Til
Uddannelses- og Forskningsstyrelsen

Dokumenttype
Aktivitetsbeskrivelse

Dato
4. januar 2021

FT01.02 Mechanical and structural testing parameters in risk assessment

Indledende oplysninger

Indsatsområde	Datadrevet risikoevaluering som katalysator for grøn vækst i vindmøllebranchen
Institut	FORCE Technology
Titel	Mechanical and structural testing parameters in risk assessment
Nummerering	FT01.02
Version	1.0
Periode	Januar 2021 – december 2021
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Ændringer

Original version.

Beskrivelse

Mål

The goal of risk-based planning of mechanical and structural test and validation strategies is to work with the industry for determining for their products and components a more effective mix of testing size scales and strategies. This is to be performed by finding the right balance of risk and budget and time. The primary goal of this specific activity plan is to build a data collection tool for sorting and understanding critical testing parameters.

Apart from this a goal is to extend cooperation in particular to DTU CASMaT and Fraunhofer IWES and enter into strategical dialog with Wind Denmark and Energy Cluster Denmark..

This activity plan, by building a data collection tool, will lay down the foundation for the next four years of development by building a common platform for how we will collect and view testing data as well as share testing data with the industry.

Indhold

Kompetenceopbygning, videnhjemtag og vidensamarbejde:

- Work with Energy Innovation Cluster and through their platform testfacilities.eu for industrial engagement and scope building and refinement
- Further the development of the collaboration with DTU CASMaT in terns of data processing and mechanical testing results analysis
- Competency development within data collection tools and data handling. Development of the testing teams within the area of risk-based planning, e.g. probabilistic risk modeling for working on the parallel development of the risk-based quantification tools.
- Build-up of the strategy for the data collection tool based on industrial needs, as a tool for direct use by industry partners or as a data sharing tool between FORCE Technology and its partners
- Build-up of a coalition for a demonstration project – university, knowledge institutes and industry partners

Udvikling af teknologisk service:

- Development of a plan for building a data collection tool for offshore wind industry
- There is a special focus in the development on handling the link and finding the relationships between different testing sizes or methods of the same products within offshore wind:

    - Collection and categorization of fatigue testing data – enabling the comparison of small-scale and large-scale testing programs
    - Collection and correlation of different testing types – fatigue and fracture mechanics testing
- Working with the coallition for build-up and demonstration of the data collection tool
    - Build-up based upon historical testing data from offshore wind industry
    - Working within a small or medium-scale testing program for working with current test data and drawing links to historical data
- Indentify potential industry driven consortiums for applications to Danish and International funding projects

Aktører

Materials, component and structure testing from FORCE Technology will run the activity.

Continued collaboration with DTU CASMaT on testing methods and the treatment of testing data.

Danish companies and Energy Innovation Cluster for engagement and scope building, and participation in the development and demonstration.

International collaboration with Fraunhofer IWES and Fraunhofer LBF on testing within the wind industry and fatigue and fracture testing.

Sammenhæng med andre projekter (evt.)

The project benefits from the recently finished Innovation Fund CeJacket project where FORCE Technology has performed significant amounts of testing, knowledge building and data generation to serve as an outline for the needs and requirements within the data handling.

In addition, the concurrently running EUDP Hi5Jack project will benefit the group as a test case within data collection and handling within a significant number of testing types, testing sizes, and testing complexities.

Følgegruppe

The activity plan will be presented to the advisory board at the first meeting, expected to be held in the end of Q1 2021.

Formidling af resultater (evt.)

The focus within knowledge sharing and industrial engagement within this activity is on the data creation and handling and the benefits with which drawing further insights from testing data can bring within the risk evaluation and planning of mechanical and structural testing.

The work will start early within industrial engagement working within the already strong collaboration that was developed with Energy Innovation Cluster in the project on Development of Hybrid Test Methods and their platform testfacilities.eu.

The industrial engagement efforts have three-fold goals:

- Working with industry to establish the goals and scope of the data collection tool
- Co-development and testing of the data collection and handling tools
- Engagement with industry in the go-to-market strategy and use-cases for achieving as quickly as possible adaptation of tools, ideas and services from the developments

Knowleadge sharing and dissemination will be coordinated through the activity plan “FT01.01 Økosystemer og Videnspredning”.