

Refurbishment and donation of a Vestas V27 wind turbine to Taiwan university.

The challenge

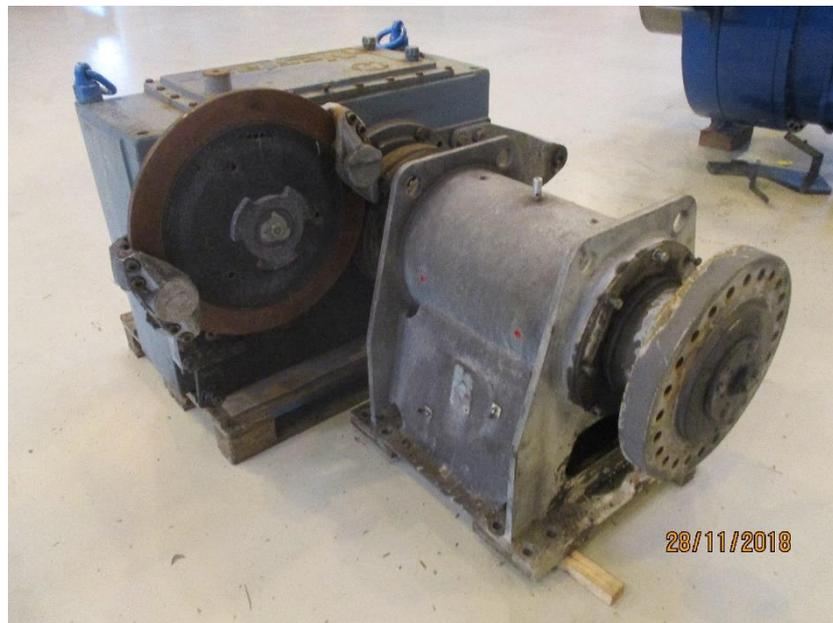
The project started at the end of 2018, when WindTech was contacted by Ørsted Wind Power. Ørsted was interested in refurbishing an old Vestas V27 wind turbine and donating it to a university in Taiwan. The Nacelle was to be part of the day-to-day education at the university. According to plan, the wind turbine would be ready and operational by February 2019.

The main challenge in this project, was the transformation from 50Hz to 60Hz. Because Taiwan utilizes a different electrical infrastructure than Europe, the transformation is a requirement for the wind turbine to function. In addition to this, the wind turbine needed to perform some additional educational functions. This included the ability to measure wind speed, wind direction and the ability for the turbine to rotate slower than normal.

During the project, WindTech also needed to produce a set of instructions for the university staff. The instructions should serve as a guideline to access these additional functions. This resulted in WindTech having to both perform the refurbishment, and at the same time, document and convey the information to an easy-to-read format.

The work begins

The work started in December 2018, where the whole refurbishment process began, with an entry-check of the Vestas nacelle. After the entry-check, the nacelle was separated, and the components were cleaned.



Most of the components were salvageable. In this case the component suffered minor wear and tear.



Some of the components were badly damaged after years without proper maintenance. In this case they needed additional work or complete replacement.

Because the project included the transformation from 50Hz to 60Hz, nearly all the electrical components, had to be replaced. The main focus was on replacing the gearbox, electrical motor, and the steering. The components that could still be used were inspected, measured, and lubricated.

Lastly the components and the nacelle cover were painted and reassembled into the complete nacelle. The nacelle was then exit-checked and placed in a shipping container. The nacelle would now start on its 40-day journey to the Taiwan university.

What did the project accomplish?

The project resulted in an old wind turbine, (which could have otherwise been discarded) being refurbished and donated to an educational center, by Ørsted Wind Power.

By implementing educational functions and producing guidelines, both the university staff and the student will receive a practical angle in their education.

The choice by Ørsted to refurbish an old wind turbine (rather than purchasing or manufacturing a new one), ensured that the Vestas V27 was given new life. The wind turbine would not only continue to contribute green energy. It would also provide educational benefits to students in Taiwan.

Below you can see some additional pictures of the final result.



The finished nacelle. Now it just needs the nacelle cover, and it is ready for shipment for Taiwan.



The refurbished parts are as good as new. With a new coat of paint, it's hard to tell this used to be a secondhand Vestas V27.



The electrical components are installed. With the new guidelines written by WindTech, the university staff and students will be able to access and use the new features.