Windworks.

Executive Summary

The pitch

Windworks develops smart wind turbines to provide accessible and affordable onsite power. Onsite power generation is increasingly crucial for industries and communities aiming to secure energy at a stable and reasonable cost. Our turbines feature proprietary real-time blade control, ensuring cost-effective wind power even at a commercial scale.

The pain

Non-household electricity users face increasing electricity costs, carbon regulations and grid constraints. The average price for industrial energy usage in the EU has increased from €0.12 per kWh in 2015 to €0.20 per kWh in 2023. Power prices will remain elevated until the late 2030's. The IEA's Net Zero scenario, anticipates significant electrification of the industrial sector, nearly doubling its current electricity demand by 2030, with an inevitable impact on energy prices and their volatility.

Our unique solution

We built the first real-time blade control system for wind turbine blades that respond to local wind conditions using on-board sensors and a data-driven algorithm. Smart vertical-axis wind turbines are quiet, fauna friendly and require only a third of the space compared to traditional turbines. They provide socially attractive wind power and thrive in a wide spectrum of wind conditions, enabling on-site power production. Our laboratory proof-of-concept achieved industry-leading efficiency, with power coefficients surpassing the 0.5 mark, and demonstrated resilience to strong wind conditions.

Our business model

We adopted an engineering, procurement, and construction business model. Customers pay for a feasibility study, supply and installation of wind turbines, operation and maintenance, and end-of-life decommissioning. Our wind turbines are 30-meter tall to minimize regulatory constraints. On target locations, each turbine produces 200 MWh annually and costs CHF 250,000. At scale, we will offer a wind energy as a service model, providing power at 10 cts/kWh.

Benefits of smart wind turbines for on-site power production

- High-efficiency, long-lasting wind turbines, reducing their cost of electricity to below CHF 6 cts/kWh at locations with 5 m/s average wind speed.
- Work in harmony with photovoltaics to ensure an evenly distributed generation profile throughout the year. With integrated storage solutions, energy-intensive industries and communities achieve full energy autonomy.
- Financially viable within an energy-as-a-service business model, achieving payback times below 10 years.

Sustainability impact

Wind energy is recognised as a key climate change mitigation technology. It offers the lowest cost of electricity among all energy harvesting systems and has the potential to produce over 30 times the global demand for electricity. Modern wind turbines achieve a carbon payback time of just 7 months, and 85% to 90% of their total mass can be recycled. By developing affordable, commercial-scale wind turbine solutions for on-site power production, we aim to democratize the technology and accelerate its large-scale implementation.

Our Purpose

Providing clean and affordable wind power on-site to help energy seekers take control on their cost and carbon emissions.

Our Vision

A planet powered by smart, renewable energy systems that work in harmony to deliver universal access to cheap, clean electricity.

Founders

Sébastien Le Fouest, CEO and co-founder. Expert in wind energy and aerodynamics with a strong innovative background: co-founded a CIO in the UK, operating a scaled service for over 100 users.

Daniel Fernex, CTO and co-founder. Expert in data science, optimisation, data-driven flow control, and machine learning.

Advisors

- Prof. Mulleners, world expert in aerodynamics.
- Adam de Sola Pool, VC and angel investor, 20 years of experience in wind industry.
- Patrick Richter, Founder and CEO at Agile Wind Power.
- Jonas Boström, CTO at SeaTwirl.