EUROWIND ENERGY

Refurbishment project doubles the lifetime of V80 turbines

Eurowind Energy expect to double V80 lifetime and optimise operation

***"We will have doubled the lifetime of these turbines"*, says John Hemdrup Jakobsen, Project Manager for Eurowind Energy A/S. By refurbishing eight Vestas V80 turbines for a new wind farm in Scotland, Eurowind Energy anticipate to save money while drastically extending the turbine lifetime and hereby reducing environmental impact. The refurbished turbines will be fitted with DEIF controllers, giving Eurowind better opportunities for optimisation and control.**

Like all other mechanical equipment, wind turbines have a limited lifetime. After years of green power production, they are often taken down and scrapped. However, many turbines such as the Vestas V80 are perfectly capable of being refurbished to run well beyond the life span stated by the OEM instead of being scrapped after 15 to 20 years. By doing so, the owner not only postpones the negative environmental impact from building new turbines; refurbishment is also far cheaper than purchasing new equipment – especially because refurbished turbines can often be optimised to run better than they did originally.

A new lease of life through common sense

The combination of a positive environmental impact and a good business case prompted Danish energy company Eurowind Energy A/S to refurbish eight Vestas V80 turbines. The company had decommissioned the turbines after 15 years of operation on a German wind farm and put them in storage. However, when developing a new project in Scotland, Eurowind Energy realised that they would be a perfect fit and chose to refurbish the V80s.

"It's an interesting process; quite educational, I'd say", says Project Manager John Hemdrup Jakobsen of Eurowind Energy's EPC department. *"We're using common sense: Everything that is broken needs to be exchanged, and if anything is very difficult and time-consuming to put in place or exchange when the turbines are erected, we will do that now because it's far easier to do in a warehouse than in the nacelle of an erected turbine."*

Established in 2006 and headquartered in Hobro, Denmark, Eurowind Energy has evolved into a leading

developer and operator of wind and PV projects. It has offices in 10 European countries and manages a portfolio of approx. 1,300 MW of wind and solar parks, of which Eurowind itself owns approx. 600 MW.

Every year, Eurowind Energy's portfolio produces approx. 1,400 million kWh, equivalent to the electricity consumption of 350,000 households.

Improved control with DEIF solution

As part of the project, the OEM controller hardware in Eurowind Energy's V80 turbines were replaced with DEIF's AWC 500 series controller. This controller offer unrivalled robustness and have been installed in thousands of turbines. In addition to reliable performance, one major reason for this success is the fact that they give operators better control over their turbines, and this was certainly important to Eurowind Energy. The controller software and control strategy for the V80 2MW turbine has also been made by DEIF Wind Solutions using newest software design methods available.

"We want to be able to optimise the turbines; we want to have more in-depth access to the turbines as they are being operated", explains John Hemdrup Jakobsen. *"We want to optimise the power we get out, and hopefully we'll be able to do something about the maintenance as well: If we can see all the performance data, we might be able to schedule the maintenance so we can keep the turbines alive and well for a very long time"*.

Looking for a solution able to deliver on these requirements, Eurowind Energy chose DEIF for their extensive experience in turbine controller refurbishment and their experience with the Vestas V80. *"Seen from our perspective, it was very positive as we wouldn't have to start from scratch, but could start with knowledge of that particular turbine type"*, says John Hemdrup Jakobsen.

With the DEIF controllers, Eurowind Energy expects to be able to optimise each turbine individually to maximise its power output in the hilly terrain of the site in Scotland. Whereas OEMs often restrict control system access, the DEIF controllers give Eurowind Energy a much broader interface to the turbine during operation. In addition, Eurowind Energy will be able to add third-party accessories as required without being bound by OEM restrictions.

> *"I'd say that DEIF is a conscientious company. They have a pragmatic approach. This is a company that I feel comfortable with."*
>
> John Hemdrup Jakobsen | Project Manager for Eurowind Energy A/S

Easy-fit solution and pragmatic approach

Before delivering the controllers, DEIF staff visited the warehouse to take measurements and make sure that all components would fit into the cabinets. The controllers were then delivered pre-mounted on switchboard doors, allowing technicians to quickly carry out the physical installation in the nacelles. It was then only a matter of connecting the wiring; the original Vestas connectors could even be re-used.

"We designed the solution to be easy to install and configure", says Business Project Manager Brian Nykjær Brandt of DEIF. *"The less equipment the technician needs to bring into the nacelle, the better. This is particularly important if the turbine has been erected and you need to carry all equipment while climbing the tower to enter the nacelle. You can mount our controller just using a screwdriver"*.

John Hemdrup Jakobsen is satisfied with the contributions from DEIF throughout the project. *"We've had many discussions, and we're in weekly contact to get everything in place"*, he says. *"I think it's been quite good. DEIF seem to show a pragmatic approach to meeting the targets of this project, which is good. We have a lot of practical talks on how to do this and that, and it's easy for us to deal with that. We like to work that way."*

Ready for a future of improved wind farm sustainability

As of this writing, the eight V80 turbines are in the final stages of refurbishment and will be shipped to Scotland and installed on the new site in the autumn of 2021, realising Eurowind Energy's ambitions to combine cost savings with environmental considerations.

"It would have been a shame to just let these turbines go to waste", says John Hemdrup Jakobsen. *"The Vestas V80 turbines are fairly sturdy machines, and with a light refurbishment, they will be able to run for another 15 years as well. We will have doubled the lifetime of these turbines. Instead of just letting them go to waste and instead of using resources to remanufacture the materials in them, we reuse the parts and add a few bits and bobs"*. Sustainability is a consideration in the project. For example, the original turbine gearbox oil was drained

and stored when the turbines were taken down. Now unsuitable for gearbox use, the oil will be reused in the tower damping systems, eliminating the requirement to buy new oil for this and reducing the amount of waste oil generated during the project.

The project sets new standards for wind farm sustainability and as such is a perfect fit for Eurowind Energy's ambitions to develop a position as a leading developer and operator of sustainable energy projects. John Hemdrup Jakobsen does not rule out using DEIF solutions for similar projects in future if the refurbished wind turbines perform as expected.

"We might well consider retrofitting other turbines with a DEIF solution" he says. *"If we had a set of turbines somewhere in the world on a wind farm that was not performing as it was supposed to, we might decide to use a DEIF system in those as well"*.

The controllers can be factory configured for all major turbine brands, including Enercon, Suzlon, Vestas, and Senvion*, making them ready for a future where turbine refurbishment could well become more common. The controllers, the customised solution it is part of, and the technical support that DEIF delivers make up a package that brings peace of mind and adds value for companies like Eurowind.

"I'd say that DEIF is a conscientious company", concludes John Hemdrup Jakobsen. *"They have a pragmatic approach. This is a company that I feel comfortable with."*


SWL 800 kg

Watch the case video

DEIF A/S
Frisenborgvej 33, 7800 Skive, Denmark
Tel. +45 9614 9614

Learn more at www.deif.com

We're pretty social too