

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.

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Dear Dr Arno van Wingerde,

Thank you very much, indeed, for your very insightful and constructive comments. I agree with most of the suggestions and will implement them accordingly. I only have two additional explanations to two of your comments as listed below:

1) 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.

C1

BS7910 is the only fracture mechanics standard applicable to all metallic structures. E.g. API579 /ASME is for pressurized equipment used in oil & gas, petrochemical, and chemical facilities and R6 is for nuclear facilities. I agree with you that in a scientific paper referencing to standards should be limited but, given uniqueness of BS7910 and the large body of conducted research which has led to creation of the standard and the well-documented references provided in the standard, It is my humble opinion that the reader will benefit from references to the standard. I myself have been a committee member of BS7910 since 2018 and have an internal insight about the extensive research carried out by research bodies particularly TWI.Ltd, that is built into the standard. DNV is also a widely used standard in assessment of offshore structures and perhaps the only standard that provides recommended continuous PoD functions.

2) Kr against Lr which are material properties: OK for the FALD curve, but not correct for the example assessment points “safe”/“unsafe” .

Kr is the ratio of applied crack driving force to fracture toughness, neither are material properties only even Kmat is affected by material thickness therefore a property of the structure. L r is the ratio of applied stress to yield strength and therefore not just a material property.

Best regards, Peyman Amirafshari

Please also note the supplement to this comment:

<https://wes.copernicus.org/preprints/wes-2020-65/wes-2020-65-AC2-supplement.pdf>

Interactive comment on Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2020-65>, 2020.

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