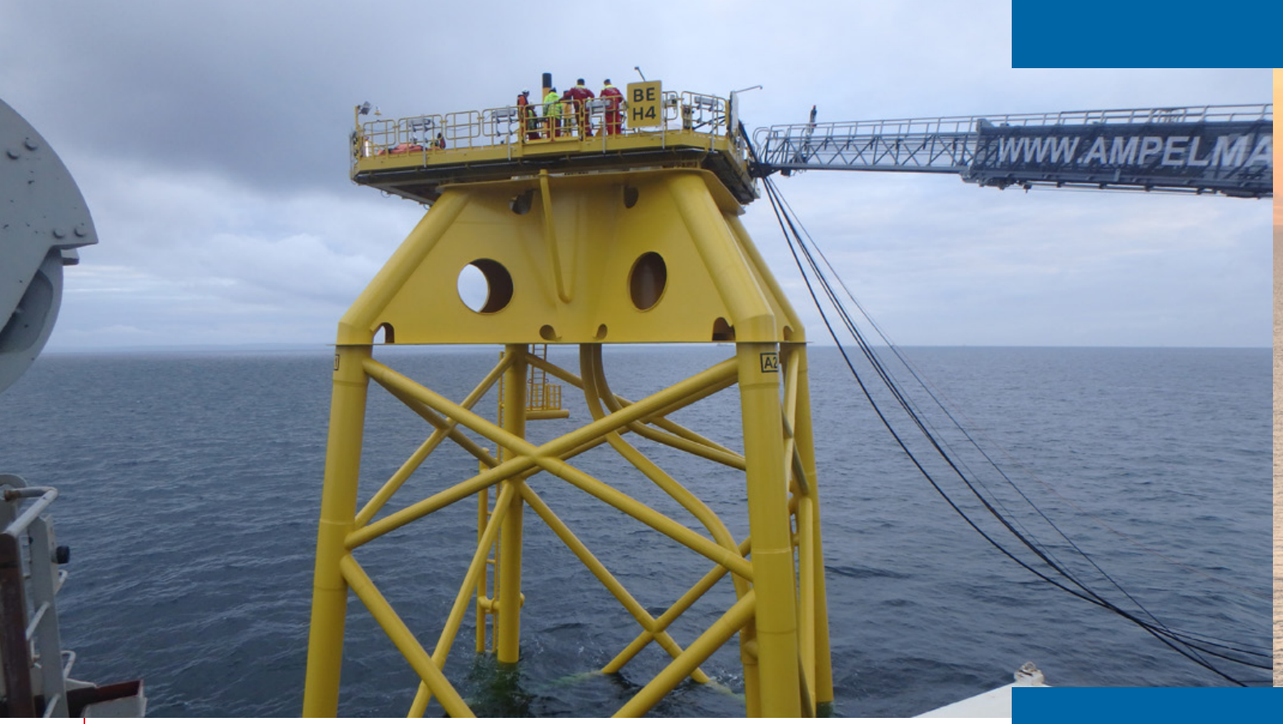

Jacket installation

Field Information

Beatrice, once fully operational, will be Scotland's largest offshore wind farm. Located approximately 13km from the Caithness coast, Beatrice will create around 90 full time roles for the duration of its 25 year lifespan. Onshore construction began in Moray in May 2016 and offshore construction began in April 2017. The first wind turbine was installed and first power exported in July 2018. Beatrice will be fully operational in 2019.

Beatrice is a Joint Venture between SSE (40%), Copenhagen Infrastructure Partners (35%) and Red Rock Power Limited (25%).

Source: beatricewind.com

subsea 7

client.enquiry@subsea7.com

www.subsea7.com

OUR VALUES

- Safety
- Integrity
- Sustainability
- Performance
- Collaboration
- Innovation

PROJECT CLIENT

Beatrice Offshore Windfarm Limited (BOWL)

BOWL EPIC Foundations and inter-array cables

Project at a glance

Offshore Scotland, located in the Outer Moray Firth, a 588mw offshore wind farm has been developed. Seaway Heavy Lifting, jointly with Subsea 7 were awarded the EPCI contract for the client Beatrice Offshore Windfarm Limited (BOWL). The scope of work included the engineering, procurement, construction and installation (EPCI) of the 84 wind turbine generator (WTG) foundations, piles and inter-array cables (IAC) and the transport and installation of the two Offshore Transformer Module (OTM) platforms for the Beatrice Offshore Wind Farm.

Full project information overleaf

Highlights

- Contract awarded in April 2016 with the first pile installed April 2017, followed by the first jacket in August 2017.
- Subsea 7 and Seaway Heavy Lifting's (SHL) first EPCI project in the offshore wind industry. The project team comprised both Subsea 7 and SHL personnel. This collaboration contributed to the success of the project.
- First time such a large scale pre-piled WTG foundation in this water depth.
- The fabrication scope was divided across six fabrication sites to allow timely delivery of structures .
- Riggerless installation of all jackets.
- First project that could cope with tight early-age cycling limitations by implementation of jacket pile grippers.

Our Differentiators

Culture · Creativity · Relationships · Reliability · Solutions

BOWL EPCI Foundations and Inter-Array Cable

Project

BOWL EPCI Foundations and inter-array cables

Location

Scotland: Outer Moray Firth on the point of the Smith Bank, approximately 13km off the Caithness coastline

Water depth

Ranging between 38m below lowest astronomical tide (LAT) in the south of the field to 60m below LAT in the north

Project Type

EPCI

Date Awarded

April 2016

Completion Date

Ongoing

Vessels

Seaway Yudin, Oleg Strashnov, Seaway Aimery, various third party vessels

Scope of Work

The scope of work comprises of the following elements:

- Design WTG foundations
- Fabrication of steel jackets & piles (84x WTG foundation)
- Transport and installation of jackets and piles
- Transport and installation of substation OTM
- Design and procurement of IAC
- Installation and trenching of IAC (91x sections)
- Marine construction support.

Project Milestones

Key milestones for the project included tight deadlines for the design, fabrication and installation works.

Technology and Innovation

Standardised transition piece top sections allowed greater transferability of these sections between the yards.

The pile mitigation protocol which was designed for Beatrice was implemented for the first time as part of a UK offshore wind farm and was found to be successful.

The Pile Installation Frame was the first of its kind and all its smart components allowed very accurate pile installation which were installed well within tolerance.

A hydraulic sea fastening system was designed for the S-2500 impact hammer which resulted in shorter cycle times for the operations.

A riggerless jacket installation system was also designed in-house. Traditionally riggers are required to hook the slings onto the crane hook, however by using a combination of the so-called lifting bucket and an internal lifting tool with steering yoke and proximity sensors, all installation was conducted remotely without rigger intervention on top of the 80m high structures.

Collaboration

Throughout the project there was close collaboration between Subsea 7, Seaway Heavy Lifting and Seaway Offshore Contractors (SOC). During this project Subsea 7 fully acquired both SHL and SOC.

Assets and Worksites

The fabrication workscope was divided between various worksites in the UK, The Netherlands, Belgium, Germany and Denmark. This ensured timely delivery of all structures.

Offshore installation activities were executed between April 2017 and August 2018 using the Seaway Heavy Lifting vessels, *Seaway Yudin* and *Oleg Strashnov* and the Seaway Offshore Cable vessel, *Seaway Aimery*.