

## Windworks

# Empowering energy independence and creating a sustainable future through smart turbine technology

### In a nutshell

Wind power is a critical part of Europe's renewable energy strategy, currently supplying nearly 20% of the continent's electricity. By 2027, wind is projected to be Europe's primary power source. There are two basic types of wind turbines – horizontal-axis turbines (the most common) and vertical-axis turbines. Vertical-axis turbines – despite being quieter, safer for wildlife, and capable of higher energy density – have historically struggled with lower efficiency and structural stability in high winds. These challenges limit their potential in addressing Europe's growing demand for clean energy.

Windworks overcomes these hurdles by unlocking the full potential of vertical-axis turbines. They have created a control framework for real-time blade control to optimise performance and reduce electricity costs. By diversifying the wind turbine offering, they are making commercial and industrial scale green energy a viable option for everyone.

### Why is our technology important?

Energy-intensive industries, farmers, and residential areas face increasing electricity costs, carbon emission regulations, and grid constraints. Solar panels can be a cost-effective option for on-site power production. However, they only generate electricity during the day and their efficiency drops significantly during winter months or in areas with less sun exposure. This drop coincides with the electricity cost peak, but also with the yearly peak of wind power production, making wind turbines ideal candidates to achieve year-round clean energy supply.

WindWorks has created the world's first real-time control system for wind turbines, enabling accessible and affordable clean energy. Their technology uses off-the-shelf sensors attached directly to the turbine blades, allowing to fully capture the unsteady flow state around the blades. This state is processed by a data-driven algorithm which adjusts the pitch angle of the blades in real time. This maximises energy production while minimising structural wear, even in strong wind conditions.

WindWorks believes this is the first step in creating a planet powered by smart, renewable energy systems, working in harmony to deliver universal access to cheap, clean electricity.

### The benefits of our solution

- 3x more efficient: Initial proof of concept shows a threefold increase in efficiency, significantly boosting energy output
- 70% reduction in structural damage: the real time control of blade pitch reduces structural damage, extending the operational lifetime of wind turbines from 15 to 25 years.
- Lower cost of electricity: WindWorks' technology reduces the cost of electricity generated by wind turbines by up to 55%. For a 30m tall, 100kw wind turbine this means electricity costs less than 10c per kW-hour.

### Keywords

renewable energy - wind power - smart turbines – vertical axis wind turbines – sustainable energy – on-site energy – carbon reduction – energy independence

### Founding Team

Sébastien Le Fouest: [linkedin.com/in/slefouest](https://www.linkedin.com/in/slefouest)

Daniel Fernex: [linkedin.com/in/daniel-fernex-4033932b6](https://www.linkedin.com/in/daniel-fernex-4033932b6)