



# ERG WIND POWER

V47 wind turbine retrofit





## Leading wind power operator retrofits 20 V47 wind turbines with solution from DEIF

Italian power operator ERG has retrofitted V47 wind turbines with new blades and DEIF's controller solution to prolong turbine lifetime, and the modernised turbines' performance is expected to increase in terms of AEP, availability and improved power curves.

As part of a large Repowering and Reblading project, ERG decided to retrofit 20 V47 wind turbines on a high wind site situated in Avigliano in Italy. The turbines were technologically obsolete and needed an upgrade to extend lifetime and productivity. *"We changed the original rotor with new blades. They have a different geometric profile, and they are 1 meter longer than*

*the original ones. The new controller solution from DEIF has, among other features, the important goal to handle this new specific configuration, optimising the reference pitch curve and the yaw alignment"*.

ERG expects the turbine productivity to increase with approx. 16% after re-blading and replacing the

original control system. *"We wanted to improve the performance of our V47 turbines and extend their lives by using a modern solution that is able to implement on kW wtgs the logics and operative strategies used on MW turbines"*, explains Production Optimization Manager Daniele Baldan, ERG.

ERG produces electricity generated by clean, renewable and sustainable sources and is the leading wind operator in Italy and one of the leaders on the European market. The company has more than 80 years of experience, and in 2018 ERG produced 7,485 GWh of electricity – enough to satisfy the clean energy demand of 2.9 million households.

ERG wanted to find an experienced partner with proven competencies within turbine retrofit, and having met DEIF's experts on several occasions, they decided to go with the Danish retrofit expert. Daniele explains the choice of DEIF this way *"We have been working with DEIF since 2016, and we are lucky to collaborate with great professionals, always available and proactive, able to support us in our requests"*.

## Tailormade solution based on turbine data

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In 2018, DEIF's condition monitoring system was installed in one of the wind turbines and based on the collected data, DEIF's engineering team build the controller software so that it matched the specific wind conditions on-site. "The engineering phase is essential

*to provide the customers with a powerful solution, and for this project, the team has put a lot of hours in the project providing ERG with a tailormade solution that meets their demands", says Team Leader Michael Stadius.*





## Good planning and effective execution

Retrofitting the control system on 20 wind turbines can be a time-consuming task, and an effective and successful installation depends on a lot of things. Especially the weather is a determinant factor. However, The Clerk of the Weather was on Michael and the team's side during the period. Together with GNL Service, the Italian wind service provider C.M.C. Srl and in cooperation with ERG Maintenance team, Michael conducted the installation of new controller hardware and software. Michael and the team had done a lot of planning before the installation, which speeded up the process.

Michael instructed the team on how to perform the control retrofit and prepared a complete package for each wind turbine, including wirings cut in the right lengths. And in less than three weeks, the team had made all the installations and the turbines were up and running.

## Scheduled maintenance and troubleshooting made easier

After having completed the installations, Michael Stadius conducted a two-day training that included a workshop where 10 participants from ERG learned to operate the new control system and to handle the new components. Day two was spent on-site in Avigliano, where Michael gave a guided tour, and the participants had the opportunity to explore the installation in real life.

Daniele Baldan believes that the new controller solution will make it easier for ERG's technicians: *"Our technicians will be more confident in using the SW of the new controller during the troubleshooting and the scheduled maintenance. Furthermore, handling a bigger data set of electrical and physical measures, we will improve the effectiveness of our predictive maintenance"*.



## ERG expects to increase performance

After having retrofitted the control systems, ERG expects to optimise turbine performance significantly and are collecting data to perform its analysis. One of the most important goals is to adjust all parameters and strategies of the V47 turbines to maximise the performance measured in increased AEP, availability and improved power curves.

*“With DEIF’s solution, we now have a modern solution based on a plug and play installation meaning minimum downtime, optimised O&M and full data access. We now have the possibility to build up and modify the operative strategies”, Daniele explains, and he concludes that “DEIF’s control solution is an effective way of upgrading Vestas V47 control platform to modern standards”.*





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