A Novel Case Study

Narrow weather window for execution of maintenance call for a New supply chain strategies for spare parts, tools, and competences when A Research of Challenges, new Strategies and Legislation

Supplier of Competitive Offshore Wind Solutions

Failure rates for installation, turbines and components do to some extend which makes Preventive and Offshore wind power is still immature and therefor there is a need for new Parts and components of offshore wind turbines wear down in Operations & Maintenance becomes much more challenging for 25 year of reliability, availability and accessibility becomes key to Operation & Maintenance far from the coast.

Narrow weather window at rough sea far from the coast makes Operation & Maintenance challenging

New maintenance strategies (e.g. by focusing on modularity)

Operations & Maintenance becomes much more challenging for 25 years of operation

Narrow weather window for execution of maintenance call for a constant rescheduling and re-planning of tasks

Reliability, availability and accessibility becomes key to Operation & Maintenance far offshore power installations

Our study has identified a number of different uncertainties and a need for further research in the establishment of places and organisations of work for Operations and Maintenance far from the coast. There is a need for:

- More focus on reliability and maintainability
- New maintenance strategies (e.g. by focusing on modularity)
- New supply chain strategies for spare parts, tools, and competences when technicians are available on site 24/7 but depending on a narrow weather window for work on turbines and installations spread out on a large area far from the coast.
- Offshore wind power is still immature and therefor there is a need for new and harmonized legislation for work when offshore wind farms are located and operated in different countries
- Reliability, availability and accessibility becomes key to improve Operation & Maintenance of far offshore wind power installations

Methods and Findings

Our study has been made through a literature study and through empirical studies of onshore and offshore wind farms which has been in operation for more than a decade. Our findings are:

- Often too many visits to turbines are needed (even down to 11-15 days between visits)
- Parts and components of offshore wind turbines wear down in unpredictable and various ways
- Failure rates for installation, turbines and components do to some extend follow the bathtub curve (below) – but due to weather conditions planning of maintenance is still a challenge

A number of different P-F-curves (below) illustrating the condition of equipment can be observed/developed for components, installations and a whole offshore wind farm – which makes Preventive and Predictive Maintenance challenging in a far offshore context

Conclusions and our further research

References


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