



# WIND MEASUREMENT

## with WindCollector<sub>2</sub> SODAR

**Available for your measuring campaign - long or short term, wet or dry lease.**

**Improve your wind data asset and project value, contact us today!**

With the ever increasing height of windturbines the ability to measure high is increasingly important for wind power planning. WindCollector<sub>2</sub> SODAR (sound detection and ranging) is a ground-based wind profiler for measurement of the vertical profile of the three-dimensional wind vectors up

to 500 m above ground, with 5 m increments. No other measuring provides the same information of the site wind profile including wind shear and turbulence.

The operation is based on the reflection of acoustic pulses at temperature inhomogeneities in the air with subsequent doppler analysis. SODAR can supple-

ment or replace mast measurement at a fraction of the operational costs.

Due to its compact mobile configuration, the WindCollector<sub>2</sub> can be easily transported and moved around the area for comprehensive picture of the wind conditions at a project site with complex terrain.

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Wind-Collector<sub>2</sub> is a self powered unit. Low power consumption and power independence facilitates operation in remote areas. The operation software is configurable and provides quality control features, statistical analysis tools, remote access support and self-test functions.

Data output includes:

- Wind speed and direction
- Standard deviations of wind components
- Turbulence intensity
- Wind shear
- Standard deviation of wind directions (sigma phi, sigma theta) and stability class
- Structure parameter of temperature CT2
- Turbulent kinetic energy
- Eddy dissipation rate
- Mixing height estimation
- Data quality (S/N ratio)
- Data confidence
- Wind roses
- Frequency distribution of wind speeds for power curve calculations

The software provides real-time data output during measurement and permits the user to reprocess any previously recorded data using different filters and data processing settings. Measured data-files can be used in WindPro or other external software for analysis.

## Specification

### SODAR system specification

Number of antenna elements	64 piezo-electric elements
Frequency range	2525...4850 Hz
Multi frequency	10 adjustable frequencies per sequence
Multi-beam operation	9 beams
Beam angles	0°, ± 19°, ± 24° (Narrow Tilt Angles can be selected)
Vertical resolution	5 m
Minimum measuring height	10 m
Maximum measuring height	500 m
Number of range gates	100
Averaging time	1...60 min
Accuracy of horizontal wind speed	0.1 to 0.3 m/s
Accuracy of vertical wind speed	0.03 to 0.1 m/s
Accuracy of wind direction	< 1.5° at wind speeds > 2 m/s
Measurement range of horizontal wind speed	0 to 50 m/s
Measurement range of vertical wind speed	-10 to 10 m/s
Operating temperature	-35 to +55°C
Heating	100 W heating under the antenna array plate

### Mobile Power system specification

Diesel tank	200 liters
Diesel Generator Running time - Summer	Approx 2...4 h per 72 hour period with solar panel support
Diesel Generator Running time - Winter	Approx 2...4 h per 24 hour period with all heating systems on
Diesel consumption	Approx 0.8 liters per hour
Oil capacity	2.9 liters including radiator and piping
Engine speed	2500...3500 rpm
Cooling system	Oil cooled by means of dedicated trochoid pump on the engine and radiator
Lubricating system	Forced lubrication with dedicated trochoid pump (different from cooling)
Genset intermittent power	3.8 kW 230V 50Hz at 3400 rpm
Genset Continuous power	3 kW 230V 50Hz at 3000 rpm
Genset Alternator type	Permanent Magnet, integrated in flywheel
Genset Alternator output rating	5 kW (oversized)
Heating	Fuel pre-heating system, thermostatically controlled

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