

WINDCUBE[®] v2

LIDAR REMOTE SENSOR



LEOSPHERE
Lidar Environmental Observations

Global Partners in Lidar Wind Technologies



WINDCUBE® v2 Key Benefits

- Ultra portable (45 kg) — 10 minute installation
- Class 1 anemometer matched accuracy
- Complex terrain applications with CFD software engine
- Unmatched reliability and data availability
- Backed by industry leaders





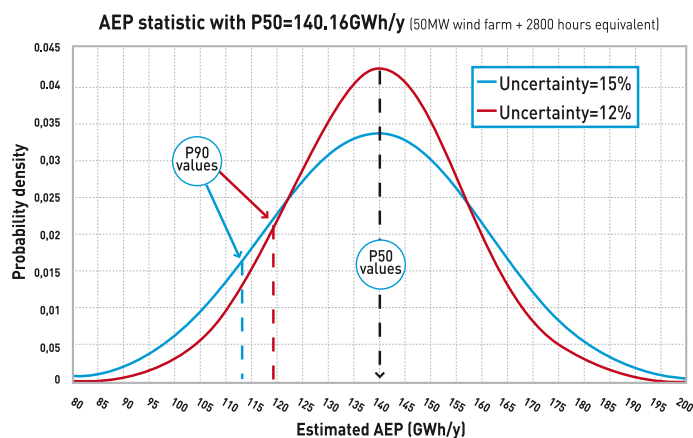
WINDCUBE®v2 : Reduce Uncertainty and Increase Profitability



The profitability of a wind farm rests upon reducing uncertainty—uncertainty associated with wind resource assessment and wind turbine optimization.

Project risks vary from site to site, depending upon wind farm size and site complexity. More and more,

wind resource experts, developers and others are turning to lidar to reduce uncertainty. In combination with traditional meteorological (met) masts measuring for twelve to eighteen months, a mobile lidar remote sensor collecting actual measurements is ideal for knowing the wind resource and reducing project risks.



Return on Investment of a Lidar System for Wind Resource Assessment, poster EWEC2010



200m wind profile

The ultra portable WINDCUBE v2 lidar remote sensor collects measurements at heights up to 200 meters, mapping the vertical wind component, wind speed and direction, turbulence and wind shear. Built upon the original WINDCUBE now operating in 20 countries around the world, WINDCUBE v2 is the lightest, most compact lidar available on the market.

An analysis of return on investment found that a use of a lidar system in conjunction with traditional met masts can save a developer up to millions in equity investments giving bankable data to wind farm investors and owners. The WINDCUBE v2 can make the difference between project success or failure.

WINDCUBE®v2 Applications

Project Siting:

Simple installation, no permitting required; ideal for offshore and pre-site evaluation.



Power Performance:

Ideal for turbine commissioning and wind farm performance monitoring.

Turbine Optimization:

Ideal for measuring turbulence, kinetic energy, and inflow angle.



Technical Data

Specifications

MEASUREMENTS

Range	40m to 200m
Data sampling rate	1s
Number of programmable heights	12
Speed accuracy	0.1m/s
Speed range	0 to +60m/s
Direction accuracy	2°

ELECTRICAL

Power supply	18-32V DC / 93 to 264 VAC 50-60 Hz
Power consumption	45W

ENVIRONMENTAL

Temperature range	-30°C to +45°C / -22 °F to 108°F
Operating humidity	0 ... 100 %RH
Housing classification	IP67
Shocks & vibration	ISTA / FEDEX 6A
Safety	Class 1M IEC/EN 60825-1
Compliance	CE

TRANSPORTATION

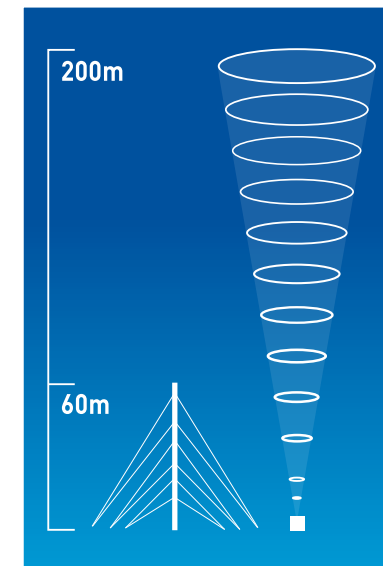
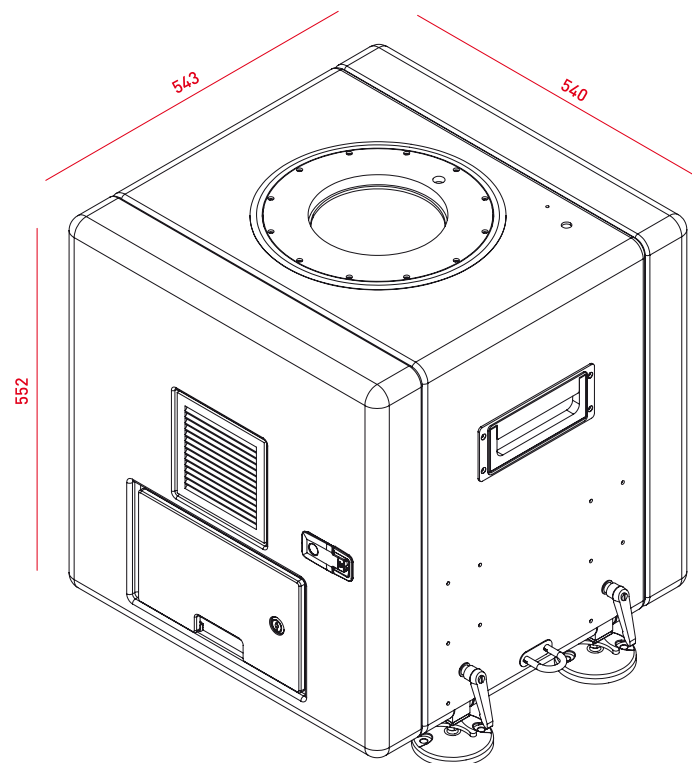
Size	System : 543 x 552 x 540 mm Transport case : 685 x 745 x 685 mm
Weight	System : 45 kg Transport case : 21 kg

SOFTWARE/DATA

Data format	ASCII
Data storage	SSD and compact flash (backup storage)
Data transfer	LAN/USB
Standard WINDSOFT™ Software	Configuration & control Real time display Diagnostic
Output data	1s/10min horizontal & vertical wind speed Min & max, direction, SNR Quality factor (data availability) GPS coordinates

Lidar Technology Overview

The WINDCUBE® v2 is an active remote sensor based on Light Detection And Ranging technique. Wind lidar relies on the measurement of Doppler shifted laser light backscattered by particles in the atmosphere (dust, aerosols). Lidar is the only remote sensor technology to measure the absolute speed of the wind, making it the best choice to meet the industry's high accuracy requirements.



12 HEIGHT WIND PROFILE IN 1 SECOND



WINDCUBE UNATTENDED WIPER

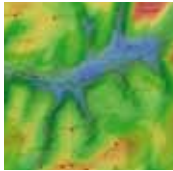


Optional Features and Services



WINDCUBE® Power Pack

Based on fuel cell technology, the WINDCUBE power pack is the ultimate solution for remote locations. Ultra portable, green and affordable, this stand alone power supply is available worldwide (950 x 690 x 480 mm -1 box).



WINDCUBE® CFD Software Engine

Remote sensors and traditional anemometry have always shown discrepancies in complex terrain due to their different measurement principles. Developed in partnership with CFD modeling companies (Meteodyn, WindSim), the unique software engine provides accurate data results in any topography. Proven accuracy <2%.



WINDCUBE® Anywhere SAT/3G

The built-in modem and universal SIM card provide a secured web based interface from any location. The WINDCUBE Anywhere option features:

- Remote access to real time data
- System health monitoring
- Data management



GPS Geofencing Security

The optional GPS security provides reliable, affordable, peace of mind. Over 100 units have been operating worldwide.



WINDCUBE® v2 Offshore

We supply specific solutions for reliable offshore WINDCUBE v2 operation featuring an IP67 reinforced enclosure:

- Satellite data access
- Marine protective coating
- Dedicated offshore maintenance services



QUALITY & DELIVERY

Our optimized lean manufacturing processes allow us to deliver your WINDCUBE v2 product with minimal lead time.

WARRANTY & MAINTENANCE CONTRACTS

Both Leosphere and NRG Systems offer several options for warranty extensions and service contracts that provide fixed cost-of-ownership over the life of your project.



Customer Service and Support Worldwide



**Diagnostic Support
Within 48 Hours**

**No Matter Where
Your Wind Site Is**



In March 2009, Leosphere and NRG Systems formed a global joint venture to expand the use of remote sensing with lidar in the wind energy industry. The joint venture serves customers on all seven continents with sales, service, technical expertise, and support.

www.lidarwindtechnologies.com