



WINDCUBE[®] 400S-AT

**3D Wind
Doppler LIDAR**

WIND SHEARS

WIND HAZARDS



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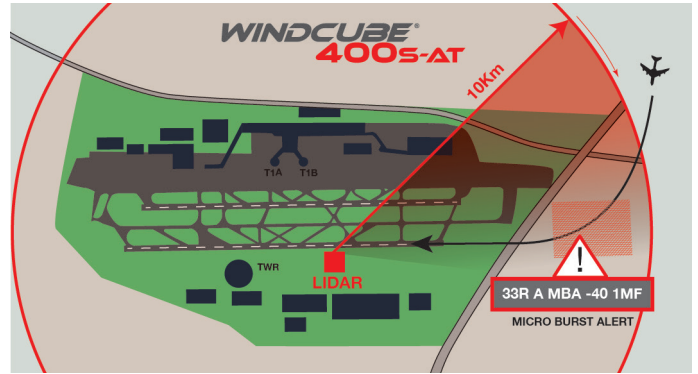
The WINDCUBE 400S-AT LIDAR provides an operational answer for wind shear detection issues: it scans in real-time all potential hazard zones within the airport air space, measures wind-related hazards such as shears and microbursts up to 10km radius, and sends automatic alerts to air traffic controllers.

Wind shear detection in airports: a major issue to be faced

As global passenger traffic is set to increase by 4.1% per year until 2031, according to the latest edition of ACI & DKMA's Global Traffic Forecast Report, a total figure of 12 billion passengers a year will be attained by 2031. Airports must be ready to deal with this increase in traffic without compromising safety.

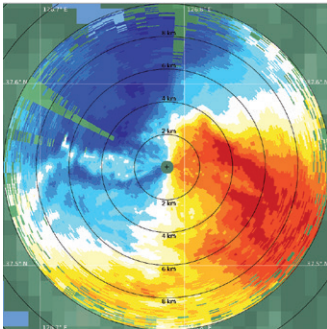
Wind shears have been identified by ICAO as a serious danger to aircraft during takeoff and landing. They are particularly hazardous in the glide slope and near the runways, in the lowest level of the atmosphere (up to 500m).

An increasing number of airports are considering the use of LIDARS as primary or complementary wind sensors in order to build robust, all-weather wind shear monitoring solutions, able to detect wind hazards also in dry weather conditions.



WINDCUBE 400S-AT wind shear alert generation

WINDCUBE® 400S-AT: best-in-class fibered optics LIDAR



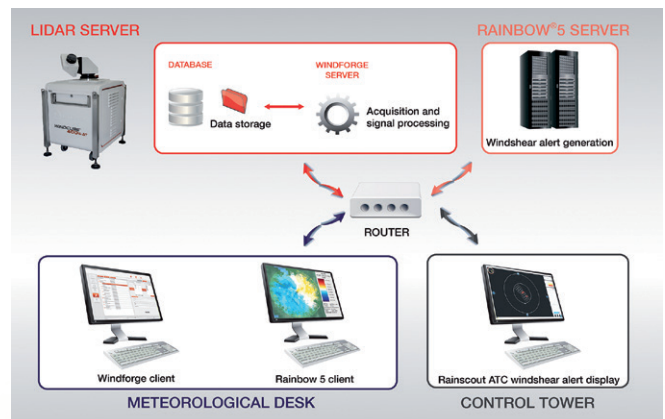
The WINDCUBE 400S-AT is a new generation LIDAR designed for airport safety and low level wind shear alerts. It detects wind shears within the ICAO recommended area of attention around the airport. Depending on the specific configuration of the airport, one LIDAR may be sufficient to cover this area.

The fiber technology used in all WINDCUBE LIDARS is designed to meet demanding operational requirements and optimal instrument compactness. This instrument offers a high degree of flexibility on the geometry of the scanning patterns thanks to its fast and highly accurate scanner head. Its endless motion design, coupled with LEOSPHERE WindForge Lidar control software, ensures total control to focus on the monitoring, which is relevant to each airport situation.

The WINDCUBE® 400S-AT: integration with ATC systems

LEOSPHERE has selected Rainbow®5 wind shear alert software by SELEX to process our accurate wind measurement data into a robust decision-making tool for air traffic control:

1. The LIDAR acquires highly resolved 3D wind data, accessible to meteorological services for short-term forecasting of wind shear phenomena.
2. 3D wind data are transferred in real time to a Rainbow®5 server, which computes wind shears and generates automatic wind shear alerts that can be pushed to the ATC tower or meteorological service displays.
3. Integration architecture can be customized and is compatible with other wind shear sensors for data-fusion.



Wind shear alert system architecture

SCANNING SCENARIOS AND PERFORMANCE*

PPI (Plan Position Indicator)	Scenario with fixed elevation angle
RHI (Range Height Indicator)	Scenario with fixed azimuth angle
LOS (Line of Sight)	Scanner pointing at one single direction of the atmosphere
DBS (Doppler Beam Swinging)	Vertical wind profile
Maximum LIDAR acquisition range	14 km
Wind measurement range (on aerosol - Visibility of 20km within visible wavelength range)	Typical scenario from 300 m (or 400 m) to 10km within the Planetary Boundary Layer (1s accumulation time, 150 m or 200 m physical range resolution)
Wind speed range	Radial wind speed (PPI, RHI, LOS) : -30 m/s to 30 m/s
Precision of velocity measurements	Radial wind speed accuracy is better than 0.5 m/s

MEASUREMENT PARAMETERS

Accumulation time	0.5 s to 10 s (1 s is standard)
Physical range resolution	75 m, 100 m, 150 m or 200 m
Scanner rotation speed	Up to 30°/s
Azimuth angle	Between 0° and 360° (with 0,1° increment)
Elevation angle	Between -10° and 190° (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 μm
Power consumption	500 W to 1.600 W (range includes use of coolers and heaters)

- Real time detection of wind shears to 10 km in the glide slope
- Automatic alert generation with Rainbow®5 software
- 2nd generation full fiber optics 3D wind LIDAR
- Low equipment and maintenance cost





For further information about

WINDCUBE[®]
400S-AT

please contact us: info@leosphere.com

www.leosphere.com

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 several 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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WEATHER & CLIMATE 

AVIATION WEATHER 

AIR QUALITY & INDUSTRIAL RISK 