

Structural health monitoring of wind turbines: method and application to a HAWT

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Web Source: ftp://ftp.fe.up.pt/pub/Dec/filipema/public/FCT_WindOMA/ref_20.pdf

In this source, extensive simulation is used to model the structural longevity of a Horizontal Axis Wind Turbine (HAWT) by treating it as a vibrational system with multiple degrees of freedom. Each axis is described as having its own very unique behavior and forcing functions derived from physical principles, although some axes of motion share elements of these sources of disturbance. The analyses described in this source will provide valuable insight into the approaches, along with relevant assumptions, that we will need to make as a group in order to effectively model and evaluate our given system. Of particular interest are the fluid models used to simulate interactions with the wind turbine simply yet effectively, as well as the methodology used to communicate these physical principles mathematically so that they can be applied to a simple vibrational model. The depth and breadth of the simulation used throughout this study seems to be outside the scope of our project's considerations, so simplifying these models with reasonable assumptions is of importance.