

Teesside Uni turbine blade innovators



Teesside University students who took part in the Sofia blade innovation competition

Engineering Degree, making up a four month Engineering Design module.

Over a period of four months, the teams of students researched, analysed and assessed potential ways to improve existing blade inspection methodologies. They also had a session with discussing careers pathways and a visit to the Siemens Gamesa Renewable Energy's impressive factory in Hull to see the size and scale of the blades under fabrication.

The challenge was run by Gill Lacey, Senior Lecturer at Teesside University's School of Computing, Engineering & Digital Technologies who said: "The students really enjoyed the real-world element of this challenge which integrated numerous engineering disciplines, maths, logistics and especially the design side and should hold them in good stead for their future careers."

Now in its second year, the Sofia blade innovation challenge gave around 50 Teesside University students the opportunity to become offshore wind innovators.

The challenge - for students to come up with innovative new ways to inspect the blades of offshore wind turbines - is part of the Foundation Year of their

Who has been awarded a community fund grant

Local groups recently awarded grants from the Sofia Construction Community Fund include:

Tees Valley Wildlife Trust: Sofia supported the hosting of a mini countryside festival called Nature comes to Grangetown. Held at Kingsley Field and Greystone Woodland in Grangetown in August 2023, it aimed to get local people engaged with their local green spaces (Kingsley Field and Greystone Woodland).

Marske on a Mission: The grant from Sofia will cover cooking equipment, refreshments, takeaway containers for meals, volunteer support and pantry supplies for the group which provides the community with

regular social interaction, and the opportunity to seek support and advice, particularly if struggling with mental health or issues related to poverty.

Redcar & Eston School Sport Partnership (RESSP) and the Cleveland School Sport Partnership (Cleveland SSP): Sofia's funding helped the organisations to offer Balance Bike sessions to around 200 pre-school children in Redcar & Cleveland by covering the costs of staff and the provision of equipment including balance bikes and helmets.

Eston Arts Centre: Sofia's fund helped Eston Arts Centre realise the project Let's Pedal to

provide an alternative way for local people with physical and emotional health barriers to get involved with the National Cycling Championships as the event went through Redcar and Cleveland in June 2023.

The Sofia Construction Community Fund remains open for applications for funding from local community groups and charities in East Cleveland. To find out more about the fund or to apply for funding visit www.teesvalleyfoundation.org and follow the 'apply for a grant' links specifying the Sofia fund.

Helping to build primary students' futures



Westgarth Primary students present their ideas on dealing with bird guano on turbines

Over the past academic year, Sofia's education team conducted careers engagement activities with more than 400 local primary students from Years 4 to 6, as well as those from special educational needs schools as part of Redcar & Cleveland Borough Council's Building our Future primary programme.

The programme, run by Redcar and Cleveland Voluntary Development Agency (RCVDA) is designed to make careers education more meaningful to children from an early age.

This year Sofia worked with five local primary schools and two special educational needs schools, enabling students to take part in a range of different projects related

to offshore wind and early careers preparation.

Offshore wind farm cable mapping exercise sessions



Whale Hill Primary School students map a cable corridor

were held with students from Bankfields, Whale Hill, Grangetown, Westgarth and Caedmon Primary Schools, where the students were tasked with calculating the best cable route from an offshore wind farm site to the onshore substation.

Also with Westgarth, Sofia ran a four-month long project tasking Year 5s to come up with inventive ways to clean bird guano from offshore wind turbines and platforms, which is a real life issue in the sector.

With both Kirkleatham Hall School and Kilton Thorpe Specialist School, Sofia was engaged with 'meet the employer' sessions, interactive projects and with carrying out mock job interviews. These were to help the students understand the type of sectors and careers available locally and prepare them for potential post-school work opportunities.

Sofia will continue to support the programme as it continues into 2023/24.

To remain updated on Sofia please send your request to be added to the distribution list to: comms_sofia@rwe.com. Send your name and postal address for posted copies and your email address only for electronic copies.



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.

Sofia's offshore construction kicks off

Offshore construction is officially underway on Sofia Offshore Wind Farm as cable manufacturer Prysmian's Leonardo da Vinci lays the first of its high voltage direct current (HVDC) marine export cables that will transport green electricity 220 kilometres (km) from Dogger Bank to the UK's North East.

This is a significant milestone for project-owner RWE and for the project itself, which represents a more than £3 billion investment in the UK's energy infrastructure and a significant contribution towards the nation's net zero targets.

The 170-metre-long vessel sailed from the Port of Middlesbrough with the initial two 130km sections of offshore export cable, which are being laid in parallel from just off the Teesside coast between Redcar and Marske-by-the-Sea. Visitors to the coast during late August and into early September, may have seen the vessel as it started its work.

One end of each of the two sections of subsea cable is drawn from the vessel towards shore through cable ducts that run beneath the seabed, beach, sand dunes and road to the project's landfall construction compound.

The cable ducts were installed earlier this year using a technique called horizontal directional drilling.

The cutting-edge vessel then moves away from the coast, laying the cable sections side-by-side and following its set route towards the offshore wind farm site. Installation of the remaining two 90km sections of marine cable - which will connect these initial two sections to the offshore site on Dogger Bank - is planned for 2024.

Construction has been underway in Teesside on the project's onshore converter station and

land cable corridor since June 2021, however the laying of the first sections of cable marks the start of the project's intensive three-year offshore construction phase.

By late 2024, the Leonardo da Vinci will have laid four sections of ±320kV HVDC marine export cables, totalling 440 kilometres plus the accompanying communications cables.

The ongoing offshore construction works will include the arrival of the project's offshore converter platform, due to make the journey from Batam in Indonesia to the UK in 2024. Also planned for next year is the start of installation of the 100 extended monopile foundations and array cables at the site in the central North Sea.



The Leonardo da Vinci leaves Middlesbrough Port bound for the Redcar coast

Next steps along the cable corridor

Since February 2022, cable civils works contractor J. Murphy & Sons (JMS) and others have worked on establishing the onshore cable route for both the Sofia and Dogger Bank C offshore wind projects, from landfill between Marske-by-the-Sea and Redcar, to the site of the new onshore converter stations adjacent to the Wilton Complex, north east of Lazenby.

Although separate projects, Sofia and Dogger Bank C continue to work together to maximise efficiencies and minimise impacts on local stakeholders. The work underway to date has been in preparation for the arrival of both projects' onshore export cables.

Almost all of the work to lay the projects' cable ducts and backfill the trenches is completed except for some activity related to the ducts for the cables that will go under Green Lane and the railway line at Black's Bridge/Redcar Road.

Tunnels have been created under Green Lane and the railway line to house the ducts at this location, with construction of the 20 to 30 metre long transition sections in the fields adjacent to the tunnel shafts taking place during the summer and early autumn.

Unfortunately this work required more hammer piling than originally planned due to local

ground conditions and therefore caused significant disturbance to nearby residents, which the project team acknowledges has been a trying time for those at home during the day.

Sofia Project Director Matthew Swanwick said: "We worked closely with the contractor to look at alternative methods to install the necessary sheet piles to line the transition sections, and also at improved noise barriers.

However we know this was a particularly disruptive piece of work and very much appreciate the community's patience and understanding and apologise for any distress it may have caused."

Installation of the cables from shore to Wilton



The tunnel boring machine being lowered into the shaft (Photo: Cal Carey)

Also in the summer, the first of the wind farms' onshore export cables will be pulled through the in situ cable ducts.

The activity around the arrival of the cable comprises various tasks including initial mobilisation and set-up, duct proving, pull

through and installation of both the electric and fibre optic cables, jointing, backfilling and finally demobilisation.

To facilitate the efficient installation of the onshore export cables, specifically pulling them through the ducts and joining

sections together, Redcar & Cleveland Council has approved seven day-a-week working (during daylight hours). This means there is likely to be activity on Sundays, as well as weekdays and Saturday, until early October 2023.

All the Sofia and Dogger Bank C onshore cable construction work, including reinstatement, is due to be completed by the end of 2024, subject to weather and ground conditions.



Tunnel boring machine at the shaft base

Onshore converter station update

Civil engineering contractors working with GE's Grid Solutions have now been onsite since spring 2022, readying it for the installation of the converter station's state-of-the-art electrical infrastructure.

Work has made visible leaps forward with the converter station buildings, including the main valve hall, control and storage buildings now weathertight and with their fit out underway. The four huge transformers that have been manufactured in GE's Stafford facility are set to arrive in the autumn of this year.

Sofia placement helps secure engineering apprenticeship Having studied different types of engineering at Middlesbrough College, it was the final year of her Construction and the Building Work Environment course that prompted 20-year-old Maisy Marcuzzi to contact



Learning by doing: Middlesbrough College's Maisy Macuzzi with Sofia's onshore converter station site manager Matthew Archer during her work placement with the project.

Sofia for a placement at the onshore converter station site.

Sofia's onshore converter station site manager Matthew Archer, was able to offer her experience at the Teesside site and provide guidance throughout.

Since completing the day-a-week placement, Maisy has been offered

an Onsite Manager Apprenticeship with supplier Seymour Civil Engineering Contractors, so she will spend four days a week on site and a day a week at Teesside University for the coming four years.

Project milestone calendar

Sofia has a number of milestones ahead for the rest of 2023 and into early 2024, with major activity to include:

Summer 2023	<ul style="list-style-type: none"> Installation of first onshore export cable (Teesside) Installation of first 130 kilometre offshore export cable (from shore towards Dogger Bank)
Autumn/ Winter 2023	<ul style="list-style-type: none"> Pre-ploughing of the seabed for array cable installation starts (Dogger Bank) Installation of scour protection at the turbine locations (Dogger Bank) Onshore converter station civil works complete and arrival of transformers (Teesside)
Winter 2024	<ul style="list-style-type: none"> Foundation installation begins (Dogger Bank) Completion of civil engineering works along the onshore cable corridor (Teesside)
Spring 2024	<ul style="list-style-type: none"> Installation of final onshore export cable (Teesside) Arrival of new-build construction service operations vessel Rem Power (Port of Blyth)
Summer 2024	<ul style="list-style-type: none"> Offshore converter station sets sail for the UK (Batam, Indonesia)

Opportunities for North East suppliers



Bates Clean Energy Terminal, Port of Blyth (Photo: Mike Smith)

Sofia is committed to ensuring suppliers close to its works are up to date on the project's construction and relevant opportunities. As part of this, Sofia is hosting a supply chain event in Blyth to introduce its offshore construction phase and provide way for those in the region to find out more about the project and ways to get involved.

The event on Thursday, 14 September is in conjunction with key partners Van Oord, responsible for the project's foundations and array cables; Port of Blyth, location of Sofia's

offshore construction base and Van Oord's array cable



Sofia's offshore construction base

mobilisation, and Specialist Marine Consultants (SMC), delivering offshore resources and services. To find out more visit: <https://sofiawindfarm.com/supplier-portal/#Events>

Sofia will also be a strategic partner for this year's Offshore Wind North East, being held in Sunderland on November 8 and 9. This is the largest offshore wind event in the region and open to anyone with an interest in the sector.

Organised by NOF and supported by Energi Coast for more information visit the event website: <https://offshorewindne.com/>

Sofia team volunteering day

Sofia's latest team event comprised a day working at Skelton Castle Cricket Club - to help get a range of 'odd jobs' completed for the community sports club. The club has a long history, having been in operation since 1876.

The jobs needed covered a variety of inside and outside tasks ranging from a litter-pick

and general 'tidy up' to planting and potting the new community garden, internal and external painting and groundworks.

The club's Andrew Buchanan said of the Sofia team: "The team was on site today and did a cracking job. I was blown away by how quickly they mobilised and got on with everything we asked for and more."



Sofia team volunteering day