

# Questions and Answers Webinar on Wind Asset Optimisation (ROMO Wind) 2021-01-26

nabla wind power

## QUESTIONS AND ANSWERS

The following questions that arose in the webinar are answered:

**1. What is the involvement of the turbine manufacturer in the mentioned improvement methodology? Is it carried on together with the turbine manufacturer or is it done independently?**

The OEM doesn't need to take any particular role, the retrofits are independently developed in order to fit perfectly in the particular platform setup and site conditions, always keeping the loads and deflexions within the design boundaries, without any impact in the drive train, structure or controller. Therefore, nor adjustment is needed, neither specific additional retrofit.

**2. How is the certification subject considered?**

The product is ready for certification, following strict validation processes in terms of design, manufacturing, installation, operation and suitability. Tests are also carried out at the factory to ensure and create the confidence that the product is perfectly safe. Any client wishing to seal the retrofit with a certification body can do it, counting on all our support to ease the process. Our process is based on all the good practices wrapped up in the IEC standards.

**3. Hello, you are modifying the blade hence the blocking effect so how is the iSpin taking this into account in the sensor NTF?**

As the iSpin is installed in the nose of the wind turbine, it is not subject to any blocking effect by the blades, and the rotor extension through retipping is therefore not affecting the accuracy of the iSpin's ultrasonic high frequency anemometer.

**4. Is this enhancement is possible already installed Vortex Generator? Is this retipping concept will be help on low wind season or high wind season?**

Each case is studied in detail taking into account aerodynamic studies (apart from loads, vibrations, noise, production and drive train eventual impacts), so the presence of any aerodynamic add on would be addressed in advance to validate the suitability of the retipping retrofit. But in short: normally VGs do not affect, they are usually placed in other blade sections so that if the checks commented before (loads, vibrations etc.) are fine, they are perfectly compatible. To the second question, retipping is valid for low and high wind seasons. It is something that will be installed "forever". A site suitability analysis shall be done case by case with a detail wind analysis (different wind directions and wind speeds properties, seasonal effects, day-night etc.) to capture the site specific conditions where it wants to be installed. Extreme Loads, blade deflections and fatigue need to be addressed to avoid any impact on the rest of the turbine components.

**5. What kind of guarantee is given for this tips?**

Design, Manufacturing and installation are guaranteed by the engineering and manufacturing company. Any damage provoked by the retipping due to missdesign, manufacturing defects or wrong installation, are covered. In terms of production, the AEP gain can be also assured, but under particular terms, as such depends on the good performance of the O&M (availability), and, of course, wind.