be re-assessed.

Scira's General Manager, Einar Strømsvåg said in the lifecycle of a wind farm, Sheringham Shoal is now entering its longest phase – operation.

"Construction is complete and we can now proceed with the business of running a wind farm," he said. "This is a business guaranteed to be here for 25 years until the turbines require reconditioning, and then another 25 years after that.

"So for at least 50 years, we will be providing career opportunities, utilising local services and – as one of North Norfolk's largest employers playing a key role in enabling the local community to take advantages of the opportunities the growing offshore renewables industry will bring to the area."

Last construction vessel leaves the Wash

For almost three years, North Norfolk residents and visitors have seen a wide assortment of different sized and shaped vessels off the coast as the wind farm gradually took shape. But in December, the last of those vessels departed the Greater Wash marking the end of construction of the £1 billion development.

Former cruise ferry, the 145m *Regina Baltica* arrived on site in April 2012 as a temporary home for wind farm workers installing and commissioning

the project's wind turbines and electrical infrastructure. Those on board were met with facilities that included single-berth cabins, cafeteria, restaurants, conference and meeting rooms, lounge areas and a sun deck.

Once all the wind turbines were erected, rock placement for scour protection complete and export cables buried, only a few turbines remained to be commissioned. Workers finalising the last tasks on these turbines, which included fixing snag items and managing the 500-hour service required, were the last offshore contractors to remain.

Now their work is done, the workers have left for their next projects and so too has the floating hotel that accommodated them.



The last construction vessel to leave the site, *Regina Baltica*.

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A global team builds a local wind farm

Expertise from around the world was called on to develop, plan and construct the first of the Round Two offshore wind farms to be completed in the Greater Wash – Sheringham Shoal.



Contractors from around the world helped shape Sheringham Shoal

The almost 60-strong project team led by Project Manager, Elly Bjerknæs comprised specialists mainly from the Norwegian lead operator, **Statoil** as well as from the joint-venture owner, **Statkraft**. Members of this expert team have now been dispersed to projects elsewhere in the Statoil and Statkraft systems after completion of this momentous development.

More than a dozen main contractors played starring roles in the wind farm development and should be recognised for their important contributions – not to mention dozens of sub-contractors who also had vital supporting parts.

“A project as ground-breaking, large and complex as Sheringham Shoal needed a huge amount of cooperation, flexibility and innovation from its contractors,” Elly said. “At this end stage of the work, I would like to extend an enormous thank you to all those involved.”

The early stage construction started onshore with the installation and testing of the 22.6 kilometre cable to feed the electricity generated by the wind farm from landfall to a new substation at Salle. UK support services contractor **Carillion Utility Services** successfully carried out this work.

The backbone of the wind farm is its foundations, which were designed and fabricated by Danish construction and civil engineering company **MT Højgaard**.

The majority of the steel monopiles and yellow transition pieces were installed by Netherlands-based offshore contractor **Seaway Heavy Lifting** using state of the art crane vessel *Oleg Strashnov*.

The Norwegian division of global engineering group **Trelleborg** stepped up to design elastomer spring bearings to reduce the vertical load on the grouted connection between each monopile and its outer transition piece. Trelleborg also looked after their fabrication and installation as well as secondary offshore works and damper solutions for inner j-tubes.

The responsibility for the electrical system infrastructure, including the onshore and two offshore substations, lay with UK-based **Alstom Grid UK Ltd**. This role included the overall coordination of a number of sub-contractors such as **Hereema**, which fabricated the 1000-tonne substations at its Hartlepool facility.

The submarine cables that transmit the power both in the field and from the offshore substations to shore were fabricated by **Nexans Norway** before being transported to site on the *Team Oman* for installation, termination and trenching by Dutch firm **Visser & Smit Marine Contracting** via its Darlington-based team. VSMC installed the cable protection systems for the scour-protected areas and completed all the secondary works needed to connect the cables to the turbines and offshore substations.



Sheringham Shoal Offshore Wind Farm – construction in pictures

To mark the end of the construction phase of the wind farm, the next two pages of this special 6-page edition of the Sheringham Shoal Newsletter will feature a pictorial review of the project, which is now complete and in full operation mode.

Work on the £1 billion Sheringham Shoal project could only begin once the New Licence was granted from Natural England. This ensured there were no Great Crested Newts on the Salle substation site.



At 22.6 kilometres, the cable transporting the power from landfall at Weybourne beach to the new substation is the UK's longest underground high voltage cable. It was installed using both open trenching and horizontal directional drilling.

The most visible parts of every offshore wind farm – the wind turbine generators – were supplied, hooked-up after installation and commissioned by the Danish arm of **Siemens plc**. **Siemens UK** will implement the service and warranty agreement to ensure each turbine operates efficiently.

Global Marine Systems UK and Great Yarmouth-based companies **Seajacks Ltd** and **A2SEA** were responsible for the bulk of the turbine installation. A2SEA was also utilised as offshore service provider, arranging the transportation of turbines on two barges shuttling between Esbjerg in Denmark to Great Yarmouth. This company also arranged all the facilities needed in the harbour to load the turbines ready for transportation to the site.

Finally Dutch marine contractor **Van Oord** installed rocks on the 79 locations that needed scour protection and the UK's **Granada Material Handling Ltd** has followed the offshore activity throughout with the supply of the Davit cranes and certification of all lifting equipment. There were more than 30,000 topside lifts during the construction of the wind farm.

“It was a truly international effort and every contractor, sub-contractor, supplier and individual involved should be proud of their contribution towards making it a reality,” Elly added.



Foundation installation began in June 2010 and was completed just over a year later in August 2011. Each foundation was made to individual specifications and weighed from 375 to 530 tonnes.



Cable installation vessel *Team Oman* was a wind farm stalwart. In total more than 100 kilometres of cables were installed offshore between the turbines and the offshore substations and from there to shore.



A wide range of vessels of all shapes and sizes were needed in the Greater Wash to complete all the different phases of construction. Many were designed especially for the emerging offshore wind energy industry.



The state-of-the-art crane vessel *Oleg Strashnov* installs one of the two 900 tonne offshore substations – a key milestone for the project.



The arrival of the first turbines heralded the most visual part of the construction as people onshore could start to see the wind farm take shape on the horizon.



The wind farm began generating power in August 2011; however it was in July 2012 when the last of the 88 turbines was put into place.

Keeping the blades turning

Construction of Sheringham Shoal is complete, now the wind farm will need ongoing maintenance to ensure the blades keep turning and power keeps generating.

As well as providing and installing the 3.6MW wind turbines, Siemens also has a five-year service contract with Scira to maintain and repair the giant machines under warranty.

Siemens service site manager Graeme Pickersgill, from Aylsham, said his 39-strong team's main role is to ensure each of the 88 turbines has a full service – including oil changes, gearbox and generator alignment and filter replacements – every year. Each service takes between four and five days to complete.

The Siemens team is 32 wind turbine technicians who transfer offshore to carry out the work; four service planners who plan and coordinate the logistics; an administration assistant; a warehouse storeman and a health and safety representative.

Fresh recruits from Norfolk

"We are all fresh recruits to this project and local to Norfolk with previous careers ranging from the Forces and car mechanics to electricians," he said.

Graeme's team members work in rotation, with the planners working four days on and four days off, and the technicians working a rota around the tidal patterns, with 12-hour shifts.

"The technicians' rotations accommodate the neap tides which make sailing to and

from Wells-next-the-Sea outer harbour logistically awkward during certain days of the month," he said.

Wind turbine technician Sam Vincent, from Scarning, was an electrician before joining the company and undertaking the stringent training and assessments required to be able to work on the turbines.

"Its physically very demanding and we generally work from 7am until 7pm, which includes almost three hours on a personnel transfer vessel to and from the field," Sam said. "We don't go out on rough days but even on good days seasickness can be an issue so we make sure we drink plenty of water".

A typical day would start at the Scira offices for a toolbox talk and preparations, including organising gear and bringing packed lunch, before travelling on mini-bus to the outer harbour. Every day 12 technicians – nominally three teams of four – will board a transfer vessel and swipe on with a personal identification card. This is a key part of a system that tracks everyone going to work on the wind farm.

The team within Scira Marine is responsible for all the transfer arrangements – both onshore and off - so there is a significant amount of interface between Siemens and the marine coordinators.



Siemens Graeme Pickersgill and Sam Vincent at the outer harbour and ready for work.

Arrive at work

Once safely onboard the boat and briefed by skipper and crew, the technicians transit to the field where teams are dropped off at their respective turbines. Climbing up the yellow transition piece access ladder, they arrive at their workplace for the day.

"Our first task always is to take control of the turbine and stop it before moving a safety switch to local position, as it has to be off before any work can be carried out," Sam said.

Once inside the tower, the technicians ascend via the electric two-person lift to the nacelle – which is the size of a National Express coach – where they start their set tasks. These may include unpacking tools and equipment in preparation, changing filters or oil, servicing the hub and blades, aligning the generators, repacking tools or tidying and cleaning.

Graeme added that it is important for all the turbines to be left in pristine condition ready for the next time they are serviced. All waste, such as packaging and used cleaning materials, is brought back to shore for recycling.

The technicians generally work on the turbine for around eight hours, including tea breaks and lunch, before being collected by the transfer vessel and returning to the outer harbour and a waiting mini-bus. It is then back to where the day began, before starting the process again tomorrow.



A turbine technician climbs up to work.

Meet the wind farm operators

The core Scira team currently comprises 14 employees (rising to 20 in 2013), each with a key role to play in ensuring the efficient operation and maintenance of the Sheringham Shoal Offshore Wind Farm.

In the next editions of the Sheringham Shoal Newsletter, we will profile members of the team to introduce readers to them and their roles.



Electrical engineers James Cooke (left) and Richard Nunn at the Salle substation.

"Achieving safety from the system" is the short version of what Scira's two electrical engineers do, but more specifically their role is to ensure the wind farm's three substations are working as efficiently as possible.

Richard Nunn from Sculthorpe and James Cooke from Newton Flotman were hired by Scira almost two years ago to interface with contractors who undertake quarterly maintenance services on the substations – two offshore and one onshore – ensure their work meets warranty standards and investigate equipment faults.

Both are senior authorised persons (SAPs), which means they are responsible for the switching of the high voltage equipment before and after any work is undertaken on the substations and must be present throughout.

"Around 60 per cent of the work is office based but the rest of the time we are either at the Salle substation or offshore," Richard said.

Each substation comprises technically advanced transformers, switchgear,

High voltage heroes

cables and other high voltage equipment, all fitted with multiple computer monitors and alarms to enable the rapid detection of any faults or anomalies.

"We can tell from our computers where a fault is and almost what caused it before going to inspect it thanks to the monitoring systems in place."

While the work carried out at both the onshore and offshore substations is similar, Richard said being offshore adds a number of complications.

"We have had to undertake a lot of health and safety training including working at heights, first aid and offshore survival to be able to carry out the job."

Both electrical engineers have been heavily involved in Scira's move from its Polka Road offices to Egmore and look forward to 2013 as the organisation consolidates its role as wind farm operator.

Questions from the community

How many jobs has the wind farm development created and what are they?

During construction of the Sheringham Shoal wind farm, there were many local contracts and short-term roles created. However now the wind farm is operational, there are 54 people working in permanent positions (with six more to be hired in 2013).

Forty of these are with Siemens, which has the contract for the service and maintenance of the wind farm. All were Norfolk residents when they were hired.

Within Scira itself, there are currently 14 full time employees working in roles including electrical engineers, health & safety manager, marine coordinators, HR & communications manager and finance manager. All except three were also hired from the local area.

Scira is one of the largest employers in North Norfolk, in the top two percent of companies operating here.

There are also a number of indirect long-term jobs created by the development due to the need for local goods and services. These include positions within the Wells Harbour organisation to cater for the increase in vessel traffic; transit drivers to transport wind turbine technicians daily, Scira site security, office cleaning and catering, vessel skippers and crew, IT infrastructure and support services.

If you would like a question answered in the next newsletter, please email info@scira.co.uk

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The Sheringham Shoal Offshore Wind Farm is owned equally by Statoil and Statkraft through the joint venture company, Scira Offshore Energy Limited, the wind farm operator.

