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# *Interactive comment on* "A fracture mechanics framework for optimising design and inspection of offshore Wind Turbine support structures against fatigue failure" *by* Peyman Amirafshari et al.

**Arno van Wingerde (Referee)**

arno.van.wingerde@iwes.fraunhofer.de

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There is not that much actual research, either numerical or experimental, presented in the paper, but it serves as an introduction and application. What makes the paper worthwhile is a nice combination of design standards, fracture mechanics and probabilistic approach presented with a practical application.

The first 20 pages paper provides a lengthy albeit still readable introduction on Fracture mechanics and probabilistic design. Consider condensing a bit: reference to a national standard is of limited interest for people using other standards and should just be used to outline the real topic of the paper.



The principle of using fracture mechanics on based probabilistic design is demonstrated applied to a weld in a monopile and a weld in a plate, showing the possibility of the technique. Given the length of the paper a list of symbols and definitions may be useful.

A number of small recommended edits: 19: In-service => in-service 22: showed to possess => showed 26: framework => the framework. In general articles and plurals seem to be missing here and there, the English is Ok but would benefit from a read-over by a native speaker. 37: Turbine (OWT)=> Turbines (OWTs) 38: Social acceptance is also an important driver of OWT, you might wish to mention it here 42: structure => structures 53: approach => approach, 58: is => are 76: POND => PoND suggestion 103: relived => relieved 151: natriting "treat (a substance) with nitric acid, especially so as to introduce nitro groups". I am pretty sure you didn't mean that the an equation. . .. 171: or air-filled offshore structure where the pressure or absence of water inside the structure can be used as a simple way to detect through-thickness cracks. 202: Failure => the Failure 219: Fig. 6 => Fig. 7 Check figure references as this happens several times in the paper. 224: a picture with the ïĄş-ïĄě diagram of mild steel helps explain this. 228: Fig. 6 => Fig. 7 231-255: the explanation of the various options on the BS which only matters for Lr>0.9 could be omitted altogether 257: figure 7 shows on the axes: Kr against Lr which are material properties: OK for the FALD curve, but not correct for the example assessment points "safe"/"unsafe" 287: size has => size ac has 292: Fig.8 => Fig. 9 295: PODs => PoDs 346: POD => PoD please check the paper for that 471: units missing Young Modulus 210 => Young's modulus 210.000 MPa 480: Primary => The primary 568: posseses => possesses a 568: (0.62 Ys) => (Ys = 0.62) 609: require three times less inspection interval => allow for thrice the inspection window

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