



The Danish Pilot – Policy and Regulation Exploitation and Knowledge Transfer Session



Funded by the European Union (H2020 Grant Agreement no 862915). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them

20/01/2023

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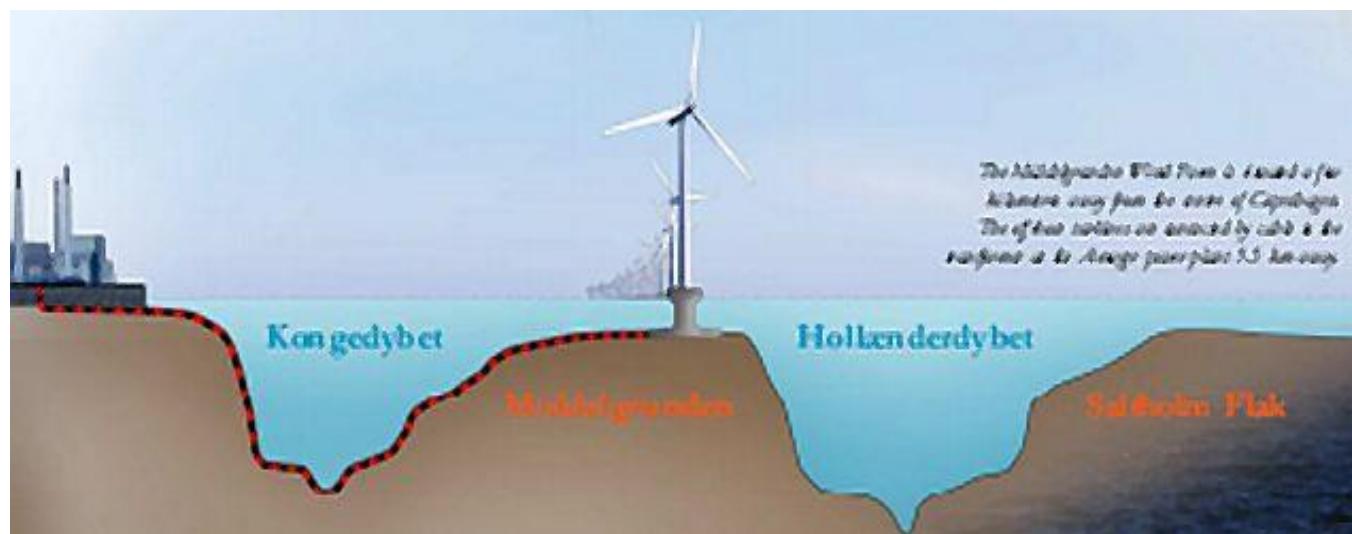
Middelgrunden Offshore Wind 40MW

Basic information

- Situated just 3.5 km's off the harbor in Copenhagen, Denmark.
- Established 2000 as the largest offshore wind farm in the World.
- Delivering 3% of power to Copenhagen.
- Two owners each 50%:
 - ❖HOFOR (Copenhagen Municipality) and
 - ❖A Cooperative with 8,000 members
- Lease of the seabed ends 2025; repowering ongoing.

Danish Pilot:

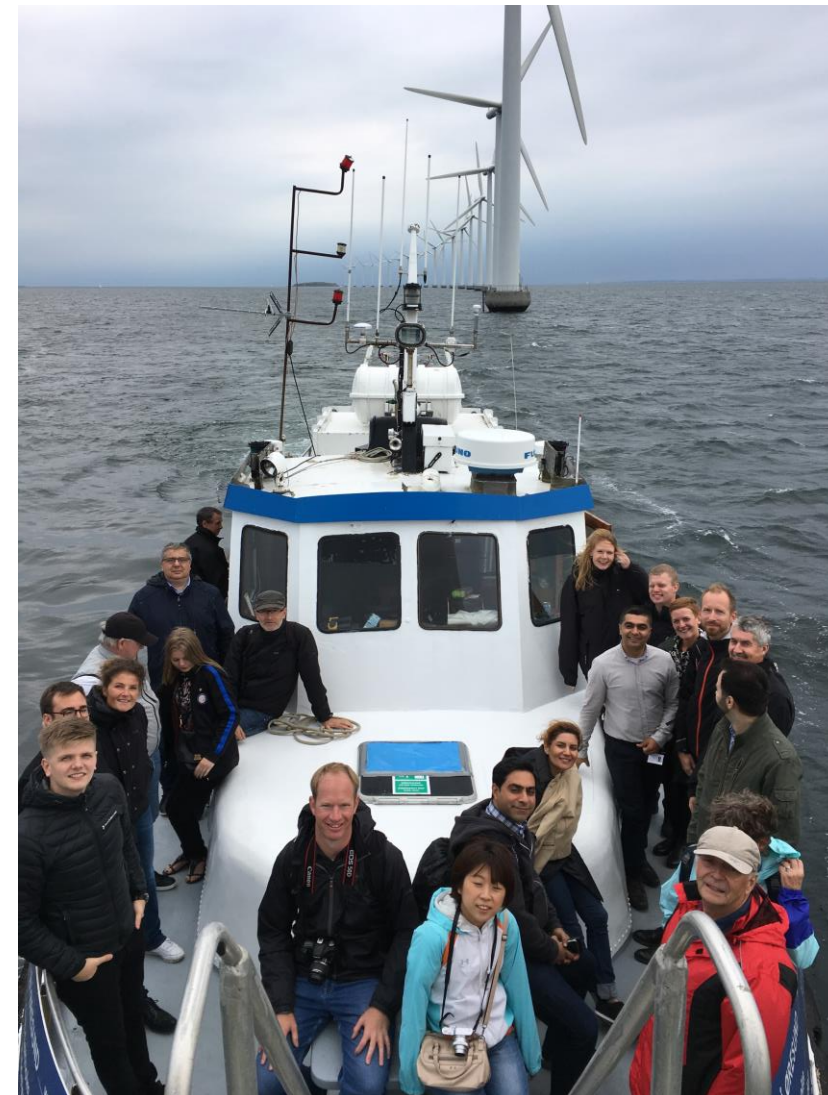
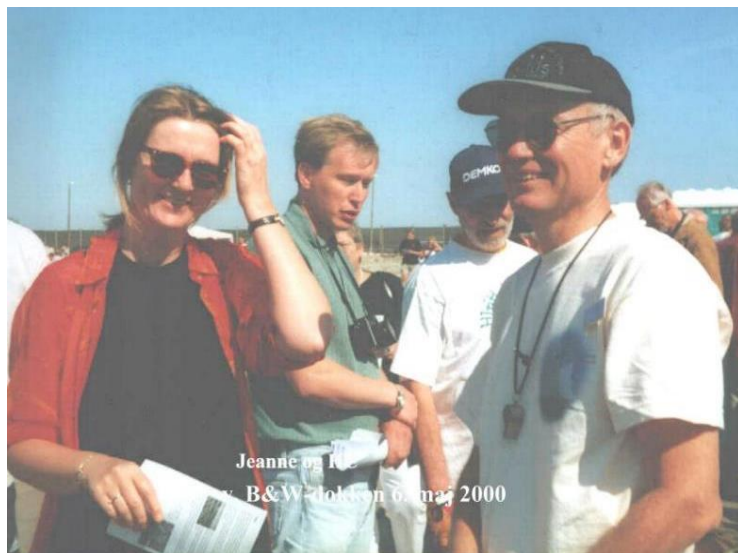
Combining offshore wind and tourism



Visiting the windfarm is an old tradition in Denmark

Since 2000 at Middelgrunden Wind

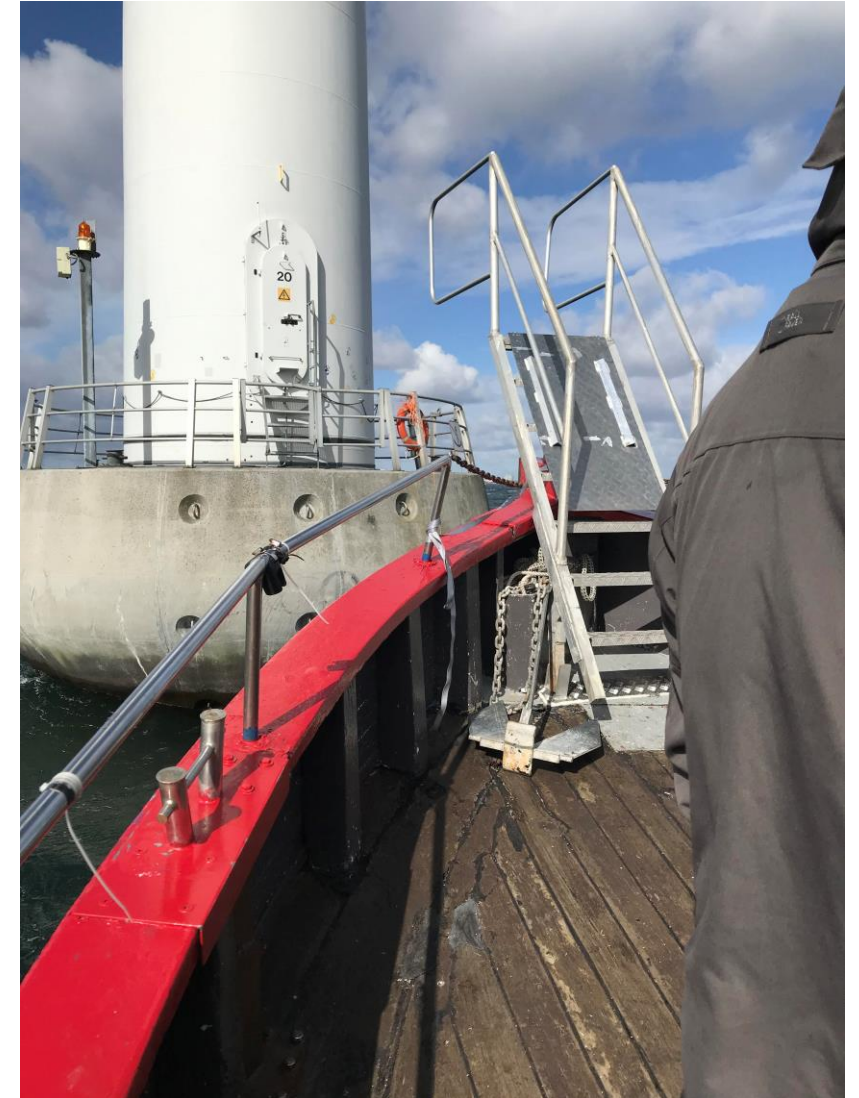
- We started already during the construction phase having 1600 people visiting the building site.
- Owners have been invited to visit their wind farm 3rd Sunday in June (windmill day).
- At the open day: we have 150-200 people every years on a sailing trip including climbing the turbine.



What regulatory, or planning challenges have we encountered?

Only: Danish Maritime Authority

- You are allowed to sail to the turbines – this may not be the case all over the World!
- The safety rules:
 - On the boat: the captain
 - From the boat to the foundation: Like approaching a harbor – the captain
 - Entering the turbines is a question between the owner and you



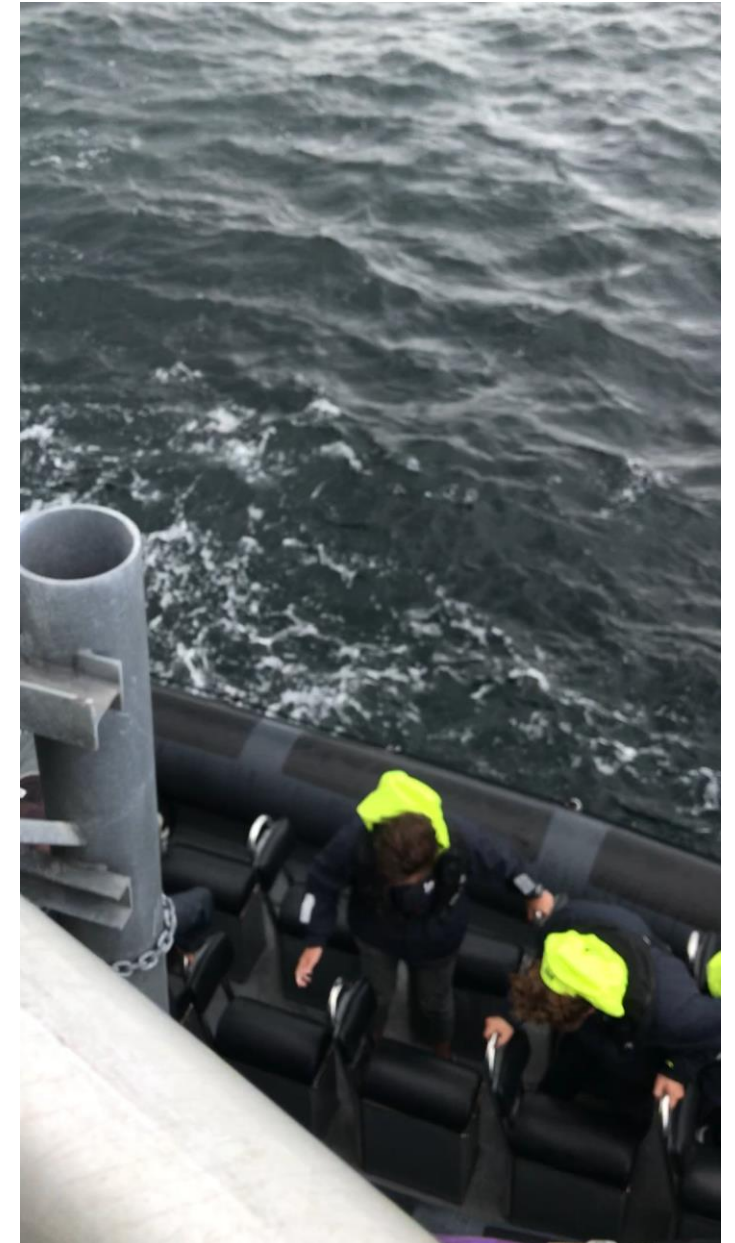
Safety rules – entering the turbine



- Standard boat with access directly to the platform – fixed bridge with rails.
- RIB boat with access from the sea level and a ladder outside the foundation – safety suit depending on water temperature; life jacket compulsory.

Rules: Danish Maritime Authority

With a large boat for 30 people a stair has been installed to give easy and safe access.



Safety rules – lesson learned



The RIB is more sensitive to the weather.

Increase of windspeed during the visit can result in difficulties to reentering the RIB.

Here a situation in November where we had to wait 1 hour for an extra person to help by the mooring.



Safety rules – entering the Nacelle

- Stop production.
- How to use the ladders – depends on type of turbine (one section or several)
- Lightning closer than 70 km.
- Risk is dependent of “rail protection” at the Nacelle.



Rules visitors: Does not exist. Own safety instruction to be signed by all visitors when climbing the turbine.

The standard rules are covering service people entering the turbine during production and equipped with safety equipment and having followed a safety course



Insurance

Signature Statement visits Middelgrundens wind turbines, 2021 -

The trip out to the mills and the climb up in them is both a physical challenge and an experience out of the ordinary, but it is also a practical and security challenge. Therefore, it is essential that all guests read this statement carefully and agree to these conditions and precautions. Persons under 18 may participate if accompanied by a parent who must stand as a signatory below.
This statement is part of the COOP's emergency plan.

When ascending the mill requires that:

- I am not under the influence of alcohol, medicine, or drugs,
- I do not suffer from claustrophobia or fear of heights,
- I do not suffer from circulatory disturbances, dizziness, epilepsy, etc. and that,
- I am in good physical shape and not have significantly reduced mobility.

I must pay attention to the markings that are set up in different parts of the mill and respect the instructions given by the guides and staff. At the ladder's in turbines applies that there may be only one person at each section, a maximum of three people on each floor (there are 11 floors) and a maximum of 18 people up in the nacelle – if not more accepted by the guide.

To ensure a steady flow of guests in the mill, it is important that the fastest guests climb up first, but waiting to study the interior of the tower until they are on their way back down. Generally, you must give way to the guests coming down, except if you get a different message from the guides.

Secure loose objects such as mobile phone, camera, video, etc. to be carried in a pocket or small bag with zipper. It is recommended to take rings or to take work gloves while climbing on ladders. Gloves are usually provided by the guide.

When passing from the vessel to the turbine foundation, both hands to be free, and the instructions of the guild and the ship's crew must be strictly followed. When needed safety vests are provided.

Because of risk of dirt and grease in the boat and wind turbines, it is recommended that you wear practical clothes and shoes with rigid non-slip soles. In addition, you should bring a rain jacket (if weather forecast gives risk of rain), a bottle of water and some fruit or chocolate.

In addition to these formal measures, we hope that all guests will positively contribute to the event by being patient in the event of delay and by showing respect for the other guests, so we all have a good experience with us home.

I certify by my signature that I agree with the above conditions and to the whole event takes place at your own risk and that there cannot be any liability claim against Middelgrundens Wind Coop or SPOK ApS in relation to the destruction or theft of clothing or personal items.

Date:

Name & signature:

Name & signature

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- Insurance has been obtained by the company operating the tourist tours as part of their normal insurance for consulting activities.
- Safety rules is a must and must be signed by all participants.



What would be the pre-conditions for rolling out this type of multi-use to other areas in your country/sea basin?

- Only turbines from before around 2003 have several floors and can be climbed without safety line.
- Owners in general - like utilities have no interest in a visiting program- cooperatives have.
- The legal and safety rules for professional service people cannot be followed, - and need not to be followed.



Your recommendations for the planners and sectoral regulators dealing with multi-use

Your recommendations for the policy makers for your multi-use

Don't make special rules if not needed.

Accept that tourist visits is different from service visits.

Demand local safety rules by climbing.

Accept sailing between the turbines by tourist boats.



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