SMART AGRICULTURE 2023

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TECHNOLOGY
AT YOUR SIDE

Netsens, one of the first companies in the world to create wireless systems for digital agriculture, is a leader in the field of IoT systems for sustainable crop management.

more than
75.000
active and working sensors

100%
made in Italy

more than
500.000
records per hour in our Cloud

International distribution
of Netsens smart farming products

Irritec ® and Netsens has signed a strategic and commercial agreement, upon which Irritec will be the exclusive distributor in international markets.
This partnership is part of a program for the development and international dissemination of a model of interconnected and sustainable agriculture.
Relying on Netsens' technological assets and products, Irritec extend its commercial offer to the entire agriculture IoT sector, for end-to-end turnkey solutions.

This alliance grounded in years of collaboration and shared values, strengthens Irritec presence in the smart farming sector, offering an even more integrated service to farmers around the world.

netsens IoT

An unique system
for smart farming

Netsens IoT is the complete system for digital agriculture, perfect for farms, consortia and producer organisations that want to control production costs and increase the yield of their crops, covering thousands of hectares.
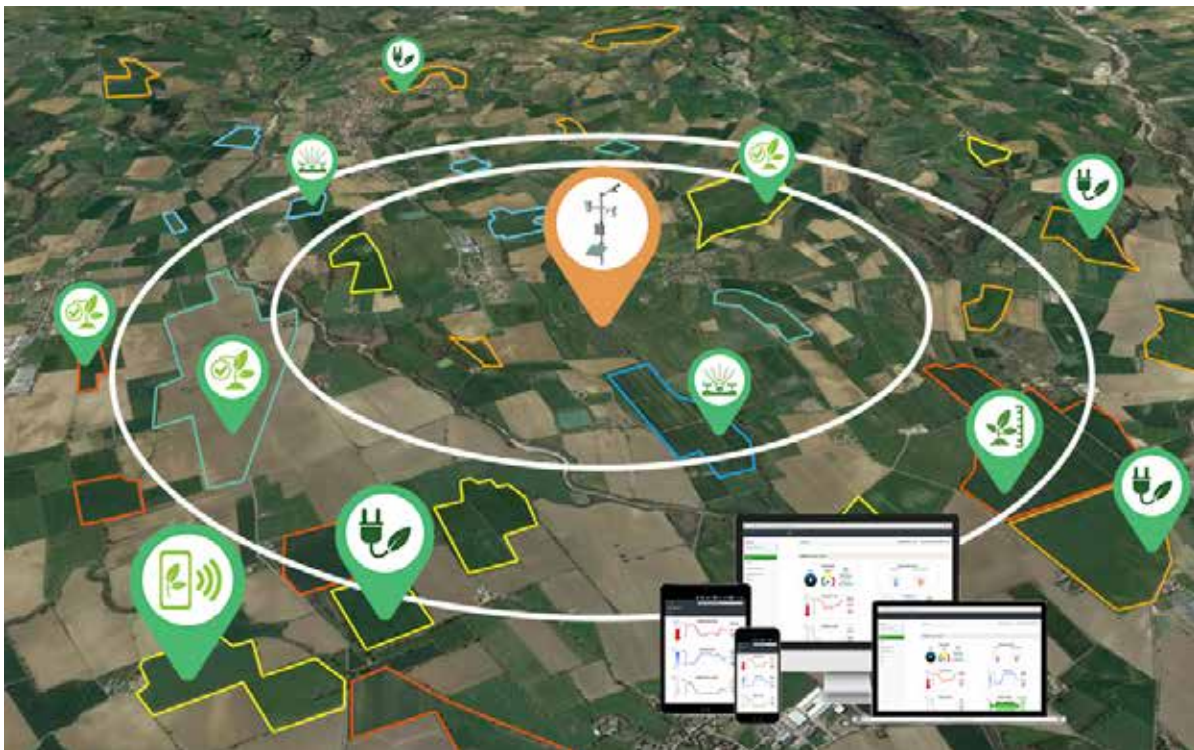
Crop monitoring

With Netsens, you have the weather, climate and soil data of your plots always at hand, with an unlimited historical archive

Phytosanitary Defence

With Netsens, you can save up to 30% less on processes, to the benefit of the environment and quality

Water saving

With Netsens, you can measure the water available to your plants and conveniently manage irrigation schedules remotely

Savings

With our sensors and agronomic models, you can easily save money by cutting out unnecessary irrigation and plant protection products.

Sustainability

Less intervention also means less waste of resources and less environmental impact, with benefits for quality and for our health.

Simpiicity

Netsens has always been committed to making sure that its systems are a real help in the field and not a further complication.

Integration

Digital agriculture is constantly evolving, and we believe it is important to integrate our products with the most modern platforms and the best services on the market, to the benefit of our customers.

Around a main station, with the main weather-climate sensors, more IoT wireless units with micro-climate sensors are positioned **up to 8 km (5 miles) away**.

With the same technology, it is also possible **to automate the irrigation system,** and automatically adjust the duration of irrigation shifts based on the sensors in the field, so as to use the water actually needed.

All collected data are available on our **LiveData cloud platform**, **via APP or PC**, to keep all data always at your fingertips, and to manage the main needs of the field: **pest management, water requirements, frost alerts, forecasts,** as well as a complete history of all acquired data.

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Sustainable Irrigation

WiSense IoT is the most advanced system for irrigation automation: it combines field monitoring with remote management of the irrigation system, all via radio.

The WiSense2.0 control unit manages up to 64 sectors via cable and 64 sectors via radio; it controls the pump start and reads up to 4 litre counters, also via radio.
On request, it can also automatically manage the backwashing of filters based on time or differential pressure. Complete remote control from PC or via app: single, sequential or automatic programming; flow reading; anomaly management.

WiSense IoT field units can be completely autonomous, thanks to the solar panel, and can manage up to 4 or 15 sectors, in addition to the meter reading and pump control output.
They can also read all major weather sensors, including soil probes (up to 4) and many other climate sensors.
The distance by radio can reach 8 km (5 miles) depending on the characteristics of the territory.

Adjust irrigation shifts
based on sensors

Water is not an unlimited resource, and its use is valuable: for this reason, it is important to know how much water is actually needed for your crops, and in many cases, experience may not be enough.

Using the soil moisture sensors, at different depths, and the weather sensors, which calculate the water requirements for each phase of the crop, it is possible to automatically manage the irrigation shifts, and manage the entire system remotely.

In addition, in case of anomalies (such as failure to open or close the valves, leaks, etc.), you can receive a report and avoid further problems.

01 — **Observe the trend of the soil probes, and evaluate the water balance calculated for your crop**

02 — **Set the irrigation shifts for each sector, adjusting the duration and start also based on the data of the sensors in the field**
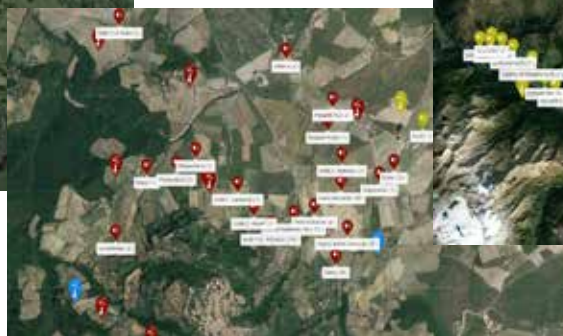

03 — **In the event of an anomaly (programming failure or flow rate different from that expected) you can be notified automatically.**

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Sustainable
Pest management

Your farm will be able to manage phytosanitary processes in an intelligent and sustainable way, with obvious economic and environmental advantages.

From a single farm
to wide areas

Netsens IoT allows you to monitor the plots of individual farms, up to covering thousands of hectares, and meet the needs of **consortia, wineries and producer associations**, with data sharing and central agronomic supervision.

The optimal support

for your decisions

Unlike old-generation systems, Netsens sensors are **positioned in the field**, and measure the parameters actually perceived by the crops, without hindering mechanised activities.

Available pest management prediction models:

Grape: Downy Mildew, Powdery Mildew, Grey Mould, Moth

Corn: Corn Leaf Blight, Fusarium, Septoria

Solanaceae (Tomato, Potato): Powdery Mildew, Alternaria, Grey Mould

Apple, pear: Scab, apple mildew, fire blight, sooty blotch, cherry leaf spot, rosy aphid, pear psylla, codling moth, sawfly

01 Observe the data continuously collected in the field on the Netsens LiveData cloud, with unlimited storage

02 Set the phenological phases by plot and by variety, and enter the processes carried out

03 The LiveData DSS provides predictions for up to 7 days on the development of adversity, including through daily email reports

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MeteoSense 4.0 Weather Station

The MeteoSense 4.0 unit is the core unit of Netsens systems. It is the acquisition and communication unit between the sensors in the field and the LiveData cloud platform, and is therefore present both in the MeteoSense stations and in the AgriSense and VineSense IoT systems. Produced in thousands of units, it is a robust and reliable product, suitable for any professional use.

Technical specification

Communication interface: 4G NBIoT / CAT-M1 / 2G / LAN Ethernet / MODBUS RTU
Connection mode: "Always on", TCP / IP protocol (4G, 2G and LAN)
On-board memory: micro SD Card slot
Local configuration interface: USB
Display: 2x20-character LCD
Power supply: 12 VDC or 220 VAC with external power supply
Integrated electronic battery charger for solar panel
Power consumption: <1W with active connection
Autonomy on battery: up to 50 days stand alone
Case: IP55 ABS UV resistant, with front door opening
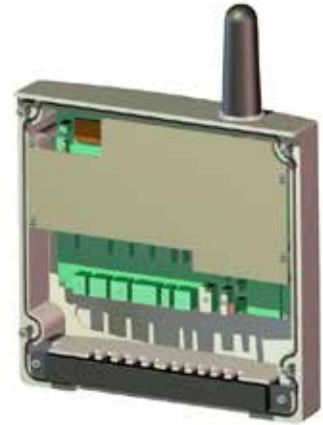
Netsens IoT Wireless Unit

The product is based on an Internet of Things (IoT) communication system and achieves extremely advanced communication range performance, even compared to previous versions. Its low power consumption and energy optimisation algorithms allow it to operate continuously for years (depending on the number and type of sensors) with a lithium battery supplied as standard, which can, however, be easily replaced in the field.
The integrated antenna and the robust and small box do not create clutter for the most common mechanical operations in the field, making installation easy and reducing maintenance.
The unit has a display and a selector for field configuration, and a particularly advanced radio coverage verification system.

Technical specification

Power supply: 3.6 V lithium C battery, reverse polarity protection
Up to 3 years of battery operation
Communication: 868 and 915 MHz spread spectrum (LoRa ™)
Maximum range (from base unit or repeater): 10000 meters
Inputs: up to 11 digital and analog sensors
Case: IP55 ABS UV resistant
Antenna: integrated on printed circuit
Small size and compatible with mechanical field operations

WiSense irrigation control unit

La centralina WiSense 2.0 è la base per l'**automazione dell'irrigazione.** Consente il controllo di elettrovalvole cablate o via radio (con le unità WiSense IoT) e la lettura di sensori, contalitri e pressostati.
Consente quindi di realizzare sistemi integrati e flessibili, adatti alle diverse tecnologie di impianto di irrigazione, anche intervenendo su impianti esistenti, gestiti manualmente o con sistemi di vecchia generazione.

Technical specification

Communication interface: 4G NBIoT / CAT-M1 / 2G, or serial RS485 to a MeteoSense unit
Local user interface: keyboard and display
Power supply: 12 VDC (with optional solar panel and back-up battery) or 220 VAC with external power supply
Case: IP55 ABS UV resistant, with front door opening, optionally IP66 steel cabinet
Outputs: 16 up to 64, with 24V or 9-12VDC solenoids. Additional relay output for pump control
Inputs: 4 water counters + 4 pressure switches
Compatible sensors: most of the standard weather sensors, cabled or wireless
Optional wireless communication: LoRa™ communication with Netsens IoT units

WiSense IoT Wireless Irrigation Unit

The Netsens IoT technology allows groups of 4 or 15 solenoid valves to be connected via radio, at distances of up to about 8 km (5 miles). The WiSense IoT unit can be powered by mains power or with a solar kit, with a backup battery. All sensors compatible with Netsens IoT wireless units can also be connected. An NC/NO output is also available for the logical activation of external equipment (e.g. pumps, dispensers, etc.)

Technical specification

Communication: 868 and 915 MHz spread spectrum (LoRa ™)
Power supply: 12 VDC (with optional solar panel and back-up battery) or 220 VAC with external power supply
Case: IP55 ABS UV resistant, with front door opening,
Outputs: 4 x 9-12VDC (latch), or 15 x 9-12VDC or AC 24V (mains supply version only)
Compatible latching solenoids: pulse lenght 20 ms, current 3A, charging capacitor 4700 uF, minimum impedance 6 ohm
Additional output: NC/NO logic relay output
Compatible sensors: all the sensors available on Netsens IoT unit

Netsens agro-meteorological sensors

The agro-meteorological sensors are designed and manufactured in Italy by Netsens, which therefore ensures the wide availability of spare parts and the updating of systems that were installed many years ago. Many sensors are individually calibrated to ensure high accuracy and reliability over time.

Wind sensor
Wind speed: 1-67 m/s, accuracy 5%
Direction: 0-360°, accuracy 7°

Rain collector
Resolution: 0.2 mm
Principle: tipping bucket

Thermo-hygrometer
Temperature: -25 +85 °C, accur. 0.5°C
Humidity: 0-100 %RH, accuracy 3%
Dew point calculation
Solar shield included

Soil moisture and temperature
Accuracy: 2%
Measuring range: from 0% to saturation
Operating range: - 40 + 60 °C
Up to 4 sensors on the same station

Barometric pressure
Measuring range: 500 - 1100 hPa
Accuracy: 0.4 hPa (-10 to +70°C)

Soil conductivity (EC):
Measuring range: 0 to 15 dS/m
Operating temperature: 0 to +50 °C

Leaf wetness sensor
Two output channels (upper and lower leaf side)
Measuring range: 0 – 100 %
Operating range: - 40 + 60 °C

Solar radiation sensor
Visibile radiation: 0-1800 W/m2
Accuracy: 5% FS
Operating range: -40 +65 °C

Other compatible sensors
First class and Second class pyranometers, PAR, UVA/UVB; diametric growth; tensiometers.

	MeteoSense	IoT Unit	WiSense
Anemometer	Y	Y	Y (wind speed only)
Rain collector	Y	Y	Y
Thermo-Hygrometer	Y (Max 2)	Y (Max 2)	Y (Max 2)
Barometric pressure	Y	N	N
Soil temp. and humidity	Y (Max 4)	Y (Max 4)	Y (Max 4)
Soil conductivity	Y (Max 2)	Y (Max 2)	Y (Max 2)
Leaf wetness	Y	Y	N
Solar radiation	Y	Y	N
Other sensors	ON REQUEST	ON REQUEST	ON REQUEST

LiveData Cloud Platform

Netsens manages **nearly 500,000 data records sent every hour** from our systems in the field through LiveData platform. Each record is acquired, validated and stored according to advanced safety standards, which ensure continuity of operation: this is also thanks to an advanced **automatic diagnostic system**, which allows its technicians to be warned in the event of individual failures or malfunctions, or to organise technical interventions in collaboration with local partners.

All weather stations and IoT units that you have access to are represented on **satellite cartography**, for intuitive and immediate use, even in the case of large and articulated networks, or farm units located in the territory.
From each page, you can always access the service request menu, with which you can activate **Netsens technical support**.

The graphic presentation is simple and intuitive, thanks to the experience of Netsens, which for over 15 years has used the most advanced IT tools for consulting the data of its systems. Each page is made in such a way that it can be consulted on **both PC and smartphone**, with dedicated apps for both Android and iOS devices. LiveData is **continuously updated**, and all Customers can have the latest version without having to make any updates.

There are numerous functions dedicated to agriculture that can be activated: **DSS forecasts** for phytosanitary management; evapotranspiration and water balance; field agenda with crop indices; frost forecast; agro-meteorological forecast located on your farm. All **agronomic models** make the most of IoT technology: in fact, the indices and forecasts are calculated **on each IoT unit** in the field, and not as a result of a general average value.

Access to the platform is via web or app, with user profiles that can be differentiated according to needs (e.g. supervisor, external consultant, operational, etc.), even in the case of sharing the IoT system through a network between multiple farms. Netsens systems are also seamlessly integrated with many of the major Precision Agriculture platforms, automatically exchanging data via specially crafted data interfaces (APIs).

Our story

Since 2004, Netsens s.r.l. (www.netsens.it) has been producing monitoring systems for agriculture, meteorology and the environment. Netsens has its headquarters in Calenzano (Florence), and has been operating since 2015 with a quality system certified according to ISO 9001:2015 and environmental certification ISO 14001:2015; it is also notified for the production of equipment according to ATEX regulations.

Mission

Netsens manufactures and sells systems for the acquisition and wireless transmission of data, offering the related installation, maintenance, and IT services for the processing and presentation of data in the Cloud environment. The products offered are mainly based on proprietary technologies and projects, integrating qualified and selected third-party components, where necessary to complete the technical and commercial proposal.

Technologies

The company has an internal technical staff that covers all phases of electronic and industrial design. In addition, through agreements with research institutions, it is able to make use of specialist advice in the field of radio frequency systems and in the basic technologies for the construction of physical and chemical sensors. Netsens products are the result of constant R&D investments, also supported by participation in important national and international research programmes.
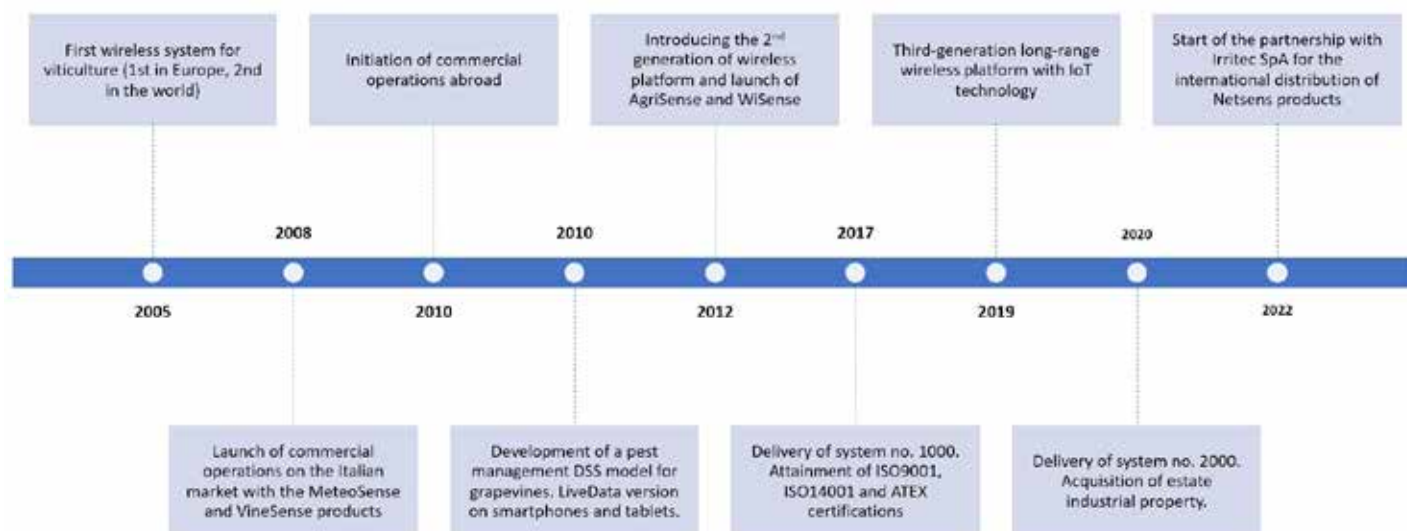
Support and Service

Netsens distinguishes itself from its competitors by paying particular attention to customer support, even after many years of purchase: thanks to the internal design of all the main components, we can guarantee original spare parts and offer scheduled and specialised assistance services to keep your systems in perfect working order, without unnecessary replacements.

Netsens, one of the first companies in the world to create wireless systems for digital agriculture, is a leader in Italy in the field of IoT systems for agriculture, with a technical and commercial network that is constantly expanding, both in Italy and abroad, thanks also to prestigious partnerships with global players.

netsens
sensing the environment

MADE IN ITALY

CERTIFICAZIONE DI SISTEMA QUAL... DNV·GL ISO 9001

...FICAZIONE DI SISTEMA AMBIENTALE DNV·GL ISO 14001

Other business sectors

In addition to the digital agriculture sector, Netsens has carried out over 15 years of important work in the field of professional meteorology and weather and environmental monitoring networks for the main Italian industrial groups and many public and research bodies. Netsens also manufactures access control track-side equipment in Telepass® standards for toll applications, and highway traffic control systems.

| First wireless system for viticulture (1st in Europe, 2nd in the world) | Initiation of commercial operations abroad | Introducing the 2nd generation of wireless platform and launch of AgriSense and WiSense | Third-generation long-range wireless platform with IoT technology | Start of the partnership with Irritec SpA for the international distribution of Netsens products |

2008   2010   2017   2020

2005   2010   2012   2019   2022

| Launch of commercial operations on the Italian market with the MeteoSense and VineSense products | Development of a pest management DSS model for grapevines. LiveData version on smartphones and tablets. | Delivery of system no. 1000. Attainment of ISO9001, ISO14001 and ATEX certifications | Delivery of system no. 2000. Acquisition of estate industrial property. |

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