



## Revista #03 / En portada Iberdrola

Por Ángel Luis Sucasas



### **Drones for the maintenance of wind farms**

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It is explained in a figure: seven out of every 100 watts. This is what Spain uses the power of wind energy in its energy consumption, according to Eurostat data. But, in 2050, a Stanford University study says that 35% of the energy could be produced with wind farms deployed in the interior (10%) and on the coast (25%). That is, an increase of 500% in 30 years.

This capital importance of wind power causes innovations in its maintenance to play an essential role so as not to lose the efficiency of wind turbines. With this goal in mind, Iberdrola is committed to drones. Drones that do much more than fly. “Before, there was an operator in a park looking at the shovels with a telescope. Now, we send a drone to do a more thorough study”, explains Agustín Delgado Martín, director of Innovation and Sustainability of Iberdrola.

It is not a mere conventional visual inspection. The drone is equipped with sensors and cameras that allow it to penetrate the surface of the blade to locate deeper faults. And with the information you receive, machine learning allows you to make decisions. “The machine manages the level of importance of the

detected faults. If you discover an anomaly, a human expert confirms the diagnosis. The idea is to give you the ability to decide based on the information you receive. That is, automate the inspection”, says Delgado. For this operation, since the flight time is not very long, there is no remote communication with human personnel. When the aircraft is recovered, the information is downloaded and analyzed. The anatomy of this inspector drone is marked by its name: *Aracnocóptero*, spider. Eight rotors act in unison to achieve the highest possible flight stability and, consequently, the highest quality of the images it captures. “We carry out inspections when there is little wind. Which is very good for us, because that way we don't lose energy production for this task”, Delgado details.

This maintenance system demonstrates a reality of the engineering of the present. Technologies are not islands, not even archipelagos. They are members of an organism that works by the sum of its parts. “The drone is nothing if you take away its ability to measure. And the measurement is nothing if you don't integrate it into a software capable of interpreting what you see. I would dare to predict that the most successful companies will not be the ones with the best drones or sensors, but the ones that interpret this information better”, Delgado values.

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### **It informs, but it does not repair**

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Drones that are capable of performing a more complex repair, such as replacing an electronic motherboard or fixing a particular electrical fault, are still far away. “Neither we are developing projects like this nor have we seen companies presenting them to us. I think it is still far away. Physical interactions with the real world continue to cost”. He illustrates: “We see how MIT manages to emulate the movement of a leopard with robotics, but if you change the terrain conditions, adaptability costs a lot. They fall. It is not that easy”.

This technological support that improves the performance of renewables is a mainstay of the present and future economy. “We all agree that the fossil fuel-based energy system is not sustainable. And it is no longer just a matter of spending finite resources, but of environmental impact. We cannot continue like these 30 or 40 years more. Sustainability is achieved with three things: that energy is competitive (that is, that the user can afford it), that it has quality and security of supply and that it respects the environment ”. At that point two drones and their thousand ways of looking and understanding what they see will have much to say.

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