



WINDCUBE⁺

100S/200S/400S

3D Wind Doppler Lidar

SITE ASSESSMENT

POWER CURVE

WAKE MEASUREMENT

FORECASTING



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Scanning wind doppler Lidars systems offer a fully integrated operational capacity to improve wind measurement at any stage of a wind farm project, from prospecting to operation. WINDCUBE 100S / 200S / 400S perform a full 3D mapping of the atmosphere to provide enhanced measurements of wind speed and direction.

Wind farm challenges

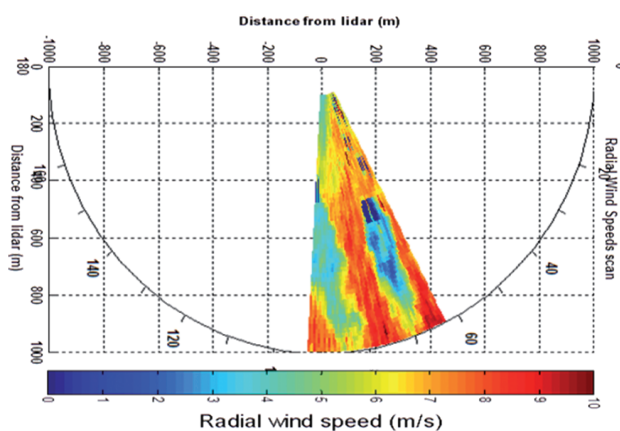
The development of the wind industry creates new challenges, such as the need to better measure wind resources at either one location or on a larger scale area.

The increasing size of the wind farms requires a mapping of wind resources, offering a better understanding of turbine-to-turbine or farm-to-farm wake effect. Accurate forecasting is the overall goal, particularly as wind farms increase in size.

Scanning wind doppler Lidars such as WINDCUBE 100S / 200S / 400S are the equipment of choice to address these challenges.



Scanning Lidars bring value to the wind energy market: Applications



Site assessment: to determinate the location of a future wind farm by predefining the best location for Lidar for the further site assessment, on-shore site assessment (horizontal uncertainty reduction) and offshore site assessment from an on-shore location.

Offshore Power curve: to measure the wind for power curve verification, from the transition piece of an offshore turbine.

Wake measurement: to capture real-time wake effects turbine-to-turbine, farm-to-farm. If combined with a Wind Iris turbine-mounted Lidar data, it provides a comprehensive characterization of wake effects, at short and long distances, simultaneously.

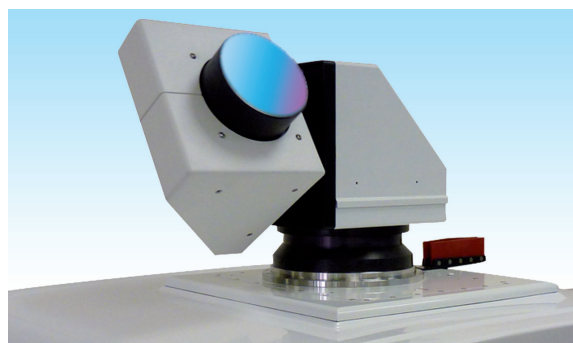
Forecasting: to improve short-term and ramp event forecasting due to the capability of measuring wind several kilometers ahead of the wind farm.

WINDCUBE 100S/200S/400S: 3D wind mappers

The scanning WINDCUBE family uses the same pulsed Doppler technology as the well-known and widely used WINDCUBE vertical profiler.

Fiber technology used in all WINDCUBE Lidars is designed to meet strong operational requirements and optimal instrument compactness. The modularity allows use of the WINDCUBE 100S/200S/400S with different scanning scenarios (PPI, RHI, LOS, DBS) adapted to multiple applications.

WINDCUBE 100S/200S/400S offer the most advanced technique to measure the wind components on a large scale for short term campaigns or long term operations to reduce uncertainties, understand physical phenomena (such as wakes) or improve forecasting.



SCANNING SCENARIOS AND PERFORMANCE*

Scenario modes available	PHI (Plan Position Indicator) RHI (Range Height Indicator) DBS (Doppler Beam Swinging - Vertical profile) LOS (Sequential fixed Line of Sight measurements)
Wind measurement range	WINDCUBE 100S: 3.5 km (range resolution 50m, accumulation time 1 sec) WINDCUBE 200S: 6 km (range resolution 50m, accumulation time 1 sec) WINDCUBE 400S: 10 km (range resolution 150m, accumulation time 1 sec)
Maximum Lidar acquisition range	WINDCUBE 100S/200S: 12 km WINDCUBE 400S: 14 km
Wind speed range	Radial wind speed (PPI, RHI, LOS) : -30m/s to 30m/s

MEASUREMENT PARAMETERS

Accumulation time	0.5 to 10s (1 s is standard)
Physical range resolution	WINDCUBE 100S/200S: 25,50,75,100m WINDCUBE 400S: 75,100,150,200m
Scanner rotation speed	Up to 30°/s
Azimuth angle	Between 0° and 360° (with 0,1° increment)

*Note: The maximum range of velocity measurement depends on various parameters such as the accumulation time, physical range resolution, rotation speed and atmospheric conditions (visibility, type of aerosols and air turbulence).

HARDWARE AND ENVIRONMENTAL

Dimensions	(L-W-H) (mm): 1008 x 814 x 1365 (with scanning head and minimum feet extension)
Weight	232 kg (without options)
Outdoor conditions	<ul style="list-style-type: none"> Operating ambient temperature range: -25°C to+ 45°C (-13°....113 F°) IP65 (dust and splash water resistant) Operating humidity: 10% to 100% Resistant to salty environment (ISO 9227)
Laser source	Pulsed laser @ 1,54 um
Power consumption	500 W to 1.600 W (range includes use of coolers and heaters)

- Wind measurement to 10 km
- Full 3D fast scan
- Unattended and continuous operations
- Flexible configurations
- Ideal for short term campaigns
(rental options available)



For further information about

WINDCUBE⁺

100S/200S/400S



SARTELCO[®] SISTEMI SRL

Via Torri Bianche, 1
20871 Vimercate (MB)

Tel. +39- 039- 62905.1 Fax. +39- 039- 62905.99
e-mail sistemi@sartelco.it Web www.sartelco.it

LEOSPHERE is a world leader in Lidar (laser radar) atmospheric remote observations. The company develops, sells and services new turnkey remote-sensing instruments allowing wind measurement and aerosol (ice, ash, dust, smoke) characterization.

LEOSPHERE has deployed hundreds of Lidars throughout the world in severe environments with the same concern of reliability, reduction of operational costs for clients, and dedication to atmospheric hazards control.



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