SIMULWIND

Co-funded by the Erasmus+ Programme of the European Union

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Maintenance simulator: A TRAINING TOOL for the sustainability of European wind farms

Project overview

Launched in December 2017, SIMULWIND is an ambitious European funded project aiming at developing a maintenance simulator. It will be used in the training of operation and maintenance (O&M) workers. The project ends in December 2019. The SIMULWIND project receives funding under the ERASMUS + programme of the European Union.

Simulator – latest developments!

SIMULWIND is developing a tool - designed by the company MONSUTON- that will simulate the main faults and maintenance procedures of a wind turbine.

This project follows the wind industry priority for a digital transformation of the sector. It tries to answer some of the challenges that currently impact the wind farms operation: the need of skilled personnel and new operational modes based on the projects useful life extension and the reduction of variable costs.

The simulator will present specific situations and cases that may occur during the operation of a wind farm. This represents a further step in training operation and maintenance technicians, as they would be able to test real life situations and concepts acquired in different training modules. This step offers the possibility to know the details of a wind turbine before actually starting working onsite, which means a great advancement as it is not always an easy and affordable task in the training phase, particularly for offshore wind turbines.

Simulator Innovation – Functional design

The main innovation brought by the project is to develop a standard tool that could be updated with the newest wind turbine models in order to provide technicians with the best up to date training. The solution adopted is the **functional design** which will allow the simulator to specify the elements involved in the selected maintenance procedures and add new procedures when necessary.

The simulator itself highlights the map of possible combination of materials, tools and Personal Protection Equipment (PPE). It contains various actions and its results, as well as technical elements of interaction. It will

allows as well to complete each digital action with specific videos, messages and texts to reinforce the simulator capabilities.

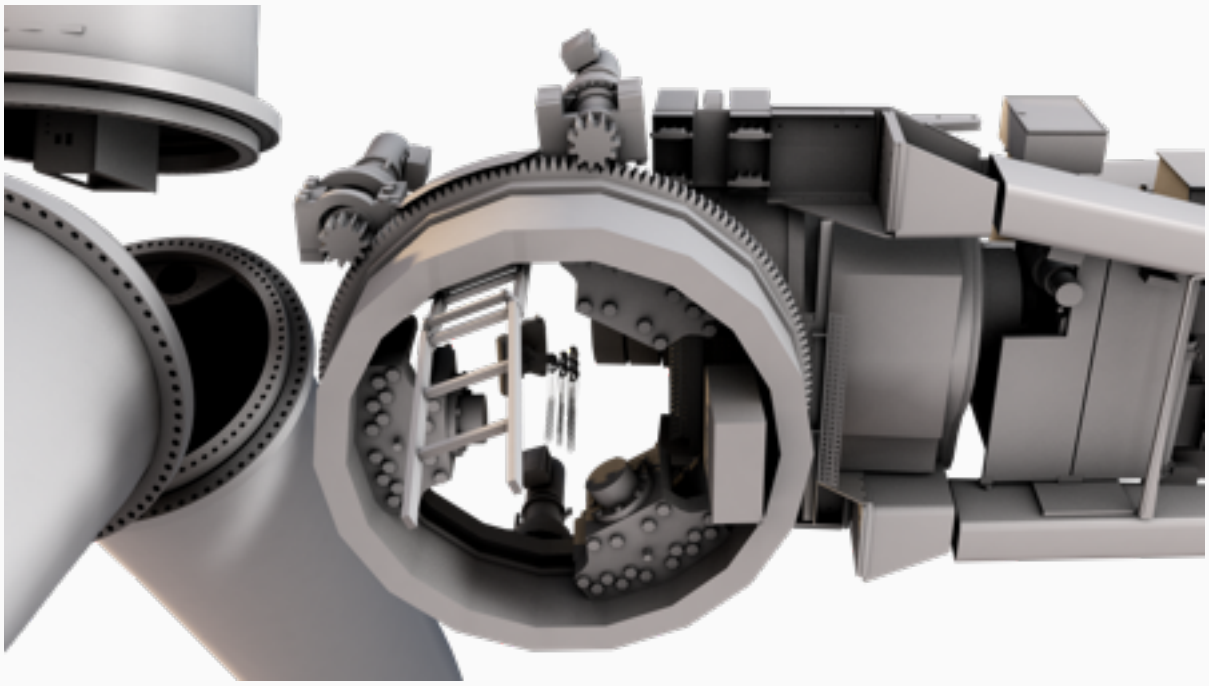
The final product has to be as simple as possible. It will be used by stakeholders with different levels: administrator, teacher and users. The beta version will be finished in September 2019. Pilot tests will take place after September 2019. The final version to be used by external persons will be ready in December 2019.

How does the simulator work?

Before starting a tutorial, the user should register and specify its role (administrator, teacher or user). For example, if the user is the administrator, different options will be offered that will allow to change loaded practices and add new practices. For the others, teacher or user, they will select one of the available practices, of a total of three in the first phase of the project (lock of the high-speed shaft, high speed shaft coupling substitution, replacement of the motor of the yaw moto-redactor) as well as the difficulty of carrying it out (easy, medium, hard). When the simulator starts, the user should select the tools, materials and the necessary Personal Protection Equipment (PPE) and then he/she will move the wind farm room to get access to the nacelle. Once the piece on which one wants to operate is identified, the corresponding tool is to be applied either in isolation or in combination with the necessary material. In this section the rest of materials, videos and texts, will be included to complete each of the existing procedures.

Wind Turbine Generator (WTG) Model

Another innovation in the project is represented by the wind turbine model (WTG), a standard one based on a typical layout and using a double-fed induction generator (DFIG) and a classical structure of the main frame, pitch actuator, active yaw and tower access (see figure below). The WTG model at the basis of the simulator is nearly finalised, with some components still to be integrated: hub, main frame, nacelle cover, tower and access platform. It should be used to facilitate the use of other types of WTG.



Source: SIMULWIND project

For more information on the simulator and its design, please contact the project coordinator at info@bzee.org

Project meetings

Third project meeting, Rome, 10-11 December 2018

The meeting highlighted the project progress: the report of the simulator maintenance subjects, faults, solutions and maintenance procedures and the communication and dissemination

activities. The website is now online. AEE introduced the simulators' state of play: the modular contents' script and design, development and programming of the simulator. The next project meeting will be held in Valencia on 25 June 2019.

Project Consortium

Project Leader:
The BZEE Academy GmbH

BZEE
THE INDUSTRY STANDARD FOR TRAINING EXCELLENCE IN WIND ENERGY

Project partners:

AEE Asociación Empresarial Eólica

SGS

anev associazione nazionale energia del vento

Wind EUROPE

For more information on the project please contact the project leader BZEE at info@bzee.org or visit the project website

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