WIND TURBINE MONITORING

Operation and maintenance (O&M) of offshore wind turbines is one of the main cost drivers of offshore wind energy today. Condition based maintenance, instead of corrective maintenance, is becoming more and more a means to better control the O&M costs of wind turbines.

All current known monitoring techniques have in common that useful information is provided after the components start to degrade or fail. Degradation of components is strongly related to the loads introduced via the rotor blades. Therefore the partners in the LoadWatch project collaborate with the goal to finalize the fibre-optic load monitoring system (FOBM) and make it ready for commercial sales. Apart from load monitoring as input for condition based maintenance planning, the real time information can be used for e.g. individual pitch control (IPC), applied in order to reduce the loads on the blades.

Already ongoing measurement campaigns in wind turbines using the desktop interrogator and prototype sensor design substantiate the tremendous usefulness of the load monitoring data. Current efforts focus on delivering a fully industrial validated product with EtherCAT data-interface and integrated wavelength reference. This ruggedized, small footprint interrogator is IP60 rated, shows outstanding stability and is already commercially available by the end of 2018.

In combination with the fully validated sensor rig a 6 months field test is started in 2019 proving the real time information usefulness for condition based maintenance and IPC, which results in a reduction of cost of energy of 0.4% in offshore wind!

Industrial SwitchedRefGator

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