iSR **Smart-Agro**

Smart NIRS V2
for olive oil inspection

Smart-Agro
Industrial Solution
This solution allows automatic control and measurement of olive oil, through *Near-Infrared Spectroscopy*, showing information in real time.

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The Smart-NIR device is a smart device with cloud connectivity that allows related measurements of the light energy absorbed by all materials/products in the near infrared (NIR). This absorbed light energy, also called spectral response, depends on the molecular composition of the material/product allowing to determine more or less approximately its characteristics and/or properties.

CHARACTERISTICS

- Captures the spectral response of the product iteratively with scan cycles of up to 1 second.
- Local and remote configuration modes.
- Wifi and Ethernet connectivity.
- Conexión a la nube Isr-Cloud para el almacenamiento de la información espectral capturada.
- Intelligent and "on the fly" generation of calibration curves through supervised learning.
- Local and remote visualisation of measurement results.
- Self-learning to determine new parameters.
- Integrates a 128-element InGaAs sensor with spectral response in the 900 - 1700nm range.

PROCCESING

In addition to taking measurements, the Smart-NIR is able to process the data in real time, thanks to its integrated 64-bit CPU with a 1.2GHz processor and 1GB of RAM. The different configurations and real-time results are stored in its 64GB of internal memory. The ability to run different processes means that the system is also responsible for managing communications via wireless connection. In addition, thanks to its cloud-based maintenance programme, the system remains calibrated at all times regardless of the weather conditions of the season or type of crop.

ALWAYS CONNECTED

ISR IoT Platform is the cloud platform that allows to organise, monitor and manage thousands of devices with different purposes distributed geographically. It is capable of receiving huge volumes of data, processing them and updating the status of the devices with high security measures.

Its biggest competitive advantage lies in the high capacity of Big Data analysis to draw conclusions, make decisions on the data in real time and guarantee the quality of the final product.

The platform offers a service interface that allows integration and communication with the customer's software platforms. It is therefore possible to extrapolate the data to the company's systems.

The platform contains a specific module for managing NIR devices that offers functionalities such as configuration and parameterisation of the devices, displaying the collected data in detail and generating reports of results in the time intervals considered of interest.
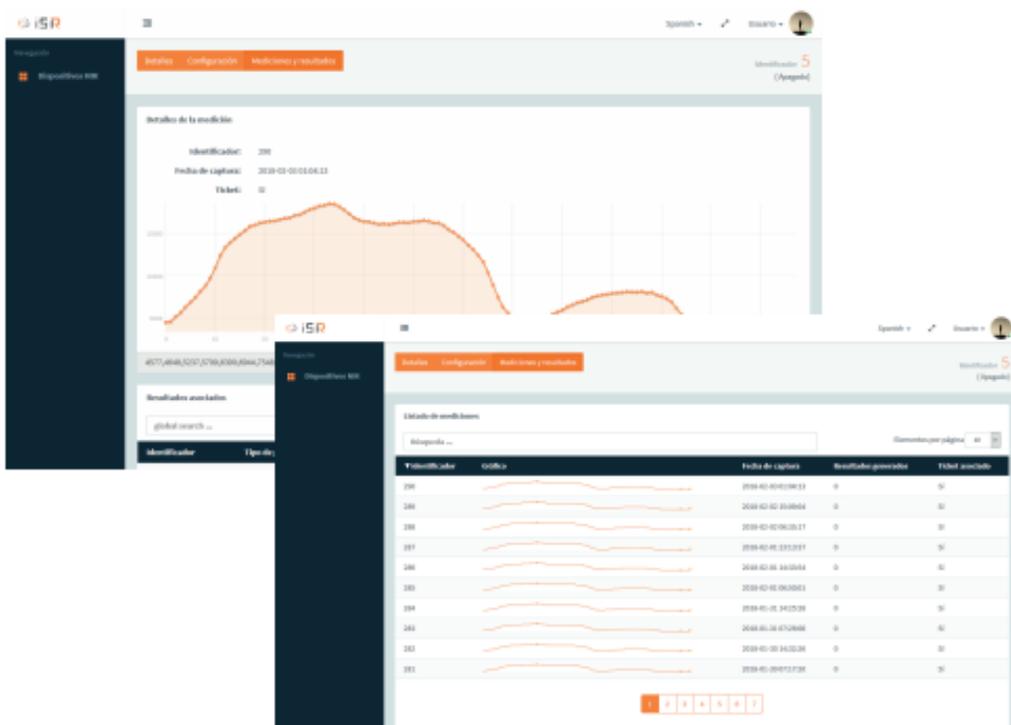
USE SCENARIO: OIL YIELD MEASURES

One of the applications of the Smart-NIR device is the automatic and instantaneous determination of the amount of oil escaping from the pomace outlet of horizontal centrifuge machines. This can be useful not only to know if the machine settings are correct (diaphragm position, etc.), but also to decide whether or not to rework the pomace produced.

SUPERVISED LEARNING

During the first days after the installation of the Smart-NIR device, it is necessary to carry out a calibration procedure in which samples of the same pomace passing through the measurement point will be analysed by an accredited laboratory. This procedure is part of the maintenance tasks of the device and will always be carried out by the iSR technical team.
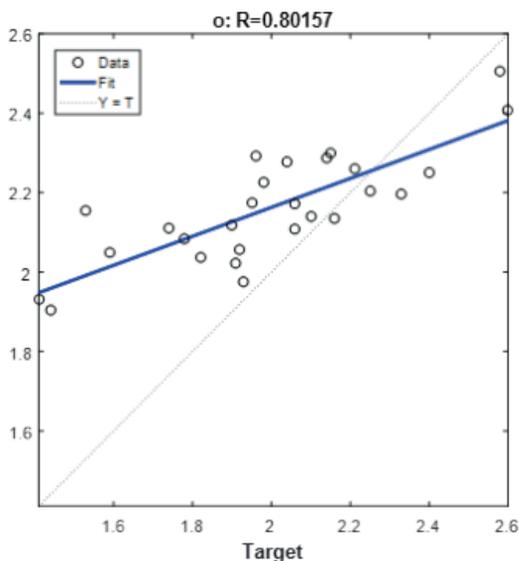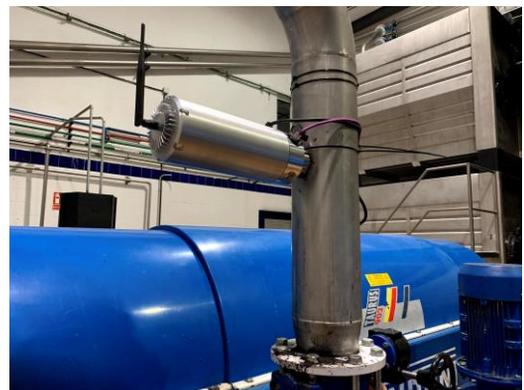
AUTOMATIC DETERMINATION

After the calibration process, the Smart-NIR device automatically determines the fat yield of the pomace passing through the measuring point. During the validation tests of the equipment, the values obtained by the Smart-NIR were compared with the determinations of an accredited laboratory. The results showed an accuracy of 85% over the measurement range and only a 0.2% error in the determination of fat yield.

CONTACT

iSR Smart-Agro

COMPANY

BUSINESS DEVELOPMENT DEPARTMENT

WEB: https://isr.es/

LinkedIn: Integración Sensorial y Robótica, ISR

Email: administracion@isr.es

Person: Arturo López Riquelme

Email: arturo.lopez@isr.es

Phone: +34 686 96 00 24