



Newsletter

Autumn 2022

First floor of the valve hall as it takes shape

This is the latest newsletter from Sofia Offshore Wind Farm, one of the world's largest single offshore wind farms. This edition carries the most recent news about the project with more details to be found at www.sofiawindfarm.com.

Converter station shapes up

In the latest construction activity at Sofia's converter station site near Lazenby, the framework for the buildings which will house the project's state-of-the-art electrical equipment are now standing tall onsite.

A total of 520 tonnes of structural steel was delivered and installed by North Yorkshire firm Severfield for their construction.

Over the summer Kier Infrastructure, contracted to GE's Grid Solutions, also completed new temporary welfare facilities, internal roads, and the car park as well as the converter station building foundations.

Next up the onsite team, which now numbers around 130, will be working on concrete foundations for electrical equipment and the installation of drainage and cable ducting to connect all

the electrical equipment to the control building. Some concrete finishing will go on into the night but contractors will endeavour to keep disruption to a minimum.

Of note for Lazenby residents is that work to reshape the southern of the two mounds located between the construction site and the village is also due to restart. Soil from site excavation works will be placed on top of the mound periodically over the coming year before it is planted with trees, shrubs and wildflowers as per the north mound which was completed earlier this year.

The contractors for the converter station for Sofia's neighbouring project Dogger Bank C moved on to the site in late summer.

Monthly drone surveys will continue for the duration of the works to monitor progress.



Workers erecting the framework of one of Sofia's converter station buildings

AC cable route

After the power has been converted to alternating current by Sofia's onshore converter station, it will be transmitted to the existing National Grid substation at Lackenby by underground cables.

Contractor Volker Infra is working on installing ducts for the cables along the 2km route, with this activity set to be completed this year, and cable installation due to start in Spring 2023.

What does the converter station do?

A converter station converts electricity from alternating current (AC) to direct current (DC) and vice versa. Sofia's wind turbines on Dogger Bank will produce power at 66 kilovolts (kV) alternating current (AC) which the offshore substation will then convert to 320kV direct current (DC) to transmit to shore.

The use of DC technology is the most efficient way to transport power over a long distance.

Once the power reaches the onshore converter station it is converted to 440kV AC so it can enter the national grid, the nation's transmission system.

Coast-to-converter station cable corridor takes shape

Main contractor J. Murphy and Sons is well underway with its progress along the onshore export cable route that runs seven-kilometres on primarily agricultural land from the coast near Marske-by-the-Sea and the new converter station site near Lazenby.

The main construction compound off the A174 is fully functional as well as the compound at the Coast Road (A1085), which is also the location of the project's major horizontal directional drilling activity (HDD) at the coast.



The main A174 construction compound



Members of the J. Murphy & Sons team, all local to Teesside.

Work has progressed well during the summer due to the dry weather. Local residents are likely to have noticed activity which has included the removal and storage of top soil, excavation of trenches and installation of ducts installed in readiness for the arrival of the high-voltage cable that will be pulled through from mid-2023.

The export cable route team comprises a total of around 80 workers with the majority local to the Teesside region.

Going underground

In addition to the landfall at the coast, the HDD technique will be used at other locations where there are roads or features which cannot be trenched.

There are a total of 10 HDDs to be carried out along the route, with six completed so far including underneath the A174 near Longbeck Road.

However at one section along the cable route, by Green Lane where the bridge and railway line cross, the ducts and cables will be installed via a micro-tunnelling technique. This work will be carried out by a specialised

tunnelling contractor due to move onto site in November.

A total of eight shafts – four at each end – will be created to launch the micro-tunnelling machine which will begin boring the 1.5 metre diameter tunnel in late February next year. The tunnel boring is likely to take around 2.5 months and there will be periods of 24-hour working during this time.

Residents living nearby to the site will be contacted with specific details of the works closer to the time.

Keeping the beach trench free

The trenchless construction methodology called horizontal directional drilling is being used to install ducts for Sofia's export and fibre optic cables underneath the Coast Road (A1085), beach and foreshore so that the area above remains undisturbed.

The first phase is due for completion in October with the remainder of the drilling and duct installation – for the second export cable and the fibre-optic cable – to take place early next year. The export cables will bring the power generated from the wind farm to shore while the fibre optic cable will transmit data to and from the wind farm.

The drills are one kilometre long with the drill bores for the export cables being almost half a metre in diameter. They will be lined with a continuous plastic pipe which is welded on site and pushed into the drill bore and out on to the seabed once the drilling is complete.

This long-distance precision drilling work is being carried out from the landfall construction compound opposite the beach between Redcar and Marske-by-the-Sea with the ducts coming up around 525 metres from shore. Once the ducts are installed they are plugged and fixed to the seabed ready to act as conduits for the cables when they arrive to be pulled through in 2023.

Vessels visible from shore will support the activity by carrying out subsea trenching and excavation as part of the works.

Taking on T-Levels

A total of six T-Level students from Middlesbrough College have so far been able to be part of the Sofia project's onshore construction works.

Sofia and our onshore contractors including: Jones Bros Civil Engineering UK, Kier Infrastructure and J. Murphy & Sons (JMS), have worked with the College to place students interested in a career in construction or engineering.

T-Levels are a technical qualification which includes core skills, theory, and concepts for the industry area. They are designed by employers and based on the same standards as apprenticeships, offering around 1,800 hours of study over two years. A key element of them is a 45-day work placement, which is where Sofia and our contractors have been able to provide support.

Providing a platform for Sofia suppliers



SGRE's Priscilla Ugoh outlines their supply chain plan requirements at the summer supply chain event.

Around 200 suppliers and stakeholders attended Sofia's 'Tier 1 Showcase' supply chain event – a face-to-face gathering in Hull with presentations from Sofia's turbine supplier, Siemens Gamesa Renewable Energy (SGRE) and turbine installation vessel supplier, Cadeler, as well as an update on the project itself from Sofia.

SGRE will supply the project with 100 of its latest model turbines while Cadeler will introduce two new state-of-the-art X-class installation vessels.

The event was one in a series which have raised awareness of the contracting opportunities on the project and facilitated engagement between Tier 1 contractors and the local supply chain.

The presentations from the day with all the key information can be downloaded from the Sofia website and all potential suppliers to the project are reminded to register their details on the Sofia portal which is now a shop window for more than 1200 companies.

Sofia around the world

Building an offshore wind farm requires a wide breadth of expertise and know-how from both the UK and around the world. As well as all the work happening in the North East, some of the major components are underway in other parts of the globe.



Sofia's Batam team in front of the offshore converter platform, once completed it will be 54 metres tall and weigh 7,000 tonnes.

The offshore converter station, one of the largest ever to be fabricated, is taking shape at Sembcorp Marine's fabrication yard in Batam, Indonesia; the high voltage direct current export cables are being manufactured at Prysmian's factory at Pikkala in Finland, and the prototype of the SGRE 14MW SG-DD-222, the world's largest installed operational has been erected for testing at the National Test Centre in Østerild, Denmark.

It takes a huge amount of planning and coordination, and is no mean engineering feat to ensure each component will be ready for installation at the right time.

Landfall hoardings unveiled by students

As part of Sofia's ongoing relationship with neighbouring school Outwood Academy Bydales, the project teamed up with the art club with the brief for them to create designs for the hoardings of the landfall construction site.

Working with their art teacher Kelly Smith, three art club students produced seven stunning images under the theme, "Love where you live", which include local landmarks such as the Redcar Beacon and Teesside Wind Farm and icons including Lemon Tops and donkeys on the beach.



The young artists responsible for the colourful designs, Year 7 and 8 students Talia, Rosie and Autumn cut the ribbon to signify the opening of the 'gallery'.

Sofia sets NCS 22 Enterprise Challenge to reduce gender gap in offshore wind

Teaming up with NCS (National Citizen Service), Sofia tasked more than 1600 North East teenagers with creating campaigns to improve the gender balance in the offshore wind sector which at present has only 18% women.

The Enterprise Challenge was part of the NCS22 programme which ran for eight weeks over the summer. For Sofia it provided the perfect opportunity to seek valuable insights and advice from many of the young people who may join their workforce in years to come.

For the 16 to 17-year-olds, who took part during their summer holidays, it gave them a chance to work creatively, develop their presentation skills and start to mould their future career ambitions.

Concepts from the 150 teams who took part ranged from an offshore wind Barbie and a Love Island pastiche to a touring bus and use of historical role models. During the challenge, the campaign presentations were



The winning team - Headliners - with management representatives from NCS and RWE.

peer-reviewed and then judged by RWE experts with three finalist teams invited to a grand finale held in Durham.

The winning entry came from a team of teenagers from South Tyneside who picked up the main accolade for their campaign that aimed to tackle gender stereotypes using social media trends on TikTok and education outreach.

Highly commended runners up from Gateshead and Stockton-on-Tees received praise from judges for their respective animated advertising campaign based on powerful women in history and a social media celebrity endorsement campaign combined with a multi-level education programme.

Second year of community fund

Sofia's community fund is now in its second year with funding available to local groups and charities in East Cleveland.

Recent funding awards have gone to Marske Litter Action working together to keep Marske-by-the-Sea litter-free; local autism charity MAIN to increase its volunteering

activities, and Tees Valley Wildlife Trust to support a Wilder Coast Project Officer.

To find out more or apply for funding visit www.teesvalleyfoundation.org and follow the 'apply for a grant' links specifying the 'Sofia Offshore Wind Farm Construction Community Fund'.

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