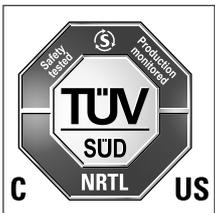


# You take the decisions...

... we supply the measurement data that you need for this purpose. We deal with the measurement of all environmental data. Smart sensors allow not only reliable measurement with state-of-the-art technology, but also computing and diagnostic functions. In addition, via the serial interfaces of the smart sensor, the information can also be forwarded for subsequent processing in various languages (protocols). Whether cloud, datalogger or "smart communicator". Smart sensors facilitate streamlined hardware architecture in the entire measurement setup.



## Applications

- > Proactive runway management
- Safe winter roads with optimal salt application
- > Automatic spreading
  - > Environmentally friendly agricultural applications
  - > Efficient plant control for renewable energies
  - > Production of artificial snow
  - > Energy efficient buildings



## System Concept

Individual sensors or modular-designed all-in-one sensors supply data via an open interface for further processing. Whether GPRS, LAN, WLAN or satellite transmission, the necessary infrastructure to provide real-time data for decision-making is available worldwide.

## Reliable Measurement Data

Big Data provides ever increasing amounts of environmental data. Which sources can you use for decision-making? Which data can you trust? To answer these questions, in the future every measurement network needs to contain several reference stations, which measure correctly at all times. Guaranteed.

**We help you to master complex weather conditions.**

# Reliable Measurement Data Verification and Calibration

What type of maintenance do you want for your environmental sensors?

Reactive (in case of faults) with regular maintenance intervals? Or proactive with timely replacement of critical components? Predictive, taking account of probabilities of failure? Or availability-based, i.e. you expect data delivery, for example, in 99.5% of all possible cases? On this basis, verification and calibration activities can be performed on your measuring systems.



## Calibration (traceability)

Environmental sensors can be laboratory tested, including traceability. In the best case, the characteristic curve of the sensor can also be corrected (adjustment). And the date of the next verification can then be set.



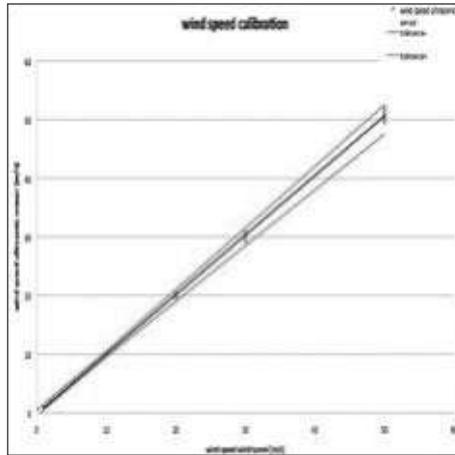
## Verification

The measurement point is compared with a reference. Ideally, not only at a given time, but over a period of about one hour. A decision can then be taken regarding adjustment or replacement.



## Reference Sensor WS3000

- > Exchangeable sensors
- > Redundant air pressure sensor
- > Excellent ventilation
- > Metal housing



## Characteristic Curve of a Wind Sensor

- > Target / actual comparison over the entire measuring range
- > Optimization of measurement accuracy by storing the characteristic curve in the sensor
- > Secondary calibration by the user during use

reference standard		calibration items			
Pressure in mbar	Pressure in mbar	Pressure in mbar	Pressure in mbar	Pressure in mbar	Pressure in mbar
740.00	740.00	740.00	740.00	740.00	740.00
745.00	745.00	745.00	745.00	745.00	745.00
750.00	750.00	750.00	750.00	750.00	750.00
755.00	755.00	755.00	755.00	755.00	755.00
760.00	760.00	760.00	760.00	760.00	760.00
765.00	765.00	765.00	765.00	765.00	765.00
770.00	770.00	770.00	770.00	770.00	770.00
775.00	775.00	775.00	775.00	775.00	775.00
780.00	780.00	780.00	780.00	780.00	780.00
785.00	785.00	785.00	785.00	785.00	785.00
790.00	790.00	790.00	790.00	790.00	790.00
795.00	795.00	795.00	795.00	795.00	795.00
800.00	800.00	800.00	800.00	800.00	800.00
805.00	805.00	805.00	805.00	805.00	805.00
810.00	810.00	810.00	810.00	810.00	810.00
815.00	815.00	815.00	815.00	815.00	815.00
820.00	820.00	820.00	820.00	820.00	820.00
825.00	825.00	825.00	825.00	825.00	825.00
830.00	830.00	830.00	830.00	830.00	830.00
835.00	835.00	835.00	835.00	835.00	835.00
840.00	840.00	840.00	840.00	840.00	840.00
845.00	845.00	845.00	845.00	845.00	845.00
850.00	850.00	850.00	850.00	850.00	850.00
855.00	855.00	855.00	855.00	855.00	855.00
860.00	860.00	860.00	860.00	860.00	860.00
865.00	865.00	865.00	865.00	865.00	865.00
870.00	870.00	870.00	870.00	870.00	870.00
875.00	875.00	875.00	875.00	875.00	875.00
880.00	880.00	880.00	880.00	880.00	880.00
885.00	885.00	885.00	885.00	885.00	885.00
890.00	890.00	890.00	890.00	890.00	890.00
895.00	895.00	895.00	895.00	895.00	895.00
900.00	900.00	900.00	900.00	900.00	900.00
905.00	905.00	905.00	905.00	905.00	905.00
910.00	910.00	910.00	910.00	910.00	910.00
915.00	915.00	915.00	915.00	915.00	915.00
920.00	920.00	920.00	920.00	920.00	920.00
925.00	925.00	925.00	925.00	925.00	925.00
930.00	930.00	930.00	930.00	930.00	930.00
935.00	935.00	935.00	935.00	935.00	935.00
940.00	940.00	940.00	940.00	940.00	940.00
945.00	945.00	945.00	945.00	945.00	945.00
950.00	950.00	950.00	950.00	950.00	950.00
955.00	955.00	955.00	955.00	955.00	955.00
960.00	960.00	960.00	960.00	960.00	960.00
965.00	965.00	965.00	965.00	965.00	965.00
970.00	970.00	970.00	970.00	970.00	970.00
975.00	975.00	975.00	975.00	975.00	975.00
980.00	980.00	980.00	980.00	980.00	980.00
985.00	985.00	985.00	985.00	985.00	985.00
990.00	990.00	990.00	990.00	990.00	990.00
995.00	995.00	995.00	995.00	995.00	995.00
1000.00	1000.00	1000.00	1000.00	1000.00	1000.00

## Meteorology and Metrology:

- > Verification of accuracy, e.g. air pressure, traceable to primary standards (NIST, DAkKS, etc.).

Trust the measurement data whose origin you know.

# WCO Sensors

# Matrix

As well as measuring typical weather parameters such as air temperature, relative humidity, air pressure, wind and precipitation, weather-critical applications require additional sensors to provide further information.

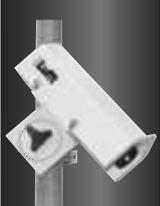
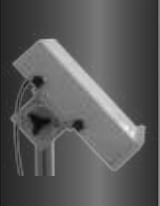
- > Road and runway conditions
- > Wetness measurement for speed adjustment
- > Fog detection
- > Snow depth measurement
- > Cloud height measurement for safe landing of aircraft and helicopters
- > Redundant sensor technology for maximum reliability

**Cloud height**




	CHM15k	CHM8k
Measuring range up to 15 km	■	
Measuring range up to 8 km		■

**Snow depth**

	SHM30	SHM31
UMB protocol		■
ASCII protocol	■	

**Visibility**



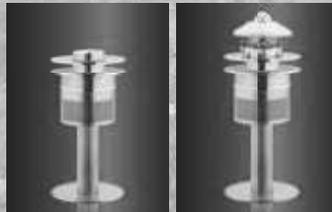

	VS2k	VS20k
Measuring range up to 2 km	■	
Measuring range up to 20 km		■

### Road / Runway Conditions



	IRS31 pro	ARS31 pro	NIRS31	StaRWIS	MARWIS
Mobile					■
Stationary	■	■	■	■	
Installed in asphalt	■	■			
Non-contact measurement			■	■	■
Freezing temperature	■	■	■	■	
Surface temperature	■	■	■	■	■
Depth temperature sensor(s)	■				
Condition	■		■	■	■
Water film	■		■	■	■
Friction	■		■	■	■
Air temperature / humidity				■	■

### Temperature / Relative Humidity / Air Pressure



	WS3000	WS3100
Redundant air pressure (opt.)	■	■
Calibration certificate	■	■
Metal housing	■	■
Radiation measurement		■