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ADVANCED OPTICAL TECHNOLOGIES S.L.

Experts on optical sensors technology

AONIR PLATFORM

IN-LINE & REAL-TIME
FOOD PRODUCT
CHARACTERISATION

INTRODUCTION

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Presentation

Origin:

- Spin-off from the research group Applied Photonics Group (University of the Basque Country)

Company mission:

- To apply photonic solutions to all kinds of industries.

Own technology:

- Bladed-rotor monitoring system → Turbines, compressors, fans,…
- Integration of spectroscopy-based sensors in food and pharma processes.
- Biosensors development for food, water and healthcare sector.

PROBLEM

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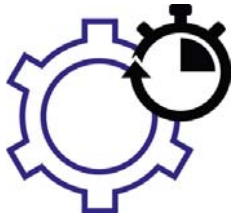
FOOD INDUSTRY DIGITALISATION

- ✓ Data through advanced instrumentation.
- ✓ Useful information.
- ✓ Real-time production adjustment and improved management.

OBJECTIVES:



✓ **Efficiency**
Lower production costs, waste and reprocessing; resources optimisation.

✓ **Quality**
Quality assurance, consistency, customer satisfaction and loyalty.

✓ **Traceability**
Origin and characteristics of the raw material assurance and detection of counterfeit products. <u>Security.</u>

SOLUTION

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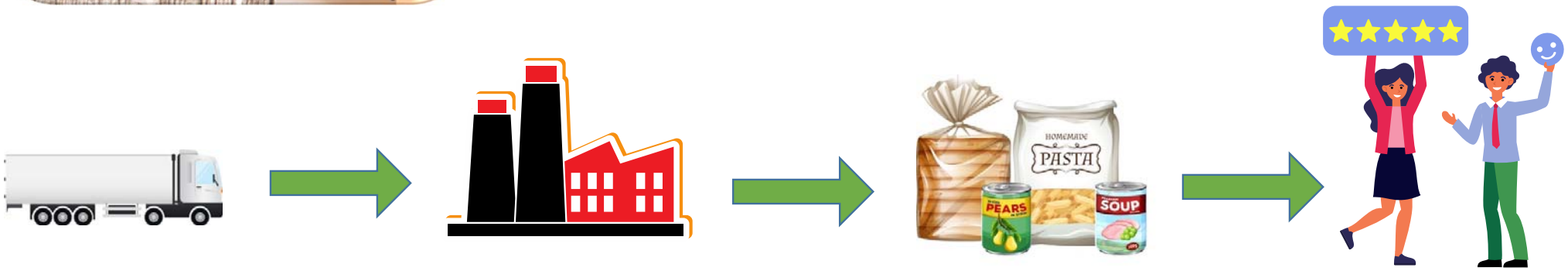
AONIR platform

- ✓ Real-time measurements (seconds).
- ✓ Minimal or no sample preparation.
- ✓ Optimal results for different kinds of products: liquids, powder, grains, slurries, …
- ✓ Multiple parameters determined at the same time.
- ✓ Non-destructive measurements.



SOLUTION

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AONIR platform

- 1 Single device → 2 versions (C/NC)
- Sending final data to PLC/SCADA/ IoT.
- Calibration development and maintenance service.

APPLICATION

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Main food applications

- Dairy
- Oil
- Milk/whey powder
- Grain & flour
- Meat & Fish
- Wine
- Chocolate
- Sauces & condiments

Total quality management from raw materials to finished product
→ increase product **quality and consistency** with tighter control.

Optimisation of mixing times.

Monitoring of fermentation.

Energy savings in drying process → **real-time** determination of moisture.

CASE STUDY

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Smart Sensor Systems for Food (S3FOOD)

Funded from the EU's Horizon 2020 Cascade Programme under Grant Agreement 824769.

Exploration Voucher for Project **NIR SYSTEM FOR IN-LINE MILK CHARACTERISATION** (NIRMILK).

1ST Pilot project to validate AONIR platform in real working conditions with the collaboration of Dulcegrado S.L.

Objectives:

- Prediction of the percentages of fat, protein, lean dry matter and lactose of the milk used in the production of Dulcegrado desserts.
- Development of a simple IoT platform for data visualisation and storage.

Palper
TOCINILLO DE CIELO

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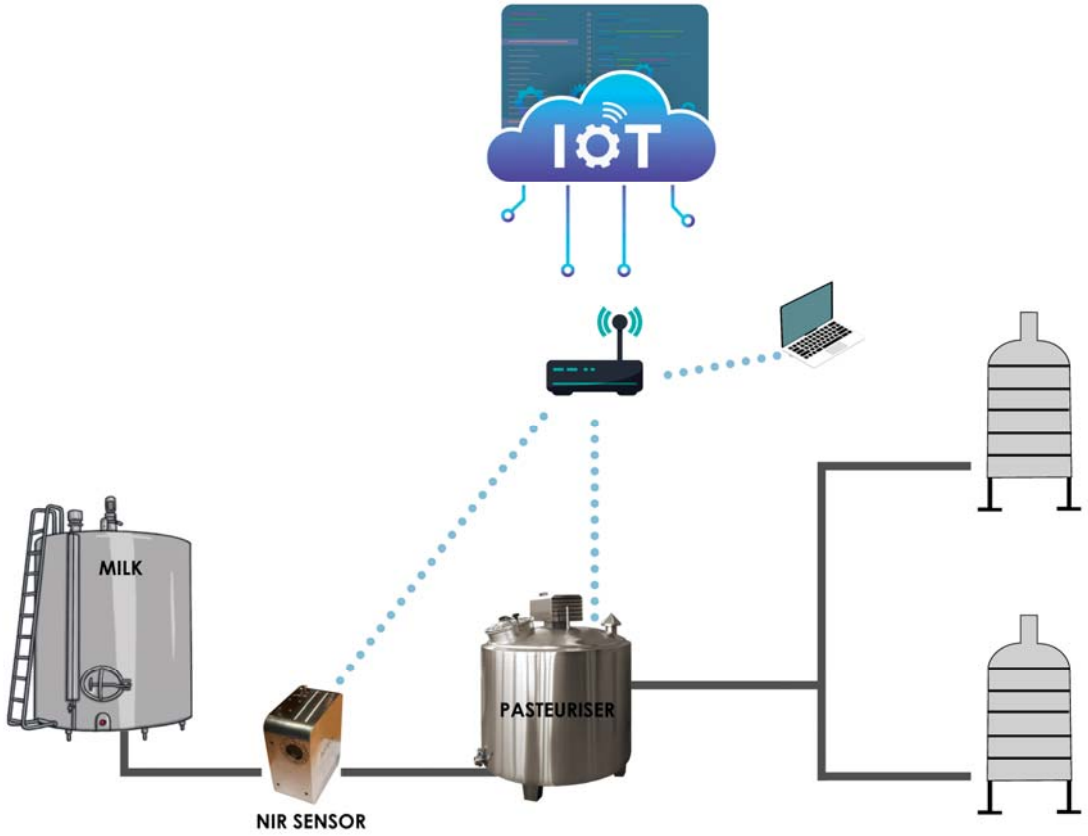
AONIR system installation



NIRMILK PROJECT

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AONIR system installation

NIRMILK PROJECT

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IoT platform

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IoT platform

S3Food Informes

Tue Apr 13 07:39:20 CEST 2021
to
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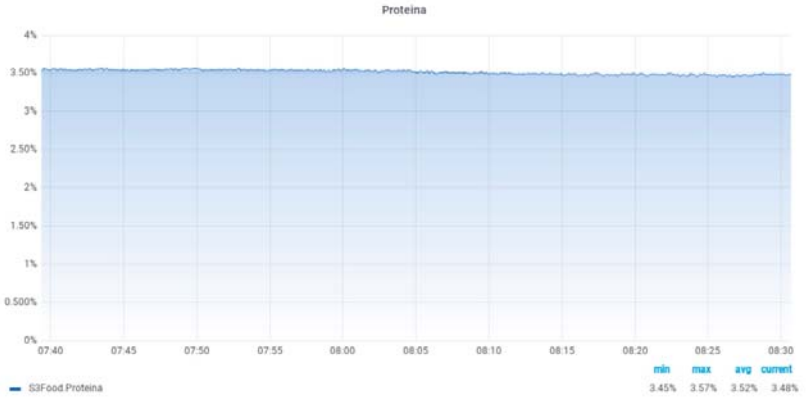

NIRMILK PROJECT

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Project outcomes

I. Demonstration of the **NIR technology potential** for the in-line characterisation of certain milk parameters.

II. Easiness to integrate AONIR into an **IoT platform**.

III. Estimated average reduction of cream for Greek yogurt production: **14,3%.**

IV. Potential high impact in the product **quality homogenisation** → "CLOUD-ASSESSMENT OF DAIRY PRODUCTION PERFORMANCE (CAD2P)"

V. Elaboration of products according to the milk characteristics provided by an **AONIR system.**

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