



Van Oord Offshore Wind

Founder's mentality

We are a Dutch family-owned company with more than 150 years of experience as an international marine contractor. We value open communication with our clients and stakeholders. Our company culture is one of entrepreneurship and engaged employees. We think and act with responsibility and focus on the long term.



Marine ingenuity

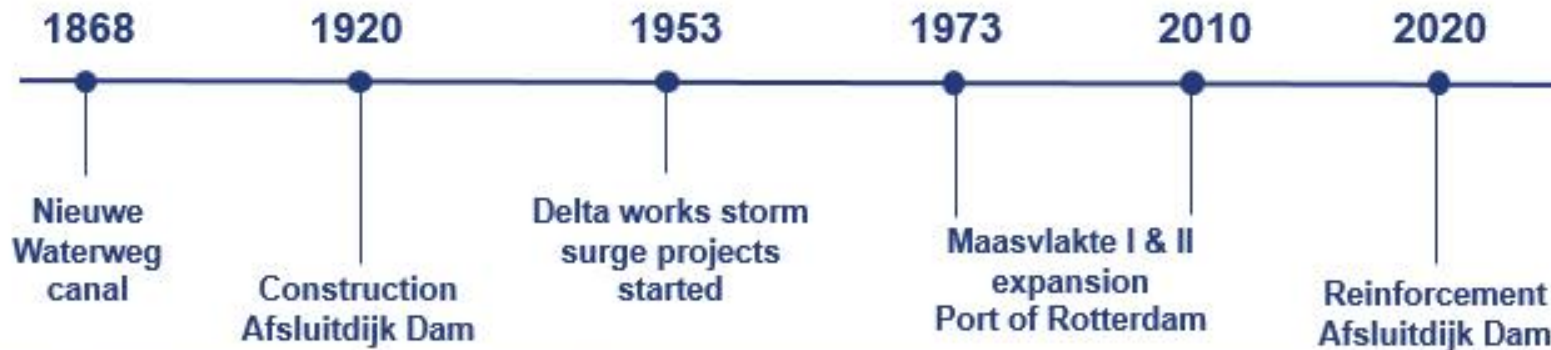


History | As a Dutch family business Van Oord has a rich heritage when it comes to iconic marine projects and working in ports

153 years of marine heritage



- ▶ Our roots date back to 1868
- ▶ A 4th and 5th generation family-owned business
- ▶ Firmly rooted in the continuous Dutch struggle with water
- ▶ Our history is strongly intertwined with Dutch iconic marine projects
- ▶ Bringing about world-class expertise and understanding of marine systems



Van Oord Worldwide



Last year
Van Oord worked in
44 countries
on
207 projects

Dredging



Offshore Oil & Gas



Offshore Wind



Foundations



Turbine installation



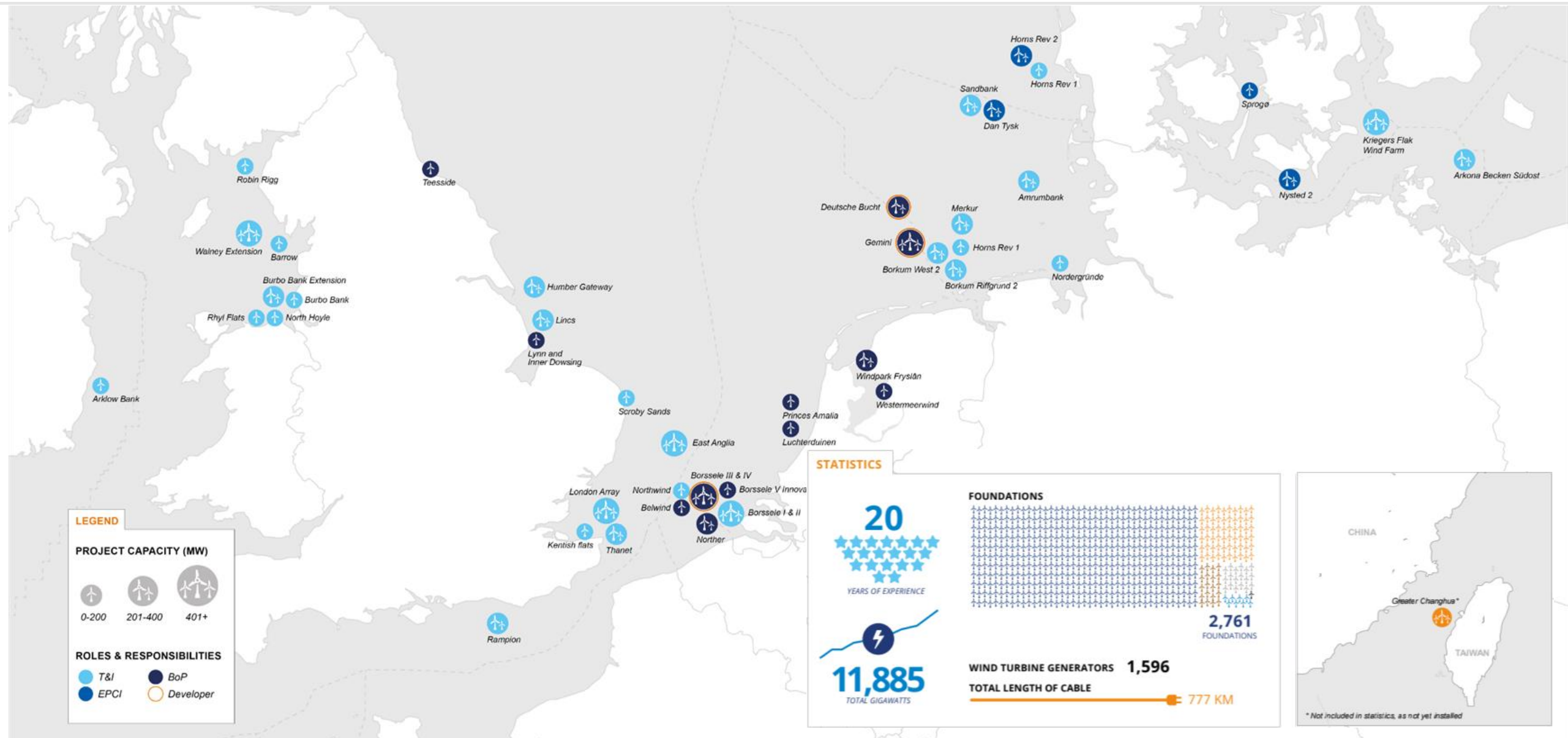
Electrical scope



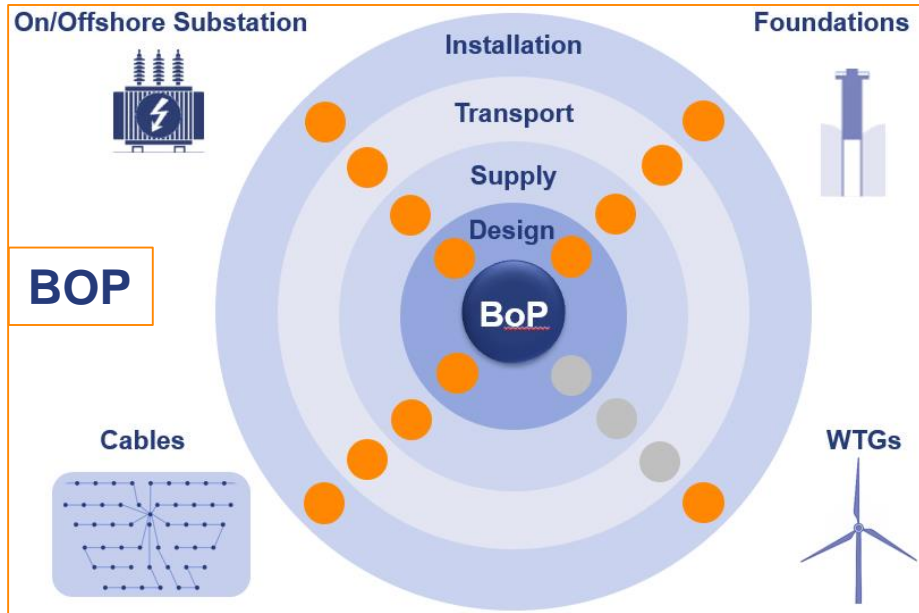
Balance of Plant

development, design, engineering, procurement, transport and installation

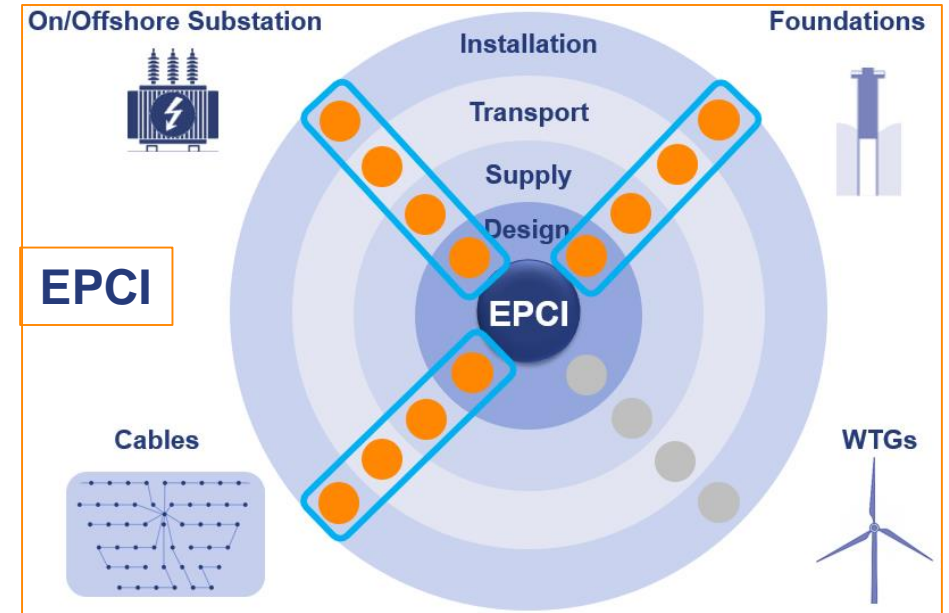
Van Oord Offshore Wind - track record [end 2019]



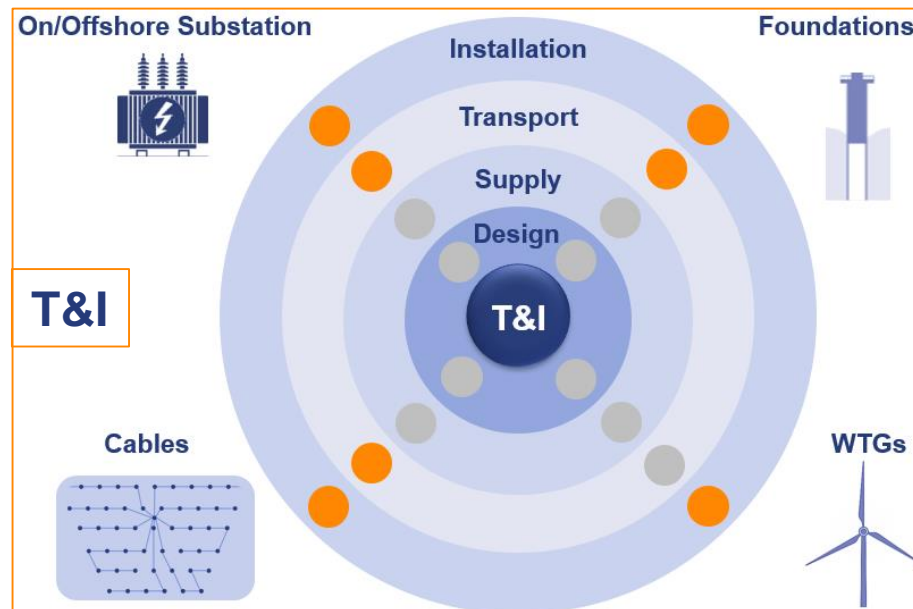
Van Oord Offshore Wind – Scope of Work



BOP: Van Oord responsible for full Balance of Plant contract, consisting of foundations, scour protection, infield cables, WTG installation, (offshore high-voltage substations, export cables)



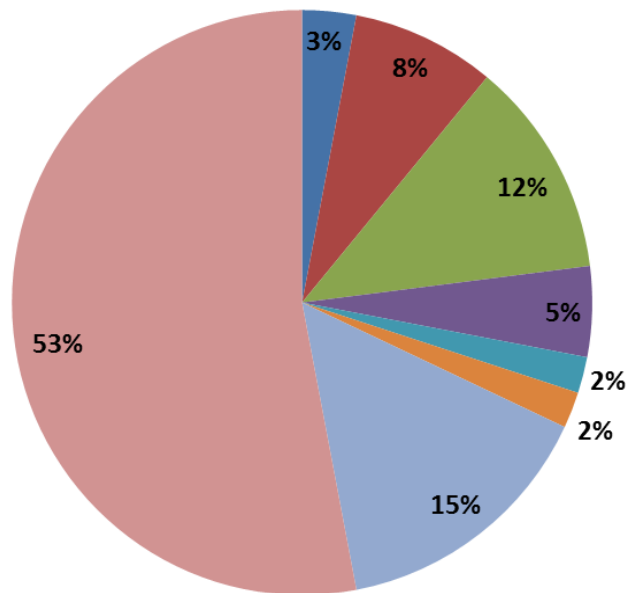
EPCI: Van Oord responsible for one or multiple EPCI packages



T&I: Van Oord responsible for one or multiple Transport & Installation packages

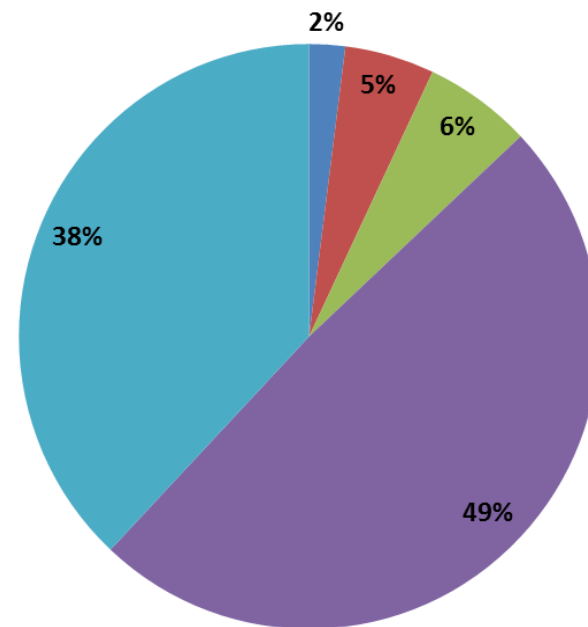
A major challenge

Typical project breakdown



- Mob/demob
- In Port (loading/backloading/seafastening)
- Jacking Ops
- Sailing
- Positioning & field moves
- Install. preparations
- WTG Installation
- Waiting

Waiting time breakdown



- Force majeure
- Technical downtime
- Other
- Waiting on weather (=WTG installation)
- Supply chain issues

← 38 %

Fred. Olsen Windcarrier AS
Presented at the 5th International Offshore Wind Construction, Installation & Commissioning Conference, 14- 15 October, 2014, Hamburg



Gemini

BoP scope

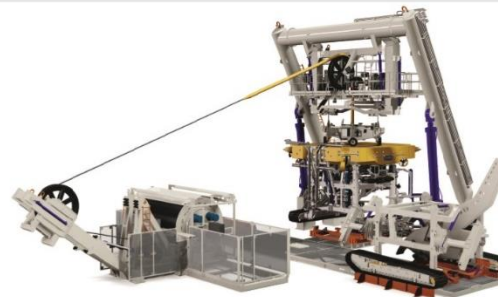
- 150 foundations
- 200km AC export cable
- 140km AC infield cable
- 2 Offshore High Voltage Stations
- Onshore High Voltage station
- 7 km onshore cables
- Supply of 2 WTG installation vessels

Looking closer

- Gemini

Specialised offshore wind equipment

- Offshore installation vessel **Aeolus**
- Cable-laying vessel **Nexus**
- Heavy lift installation vessel **Svanen**
- Multi purpose support vessel **Jan Steen**
- Cable-laying vessel **HAM 602**
- Subsea rock installation vessel **Bravenes**
- Trencher **Dig-It**



Investments - equipment

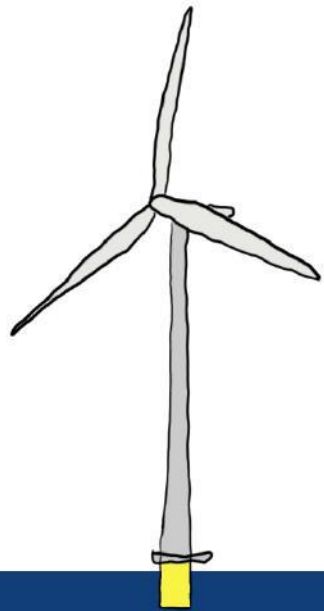
- Modification heavy lift installation vessel Svanen (2017)
- Trencher Dig-IT (2017)
- Modification installation vessel Aeolus (2017 – 2018)
- MPI Resolution (2018)
- MPI Adventure (2018)

Considered new developments

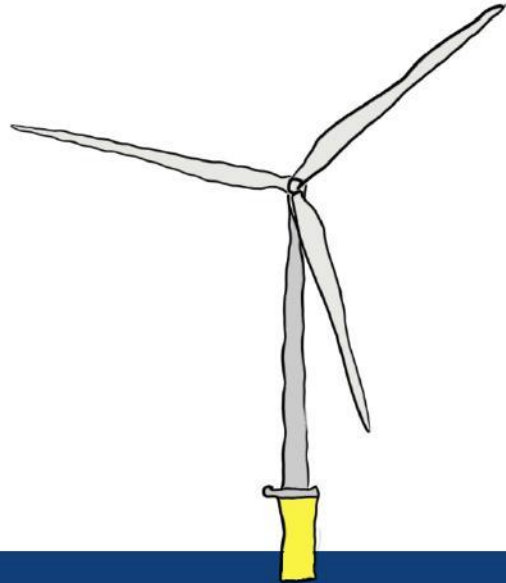
- additional cable laying vessel
- additional trencher
- next generation turbine installation equipment



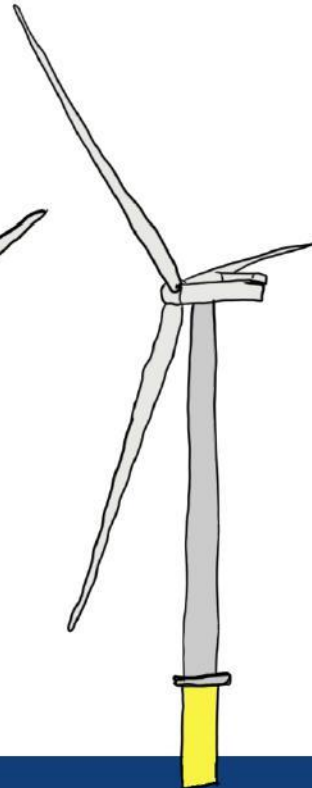
Turbine developments



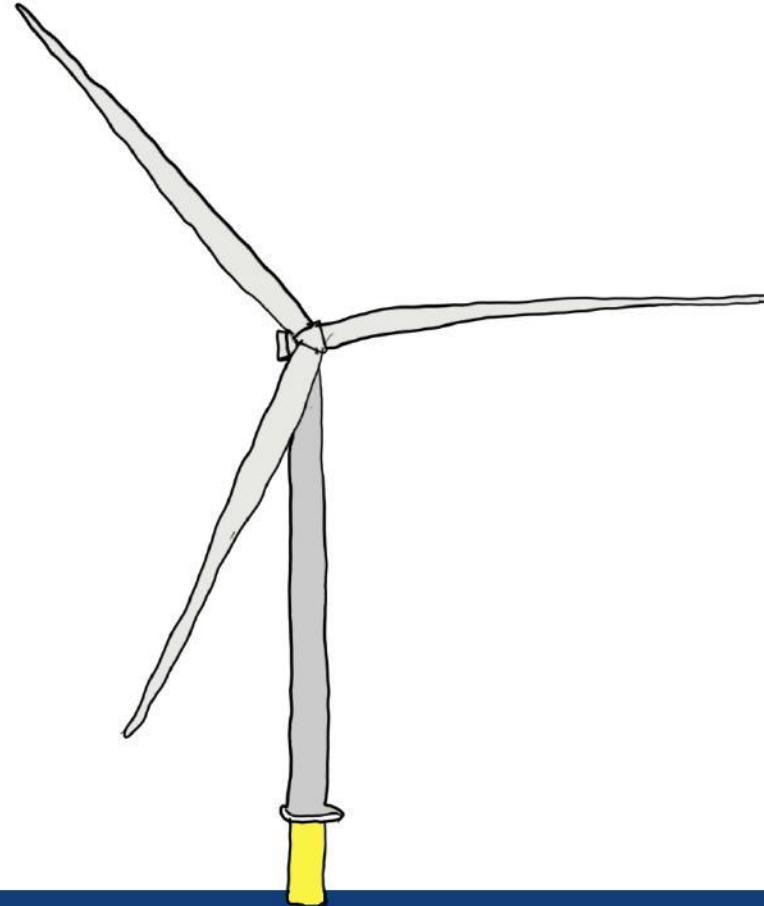
**Horns Rev
1 2002**



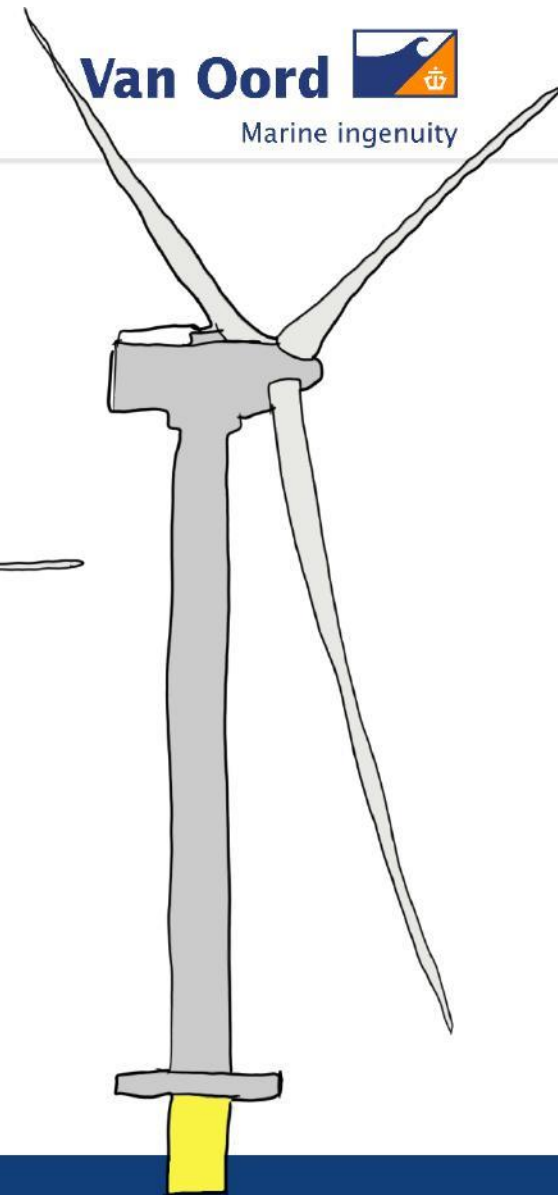
**Belwind
2010**



**Gemini
2016**



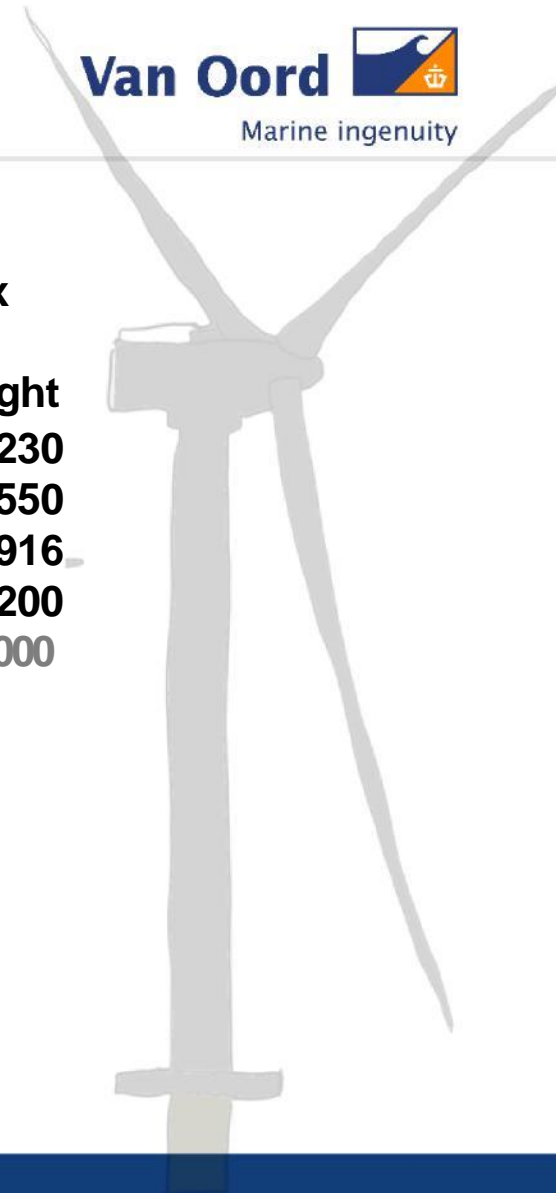
**Deutsche Bucht
2019**



**Future
2022**

Turbine developments

| Project | Year | Average Depth | Distance to shore | MW WTG | Hub height | Rotor diameter | Total height | Max mp weight |
|----------------|------|---------------|-------------------|--------|------------|----------------|--------------|---------------|
| Horns Rev 1 | 2002 | 10 | 18 | 2 | 70 | 80 | 110 | 230 |
| Belwind | 2010 | 16 | 46 | 3 | 72 | 90 | 117 | 550 |
| Gemini | 2016 | 32 | 85 | 4 | 89 | 130 | 154 | 916 |
| Deutsche Bucht | 2019 | 40 | 87 | 8 | 108 | 164 | 190 | 1200 |
| Future | 2022 | | | 12 | 150 | 220 | 260 | 2000 |



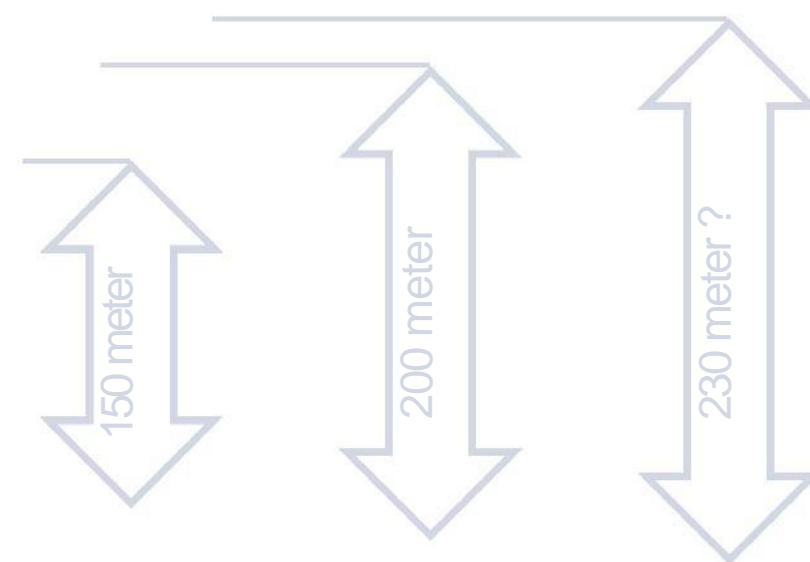
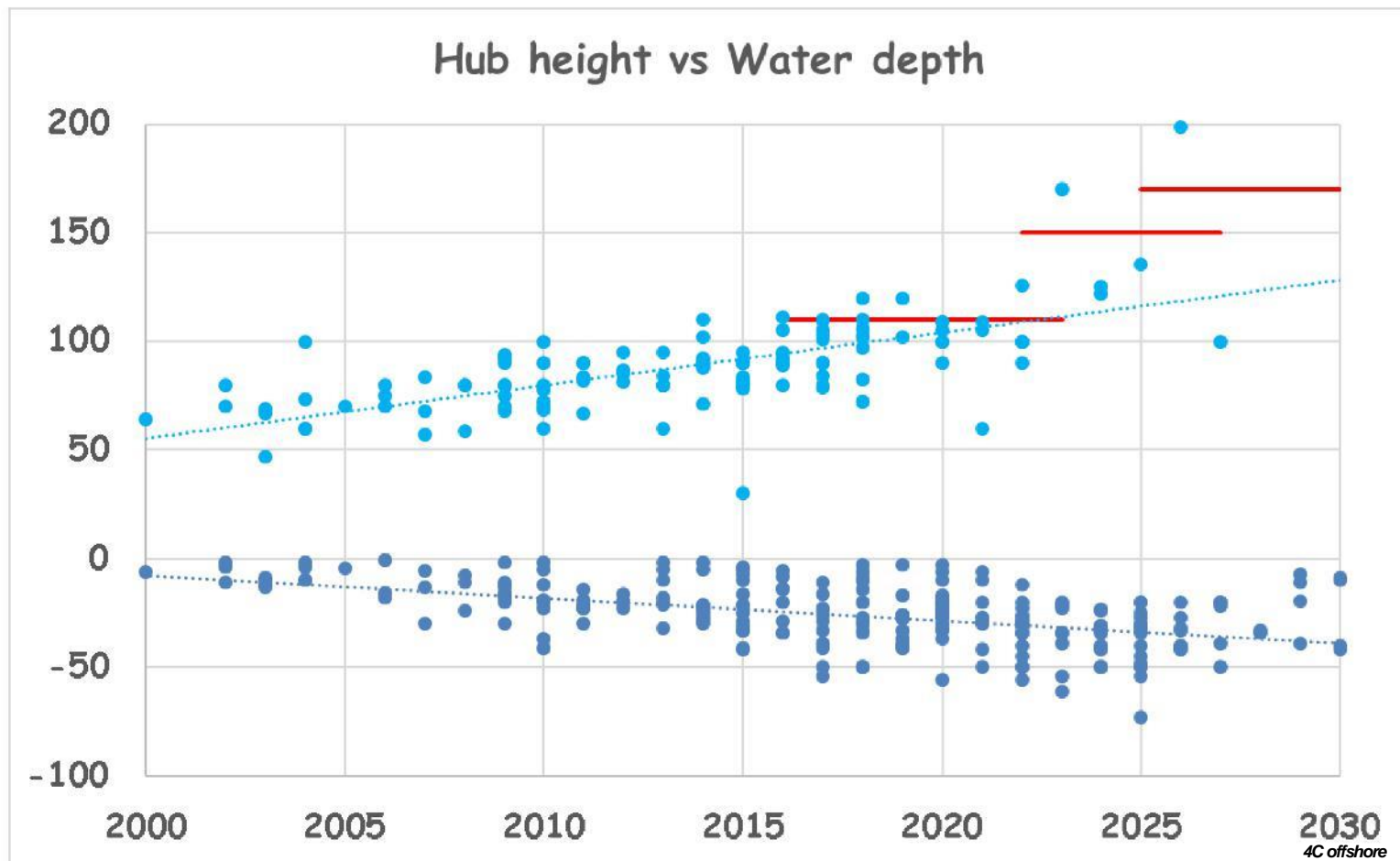
Horns Rev 1 2002

Belwind 2010

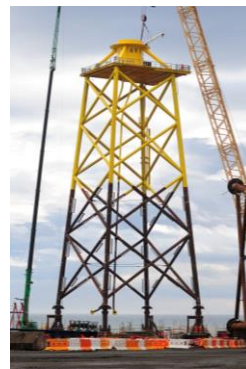
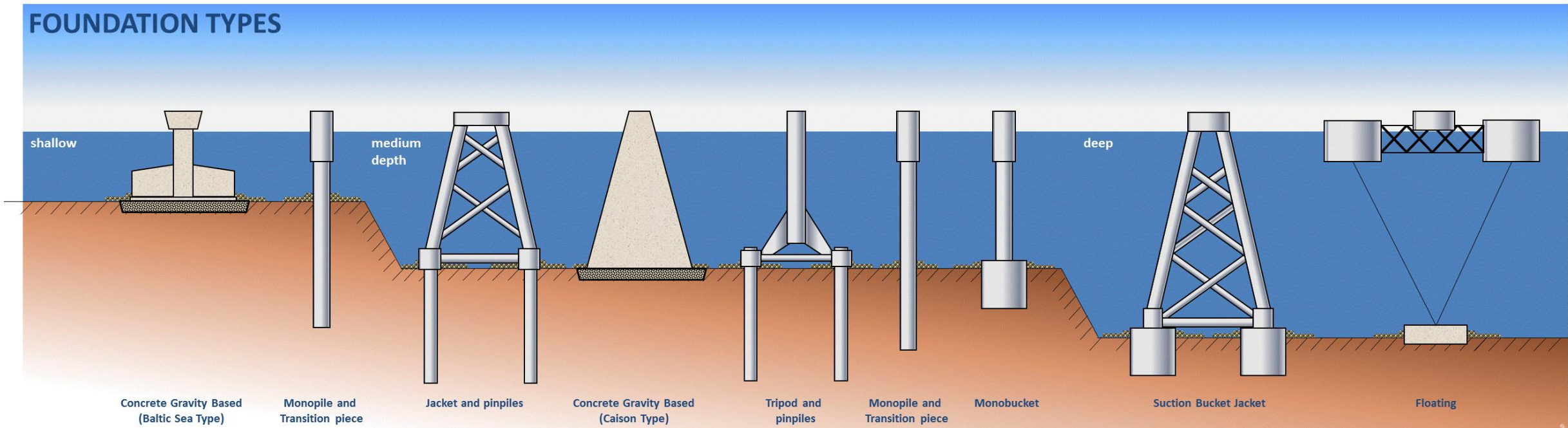
Gemini 2016

Deutsche Bucht 2019

Future 2022



FOUNDATION TYPES



2002

- Coaster with legs
- Sailing jack-up
- 230 tons Crane



2014

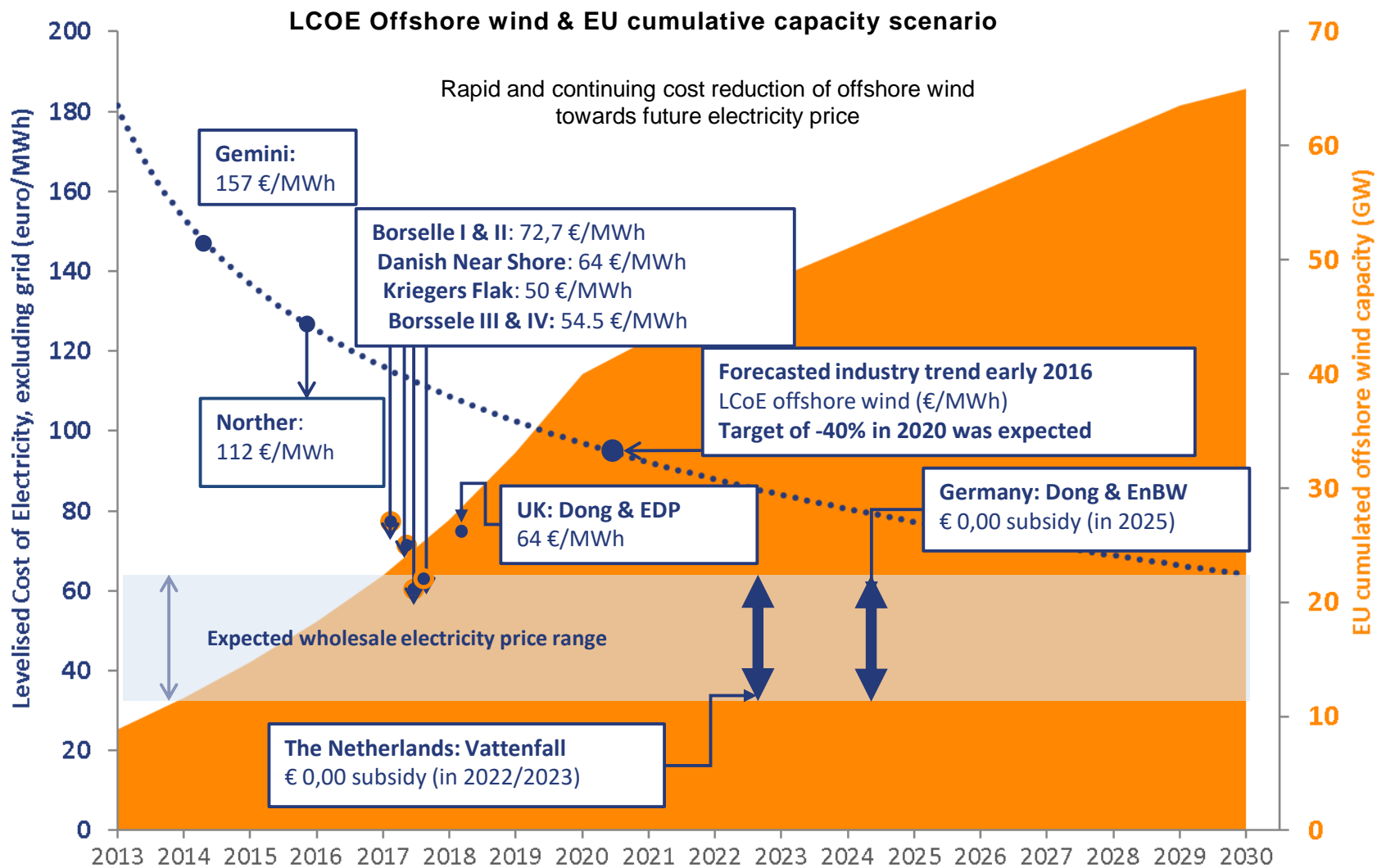
- WTIV
- Deck 3300m²
- 900 tons Crane



2018

- Helicopter deck
- 1.600 tons Crane
- Floating





Van Oord involved in Gemini offshore wind park

2 August 2013 | Press release

- 10% equity stake in Gemini wind park for Van Oord
- Gemini's total equity capital close to EUR 500 million
- Total construction costs EUR 2.8 billion
- EPC-contract Van Oord EUR 1.3 billion
- Financial close expected in 2014
- Start of construction 2015

LiDAR Campaign Starts on FEW Baltic II Offshore Wind Farm

January 21, 2019, by Adnan Durakovic

Baltic Trade & Invest (BTI) has announced the deployment of a Seawatch Wind LiDAR buoy within the area of the 350MW FEW Baltic II offshore wind farm project in the Polish Baltic Sea.

The Seawatch Wind LiDAR buoy will measure a number of parameters at the site some 50km offshore, on the north side of the Słupska Bank, including wind speeds at different heights above water, wave heights and frequency, and ocean currents, for at least 12 months to aid in the final project design.

The wind measurement campaign is provided by Fugro from Norway in collaboration with MEWO, their Polish local partner.

BTI has been developing the FEW Baltic II project, together with its partners Van Oord and Green Giraffe, since 2017.

Van Oord buys stake in Estonian offshore wind project

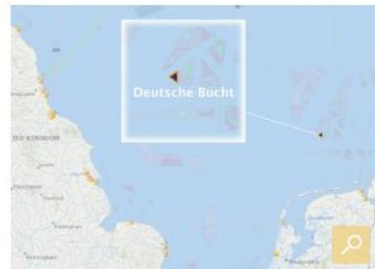
October 21 (Renewables Now) – Dutch marine contractor Van Oord on Tuesday said it has acquired a stake in Estonia-based Saare Wind Energy, the developer of the Saaremaa offshore wind project in the Baltic Sea.

The equity acquisition will help to step up the development of the offshore wind project, the capacity of which is expected to be over 1 GW, as the two companies combine their financial support and knowledge. The deal follows the signing in January of a joint development agreement for the project.



Offshore installation vessel. Image by Van Oord, ©Kloet.

Van Oord and Highland Group in Deutsche Bucht OWF Deal



Van Oord and Highland Group Holdings have signed a cooperation agreement for the development, financing and construction of the offshore wind farm Deutsche Bucht in Germany.

Van Oord will execute the engineering, procurement and construction of the foundations, inter array cables and the offshore substation.

Van Oord and Highland Group intend to participate in the equity for the offshore wind farm. Financial close is scheduled for the first half

of 2017, with the offshore installation envisaged to start in the second half of 2018. The wind farm should be commissioned in 2019.

Dutch consortium to construct second Borssele offshore wind farm

Tuesday, 13 December, 2016 - 10:15

The second Borssele offshore wind farm in the Dutch part of the North Sea will be built by Shell, Van Oord, Eneco and Mitsubishi/DGE. The 700 MW wind farm is expected to be constructed and operated with a subsidy of just 0.3 billion EUR – 2 billion EUR below what was originally anticipated.

With this second wind farm in the Borssele Wind Farm Zone, the subsidy savings are even higher than for the first 700 MW wind farm, which at the time was set to be the world's cheapest offshore wind farm. Moreover, with the current energy price outlook, the second wind farm in Borssele can be operated without subsidy after 7.5 years.



The winning consortium bid 5.45 €-ct per kWh for Borssele Offshore Wind Farm construction. (photo: iStock)

According to a press release of the Dutch Ministry of Economic Affairs, 26 bids from seven parties or consortia were received in the tender to secure permits and an associated SDE+ subsidy for the two projects at Borssele Wind Farm Site III and IV. The maximum subsidy available for this tender was capped at 11.975 €-ct per kWh - excluding costs for grid connection. Connecting the wind farm to the grid is the responsibility of state-owned TSO TenneT. The winning consortium bid 5.45 €-ct per kWh. By comparison, DONG Energy Borssele 1 BV won the previous tender with a price of 7.27 €-ct per kWh.

Roles

- Participating and investing in development stage
- Supply of equity
- Exclusive partnership
- Commitment to the project success

Why ?

- Early contractor involvement
- Ensure the project will be built
- Ensure Van Oord to build

Thank you for your attention