

AQ500 Wind Finder

**A remote sensing instrument for
accurate measurement of wind and turbulence**





AQSystem Factory in Tyresö, Sweden

Example of AQ500 installations



Site assessment by



Site assessment by



Site assessment by



Test of AQ500C for



Site assessment by



Site assessment by



Site assessment by



AQ500 installed by helicopter at
Glötesvålen



AQ500 installed by helicopter at
Sjiska

AQ500 The next generation remote sensing instrument

Market update

The AQ500 Wind Finder has become the leading remote sensing product for the wind energy market in Europe. There are 150 systems installed for different projects and at the end of 2009 there will be more than 200 systems in operation.

The secret of success

- Wind profile up to 200m
- Good data availability
- Robust and reliable design
- Fully mobile system
- Built for and will work in all weather conditions

Innovation

The AQ500 Wind Finder is based on more than 40 years of experience of the acoustic sounding technique SODAR and people in the company have been working with the technique since 1969.

The AQ500 Wind Finder has a unique acoustic horn system with a parabolic dish design which gives the possibility to optimize the output power to the atmospheric conditions.

Other current sodar concepts needs sodar experts to set up and adjust system parameters at installation. With the AQ500 you will start your measurements by simply turning on the power switch. The system is delivered with a fully automatic power supply with solar panels as the main power source and a small powergenerator as back up for the northern countries.



Applications

200m Wind profile

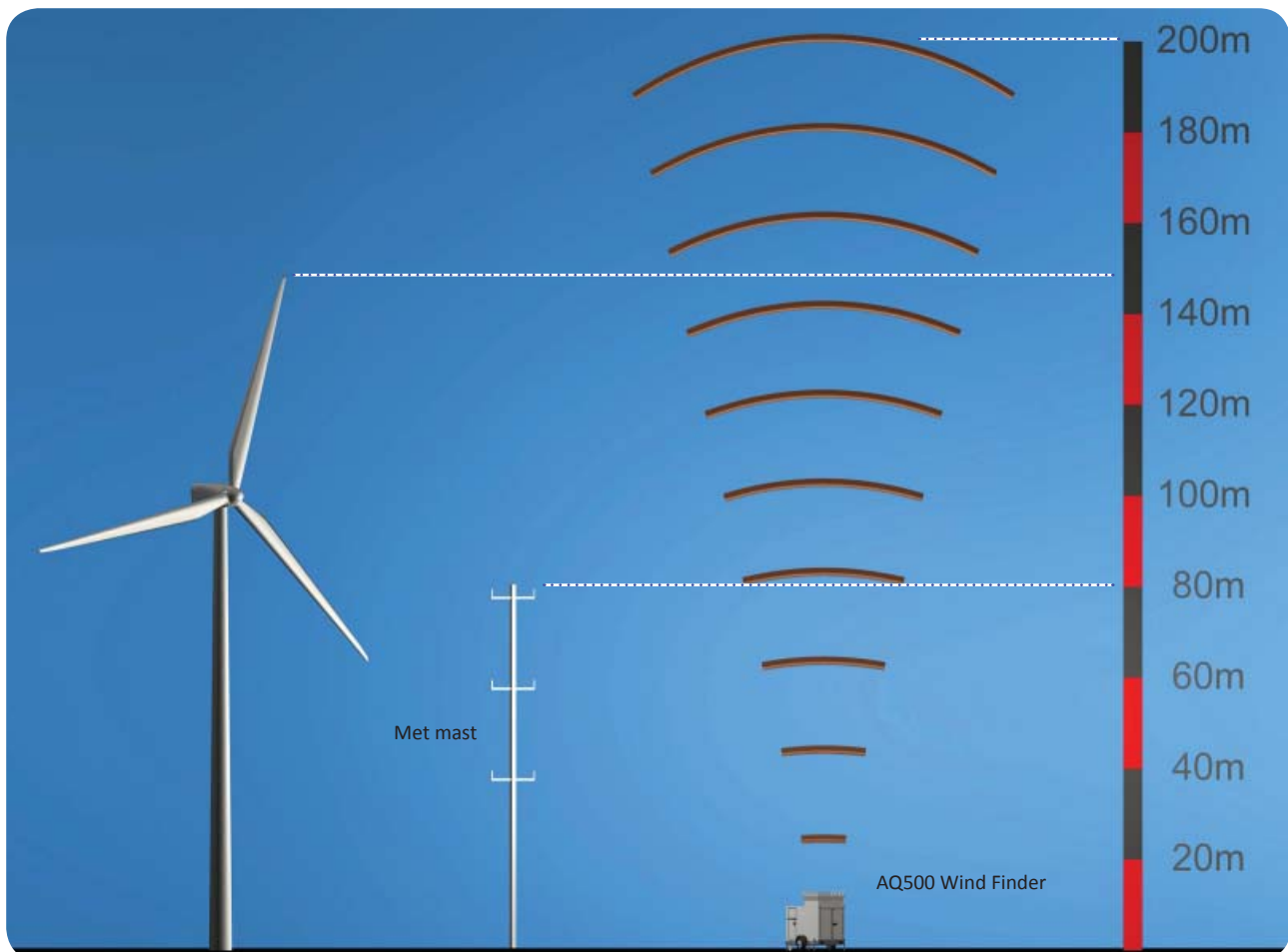
The AQ500 Wind Finder gives valuable data in the whole volume where the wind turbine is working. The system gives you the entire wind profile up to 200m with 5 meter resolution.

100% of the swept area

The AQ500 will give you accurate wind data for 100% of the turbine swept area which means that the system is good for stand alone measurements or as a complement to a met mast. By only using a met mast you normally need to calculate the wind profile from the top anemometer to the top of the turbine swept area.

Winter and rain conditions

Independent test institutes have shown that the AQ500 will give you accurate wind information and high data availability also in heavy snow fall and rain. Customers in the northern Europe can also verify that the system works in very tough climate. The secret is the special designed heating system and possibility to increase the output power. In the northern countries you will have a lot of ice and snow situations which some times can give you inaccurate wind data if you only rely on wind sensors in a mast.



Performance

Data availability

The AQ500 Wind Finder has a data availability of >95% up to 150m and >90% up to 200m. The system has been on the market for more than two years and is in operation for more than 150 different projects around the globe.

Tested by the industry

The system has also been tested with very good result by the industry and independent institutes as: Garrad Hassan, Airtricity, Vattenfall, Nordex and others. There are a number of independent validation reports available upon request.

Calibration

The AQ500 Wind Finder is calibrated in our factory by our test department. All systems are also compared against our AQ500 reference system in our test range outside the factory before the delivery. AQSystem can also offer a verification at our test site on Näsudden and compare the system against a met mast before the delivery.

Independent test institute

AQSystem has signed an agreement with Deutsche WindGuard for testing the new AQ500C Wind Finder during October 2009. Deutsche WindGuard has 20 years of experience of calibration of traditionally anemometers and we see it as a natural step to use them.

Specifications

Range min-max	20-200m
Height resolution	5 m
Accuracy	0,1 m/s





Product Concept

Acoustic radar

The AQ500 Wind Finder works like an acoustic radar, transmitting sound pulses that are reflected by the temperature structure in the air.

Special acoustic horn system

The AQ500 Wind Finder is transmitting short powerful tone pulses in three directions with a separation of 120 degrees. The special designed acoustic horn system with protected speaker elements, where the sound is reflected by parabolic dishes, means that the system also can measure the wind in heavy rain and snowfall with high data availability.

Optimized antenna-lobes

We have optimized the antenna-lobes to three to measure the three dimensional wind field with high accuracy.

System
nsing technique

Quality assurance

Customer satisfaction

Our workforce takes great pride in the craftsmanship of the product we create and is dedicated to quality assurance and customer satisfaction. We employ the best technology, fabricating equipment and fully trained and certified team members. Our attention to details extends to proper packing for secure delivery.

Certificate

All products is delivered with a factory acceptance test document (FAT) including a calibration certificate for system functions.



AQ500 Wind Finders ready for installation



Fully automatic power supply

Mobile system

The AQ500 Windfinder is a fully mobile concept with the antenna and electronic units together with power supply combined in a trailer.

Intelligent control unit

The control unit will automatically sense the voltage level in the battery bank and if the solar panels not can give you enough power it will automatically switch over to the power generator. If main voltage 230VAC is available it will also automatically switch over to the main voltage when connected. The system can also be controlled by SMS and it will send you different alarm messages as low fuel level, missing start of generator etc. The system is also equipped with a 600Ah battery bank which means that the system can operate a whole week only on battery power. This all together gives us a very reliable power supply solution.

Key Benefits

- Mobile system including the power supply
- Simply start up with one power switch
- Solar panels
- Intelligent control unit

One power switch

The AQ500 Wind Finder will automatically start the measurements when you turn on the power switch. A normal installation will take less then 1 hour after arrival to the site.

Solar panels

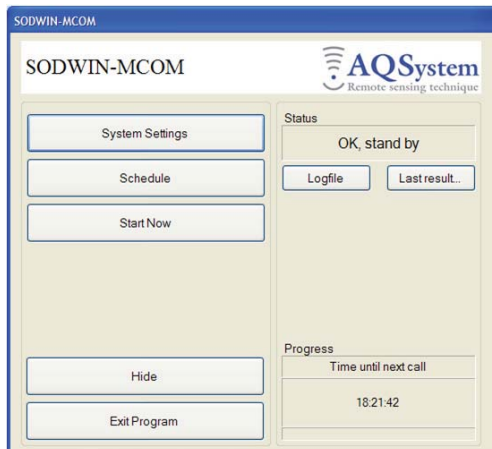
The main power source is the solar panels and for the northern countries the system is equipped with a small generator as a back up unit during the dark months.



Software

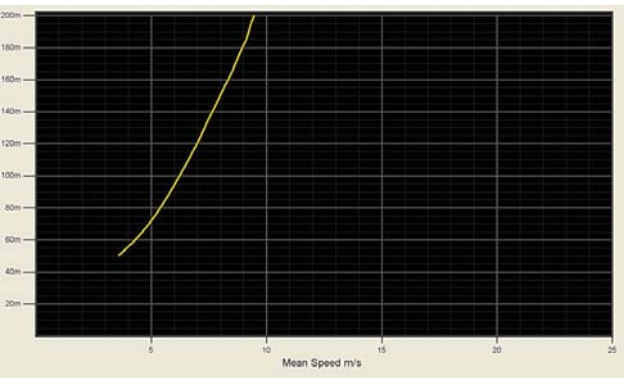
SODWIN-MCOM

The AQ500 Wind Finder supplies data every 10 minutes and the SODWIN-MCOM software is designed to collect data from a several number of systems automatically. Data is fetched at intervals defined by the user, converted to readable format. Once the program is installed and started, it will collect data automatically every day (or an interval determined by the user).



Output data

The AQ500 Wind Finder provides a full set of output data and quality control parameters at each measurement level. The AQ500 Wind Finder will automatically increase the output power when the return echo is weak, in heavy rain or snowfall to optimize the data availability.



Technical Specifications

Environmental

Temperature range	-40°C to +60°C
Humidity range	10 to 100% RH

Dimensions AQ500 Antenna

Antenna height	1,2m
Antenna width	1m
Weight	70kg

Dimensions AQ500C WindFinder

Trailer height	2m
Trailer width	1,4m
Trailer length	3m
Trailer weight	1100kg
Fuel tank size	200l

Data

Data transfer	GSM / GPRS
Data format	ASCII

Electrical

Power supply	Solar/Generator/230VAC
Power consumption	30-50W
Pulse power (max)	300W
Acoustic power (max)	17W
Frequency (standard)	3144 Hz

Support and Services

Warranty

The after-sale service and support begins with our factory warranty of 1 year for all parts in the product.

Individual service contract

Our customers can select from a wide range of individual service and support components, or of contracting annually for one of the service and support packages which offer exceptional value.

Hot line support

AQSystem representatives are available with support at no cost for customer to discuss hardware and software issues.

On-site service and repair

Field service Engineers can be dispatched from any of support centres to provide on-site diagnosis of system problems and repair service.

Spare parts

For a period of seven years after delivery of the product AQSystem will supply buyer with spare parts, as set forth in the spare parts manual.

**AQSystem offers
diagnostics within
24 Hours**





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