



EMD webinar 24/03-2015:

LOAD RESPONSE & SITE COMPLIANCE news in windPRO 3.0

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Questions submitted during the webinar

| Questions | Answers |
|---|---|
| Do we need WAsP-CFD to use site compliance or/and load response? | No not at all! SITE COMPLIANCE and all IEC checks can be calculated/run with just a mast or just WAsP and WEng and a wind statistics. Or with a mast and WAsP-CFD as I showed in the webinar. |
| Has the new loads response been checked and compared with the in house tools of WTG manufacturers (over and beyond of any certification)? | Yes it has – we have had a very good collaboration with a turbine manufacturer contributing to the validation. Due to the confidential nature of such comparisons, we are not able to publish the results. However, we do hope to make comparisons with other manufacturers and perhaps make a blind comparison with multiple manufacturers which can be published as names are kept secret. |
| Are the German DIBT-standards included? | WE plan to include DiBt 12 and perhaps 04 in SITE COMPLIANCE by next version windPRO 3.1. |
| How is the fatigue life estimated/calculated? On what basis (standard or other reference) | The fatigue life ($T_{lifetime}$) is estimated based on the turbine design lifetime (T_{design}) typically 20 years and the load index (I_{WTG}) for the WTG and sensor/component (as a fraction, not percent). The Wöhler exponent for the sensor is denoted m . $T_{lifetime} = T_{design} / I_{WTG}^m$ So a load index of 1.0 (=100%) results in a fatigue lifetime equal to the design lifetime. This equation can be derived from Miner's Rule for linear damage accumulation and a linear SN-curve. |
| What information/inputs are necessary to enter a specific WTG? | Well, as the webinar shows two files are needed: <ul style="list-style-type: none"> - an XML files which describes the turbine and the aero-elastic runs and - a binary data file with the aero-elastic simulations (based on the manufacturers in-house codes). The aero-elastic simulations should be run for a specific set of predefined parameter combinations for wind speed, turbulence, wind shear, inflow angle and air density. EMD will deliver a detailed "recipe" for how-to prepare these two files at the request of LOAD RESPONSE license holders. |



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| <p>Can we run Site Compliance and Load Response with a CFD wrg prepared in another software than WASP CFD?</p> | <p>No – not in the current version. In windPRO 3.1 we will allow use of CFD results from other models. However, WRG files does not contain sufficient information hence we will require a more elaborate file for similar to the CFD_RES files from WASP-CFD. We will provide this format specification to all the main CFD software providers</p> |
| <p>With Site Compliance modul, If I want to check with my own standard instead of IEC Standard, how to define or re-edit my own stand in WindPRO 3.0 ?</p> | <p>Well, for several reasons we do not allow home made design standards. A main reason is that the module would not be possible to certify. However, a there is a possibility to define “Class S” design classes. This alloes the user to define design parameters like mean wind speed, Reference turbulence and Vref (extreme wind speed).</p> |
| <p>Is it also possible to use other CFD-maps for example WindSim CFD maps as input to calculate the load assessments?</p> | <p>Not in this version – but in next version it will be. (see also answer above)</p> |