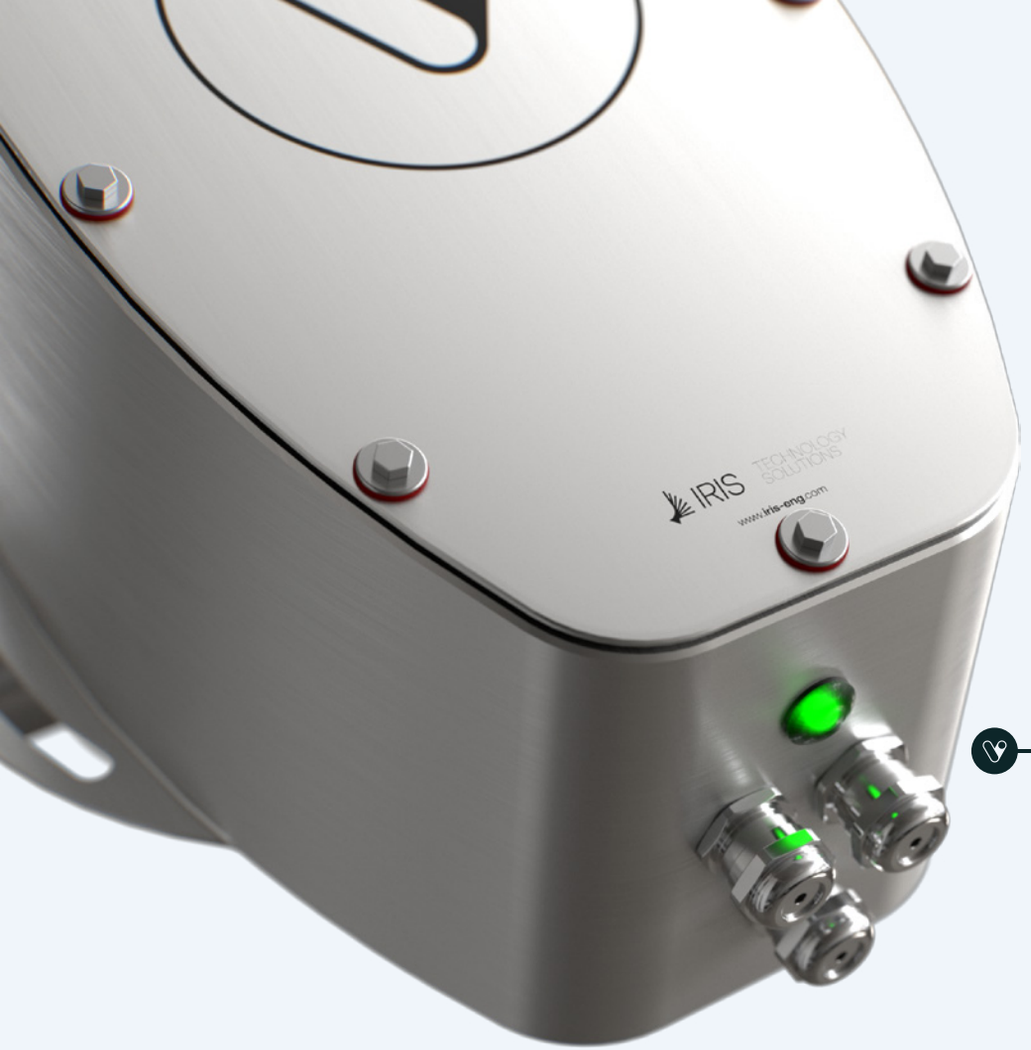
Visum®

Process & Quality Control Systems

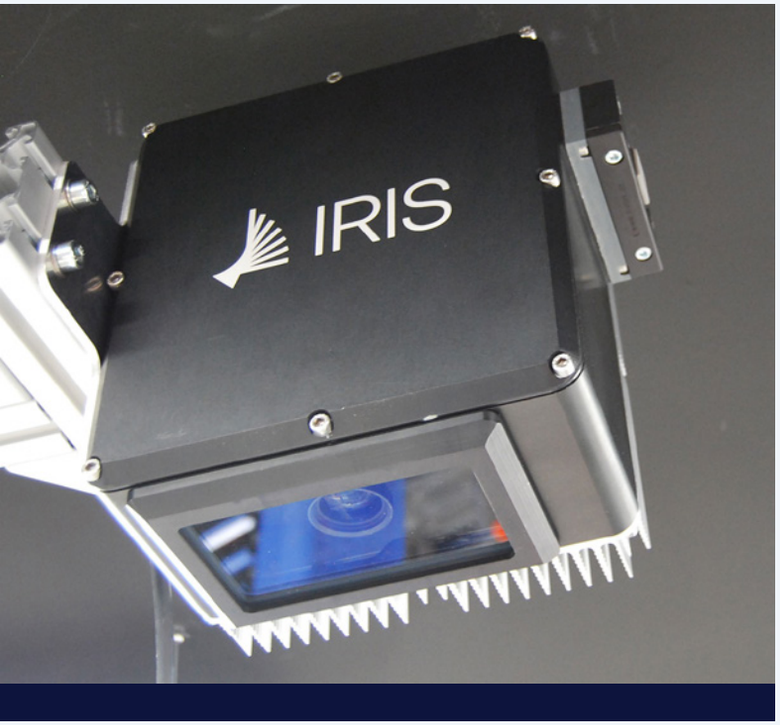
IRIS TECHNOLOGY SOLUTIONS



IRIS TECHNOLOGY SOLUTIONS

Quality and **Process Control Solutions** for **Industry**

Under the **Visum®** brand, **we manufacture end-to-end solutions** to **improve quality and control production processes** in a wide **variety of industries**. Our **systems** based on **NIR spectroscopy**, **Hyperspectral imaging**, **Raman spectroscopy** and **Machine Vision** provide **real-time information** and **results**. **Visum®** brings the **laboratory to the production line**.



In-line Spectroscopy

We employ NIRS technology (Near-Infrared Spectroscopy) technology, Hyperspectral Imaging (HSI) and Raman spectroscopy in real time, among other photonic techniques such as UV and fluorescence with artificial intelligence artificial intelligence tools and software for the development of solutions for the analysis and classification of **foodstuffs, grains, plastics, organic and inorganic waste organic and inorganic waste, wood panels, pharmaceutical products**, **chemicals**, **cosmetics**, among a wide **variety of materials** and **mixtures**.

Machine Vision & Deep Learning

We use **our knowledge** in **optics**, **software** and **engineering** to develop **machine vision systems** and **neural networks** -or deep learning- to distinguish and classify anomalies, characters and natural variations in **complex patterns**. Our **machine vision systems** are used for the control and analysis of defects in grains, nuts, fish, labeling, packaging, among the most popular technology applications.

Benefits

- Real-time monitoring of physical and chemical parameters.
- Industrial use and does not require specialized personnel.
- Possibility of analyzing multiple parameters simultaneously.
- Time savings in laboratory analysis, inputs or visual inspection.
- Real time information to rectify processes and optimize decision making.
- Food Safety.
- Reduction of losses, claims and/or returns.

Sectors

Food

- Bakery & Oils
- Fruits, vegetables and derivatives
- Dairy
- Fish & Seafood
- Meat
- Baby Food

Pharma

- Pharmaceutical
- Chemical
- Cosmetics

Other Industries

- Wood
- Plastics
- Waste
- Biofuels
- Other industries

Visum PALM™

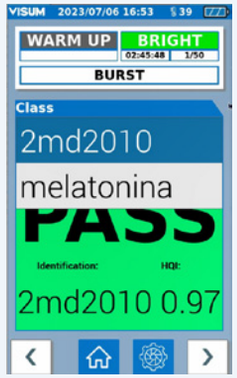
Handheld NIR analyser for use in the field or in the production process. Automated calibrations, methods, models and validations.

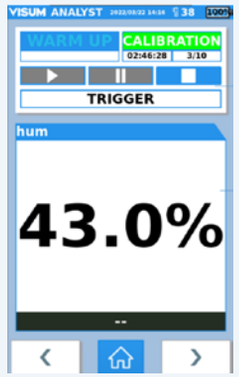
Visum Palm™ is a stand-contained analyser with embedded PC and touch screen. Through the Visum Master™ PC software, the user can develop and edit calibrations, libraries and methods as well as perform qualifications and generate automated method validations.

AI-assisted NIR

Main Functionalities

- Self-contained and multi-parametric analyser.
- Sample measuring area of 10 mm and illumination area of 50 mm.
- Embedded computer and touch screen.
- Visum Master™ PC software: device synchronisation, development and editing of calibrations or automated models, automated method validations, reports and qualifications.
- Compatible with 21 CFR 11, USP and Ph. Eur.
- Ethernet / Wi-Fi connection.





Sectors

FOOD

- Control of quality parameters in fruit, vegetables, minced meat, bakery and bakery products, snacks, olive oil, olive oil, etc.

  Snacks, olives and derivatives, oils, flours, powdered milk, grains, among other food products.
- Quick verification of raw material.
- Typical particle size, viscosity.
- Detection of anomalies.

PHARMA

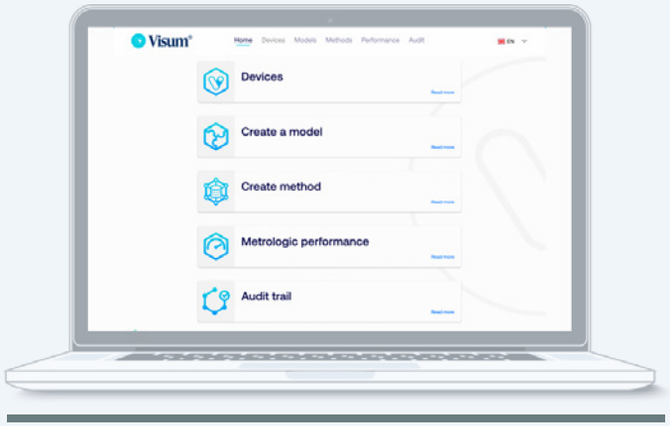
- Identification of raw material.
- Determination of particle size.
- Quantification of % of APIs and excipients (content uniformity).
- Control of the coating process of microgranulated forms.

OTHER INDUSTRIES

- Identification of polymers.
- Control of talcs and adulterations.
- Textile identification.
- Analysis of carbon, organic matter and nitrogen soils.

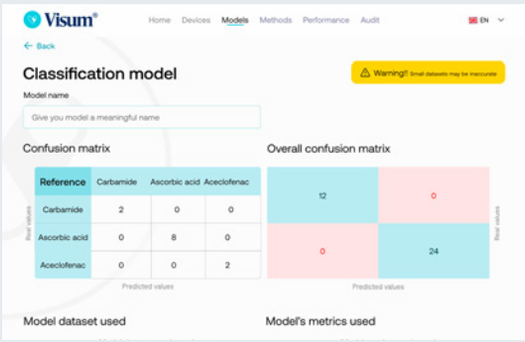
Software
Visum Master™

For identification, classification or quantification analysis of different materials, products or mixtures.



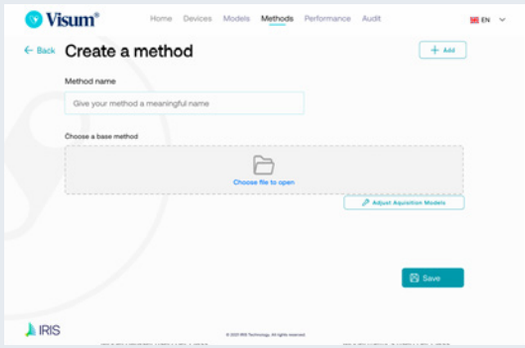
Automated calibrations and models

Allows the user to automatically create their own calibrations or models and methods for identification, classification and quantification needs of different products, substances or mixtures. Allows them to be edited and data to be linked and managed with the portable analyser.



Assisted metrological testing

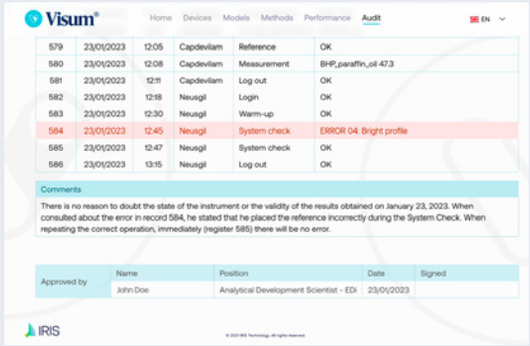
The user can perform the metrological checks of the device (wavelength accuracy, photometric linearity and photometric noise) from a step-by-step assisted wizard and download the results.



Excellence for GMP environments

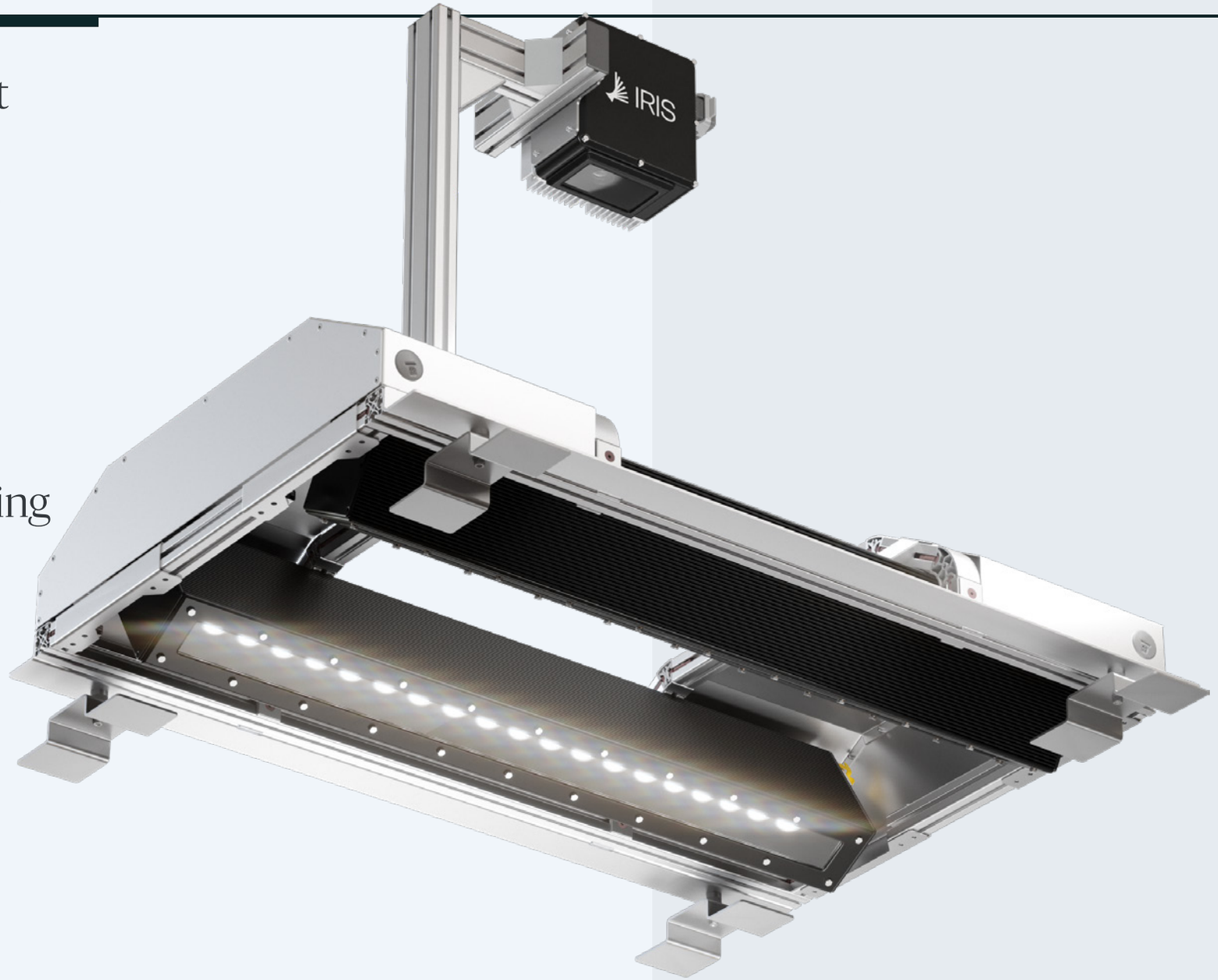
Visum Master™ allows the user to automatically generate the analytical method validations required for approval, in addition to generating an audit trail report where comments or observations can be incorporated.

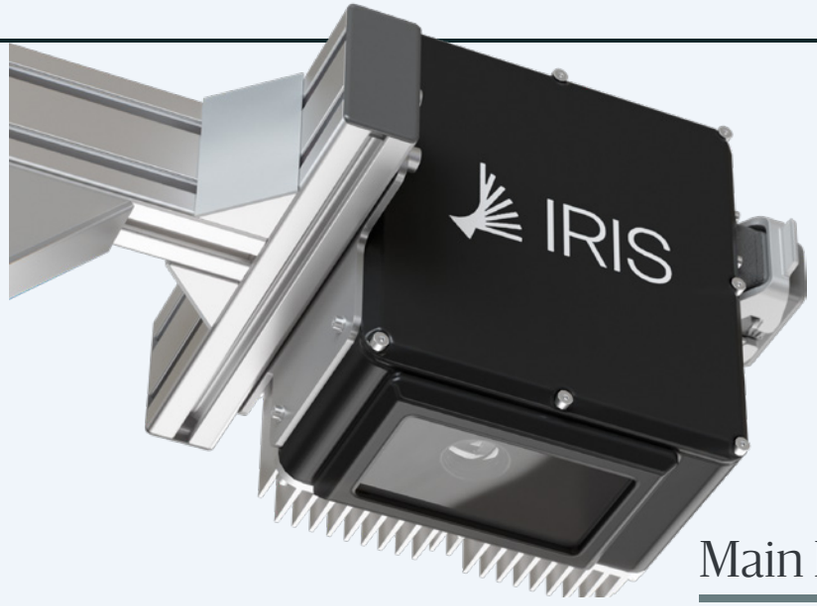
It allows the user to view, complete and download the IQ (Installation Qualification) and OQ (Operational Qualification) protocols and access essential reports for the operator's or analyst's day-to-day activity.



Visum HSI™

Visum HSI™ is the most robust and versatile Hyperspectral Imaging System (HSI) on the market. It is designed to be integrated into any production line and provides pixel-by-pixel physical chemical information of everything that passes over the conveyor belt.





Main Functionalities

- Detection of superficial foreign bodies in the production line (paper, cardboard, rubber, plastics, metals, among others).
- Quantitative and qualitative analysis with spatial distribution of each product unit passing over the conveyor belt.
- Control of homogeneity, distribution and quantity of ingredients desired in each product unit.
- Versatile technology: NIR or Vis-NIR.
- IRIS Technology's hyperspectral imaging systems adapt to the required belt width and speed without limitations.
- Integrated with all types of PLC, rejection system and SCADA.
- Improvement of quality and safety.
- Brand image protection.

Sectors

FOOD

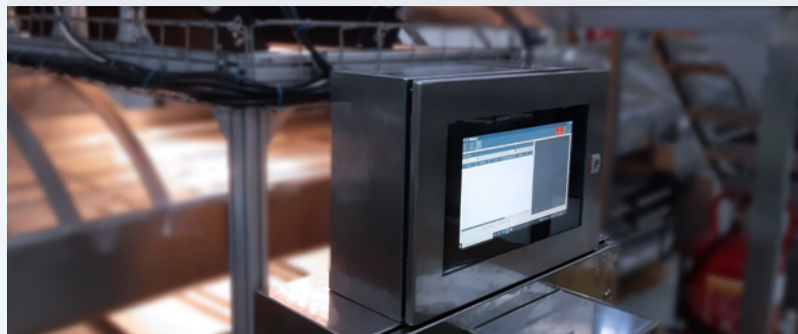
- Quantitative and qualitative analysis of each product unit (fats, fibers, proteins, moisture, among others or qualitative parameters such as shape, colour and texture), depending on the product.
- Detection of superficial foreign bodies for their rejection.
- Product homogenisation.

RECYCLING/CIRCULAR ECONOMY

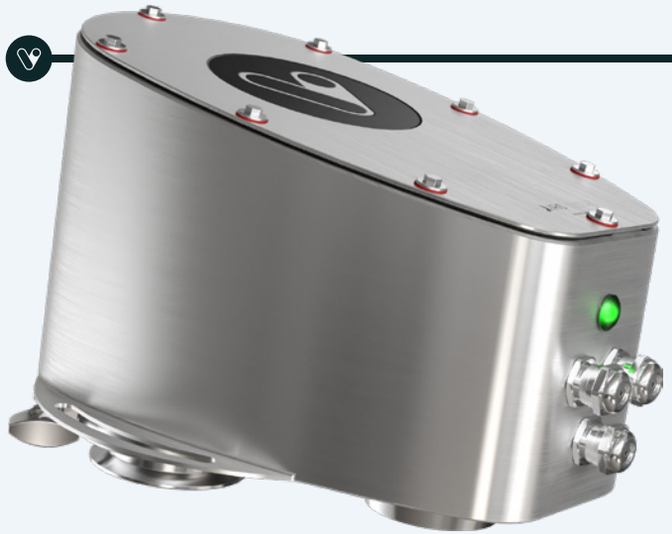
- Characterization, quantification and classification of polymers.
- Sorting of plastics in recycling.
- Recovery of multilayer plastics.
- Monitoring and sorting of organic and inorganic waste.

WOOD

- Moisture monitoring of particleboards in the impregnation line.
- Curing factor classification of wood boards.
- Quantification of wood chips flow for process control.
- Quantification or classification of resins.
- Detection of foreign bodies.
- Adhesive homogeneity in laminated veneer.



Visum NIR In-Line™



Real-time in-line NIR analyser: accurate and continuous measurements for process optimisation and quality control in the factory.

The Visum NIR In-Line™ analyser is a multi-parametric, stand-alone sensor that can be integrated into conveyors, pipelines, blenders and process machinery to monitor product flow and provide real-time measurements to plant information systems.

Main Functionalities

- Continuous monitoring of solids, semi-solids and liquids.
- Embedded computer.
- Development of automated calibrations.
- Communication with information systems.

Sectors

FOOD

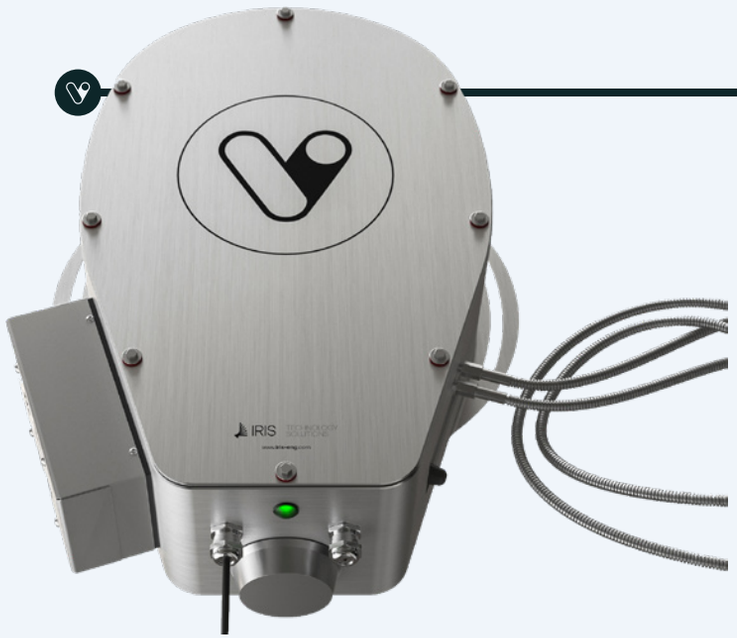
- Food analysis: juices, smoothies, purees, dairy products, oils, sweets, olives,dried fruits, bakery products, chocolates, baby food, mixtures, food supplements, among other foods and beverages.
- Quick verification of the raw material.
- End point of the drying process (residual moisture).
- End point of the mixing process (homogeneity).
- Typical particle size.

PHARMA

- Content uniformity analysis (% of APIs and excipients).
- Automatic control of the blending process (no calibrations required).

OTHER INDUSTRIES

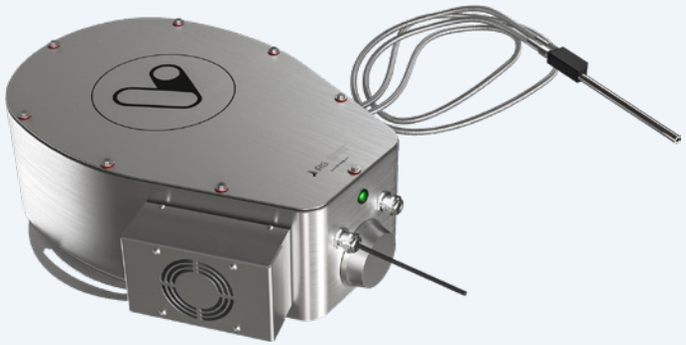
- Determination of water and moisture content.
- Determination of quality parameters in biofuels



Visum Raman In-Line™

Industrial analyser based on Raman spectroscopy for in-line, real-time process control.

The Visum Raman In-Line™ analyser is a powerful analytical tool that provides quantitative and qualitative information on a wide variety of substances and mixtures in just seconds, especially suitable for aqueous media (water abundance), in the absence of fluorescence.



Main Functionalities

- All-in-one analyser (no external computer required).
- Customised probes.
- Connection to the PLC of the line.
- No qualified personnel is required for its use.
- Allows the chemical composition of liquids, powders and solids to be analysed.
- Turnkey supply.

Sectors

PHARMA

- Quantification of APIs and excipients in real-time.
- Quantitative analysis of formulations.
- Process monitoring and characterization in bioreactors.
- Contamination detection.
- Crystallization process monitoring.
- Core and coated tablet content prediction.

OTHER INDUSTRIES

- Polymerization process control
- Quantitative analysis of formulations..

Visum Raman In-Line™ is a Process Analytical Technology (PAT) tool for the pharmaceutical, chemical and bioprocess industries that enables the inspection of various industrial processes safely, accurately and in real time using a dedicated optical probe.

Visum DeepSight™

Industrial machine vision system assisted by deep learning for colorimetric and morphological quality control and the detection of complex defects and indeterminate variations in different products.

Deep learning technology allows results to be obtained where machine vision alone is not capable and has several applications in industry.

Main Functionalities

- Detection of quality defects for sorting or rejection.
- Detection of surface foreign bodies.
- Classification and quantification of defects.
- Fast and economical integration to the production line.
- Communication with information systems.
- Antireflex system.
- Visum® software, computer system and touch screen.

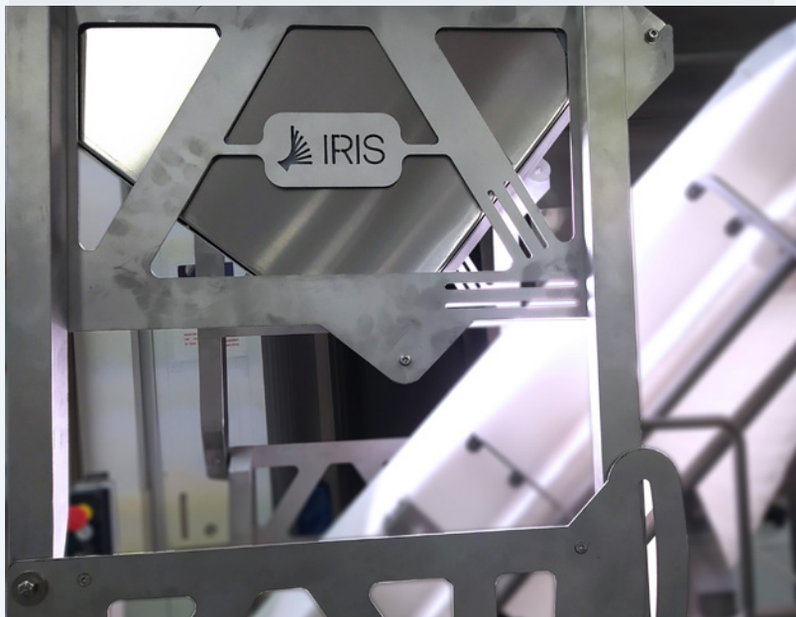
Sectors

FOOD

- Control of defects:
  - Grains.
  - Nuts.
  - Fish loins.
  - Other food.
- Detection of foreign bodies on the belt and in the product.

OTHER INDUSTRIES

- Label control.
- Bottling inspection.



Our Service

Turnkey **Solutions**

- Analysis of the customer's quality control needs and co-definition of specifications and scope.
- Development of custom chemometric predictive models for greater accuracy and robustness, compared to generic libraries.
- Integration service (including compatibility with existing plant data management systems).
- Maintenance and after-sales service during the entire life cycle of the device.
- Exploratory tests in our facilities.
- Maximum flexibility for adapting the device to meet specific requirements.
- On-site validation and training

Testimonials

The use of the VISUM Palm represents a huge revolution in terms of keeping the quality of the processes under control. It brings us real-time and reliable information and cost-saving data about total acidity and the content of the polar components in the frying oil of the production line. VISUM Palm also gives us useful data to determine the quality of fried products, like moisture and fat percentages. This functionality helps to save on arduous lab tasks and allows our employees to focus on other high value-added duties. The return on investment is clear and well founded.

Marina Diana
Scientific Research Manager
EUROPASTRY, S.A.

Thanks to the good work done between the teams of IRIS Technology and GESCASER, we have been able to get a great benefit from the end-to-end solutions development they have done for us with CTC+, a software capable of providing very detailed information of the stored grain quality as well as adding a prediction system, based on artificial intelligence tools, which learns from previous experiences in the silo, improving the efficiency of the ventilation system. For GESCASER, this software has been a qualitative leap that our customers have been grateful for.

Amadeu Casañé
Chief Executive Officer
GESCASER

At Almirall, we are committed to quality, innovation and the continuous improvement to make our processes more effective and efficient. For this reason, last year we incorporated into our quality control laboratory the new VISUM Palm analyzer, intended, in our case, for the online determination of different quality parameters in multiple products.

Thanks to the excellent communication between IRIS Technology Solutions and Almirall, the process of developing the Machine Learning models and qualifying the device for our technical requirements has been fluid and agile. At Almirall, we know that this is only the first step on a prosperous path together with IRIS towards the implementation of other PAT solutions, framed in our commitment to the Industry 4.0 paradigm.

José Martínez
Industrial Pharmaceutical Development Manager
Almirall

The development proposal we jointly presented was highly challenging. Despite the unforeseen and technical/ scientific difficulties, a higher than expected target was achieved and today BIMBO Iberia has Visum equipment that we use to achieve our mission “to make delicious and nutritious food”.

Juan A. Mena Gil
I+D
Bimbo Iberia

All and all, VISUM Palm is a solid piece of equipment that is portable, user-friendly and has a lot of potential. We and Prof Elliott’s team are working in the area of food authenticity and vegetable oil speciation for a number of years now and looking for opportunities to make the analysis fast, portable and cost-effective. With the right application the VisumPalm ticks all the boxes.

Dr. Tassos Koidis’ team
Research Leader and Lecturer in
Food Science and Nutrition
Queen’s University Belfast

Under the framework of the EU funded H2020 project, Agrimax, in Nofima we have been testing the feasibility of selected rapid and non-destructive sensors for monitoring and controlling different extraction processes. Testing the dry matter content in cutin paste monitoring, an expensive and high-resolution lab instrument from a leading brand has been compared with the hand-held VISUM Palm, yielding strikingly similar results.

While both systems were capable of performing the analysis with the same level of accuracy, the VISUM PALM offers the added advantage of measuring on a quite small spot, thereby enabling high-quality spectra to also be obtained from hard and bulk samples.

Dr. Jens Petter Wold
Senior Scientist
NOFIMA

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info@iris-eng.com

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EUROPEAN REGIONAL DEVELOPMENT FUND
A WAY TO MAKE EUROPE

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Visum®

Carretera Esplugues local **39-41**
08940 Cornellà de Llobregat
Barcelona, Spain
+34 93 554 25 00
Info@iris-eng.com

www.**iris-eng**.com
info@**iris-eng**.com