



## PROJECT PROFILE: RENEWABLE ENERGY



# Technical Consulting Enabled Vattenfall to Repower the Yttre Stengrund Offshore Wind Farm

## Integrity Management

---

### Situation

Vattenfall needed to repower the 2MW NEG-Micon wind turbines at its Yttre Stengrund offshore wind farm in southern Sweden, which has been in operation for about 10 years. Vattenfall wanted to reuse the monopile structures already built at the site, but hoped to use larger wind turbines on the existing foundations. If successful, this would mark the first repowering of an offshore wind farm in the world.

### Approach

Vattenfall wanted to establish the history of the foundation structures to identify potential areas of concern due to design limitations, structural deterioration or damage. ABS Consulting reviewed historical information for the structures and performed surveys and inspections of the wind turbine support structures. In addition, ABS Consulting reviewed the different wind turbine types and technologies that were considered for the project.

### Result

As part of the project, the ABS Consulting team analyzed the structures for ultimate and fatigue capacity, with a focus on the remaining fatigue life of the support structures using 10 years of historical meteorological data and actual load and performance data as input into the structural analysis scheme. The design study documented the current condition of the structures and helped Vattenfall understand critical design aspects of using larger turbine units for the facility.

### Benefits

ABS Consulting's analysis showed that the original design of the Yttre Stengrund monopile foundation structures allowed for longer and more effective utilization of the wind farm. Based upon the ABS Consulting evaluation, Vattenfall was able to install even larger wind turbines on the monopile structures. Reusing the current foundations saved time and money in repowering the Yttre Stengrund offshore wind farm and will prolong the life of the wind farm.