

Fatigue Strength of Weld Seams at a Structural Health Monitored Offshore Platform



SYDDANSK UNIVERSITET

A PH.D. PROJECT BY MICHAEL KRENZEL

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ABSTRACT

A specific problem in offshore wind generation is fatigue of the offshore turbine structures. Calculations of the fatigue strength of offshore wind farm structures are made in the design phase and subsequently assessed. During operation, these calculations are not adapted to existing conditions. Consequently, the structures have either been built with too big reserves, or they reach the end of their service life sooner than planned. Both scenarios may have significant financial consequences.

The Kiel University of Applied Sciences established a laboratory for fatigue strength in a former Ph.D. project. It is dedicated to scientific research, technology transfer and education of bachelor, master and Ph.D. students.

In this project it is intended to enhance this laboratory for analyzing lifetime assessment of weld seams at a structural health monitored offshore platform (e.g. FINO3) to estimate the influence of existing conditions.

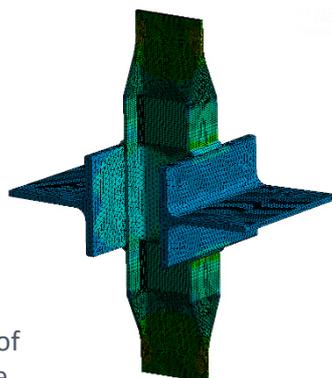


Figure 1:
finite element analysis of
critical offshore structure

THE OBJECT OF THIS PH.D. PROJECT

- Implementation of reliable calculation methods
- Experiments with weld seam specimen for fatigue analysis
- Developing of a calculation method for Structural Health Monitoring

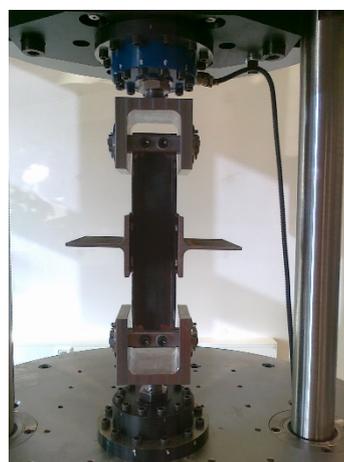


Figure 2:
fatigue analysis at weld
seam specimen by
means of experiments



Figure 3:
FINO3 offshore platform

PROJECT PERIOD

April 2016 – March 2019

COLLABORATIVE PARTNERS



UNIVERSITY OF SOUTHERN DENMARK



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