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Abstract:

The project is a part of the larger project *System Identification, Condition and Health Monitoring for a New Generation of Wind Turbines (SYSWIND)* under the Marie Curie Initial Training Network Programme (FP7). It offers training of the PhD students attached to the programme within various discipline as structural health monitoring and damage detection, laminate theory and fracture mechanics, signal processing, wireless sensor networks, multi-body dynamics and finite element theory, computational fluid dynamics and aero-elasticity.

The present project on multi-body analysis is supposed to provide a simulation platform for other activities within the SYSWIND project with emphasis on problems related to health monitoring and damage detection. With the increased size and flexibility of the tower and blades, structural vibrations are becoming a limiting factor in the design of even larger and more powerful machines. Blades manufactured with composite materials may experience damage and delaminations and thus need critical monitoring. Currently, the system monitoring is carried out either offline or initially during installation. Thus, the lack of online health monitoring facilities leads to increased downtime for the turbine and decreased life span of the components (e.g., blades, drives, power electronic converters) of the wind turbine.

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