

C-Power



Cert No. 11460
OHSAS 18001

Annual Report 2019

Project name – Phase	Thornton Bank Wind Farm - Operational Phase
Document code	CPO-OPS-PA-BMM-GEN-RPT-0011
Document revision	0
Status	Released
Issued to	BMM

	Function	Name	Date	Signature
Author	HSE Manager	Ellen De Conseth	7.04.2020	
Review	Finance Manager	Johan Calliauw	8/4/2020	
Approval	Chief Executive Officer	Dirk Magnus	9/4/2020	

C-Power NV
Buskruitstraat 1
8400 Ostend - Belgium
Phone: +32 (0)59 79 79 80
www.c-power.be



REVISION RECORD SHEET			
Revision	Date	Description changes	Changed by
0	12/03/2020	First issue	EDC



TABLE OF CONTENTS

1	GENERAL PROJECT INFORMATION	4
2	MAIN ACTIVITIES DURING 2019	5
2.1	Major component replacements	5
2.2	Aquaculture	5
3	CONSTRUCTION & OPERATION PERMIT CONDITIONS	6
4	ENVIRONMENTAL MONITORING ACTIVITIES	8
5	HEALTH, SAFETY AND ENVIRONMENT (HSE)	9
6	ANNEXES	10
6.1	Availability per phase on monthly base	11
6.2	Production – Low wind – Stops – Maintenance hours.....	12
6.3	Production per month per phase	13
6.4	Production per year per turbine.....	14
6.5	Wind Rose	15

1 GENERAL PROJECT INFORMATION

C-Power's wind farm is located on the Thornton Bank, approximately 30 km off the coast of Zeebrugge. The construction of the project was developed in three phases.

Phase 1 (2007-2009), the pilot phase, consisted of six 5M (5 MW) wind turbine generators (WTG) on gravity base foundations (GBF).

The 30 MW installed capacity has been fully operational since end of June 2009.

Phase 2 (2011-2012) consisted of:

- the construction of 49 jacket foundations (JF);
- the installation of 30 WTGs of 6,15MW: 24 WTGs in sub area B and 6 WTGs in sub area A, mutually connected with 33/36 kV infield cables;
- the laying and connection of infield cables;
- the crossing of the 33/36kV infield cables with the Interconnector gas pipeline and the Concerto South telecom cable;
- the construction and installation of the offshore transformer station (OTS);
- disconnection works of 150/170kV cable A from D1 and connection to transformer station and the connection of a 33kV infield cable between OTS and D1;
- the installation of 2 subsoil 150kV onshore connections between the 150 kV offshore cables and the high voltage station "Sas Slijkens";
- the laying of the second 150kV offshore export cable B.

Phase 3 (2012-2013) consisted of:

- the installation of 18 WTGs (6,15MW) and the necessary connections with the offshore transformer station

The complete project comprises 54 WTGs with a total rated power of 325 MW plus the supporting infrastructure. Full operation was accomplished by end of September 2013.

The figure below shows the lay-out of the C-Power wind farm.

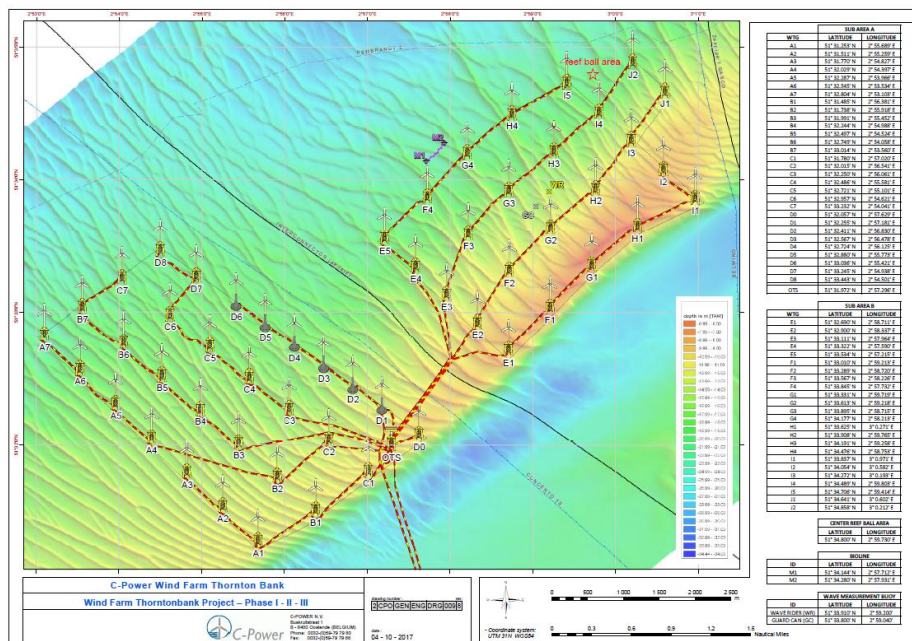


Figure 1: Lay-out of C-Power's wind farm

2 MAIN ACTIVITIES DURING 2019

An important change in the operations and maintenance set-up of C-Power occurred, following the insolvency of the wind turbine manufacturer Senvion, which was the main contractor on the wind farm, entrusted with a full service agreement. After the filing for insolvency, and in order to ensure business continuity, C-Power decided to take over the Belgian daughter company Senvion Benelux (re-baptized as Thornton Bank Maintenance Services) and to conclude separate contracts with former suppliers and sub-contractors of Senvion. The most important one was the contract with John Cockerill (the former CMI), responsible for the regular scheduled and unscheduled maintenance, together with the former Senvion Benelux. However, these changes had no big impact on the safety and environmental policy and management of C-Power.

2.1 MAJOR COMPONENT REPLACEMENTS

During 2019 following major components were exchanged on the wind turbines:

- on turbine D6 the gearbox + the rotor shaft assembly
- on turbine B1: the gearbox
- on turbine G1: the gearbox
- on turbine F4: the rotor shaft assembly
- on turbine G4: the rotor shaft assembly

All exchanges were carried out between beginning June and beginning July with the DP2 Jack-Up Vessel Neptune.



2.2 AQUACULTURE

The test project for mussel farming obtained an extension beyond the initial end date (end 2018), but ended in Summer 2019. The Bio line North to the Area B of C-Power's wind farm (cfr figure 1) was dismantled in June 2019. The end report of the project will be presented in March 2020.

3 CONSTRUCTION & OPERATION PERMIT CONDITIONS

All permit obligations are integrated and implemented in the daily management of the activities offshore by C-Power and its contractors.

The annual institutionalized Follow-up Committees (“Begeleidingscomité”) took place on 21/01/2019. During this Follow-up Committee, the progress of the project is discussed as well as the compliance of the operation and maintenance activities with the permit conditions. C-Power also provides this Committee with 3 monthly reports.

Next to this regular and official reporting to the authorities, C-Power informs the federal and nautical authorities on a frequent, voluntary and transparent basis, including a regular dialogue with the relevant authorities via e-mail, ad hoc meetings, telephone exchanges etc.

An overview of the main permit conditions is given below.

Drifting or sunken objects

A detailed track record of the drifted and sunken objects is kept by C-Power. No major events were reported.

Cables

No cable surveys were performed in 2019. Next surveys planned in 2020.

Monitoring

Monitoring activities BMM

Seabird surveys, fishing, monitoring of sea mammals with C-pods, hard substrate sampling and water sampling were performed by BMM in the course of the year 2019. Next to that, 2 bat recorders are installed on the OTS in the framework of a long-term bat detection project.

Meteorological parameters

Meteorological data (wind speed, wind direction, wave height, wave period, tide, pressure, temperature, visibility) measured in real time on C-Power’s offshore transformer platform are available on “<http://meteo.c-power.be>”.

The measurement buoy in Area B of the C-Power wind farm (see also Figure 1) installed by Vlaamse Hydrografie in August 2017 is still in operation; data of this wave buoy are visible in “Meetnet Vlaamse Banken”.

Risks & Safety

Internal emergency plan

Was initially released May 2014. Updates of the ERP are updated on the C-Power management platform. Only minor organizational items were updated in 2019.

Emergency exercises:

23/05/2019: ERP on a WTG; with involvement MRCC

12/09/2019: ERP on a WTG; with involvement MRCC

25/11/2019: ERP on a WTG; with involvement MRCC

05/12/2019: ERP on a WTG; with involvement, MRCC



Next to the overall ERP exercises, 20 smaller drills were performed, such as Man Overboard trainings, First Aid training, evacuation exercises using the Sked and Milan. The objective of these smaller drills is to train as many technicians as possible in rescue techniques.

For 2020, 4 ERP drills will be planned together with MRCC. In one of these exercises, the 40th squadron will be involved. Similar to 2019; we plan 20 smaller ERP exercises in 2020.

Medevac

A medevac from the CTV took place on 1 September. A person suffered from chestpain and shortness of breath, so we contacted the MRCC for assistance.

Examination by the doctor in the hospital later showed that there was nothing wrong with the person's heart. The pain was caused by an incident that had happened the day before. The person had dropped a heavy object on his chest the day before, while fixing his car (at home – not during working hours). This had caused the injury, which then caused the pain.

It was communicated to everyone that they should inform their team leader immediately when they do not feel well, even if it is due to something non-work-related.

Spills

In 2019, there was 1 hydraulic oil leak which resulted in some oil in the water.

During lifting activities, a hose from the winch of the crane came loose/snapped. It was estimated that about 1 to 2 litres of oil ended up in the water. The hose was fixed immediately.

C-Power was only informed of the incident later that day and could thus not intervene to try and clean up the spill. After the incident, we informed everyone of the necessity of immediately contacting C-Power and the presence of SOPEP material on the CTVs.

Harmful substances

Register updated when new substances present or existing substances are replaced by other.

Permit compliance procedures

An overview of permit conditions and a full copy of all permits have been integrated in all contracts with third parties operating offshore. All contractors are consequently fully informed on the mandatory permit conditions.

C-Power coordinates and supervises the permit conditions' compliance of the respective contractors.

During major component replacements, the planning of all construction related activities offshore has been communicated via a daily report sent to all relevant authorities by the Vessel Marine Coordinator. This included the contact details of C-Power's point of contact for the authorities, daily updates about offshore operations and changes in the planning.

All incident reports from contractors as well as from C-Power's staff are registered and kept on C-Power's internal server and C-Power management platform.

Wind Turbine data; Energy Production; Wind Turbine Availability: Confidential information

Data regarding energy production, availability and number of stop and maintenance hours can be found in Attachments 6.1 to 6.5. **These data are to be treated as confidential.**



4 ENVIRONMENTAL MONITORING ACTIVITIES

Bathymetric surveys

None executed in 2019.



5 HEALTH, SAFETY AND ENVIRONMENT (HSE)

2019 was a bit of a turbulent year for C-Power, with the insolvency of Servion. However, the focus on health, safety and environment was never lost.

On 264 days, spread out over the year, people from 40 companies performed 82938 man-hours on maintenance offshore. As anticipated, this is less than 2018. This is due to the fact that some big maintenance campaigns (e.g. gearbox oil exchange and corrosion protection repair on jacket foundations) were completed in 2018.

C-Power's SCHIC program (Safety Culture and Health Improvement Campaign) continued in 2019. Similar to 2018 we organised two safety days for all technicians working on a permanent or quasi-permanent basis on the wind farm. During 2019 we specifically highlighted the two safety rules "Stop Think Act" and "I take care of good housekeeping".

From the reported incidents, we conclude that a lot of slip and trip incidents occur. These small incidents can have more severe consequences than would be expected. Therefore, this topic will be taken up in the 2020 SCHIC Campaign.

C-Power, THBMS and John Cockerill will also in 2020 continue with their common SCHIC program to further stimulate the safety behaviour of all personnel and all (sub)contractors active in the windfarm.

In 2019 we reported two LTIs with our contractors. In the first incident, the person tripped over a lifting bag. In the second incident the person fell off a cabinet.

Corrective actions for both incidents were decided upon and (will be) implemented.

Remote Monitoring system

C-Power has a 24-hour SCADA (Supervisory Control and Data Acquisition) surveillance system in operation. The SCADA system enables the operational management of C-Power to have a complete overview of all turbines. The Scada data are sent to an external control room, staffed on a 24/7 basis, replacing the former Servion monitoring centre.

On each wind turbine, 2 cameras are installed at the height of the boat landings. The camera images are sent through in real time to the operational center in Ostend and are stored for 24 hours. Also the Offshore transformer Station is equipped with 4 HD camera's covering the whole wind farm.



6 ANNEXES



6.1 AVAILABILITY PER PHASE ON MONTHLY BASE



6.2 PRODUCTION – LOW WIND – STOPS – MAINTENANCE HOURS



6.3 PRODUCTION PER MONTH PER PHASE



6.4 PRODUCTION PER YEAR PER TURBINE



6.5 WIND ROSE