BREEDERS

AGRICULTURAL SECTOR

polispec

GETTING INSIGHT

itphotonics

*Spectrophotometry and
applied electronics*

We are a dynamic and creative company founded in 2012, **specialising in spectrophotometry and applied electronics**. We use our theoretical and practical knowledge and methodologies to design and **build electronic systems and measuring instruments**. Our core business is applied spectrophotometry, in its various forms and for each application sector. We work to design and build systems for rapid and non-destructive measurements, **suitable for all contexts where precise, immediate and multiparametric information is required**. This allows us to study and obtain technological solutions for various fields of application, to manage the variables necessary for the integration of systems in different environments and to solve the specific needs of each production process.

*Those who contact us have the
opportunity to meet a partner able
to offer:*

KNOW-HOW

EXTREME SPECIALISATION

*COMPLETE DESIGN
AND PRODUCTION, "turnkey"*

We are versatile and multisectoral,
our ideas have no boundaries.

Polispec NIR
Getting insight

We have created **POLISPEC NIR (Portable and On-LIne SPECtrophotometer)**, a compact spectrophotometer with an industrial design, designed and built both for portable use and for online installation. Its operation is based on the interaction of a light source with the molecules and with the chemical bonds that characterise the matrix to be analysed, thus performing both quantitative and qualitative measurements.

Polispec NIR is designed to ensure intensive use in all agricultural processes in which immediate and precise measures are required for the management of variables and for self-control systems.

po**l**spec
GETTING INSIGHT

THE REFERENCE SENSOR FOR
FOOD MANAGEMENT IN FARM

TECHNOLOGICAL ADVANTAGES

| . D E S I G N | ⌀ COMPACTNESS | **Polispec NIR is simple and intuitive,** suitable for multiple uses and designed for intensive use on a large variety of matrices. |
| | ⌀ RESISTANCE | |

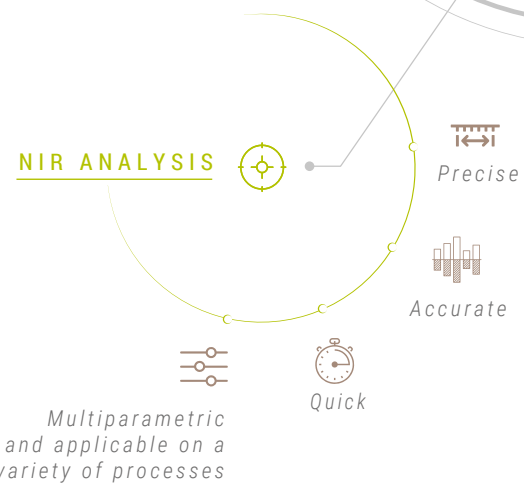| . Q U A L I T Y | ⌀ RELIABILITY | **Polispec NIR is a robust and reliable instrument,** designed for use in the field and in demanding environmental conditions (temperature, vibrations, atmospheric agents, etc.). |
| | ⌀ PRECISION | |

| . S O F T W A R E | ⌀ INNOVATION | **Polispec NIR** is equipped with software that allows it to be used in many contexts, both **as a manual system** and as an **integrated tool to agricultural machinery**. |
| | ⌀ COMPLETENESS | |

po**/**spec*NIR*

Polispec's NIR (Near Infra Red) analysis is the method that measures products as they are with extreme precision, providing immediate results and without the need for highly qualified personnel to perform the analysis operation.

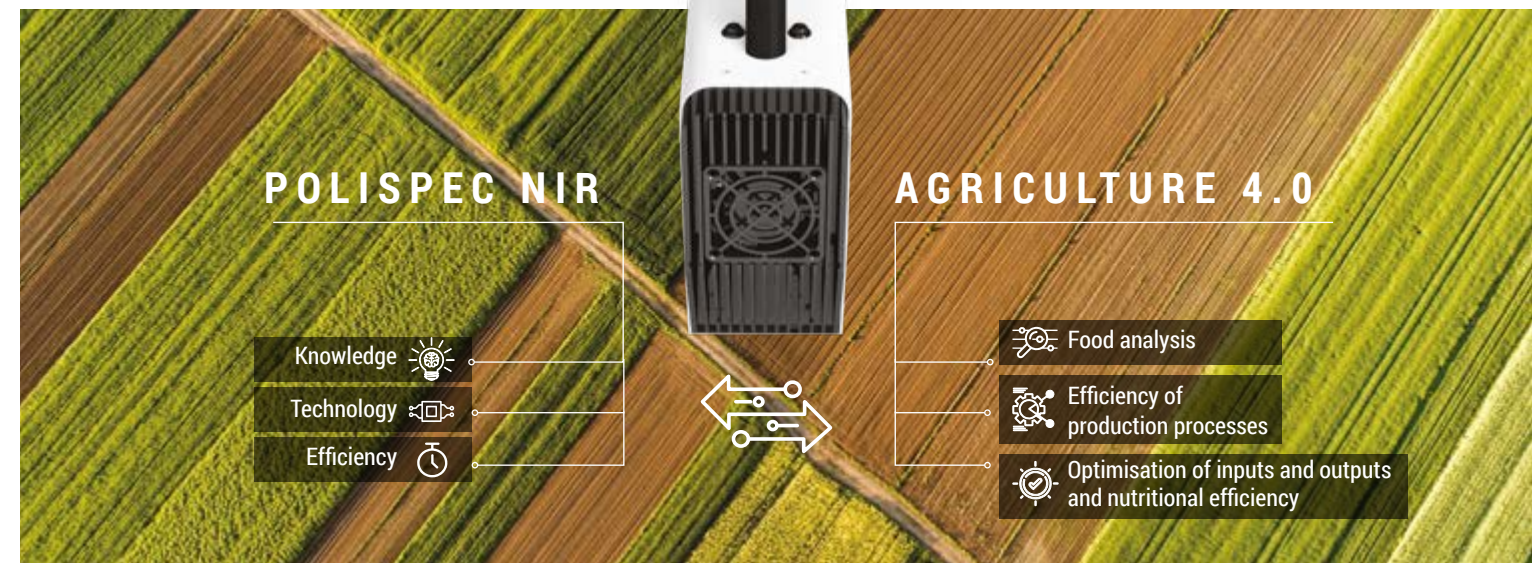. *MEASUREMENT VERSATILITY*
. *ANALYSIS PRECISION*
. *IMMEDIATE DATA*

THE NIR TECHNIQUE

Instant

Non destructive

Simple

NIR ANALYSIS

Precise

Accurate

Quick

Multiparametric and applicable on a variety of processes

TECHNICAL QUALITY .
TIME OPTIMISATION .
OPERATIONAL CONVENIENCE .

This technology is suitable for use as both a manual tool and applied in-line. Its application versatility is used to measure a multiplicity of products in an immediate and direct way.

Success is the harmonic fusion between power and technology, between strength and intellect. Today in agriculture all this is possible because the entire sector now has the skills and means to make work better, more efficient and more profitable. This is how **Polispec NIR** was conceived, because to know, it is necessary to measure and to act and improve it is necessary to know.

POLISPEC NIR

Knowledge

Technology

Efficiency

AGRICULTURE 4.0

Food analysis

Efficiency of production processes

Optimisation of inputs and outputs and nutritional efficiency

. **CHARACTERISTIC**

Polispec NIR is an innovative tool dedicated to the agriculture and precision feeding sectors.

. **TECHNOLOGY**

Polispec NIR is highly performing in terms of sensitivity, operating dynamics and signal cleanliness.
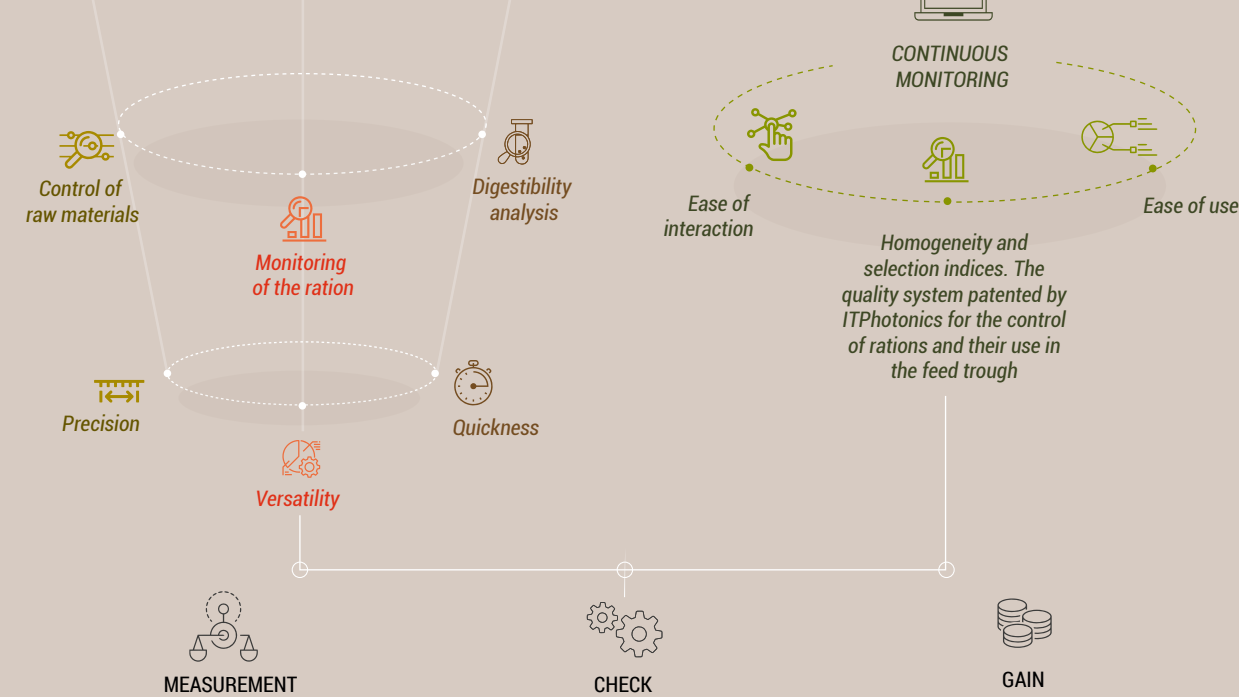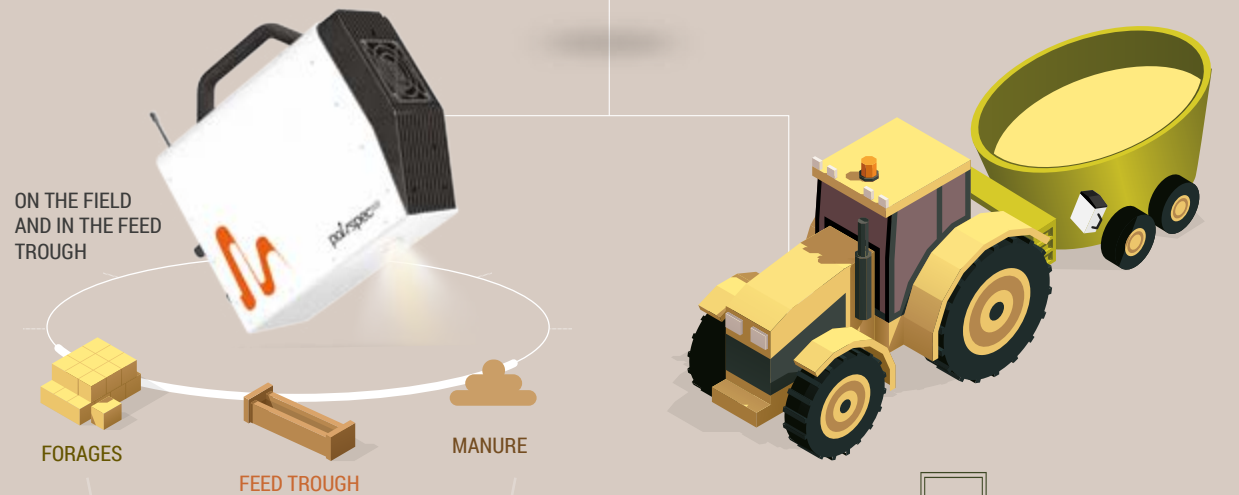
. **SOFTWARE**

Polispec NIR can be used in a single version for each application area.

POLISPEC NIR

MANUAL
ANALYSIS

ANALYSIS
ON MIXER WAGON

ON THE FIELD
AND IN THE FEED
TROUGH

FORAGES

FEED TROUGH

MANURE

see deepening

*Control of
raw materials*

*Digestibility
analysis*

*Monitoring
of the ration*

Precision

Quickness

Versatility

CONTINUOUS
MONITORING

*Ease of
interaction*

Ease of use

*Homogeneity and
selection indices. The
quality system patented by
ITPhotonics for the control
of rations and their use in
the feed trough*

MEASUREMENT

*The use of Polispec NIR in farm is used to
measure daily the nutritional properties of
all the feed products that are used every
day (dry fodder, silages, concentrates and
raw materials of all kinds). Knowing your
feed ingredients and their variability
enables optimising of their use and
checking of their quality*

CHECK

*Both in portable use and integrated on the
mixer wagon tank, Polispec NIR is used to
instantly check and correct the entire
feeding process, verifying the nutritional
properties of the rations with the relative
recipes, optimising cutting and mixing
times, guaranteeing the homogeneity of
feed distribution and verifying its physical
and nutritional quality in the feed trough*

GAIN

*Thanks to Polispec NIR it is possible not
only to control the ration but also to
monitor the feeding efficiency of the farm
through the analysis of the nutrients lost
through the faeces in order to be able to
propose the appropriate solutions*

REARING

*Analysis of the entire feeding process
(from the monitoring of raw materials to the analysis
on the mixer wagon, in the feeder trough and manure)*
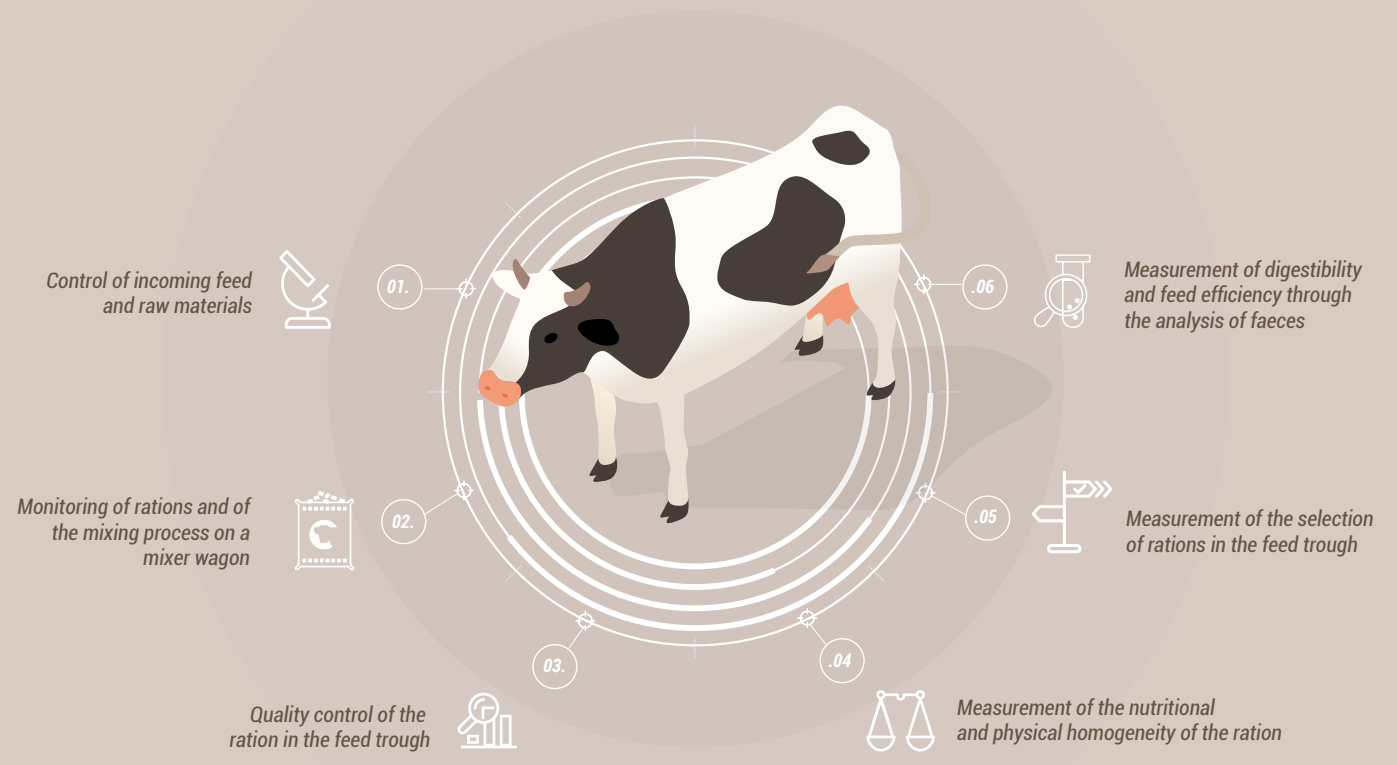
Control of incoming feed
and raw materials

01.

.06

Measurement of digestibility
and feed efficiency through
the analysis of faeces

Monitoring of rations and of
the mixing process on a
mixer wagon

02.

.05

Measurement of the selection
of rations in the feed trough

Quality control of the
ration in the feed trough

03.

.04

Measurement of the nutritional
and physical homogeneity of the ration

REDUCTION OF FEED WASTE

By optimising the quality of feed
ingredients and making the feeding
process more constant, important results
can be obtained on company
performance and on the nutritional
efficiency of the rations. All this
translates into an optimisation of feeding
costs, a reduction in healthcare costs and
an increase in the profitability of the herd

QUALITY IMPROVEMENT

The measurement and monitoring of feed
ingredients and the performance of feeding
processes are used to improve the entire
company management to the benefit of a
better economic and qualitative efficiency
of the livestock company

INCREASE IN COMPANY YIELD

Monitoring and intervention skills are
key elements for the success of the farm.
A qualitative management of the feeding
process means achieving better production
performances and reducing the risk of
costly errors

HOMOGENEITY INDICES OF DIGESTIBILITY

REARING

ANALYSIS OF THE RATIONING PROCESS

(monitoring from the mixer wagon to the feeding trough)

01.

Polispec NIR is used to measure the feeding behaviour of animals during the day, monitoring their aptitude for feed selection and helping to identify the reasons, in order to avoid costly waste and harmful inefficiencies

ANALYSIS OF THE RATION IN THE FEED TROUGH

02.

MONITORING OF MIXING

Polispec NIR can measure not only the nutrients contained in the ration but also their physical size. Through continuous monitoring of the mixing, it is therefore possible to compare the actual ration with the values provided by the recipe, to determine exactly when the mixing is completed and uniform and to monitor the homogeneity of the distribution of the TMRin the feed trough

03.

Each animal in the herd must be able to receive the same, equally balanced ration (same quantity of protein, starch, NDF etc.) and throughout the entire breeding cycle. But the physical quality of the ration is also fundamental, because it allows them to chew correctly and, therefore, to achieve a correct digestibility of the ration

HOMOGENEITY

04.

SELECTION

Polispec NIR measures the feeding behaviour of the herd by verifying whether effects resulting from the selection of some feed from the ration appear during the day at the expense of others. By comparing the "corridor side" with the "animal side" of the feed trough, it is possible to monitor the homogeneity of the TMR and the possible selection of feed ingredients in order to effectively control the absence of problems that would inevitably compromise the digestibility and feed efficiency of rations

05.

Polispec NIR completes the supply chain, recovering significant data in the solid manure of animals to judge the healthiness, yield and above all the digestibility of the ingested ration

FAECAL ANALYSIS

management of all phases, guaranteeing with the precision that only a highly technological sensor can have.

ANALYSIS OF THE NUTRITIONAL AND PHYSICAL COMPOSITION IN FEED INTENDED FOR REARING

DAILY CHECK OF THE RATION (HOMOGENEITY AND SELECTION)

VERIFICATION OF NUTRIENT QUALITY (DIGESTIBILITY)

ENSURING THE ECONOMIC EFFICIENCY OF THE FARM

Polispec NIR is the ideal tool for analysing and determining the chemical composition and physical parameters of feeds and rations and their qualitative characteristics in the feed trough. But **Polispec NIR** is much more, it is in fact an excellent system for controlling effective feed efficiency: through the measurement of faeces it is finally possible to understand how much of the nutrients administered to animals are actually retained and used and how much are unnecessarily lost. Monitoring of these aspects can therefore be essential to safeguard production performance while containing farm costs.

CONTROL OF FODDER AND RAW MATERIALS

Polispec NIR is conceived and designed for the daily assessment of the nutritional quality of feed intended for rearing. With a simple gesture, it is possible to correct the dry matter of your rations, to assess the compliance of a purchased feed ingredients or to ensure the correct use of farm fodder.
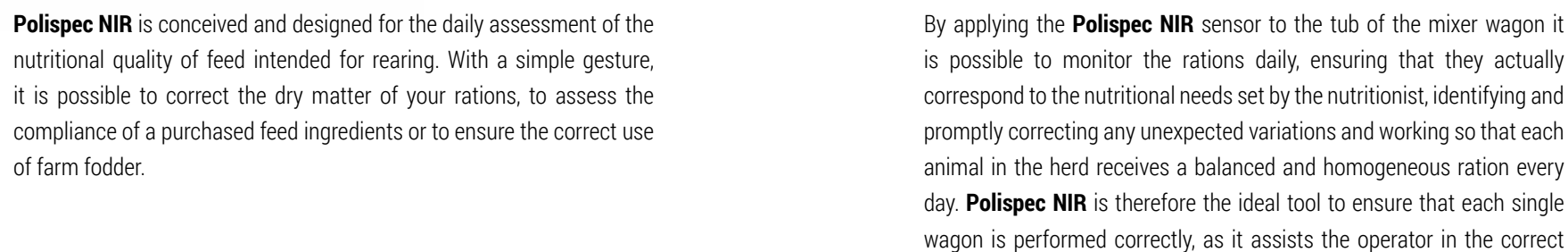
ENSURING THE QUALITY OF THE FEEDING PROCESS

By applying the **Polispec NIR** sensor to the tub of the mixer wagon it is possible to monitor the rations daily, ensuring that they actually correspond to the nutritional needs set by the nutritionist, identifying and promptly correcting any unexpected variations and working so that each animal in the herd receives a balanced and homogeneous ration every day. **Polispec NIR** is therefore the ideal tool to ensure that each single wagon is performed correctly, as it assists the operator in the correct

APPLICATION ADVANTAGES

EASE OF INTEGRATION

The connection modules for the entire Polispec range are particularly flexible and allow this tool to be easily integrated into a wide variety of production processes

SIMPLICITY OF USE

All the Polispec instruments are designed for simple management. They are intuitive both in their practical use and in that of software and therefore do not require the support of specialist personnel to use them

IMMEDIATE DATA

The analysis with Polispec systems is used to obtain immediate data, thus obtaining a real-time survey of the measured product available

PRECISION OF RESULTS

Thanks to their advanced technology, Polispec instruments are able to ensure maximum reliability of the measurements obtained, constantly offering the user precise and reliable data for each use

VERSATILITY OF MEASUREMENTS

The measurements obtained by Polispec spectrophotometers represent immediate, non-destructive and multi-parametric analyses, applicable on a variety of products and always originating from the comparison with the calibration database

Polispec NIR *is extremely versatile because it is equipped with software systems designed by us that allow us to make this device technologically performing and customised on the peculiar characteristics of each farmer's activity, both for portable and line use.*

TMR MANAGER

TMR Manager software can be installed on any computer with a Windows® 8 or 10 operating system.

It is the software that is used to archive, consult and monitor the progress of the preparations of the various recipes.

The simple and intuitive graphic interface is used to search by type of recipe and/or by period and to view the trends of the selected parameters on customisable graphs. It is therefore possible, for example, to check the consistency of homogeneity or the nutritional consistency of the ration on a monthly or weekly scale. If weights are available, it is also possible to monitor the real availability of dry matter per headbased on the precise measure of the distributed ration.

p o l i T M R

Analysis of the nutritional data of the mixture

Analysis of the homogeneity of the mixture

Data storage for monitoring

Power and data

Tablet + Docking station

WiFi

Power supply of the machine

Key

Scale
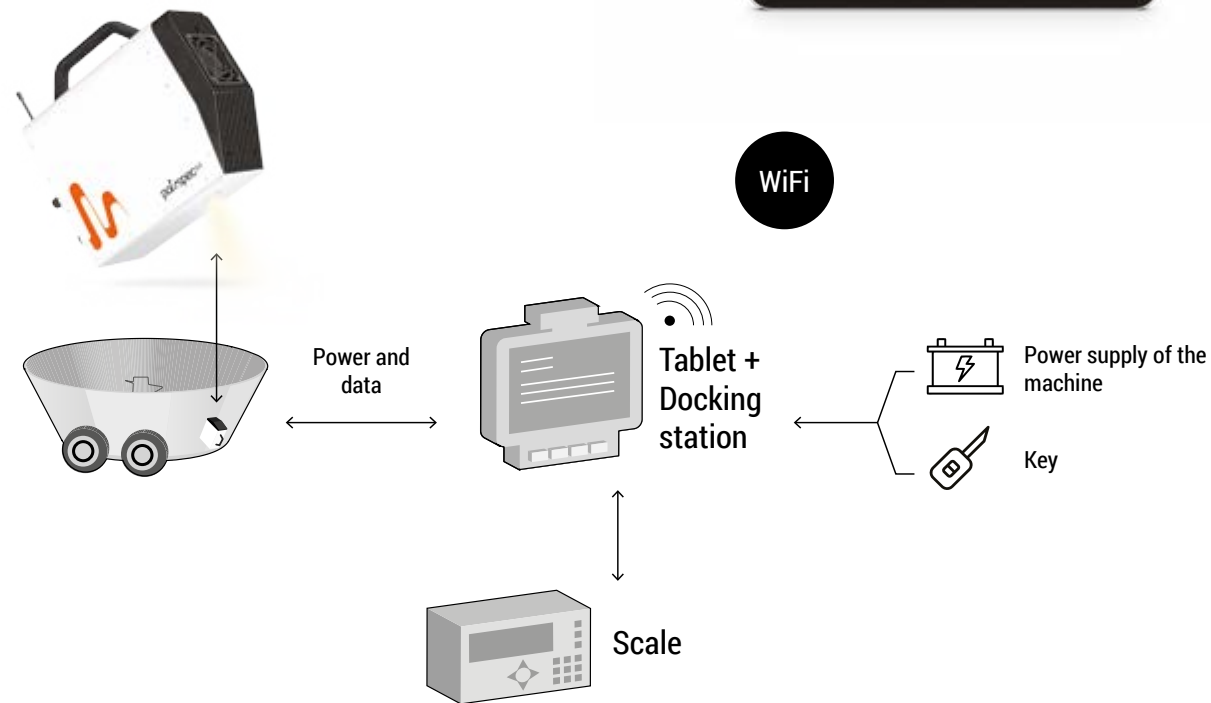
It is the software for controlling the ration on the mixer wagon.
Available for installation on all mixer wagons, both self-propelled and towed; depending on the level of integration of the machine, it can be integrated on the cabin console and interfaced with the weighing scale.

The software continuously measures the ration during the mixing phase and:

• provides the **nutritional data of the blend** that are **compared to those of the recipe** (dry matter, protein,

fibre and starch)

• it issues a **warning when the homogeneity of the mixture** is achieved, considering both the nutritional and physical parameters (average length of the particles and their distribution)

• after mixing is complete, **save all this information for daily monitoring**. Depending on the compatibility with the different weighing models, the weight data of each ingredient and the total mix can also be saved

p o l i D A T A

Different sampling modes

Immediate results

Archiving system

Custom setting

Guided diagnostics and calibration

Supplied pre-installed on a touch tablet, the poliDATA software can be installed on any computer with a Windows® 8 or 10 operating system.

It is our main software for portable use of Polispec instruments and offers an interface designed for use on both tablets and desktops. It is an application designed for control on touch devices and is particularly simple and intuitive to use.

It is available in several languages and its main features are:
- **Analysis**: by choosing a chemometric model, it is possible to analyse a product with different sampling methods (swiping on the product, multiple swiping, multi-point) designed to reduce the sampling error and to increase the representativeness of the analysis
- **Qualitative indices**: the software has innovative evaluation systems for:
  - homogeneity and selection of rations for ruminants
  - forecasting of the correct preservation of silage
  - digestibility of rations
- **Results**: the analysis results are **instantly visible** and can

be **exported in various formats and saved in an archive**
- **Analysis reports**: the analysis results can be exported to customised reports with your logo and company information. Additional parameters calculated on the results can be added to the report
- **Sharing of results**: results can be easily shared using a smartphone and sent via email and Whatsapp
- **Analysis archive**: it is used to keep and consult the data generated and saved, to print reports and to compare analyses on the same type of product
- **Instrument diagnostics**: the software contains tools for instrument diagnostics and remote assistance

HARVESTING

REARING

STORAGE

SEWAGE

POLISPEC NIR CAN BE USED WITH EFFECTIVE RESULTS IN ALL PHASES RELATED TO FIELD AND FARM.

po/spec

GETTING INSIGHT

THE CIRCLE IS COMPLETELY CLOSED

Directly in the field, during the harvesting of agricultural products, throughout the farming chain or on the materials in storage, **Polispec NIR** is the ideal tool for obtaining valuable data to improve your professional activity.

ITPhotonics S.r.l.
via Astico 39, 36030 Fara Vicentino (VI) - Italia
T. (+39) 0445-1925221
M. info@itphotonics.com

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ITPHOTONICS.COM