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# MAINTENANCE SIMULATOR: A TRAINING TOOL FOR THE SUSTAINABILITY OF EUROPEAN WIND FARMS



Project N°: 2017-1-DE02-KA202-00426

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## SPANISH NATIONAL INFODAY

25<sup>th</sup> November 2019

### Introduction and agenda

Launched in December 2017, SIMULWIND is an ambitious European funded project aiming at developing a maintenance simulator to teach about the main maintenance activities in the wind turbines and more specifically in the nacelle, even before accessing it.

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

The agenda of the Spanish National Infoday was structured in two main parts, one presenting the SIMULWIND project introducing its context and results and the other presenting the virtual reality tool developed.

11:00 - 11:30 Welcome the participants

11:30 - 12:00 Presentation of the Project Simulwind: achieved objectives and experiences

12:00 - 12:30 Presentation of the Virtual Reality Simulation tool, a pioneer public initiative globally.

12:30 – 13:30 Discussion “The digital tools in the training of workers in the Wind Sector: capacities and limitations”.

13:30 – 15:00 Participant individual simulation session during a Spanish wine.

### Evaluation

At the end of the meeting each attendee (of a total of 32 participants) was given an evaluation questionnaire that presented some statements about the project and the venue in order to evaluate the key aspect of the project and the impact it may have in the training of the wind energy sector workers.

It was remarkable the good acceptance of the final version of the simulator by the audience and the enriching debate that took place during the meeting regarding the use of digital tools in training. Thanks to the great variety of attendees to the meeting and the presence of some key institutions in health and safety training in the Spanish Wind Energy Sector the debate reached clear conclusions.



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In the Figure 1 are presented the results obtained in the evaluation questionnaire of the project. As it can be all the aspects were evaluated near 5 which was the maximum score.

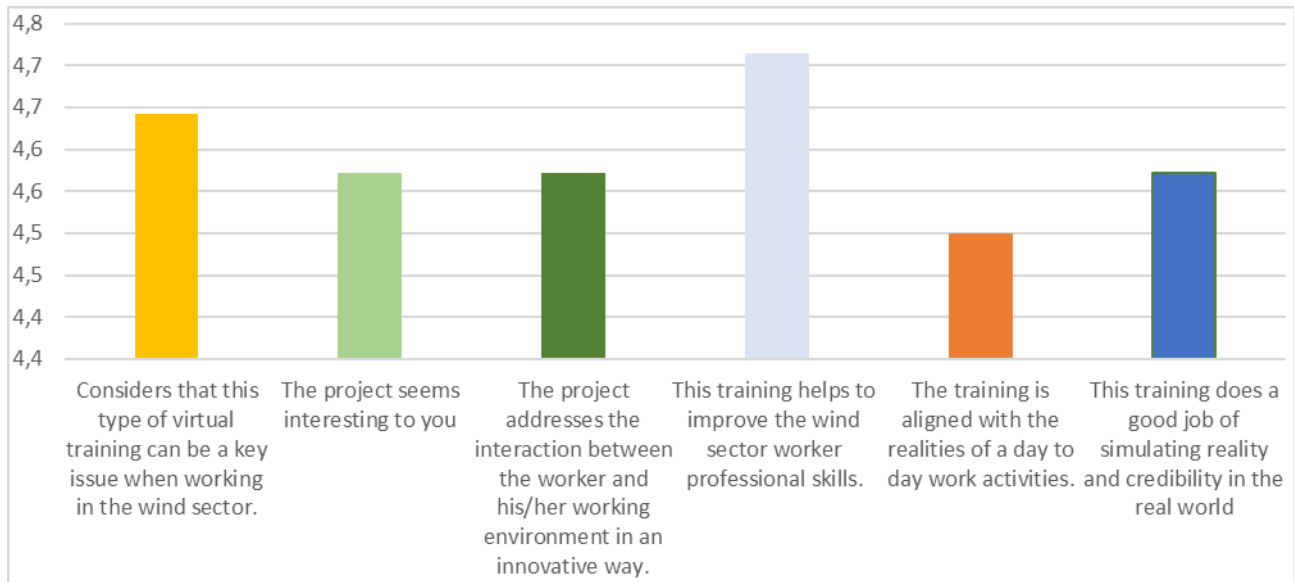


Figure 1. Evaluation results of the Spanish National Infoday

The majority of the participants considered that this type of virtual training is really an innovation in the wind sector, specially due to its open and public character, and it would be a key issue for the future workers of the wind energy sector, as it would present a real working environment before accessing a real wind farm.

AEE has had also an active involvement in the event organized in Copenhagen by WINDEUROPE inside the Offshore Exhibition and it was again clearly welcomed this initiative, thanks to the possibility of being expanded with new WTGs and Maintenance Procedures, as well as through the creation of an users platform to exchange experiences. An important issue not initially foreseen was the training of white collar workers normally unconnected to the reality of the wind farms and the reproduction of accidents in virtual reality conditions, as a measure to avoid them in the future.

Having the feedback of the Pilot Test meeting, it was considered crucial that all the participants of the National Infoday test the simulator and have the full experience of going through a maintenance procedure, so they get a real feel of the tool.

## Conclusions

Virtual reality still has a long way to go before it is completely included as a normal part of training in the wind energy sector and in others, but it offers a world of possibilities. The VR simulator developed in Simulwind is a customizable and adaptable tool that can be altered to the need of the training and the type of wind turbine.



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Many companies are considering the development of similar tools to train their workers, but the great investment needed to do so normally make the companies draw back and continue with more traditional ways of training their workers.

Simulwind is an innovative tool that would be public for some years and it would help those companies in the sector to get the feel of virtual reality and have a total flexible tool at their hand.



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