

Future wind power accommodation solutions offshore

Wind farms are moving further from shore to find the wind speeds necessary to account for the expensive turbines. But while floating demo turbines shows exciting results, less flashy parts of wind power production can be just as problematic.

Wind power is with its clean energy no doubt the future in a world in desperate need for change. Add to that exciting new technology and a booming industry with many new jobs. But there are also challenges, namely big challenges and costs. Wind turbines are very large structures and constructing one is quite the task, not mentioning erecting it at sea. And it is offshore where the true challenges await. For any profit margin to be had, several turbines are constructed to form a farm. After construction comes operation of the turbines and mandatory maintenance, collectively called, operation and maintenance.

Construction is done using enormous vessels spanning well over 100 meters in length. These vessels carry the turbines in parts to the site location and proceed to lift themselves above the water surface with the help of long legs reaching the bottom of the sea. This brings stability, something very crucial when constructing something as big as a turbine out at sea where the weather can be quite hostile. On average does constructing one turbine all in all take four days. Having several turbines in the farm means that putting up all turbines will take quite some time which also means a lot of money seeing as the vessels are very expensive to lease.

The second big phase for a wind farm is operation and maintenance, ranging up to 20 years after construction. A considerable amount of time where anything can happen. And things do happen that requires maintenance almost on par with erecting a new turbine. Changing damaged blades or a gearbox calls for the same kind of vessel that was used to put the turbine there in the first place. As mentioned before are those vessels very expensive to lease and many major failures during its lifetime can make it costly.

The other big thing when it comes to operation and maintenance in the future when turbines are far out to the sea is accommodation. A wind farm requires almost daily visits, something that becomes harder when it's situated four hours one way with a service vessel. A solution would be to have the personnel stationed at the farm like an oilrig. This has been tested out in Denmark with a big platform housing 20 people.

But what if the problems were solved with one solution? Having a medium sized vessel able to both do construction and have people live on it could be just that. It turns out that the platform used in Denmark still is the cheapest one for when it's applicable which not the case is when it gets deep. This is where the vessel shines, being able to sustain the wind farm with fast repairs and accommodate the personnel working there. My findings can be built upon with more accurate numbers, making for a more detailed prediction of costs.