Issue 8 Summer 2017

Newsletter

Rampion Offshore Wind

The final blade is installed on a turbine

Turbine installation almost at halfway mark

Almost half the 116 turbines of the Rampion Offshore Wind Farm are in place and two mighty jack-up vessels will now work together to install the remaining MHI Vestas V112-3.45 megawatt (MW) models to make up the 400MW project.

MPI Discovery started installation work in March and was joined in June by second jack-up vessel *MPI Adventure*. Both vessels bring the components of eight full turbines from Esbjerg, Denmark to the site for installation before returning to the port for their next load as part of a continuous operation. Each round trip takes approximately 20 days. The installation of turbines will carry on from now through the summer and is expected to continue until late 2017.

The commissioning of the turbines, to get them ready to start generating power, is due to begin in autumn. At the time of printing, 56 turbines were installed at the site.

Array cable laying complete

The last of the 144 kilometres of array cables, that will transmit the power generated by the wind turbines to the offshore substation, have now been laid.

Manufactured in the UK by Hartlepool's JDR Cables, the cables have been laid in 12 strings, with each string linking 9 to 10 turbines and meeting at a single offshore substation. The cables will carry the electricity generated by the turbines to the substation where it will transform the power from 33 kilovolts (kV) to 150kV, to reduce the losses when it is transmitted to shore.

The cable lay vessel *Fugro Symphony* has been criss-crossing the 72 square kilometre site, an area larger than the island of Guernsey, laying the cables since August last year, with a six month break over winter. This means that in just five months the cable installation team, provided by Fugro Subsea Services, has installed 122 cables. Cable Installation Project Manager, Alan Kelly, said laying the cable in a narrow corridor between cleared unexploded ordnances and boulders was a challenge on the wind farm site.

"Fugro specialists working closely with the Rampion project team developed a particularly efficient and safe cable installation methodology to overcome the seabed issues and successfully complete the cable laying works."

The array cable being laid

The array cable installation is a two-step process where the cable is first placed on the seafloor before it is buried by a chain cutting method, into at least one metre below the seabed. The cable burial will be completed by the end of the summer.

Laid end-to-end the array cables would stretch from Brighton to London and back.

Onshore focus shifts to reinstatement

Fine weather has meant the onshore cable installation has now progressed to the point where all but one last section of the 26-kilometre route has been pulled through the buried ducts.

All the joint bays, where the lengths of buried cable are joined together, are also complete along with all of the cable jointing itself. The last section of cable is due to be pulled through in July.

A high voltage test of the cable was successfully undertaken in late June. This involved gradually increasing the voltage to each power conductor to check the condition of the insulation and cable joints, and confirm their readiness to be connected to the electrical system.

Some sections of the route had required additional work on the ducts that house the cable, particularly at Tottington Mount.

This area is now a priority for the contractors as they replace the topsoil and turf, and work to restore the chalk grassland to its previous condition.

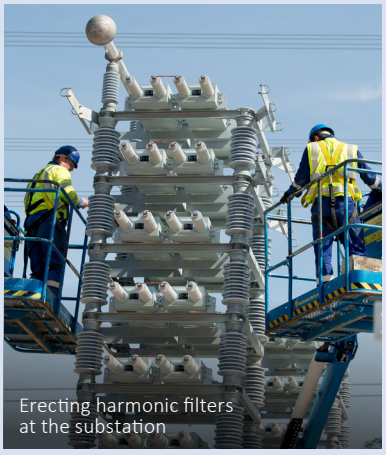
Onshore Cable Package Manager, Richard Carpenter, said that cable installation was delayed in part due to unseasonable wet weather at the start of the project.

"We have progressed well since the weather improved and the major focus for the project is now on reinstatement – topsoil replacement, reseeding and planting, restoring hedges and fences and handing land back to owners.

"The delay meant we missed a planting window but it is vital we plant in the right season to ensure the reinstatement is well underway before the 10 year monitoring programme starts."

Reinstatement underway at Tottington Mount

Substation heading for commissioning



Erecting harmonic filters at the substation

With the main high voltage apparatus now installed at the onshore substation, work on site will focus on the control and protection cabling from the field into both the control and gas insulated switchgear (GIS) buildings.

Much of this work will be done inside the two buildings as cables are connected and terminated ready to be commissioned.

External works to come include preparing and oil filling the transformers, testing switchgear and completing civil works by preparing roads, stoning the compounds and building the permanent substation access off Bob Lane.

Autumn will see the commissioning and early operation of the substation, with reinstatement works set to continue into 2018.

The tale of *Moby Dig*

The 90-tonne elevated excavator introduced in the last newsletter emerged as a minor celebrity in Lancing after it became embedded in the seabed when backfilling trenches dug for the installation of the wind farm's export cable.

Its location 500 metres offshore presented a number of technical and engineering challenges that had to be overcome before it could be safely removed.

Rampion's Development and Stakeholder Manager, Chris Tomlinson, said that the digger was too far out to recover from shore, so it was decided to bring in a specialist sheerleg crane vessel. Called *Cormorant*, this large barge with a heavy lift crane was able to manoeuvre safely in the relatively shallow conditions.

"Planning the removal, engaging contractors, ensuring the right equipment and people were available, and assessing the seabed for the arrival of the barge, meant the digger was in place for around three months, long enough to become a part of the local community."

A reader poll in the Worthing Herald came up with the name *Moby Dig*, local kite surfers adopted it, poems were written about it and countless photos and videos appeared online.

"It was heartening to see the excavator become such a popular topic of local conversation however, after considerable effort to ensure its safe and effective recovery, we are pleased to report the removal operation has been a success."

Moby Dig will now be salvaged.

Fixed to the back of the barge, the elevated excavator ready to sail away

Offshore substation finds its new home

Rampion's 2000-tonne offshore substation was lifted onto its new home on top of the four-legged jacket foundation in April, marking yet another significant milestone for the project. Manufactured at Babcock International Group's Firth of Forth facility in Scotland, the structure, also known as the topside, was installed by heavy-duty crane vessel *Rambiz 3000*, which also installed the jacket foundation last year.

Two cranes with a combined capacity of 3,300 tonnes lifted and lowered the structure in tandem, with steel guide cones helping to position it on the foundation before it was finally welded in place. Further completion and commissioning works will continue over the coming months in preparation for the wind farm's first electricity generation.

Rambiz 3000 installed the centrepiece of the wind farm, the offshore substation

The vessel armada building Rampion

Building a wind farm takes more than 100 vessels, and at least 20 different types, each with a different and specific role to play to ensure the successful completion of every phase of the development, from consenting through construction and into operation. Early phase vessels used at Rampion included those required for environmental, geotechnical and geophysical surveys, boulder and unexploded ordnance clearance and other site preparation.

The construction phase has introduced a whole new fleet to site, with the most visible being jack-up vessels. *MPI Discovery* and *Pacific Orca* installed the 116 foundations last year and now *MPI Discovery* is back with *MPI Adventure* to install the turbines. Offshore Logistics and Installation Manager, Jonathan Grigg, said these are the vessels people often mistake for rigs because they are between 140 and 160 metres long and stand up to five metres out of the water on their six legs when in operation.

Crane vessel *Rambiz 3000* lifted the jacket foundation and more recently the topside at the core of the wind farm. Installation vessel *Fugro Symphony* laid the array cables, with *Fugro Saltire* following behind to bury them. *Stemat Spirit* laid the export cables from the wind farm to shore so was clearly visible from Lancing Beach. Guard vessels and a flotilla of up to 20 crew transfer vessels have been supporting all the operations.

The latest addition to the vessel family has been the arrival of two floating hotel vessels, or floatels, which enable personnel to remain close to their workplace – saving both time and fuel on daily commutes. During the project's busiest period in June, 570 people were working offshore.

Pacific Osprey is a 160m jack-up that will support substation works and commissioning, and *MS Wind Solution* is a passenger ship that will be anchored to support the wind turbine works and commissioning around the site.

"By using floatels, our technicians don't need to transit to and from port every day. Instead they're close to their workplace and can enjoy the vessel facilities, including gym, games room and restaurants, ensuring they're well fed and rested ready for the next working day."

Name: *MPI Adventure*
Role: Turbine installation
Length: 139m
Legs: 6
Max operating depth: 40m
Accommodation: 112
Year built: 2011

Name: *Fugro Symphony*
Role: Cable laying
Length: 130m
Loading capacity: 10 metric tonnes/m²
Accommodation: 105
Year built: 2011

Name: *Windcat 19*
Role: Crew transfer to and from shore
Length: 21m
Max speed: 28 knots
Seating: 12 passengers
Year built: 2008

Name: *MS Wind Solution*
Role: Offshore accommodation
Length: 123m
Accommodation: 100
Facilities: Reception, restaurant, game and fitness rooms, conference room, movie and TV lounges
Year built: 1969

Rampion role in Newhaven Port master plan

Visitors to Newhaven Port and anyone with a view of the East Quay will notice a busy construction site as work on the new Rampion operations and maintenance base is now well underway.

Visualisation of the new base designed by architects Corstorphine + Wright together with Hemsley Orrell Partnership Engineers

Preliminary works, including driving pre-cast concrete piles on-site in readiness for the foundations, have concluded and the facility will gradually take shape over the summer with the majority of the construction due to be completed by the end of the year. The base will be home to a 60-strong Rampion team that will keep the wind farm running efficiently once it is built.

Chief Executive of the Newhaven Port Authority, Captain François Jean, has welcomed the arrival of Rampion as part of a master plan to grow the port's business base, attract new activities and industry, and contribute to the regeneration of the whole town.

"If the port prospers with new investment, that is good for the town and everybody, and with offshore wind it has a double sustainability benefit of both renewable energy and long-term jobs."

The port is currently home to the wind farm's construction team, which oversees the building of the wind farm from temporary facilities including a marine control centre, offices, welfare room, warehousing and space for main contractors.

"The construction of the wind farm and its base is contributing to a local supply chain with new businesses as hundreds of people are living, sleeping and eating in the area and bringing wealth, which has a significant impact."

Rampion's arrival coincides with the launch of the Newhaven Enterprise Zone, which aims to facilitate economic regeneration of the town, and along with the Newhaven Port's own ambitious development plans, looks set to be part of a wave of positive change for the area.

Community Benefit Fund news

The administrative arrangements for the eagerly awaited Rampion Community Benefit Fund are now being finalised and details, including the application process, will be announced in the next edition of the newsletter.

Art workshops help make Fish Festival parade the 'best ever'

Rampion Offshore Wind Farm supported the Children's Parade at this year's Newhaven Fish Festival, which was described by spectators and participants as the 'best ever'.

By providing funds to the Sussex Community Development Association, Rampion enabled local artist Carol Havard to run workshops so children could create colourful costumes and banners using the theme 'Clean, Green and Marine'. Those involved were: High Cliff Academy, UTC, Seahaven Academy, Denton Island Nursery, Brownies and Girl Guides and Hillcrest Community Centre.

More than 240 children, parents and organisers took part in the parade, which was started by Rampion Plant Manager, Pete Andrews, and led by Mayor of Newhaven, June Dyer, Young Mayor Sophie Lewis and the Earthquake Drummers.

Pete Andrews said "We were thrilled with the positive feedback we had on the day from visitors to our information stand, which was staffed by Rampion team members who answered questions about the project, distributed literature and giveaways and oversaw colouring-in activities for children."

Mayor June Dyer opens the festival with Young Mayor Sophie Lewis, organiser Lucy Hill and Rampion's Pete Andrews

Cable route wood recycled for re-use

The cable drums, delivery pallets and other wooden materials used during the construction of the Rampion onshore cable route have been recycled by contractor Carillion using Brighton-based social enterprise Community Wood Recycling.

More than 12 tonnes of wood from along the cable route have been collected by the group, which was set up to rescue and reuse waste timber that would otherwise be landfilled, while also providing jobs, training and volunteering opportunities for local people who are marginalised from the labour market.

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