



Wind Iris Turbine Control



Lidar Technology for Feedforward-Control



The Wind Iris TC (Turbine Control), delivers reliable wind data hundreds of meters in front of the rotor plane enabling unprecedented increases in capacity factors and ROI from turbine investments. Leosphere, the world's #1 Lidar provider, with almost a decade of experience in Lidar assisted turbine control research and development is already working with world's leading turbine manufacturers.



Raise your Wind Turbines to new Capacities

Lidar-Assisted Turbine Control is a unique and proven technology with the potential of significantly **extending wind turbine design limits** by **reducing loads, mitigating extreme events** and **increasing energy capture**.

Typical **load reductions from 10-20%**, enable using the **longest achievable blades** for a given class, or to **upgrading the wind class** of a given turbine platform, leading to significant energy production increases.

Integrating the Lidar into the turbine platform enables **optimized operation of the wind turbine, improving the alignment**, gaining additional turbine **availability** and **reducing maintenance costs**.



Your Customers' Path to a more Profitable Future

Whether you want to **integrate our Lidar product into the design of new platforms, assemble performance and cost optimized turbine configurations** for specific customer projects, or retrofit operating turbines, we have the appropriate capabilities and experience :

- We offer a **reliable, serviceable and affordable sensor** matching your engineering requirements and expectations of high investment returns.
- We can support your path from initial R&D to product launch and supply in quantity, leveraging our experience and expertise to **reduce risks and investment needs**.
- We define and deliver **appropriate Service-Level Agreement** to your needs.



The "Turbulence Reducer"

The Wind Iris TC measures all essential incoming wind conditions, including rotor averaged wind speed, wind direction, shear and turbulence, at multiple distances before it reaches the turbine rotor, with the **essential rotor coverage and preview time** for appropriate control actions, and with the **critical measurement accuracy and precision** needed to reap expected benefits.

With its measurement capabilities and competitive price supported by volume production and high reliability, the Wind Iris is already the industry standard for Lidar-Assisted Control, increasing energy production without compromising the simplicity and robustness of wind turbines.

ESSENTIAL MEASUREMENTS CAPABILITIES

4 beams	Capture all relevant events Provide most representative wind information
Simultaneous measurement at 10 distances up to 200m	Capture wind events at the right distances and time Inform on events evolution toward the turbine
4Hz sampling	Capture relevant events Provide comprehensive development of phenomena
Highest data availability	Ensure continuity of control operation
Data accuracy and quality checked	Make the right control actions based on a trustable data basis
Wind information processing	Provide a complete characterization of the wind field Allow appropriate control actions



MAIN SPECIFICATIONS FOR WIND IRIS TURBINE CONTROL

Lidar Type	Pulsed Lidar Technology
Radial wind speed	-20 to +50m/s
Wind direction range	-180 to +180°
Dimensions	Optical Head (OH): = 53 x 37.7 x 39.7 cm3 - Processing Unit (PU): = 50.7 x 13.1 x 37.9 cm3
Weight	OH: 24.6kg, PU: 12.4kg
Temperature range	OH: -30°C/-22°F to +50°C/+122°F - PU: -30°C/-22°F to +65°C /+149°F
Operating humidity	0 to 100% - OH: IP66, PU: IP65
Power supply	100-240V, 50/60Hz (internal AC/DC converter), Optical Head power supplied in 24V 16.5A max
Power consumption	200 Watts max
Output Data (for each measurement distance)	Raw Radial Wind Speed, Rotor Averaged Wind Speed, Wind Direction, Horizontal and Vertical Shears, Turbulence Intensities - All wind data outputs provided with Quality Check Status.
Communication	Ethernet (RJ45), CAN Bus (DB9), Profibus (Sub-D9 connector, preconfigured data gsd file), Optional Gateways (Profinet, CANopen), Peripheral (USB, HDMI, RS232)
Environmental & Electrical Compliance	CE compliance, CEM, tested under industry standards
Time synchronization	NTP, SNTP, GPS

By tapping into the expertise and maturity of the wind Lidar world-leader, wind turbine manufacturers can further secure their offer of a cost-competitive and breakthrough wind turbine technology, at the lowest possible Cost of Energy, in a secured and rapid development project.

For more information

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