WiSensys®

Wireless Value measuring platform

Many industries, companies, factories, growers and laboratories use our WiSensys® system. It is an easy to install, open system. The wireless technology enables users to immediately view all measurement results in a clear dashboard system.

Companies and all kind of organisations are making increasing use of the equipment needed to take accurate measurements. They do this to measure energy consumption or monitor the temperature of products during refrigerated transport.
There are plenty of situations where there is a need for reliable data. WiSensys® helps to safeguard quality and ensure safety, to get a better grip on the situation and to become more efficient. Measurement data has value. The Wireless Value WiSensys-platform helps you to achieve this.

WiSensys® is an open system, which means various different interfaces can be connected to it. Would you like to make use of your own sensors or would you like to develop your own user application? Both are possible with the platform.

The WiSensys® platform offers various options and applications:

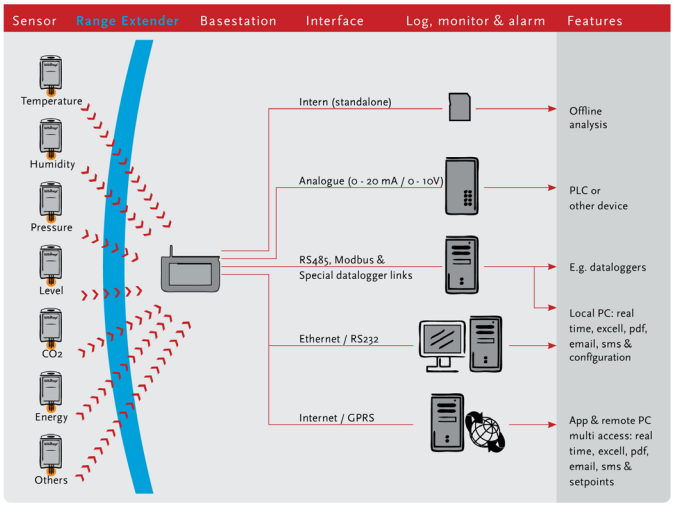
- Indoor and outdoor climates
- Status monitoring
- Energy and energy saving
- Industrial processes
- Medical applications and care
- Food and health

WiSensys®

Wireless measuring platform

WiSensys® is the platform for wireless measurements developed by Wireless Value. It is a user friendly system that can be deployed in various situations. You can connect sensors that perform various measurements, for temperature, relative humidity, CO2-content, energy consumption, analogue signals and contact. The measurement results are stored locally in the sensor or sent digitally to a base station, depending on your requirements, by means of wireless technology. You can make use of our own sensors in the WiSensys®-family, but there are also options to connect third party sensors as WiSensys® is an open system.

The sensors we supply do not have a display for a reason. By using wireless technology, we ensure that you do not have to view your data from a sensor, but that you will have it in real time on your own device.



Safe and efficient management thanks to real time monitoring

Many industries, companies, factories, growers and laboratories use our WiSensys® system. The wireless technology enables users to immediately view all measurement results in a clear dashboard system. You can choose from a local PC-version (SensorGraph), a web-based application (WebSensys) or an app for your smartphone. The advantage of WebSensys® is that you are able to log into your dashboard from any location with an internet connection using your computer, your tablet or your smartphone. In this way, you are able to monitor a greater quantity of processes in real time, which is crucial for safe and efficient management.

Features of the platform

- Open platform supporting a large diversity of sensors and connects to a variety of user environments
- Long battery life time
- Range of more than 1,200 metres provided there is a free line of sight; with range extenders up to 3,000 metres
- Reliable data transfer using two-way data traffic and data storage
- User interface for local use on a PC, web based applications and modern communications such as apps.

Most of our sensors can be supplied battery powered or externally powered. We can also provide customised versions.

Indoor and outdoor climate

Measuring temperature, humidity,CO2 and more

There are various conceivable situations where it is important to closely monitor the climate in a particular space or environment. For example, the climate in an office or a school.

People who work in a healthy environment are more productive. Recent research has shown that a healthy indoor climate may enhance learning performance at school and work performance in offices. You can determine the air quality and ventilation by checking the CO2 value. In other situations, such as horticulture, it is also important to monitor the indoor climate. This allows growers to increase their revenue as they gain more insight into the microclimate in their greenhouses. In addition to determining the indoor climate, there are many conceivable situations where it is important to obtain reliable information on the outdoor climate.

You can use the WiSensys® platform to accurately monitor the climate in a given environment. You can connect various sensors to the system. In the field of climate monitoring, the WiSensys® platform provides sensors for measuring:

- Temperature
- Humidity
- CO2
- Wind speed
- Wind direction
- Rain quantity
- Rainfall intensity

Applications climate monitoring
Monitoring the indoor climate in trains
Monitoring air quality in offices / schools
Determining optimal climate for greenhouses
Climate control in shops and museums
Monitoring temperature in server rooms
Regulating the climate in medical institutions
Weather stations

Indoor and outdoor climate

Sensor WS-DLTi

WS-DLTi measures temperature. Sensing is done using an internal digital sensor.

Measurement range: -20ºC - +80ºC
Accuracy: +/- 0,5ºC
Housing: IP 65

Sensor WS-DLTc

WS-DLTc measures humidity and temperature. Sensing is done using an internal digital sensor.

Measurement range: RH% 10% - 100% non-condensing;
T -20ºC to +80ºC
Accuracy: RH% +/- 1,8% from 10% to 90%; **T** +/- 0,3ºC
Housing: IP 65

Sensor WS-DLTa-p100 / WS-DLTa-p1000

WS-DLTa-p100 /p1000 measure temperature. Sensing is done using a Pt100 / Pt1000 sensor.

Measurement range: -150ºC - +200ºC
Accuracy: +/- 0,1ºC
Housing: IP 65

Sensor WS-DLC

WS-DLC measures CO2, humidity and temperature and transmits data to the base station. Sensing is done using internal digital sensors.

Measurement range: CO2 0 ppm - 50.000 ppm;
RH% 10% - 100% non condensing ; **T** - 20ºC to +80ºC
Accuracy: CO2 +/- 40 ppm + 3%;
RH% +/- 1,8% from 10% to 90%; **T** +/- 0,3ºC

WiSensys® is a Wireless Value product.

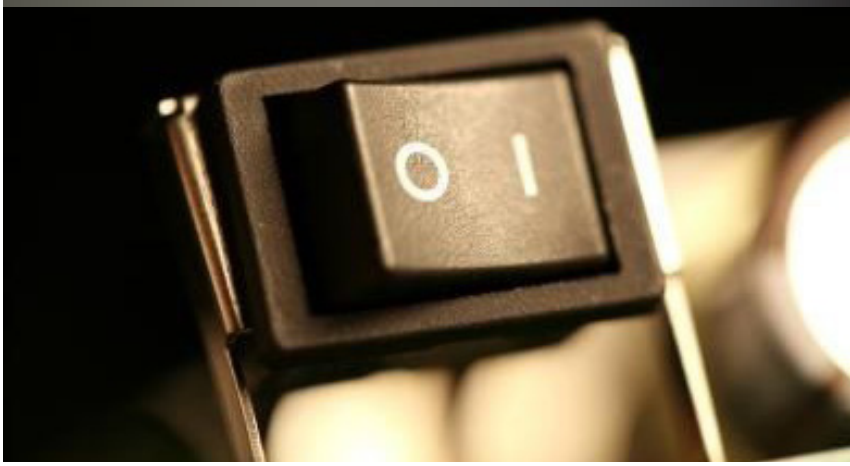
For more information go to: www.wirelessvalue.nl or www.wisensys.com

Status monitoring

Status measurements: on or off

Status monitoring registers whether something is switched on or off or is opened or closed. In addition, it is possible to detect changes in status and monitor how long a particular status has existed.

There are various conceivable situations where you can apply status monitoring. For example: to register whether a door to your office is opened or closed, or to see how long a refrigerator has been open. Status monitoring is also used to check whether the heater is still switched on or to check that the tail lift of a truck is securely closed. Status monitoring registers whether something is switched on or off or is opened or closed.



You can use the WiSensys® platform to monitor whether certain entrances, doors or applications are enabled or disabled. The system has several sensors that can monitor statuses and signal status changes.

Status monitoring applications
Detection of opened and closed status of doors
Monitoring of doors in supermarkets
Alarm function for tail lifts on trucks
Heating blocks of large buildings
Security applications for offices

Status monitoring

Sensor WS-DLXc / cc / ct

WS-DLXc detects the status of switch contact signals.

WS-DLXcc detects status and status changes for switch contact signals.

WS-DLXct detects the status and measures the part of the sample interval (measured as %) in which the switch contact is close.

Detection speed: 1 time per second
Detection closed: V_{in}<1 V
Detection open: V_{in}>2 V, V_{max}=30 V
Housing: IP 65

Sensor WS-DLXt

WS-DLXt detects pulses, counts the number of pulses and transmits this cumulative value to the base station.

Maximum pulse rate: 10 pulses per second
Detection closed: V_{in}<1 V
Detection open: V_{in}>2 V, V_{max}=30 V
Housing: IP 65

Energy and energy saving

Accurate measurement of energy consumption

Saving energy starts with accurately measuring energy consumption. How much energy do certain machines and processes consume? Do you know what equipment in your company is the least efficient? Energy monitoring provides you with the insight you need to achieve energy savings.

We live in a time where a great deal of attention is paid to the environment and where there are more and more initiatives aimed at sustainability. How can we ensure that less energy is wasted and that processes in companies run more efficiently? To find out how you can save energy, it is important that you get a sharp view on the energy consumption in your processes and machinery. Which pieces of equipment consumes a lot of power? By making use of energy monitoring you will get a clear and reliable picture of energy consumption within your company.

You can use the WiSensys® platform to measure energy consumption in homes, companies and horticultural greenhouses. WiSensys® has several sensors that you can use for energy monitoring.

Applications energy monitoring
Energy monitoring in homes
Energy saving in refrigeration units
Optimising energy consumption in greenhouses
Monitoring heating installations
Saving energy consumption in industry

Energy and energy saving

Sensor WS-DLRs

WS-DLRs measures energy usage. Sensing is done on any device plugged into the power outlet of the sensor. The device to be measured must have a regular EU Power connector and run at 230V using a maximum current of 10A.

Range: 0 - 10 A

Accuracy: +/- 1% of range (class 1)

Remark: switch for on/off switching of connected devices

Sensor WS-DLRc

WS-DLRc measures energy usage. Sensing is done on any device connected to the power outlet of the sensor. All external connections are done through easily reachable connectors on the outside of the sensor. The device to be measured must run at 230V using a maximum current of 10A.

Range: 0 - 10 A

Accuracy: +/- 1% of range (class 1)

Remark: 3 switches for on/off switching of connected devices

Sensor WS-DLXac

WS-DLXac measures process mV signals. Sensing is done using available sensor/equipment with 0 - 1000 mV RMS output. A practical example is the current clamp for measuring electrical current, estimated energy consumption, signalling on/off/full load/part load etc.

Range: 0 - 1000 mV RMS

Accuracy: +/- 0,25% of range

Sensor WS-DLXp

WS-DLXp detects pulses and counts the number of pulses. It is used for counting pulses for a kWh meter. These energy meters are used not only in 230V systems but also in high voltage, high current, 3-phase electrical systems.

Maximum pulse rate: 10 pulses per second

Detection closed: V_{in}<1 V

Detection open: V_{in}>2 V

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For more information go to: www.wirelessvalue.nl or www.wisensys.com

Third party sensors

Connecting third party sensors

WiSensys® is an open system. Various types of interfaces can be connected to it. This means you can make use of your own sensors or sensors from other suppliers.

In the various market sectors where WiSensys® can be applied, there is a wide variety of measuring instruments and sensors for measuring process data, environmental conditions, and state variables.

Many measuring instruments have their own operation and presentation capabilities. WiSensys® however has the feature to connect the many instruments with an analogue or digital output to a single user interface.

Sensors with the following output signals can be connected:

- Electric output signals such as 0/4 – 20 mA, 0 – 30 V DC, 0 – 4 V DC, 0 – 1 V DC.
- Pulse output signals
- Digital output signals (RS232, RS485, SDI-12)

Most WiSensys® modules may have the following power supply options:

- 3.6 V lithium battery
- external power
- external (battery) power with on/off switch for third party sensors

All units with standard sensor housing can be delivered in the robust industrial housing, with an external antenna and a pressure relief device for outside use.

Third party sensors

Sensor WS-DLXa

WS-DLXa measures process signals and transmits data to the base station. Sensing is done using any available sensor that has 0 - 25 mA output.

Measurement range: 0 - 25 mA

Accuracy: +/- 0.25% of range

Sensor WS-DLXv/s

WS-DLXv and WS-DLXs measure process signals.Sensing is done using any available sensor that has 0 – 30 V DC (WS-DLXv) or any available sensor that has 0 – 4 V DC (WS-DLXs) output.

Measurement range: 0 - 30 V DC or 0 – 4 V DC

Accuracy: +/- 0.25% of range

Sensor WS-DLXm

WS-DLXm measures process signals. Sensing is done using any available sensor that has 0 – 1 V DC output; for accuracy reasons the unit is equipped with a 16 bits A/D convertor. The unit has no power switch.

Measurement range: 5 values for range can be selected:

0–75 mV, 0–150 mV, 0–300 mV, 0–600 mV, 0–1000 mV

Accuracy: +/- 0.1% of range + resolution step

(5 µV – 40 µV depending on range)

Sensor WS-DLTh

WS-DLTh measures thermocouple signals. Sensing is done using any available thermocouple sensor of the J, K or S type. For accuracy reasons the unit is equipped with a 16 bits A/D convertor. The unit has no power switch.

Measurement range: Depends on sensor type (K, J or S)

Accuracy: +/- 0.1% +/- 0.5 °C

Sensor WS-DLPd

WS-DLPd measures the output of a potentiometer. The output is displayed in percentage of the full scale. Sensing is done using any available sensor having potentiometer principles such as wind direction, tree grow etc.

Measurement range: 0 – 25 kΩ

Measurememt output: 0 – 100%

Accuracy: ± 0.1%

Sensor WS-DLS

WS-DLS can be connected to sensors and measurement instruments (such as a weather station) which have a serial digital outlet. The unit features RS232, RS485 and SDI-12. Depending on the connected unit communication protocols have to be adapted.

Maximum number of variables for transmission is 10

The unit has an external power supply of 12 V DC

The unit is configured via SensorGraph.

Base station & Range Extender

Local and Internet applications

Base stations receive data from a large variety of WiSensys® sensors. The Range Extender acts as a repeater between sensors and the base station if necessary.

Base stations receive data from a large variety of WiSensys® sensors. The receiving base station makes sensor data available to:

- WiSensys® PC software SensorGraph via a RS232 interface or to WiSensys® internet software WebSensys via ethernet and GPRS.
- or to a data logger, PLC, automation system via RS485/422 and TCP/IP (MODBUS)
- or as analogue output values.

The Range Extender can be added to the systems and acts as a repeater between sensor and base station if neccessary.

The distance between the sensor and the base station can be up to 1000 metres (free line of sight). Typical in-building range values are between 50 and 80 metres. If the coverage area of 1 base station is insufficient, additional base stations or one or more range extenders can be used to increase the coverage area.

Base stations can be networked to collect all measurement data from a single site. The internet application offers the possibility of viewing base stations on different sites.

When sensors are configured with alarm thresholds, the WiSensys® base station can power a switched relay to activate a system alarm. Detailed information has to be obtained via SensorGraph or via WebSensys.

Features
Receiving data from WiSensys® sensors
Forwarding data to a PC, data logger, PLC or internet
Optional SD card storage
Sensor Range: 1000m (free line of sight)
Range Extender Range: 2000m (free line of sight)

Base station & Range Extender

WS-BU-rs232

Base station with RS232 connection to PC. Convertor to USB connection is available.

Protocol: Wireless Value proprietary
Data destination: PC with SensorGraph
Data storage: No

WS-BU-gprs

Base station with gprs modem for connection to a web server. Connection: GPRS link, programmable APN.

Data destination: internet address / PC
Data storage: 200.000 measured values

WS-BU-rs485

Base station with RS485 output. The protocol is MODBUS. More than one station can be connected on the RS485 bus. System alarm and relay are available.

Protocol: MODBUS @110bps - 230 kbps
Power: 8 - 30 V DC
Data destination: Datalogger / PLC / PC
Data storage: SD Card

WS-BU-ethernet-01/03

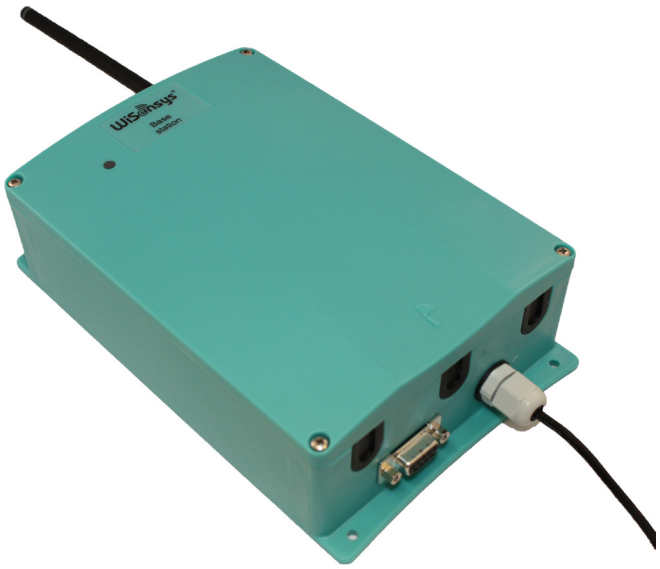
Base station with ethernet TCP/IP output. The 01 version is for local PC use and supports MODBUS /TCP. The 03 version is for connection to the internet.

Data destination: 01 ver. PC / 03 ver. internet address
I/O configuration: static, DHCP
Data storage: SD Card

WS-BU-ana with analogue output

Base station with analogue output. Selectable output for 0 - 25 mA or 0 - 10 V. Max number of outputs is 4. System alarm and relay are available.

Output range: 0 - 25 mA / 0 - 10 V
Accuracy: +/- 0,25% of range
Data destination: PLC or equal / PC
Data storage: No



WS-REX

The Range Extender is a repeater between sensors and the base station. More Range Extenders can be connected to one base station. Range Extenders can act in a chain. Can be used in combination with all base station types.

Data destination: Base station / Range Extender
Data storage: No

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For more information go to: www.wirelessvalue.nl or www.wisensys.com

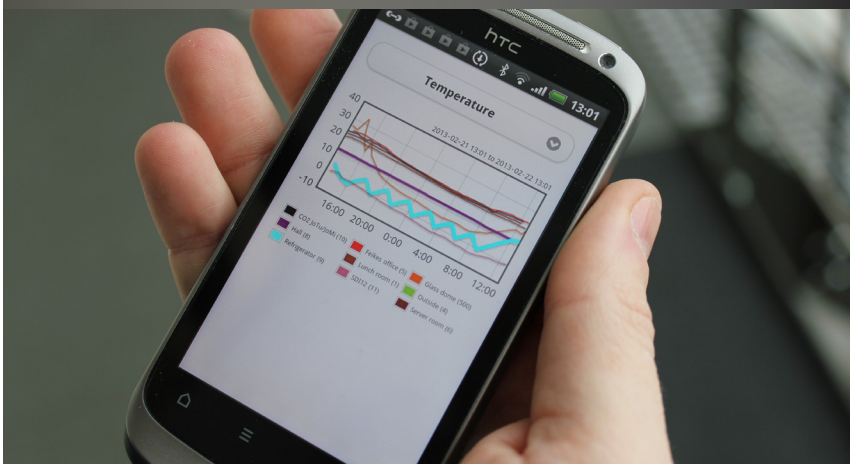
User Interface

SensorGraph and WebSensys

With WiSensys® the user has two options when it comes to presentation, logging, alarming etc. He can select a local PC version called SensorGraph or a web based application called WebSensys.

SensorGraph is a PC based application and is meant for single-site monitoring. In general most of the applications will work with a system containing one base station together with a number of sensors. However, it is possible to connect more base stations within one application.

WebSensys is a web-based multi-site application. Via authorization levels it is possible to allocate the data to different user profiles. This means you can access the database by a number of persons and allows them to see whatever is relevant for their position.

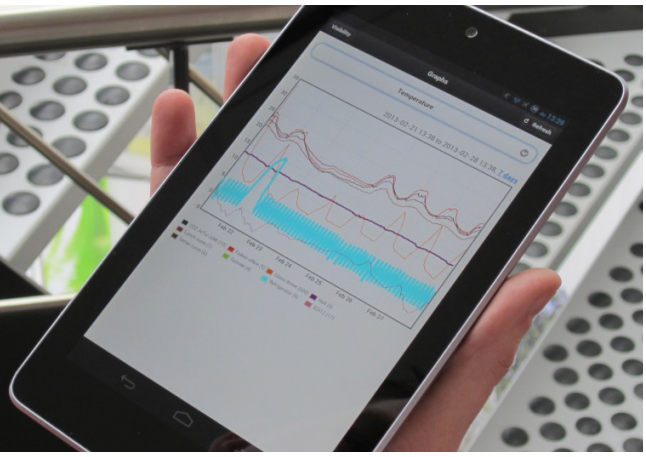


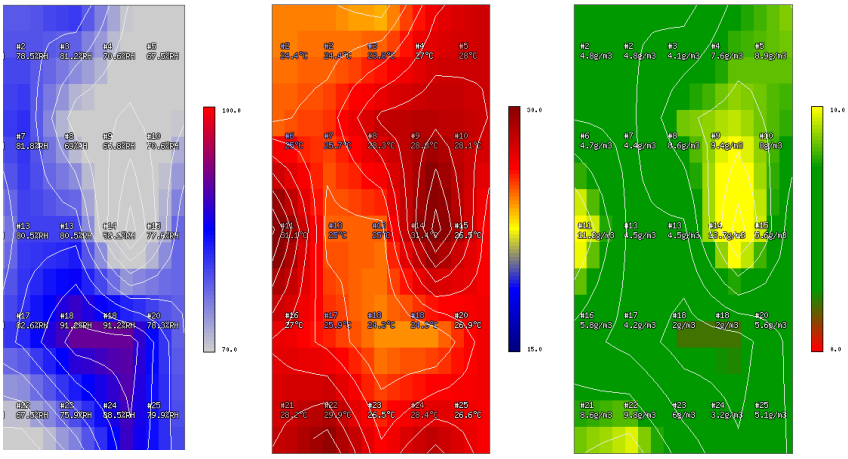
Demo website: www.websensys.eu
login name: demo
password: +demo1

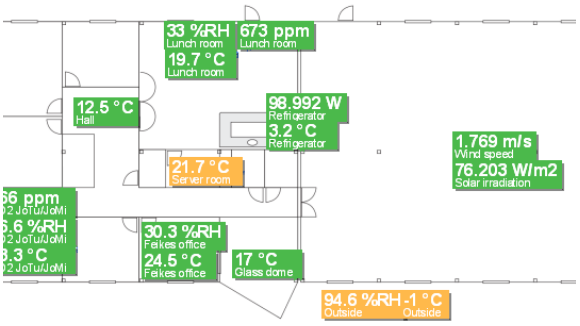
Features
Presentation of real time data in heat charts, floorplans, tables, graphs
Presenting historical data in graphs, tables, heat charts
Generating alarms via email and sms services
Recovering data from sensor memory and SD card (SensorGraph)
Creating user defined graphs and enhancements to graphics and tables
Export function to CSV and graphs

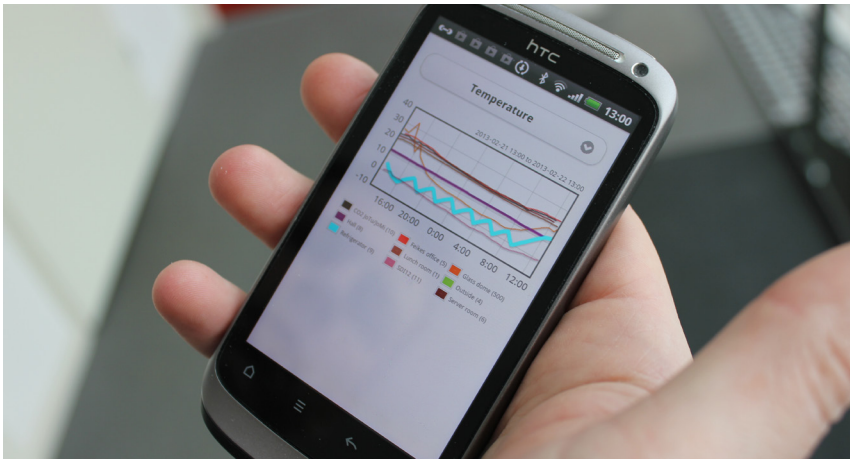
wirelessvalue

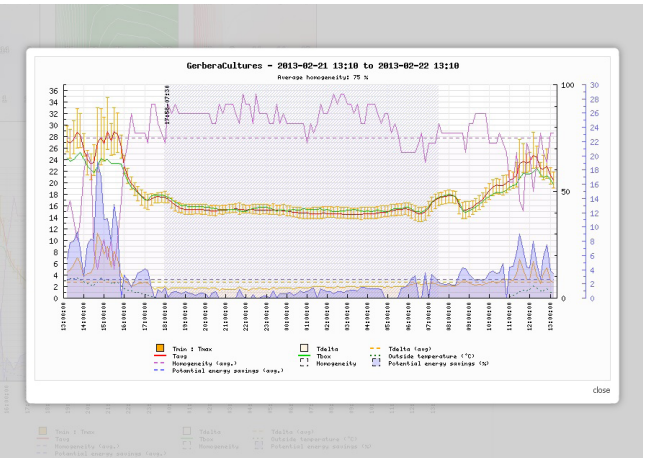
User Interface

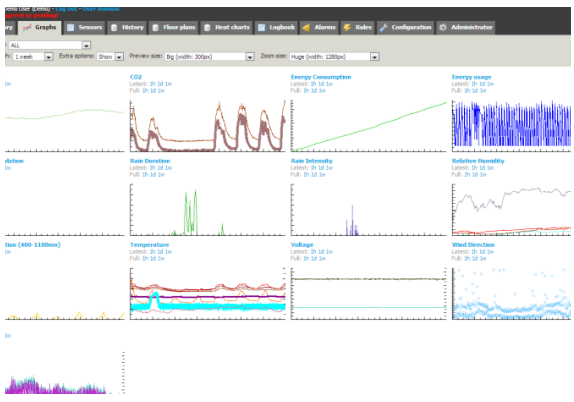












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Reference list WiSensys®

Wageningen University (NL) for Smart Dust European research projects
250 RH/T sensors in green houses
Delivered: 2008-2010

Research on trees by Max Planck Institute in Germany
300 WS-DLPd sensors;
50 base stations
Delivered: 2010-2012

Hospital laboratories e.g. in Amsterdam
130 sensors for T, RH, CO2, T during transport, T in Liquid Nitrogen (-196 ºC)
Delivered 2010/2012

Pharmaceutical industry e.g. in Norway
150 sensors for T, ΔP, RH, 25 base stations
Delivered: 2010

Climate monitoring in churches in Sweden
200 sensors for RH, T
65 GPRS bases stations
Hosting included
Delivered: 2010

Museums in Florence, Warsaw and others
150 sensors for CO2/RH/T
20 base stations
Delivered: 2009

Reference list WiSensys®

Climate monitoring and energy savings in schools
75 CO2/T/RV sensors
15 GPRS base stations
Hosting
Delivered: 2011

Ice skating track in (4 km length)
80 sensors
1 base station
Delivered: 2010

Climate monitoring in trains
600 sensors (CO2/RH/T; contact; Volt)
40 GPRS base stations
Delivered: 2011

Wind turbine manufacturing
75 sensors
5 base stations
Delivered: 2010/2013

Transport monitoring
120 sensors
45 base stations
Delivered: 2010

Temperature monitoring in waste storage
30 sensors
Delivered: 2012

Third party sensors

Pressure measurements

- Absolute/relative pressure sensor with voltage output WS-DLXv

Pressure measurements

- Differential pressure sensor with current output WS-DLXa

Soil moisture

- Soil moisture sensor with voltage output WS-DLXs-switch

Soil moisture

- Soil moisture sensor with SDI-12 output WS-DLS-sdi12

Wind speed/direction

- Anemometer with pulse output WS-DLXt
- Weather station with SDI-12 output WS-DLS-sdi12
- Wind direction with potentiometer WS-DLPd

Third party sensors

Forces and momentum

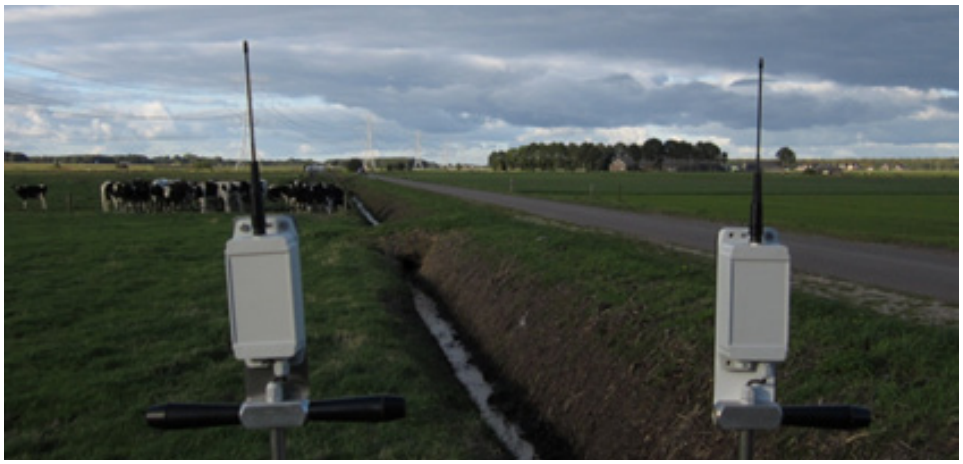
- Weight measurement with load cell WS-DLXm

Forces and momentum

- Shaft alignment with strain gauges WS-DLXm

Solar energy

- PAR light sensor with 0-1V output WS-DLXm
- Pyranometer with 0-1V output WS-DLXm



Rugged housing WSR

For outdoor use

- Robuste Hammond housing
- Protected against heavy rain (IP66)
- Extra coating (Humiseal)
- Pressure compensation