ADVANCED INSPECTION SYSTEMS

LENZ INSTRUMENTS

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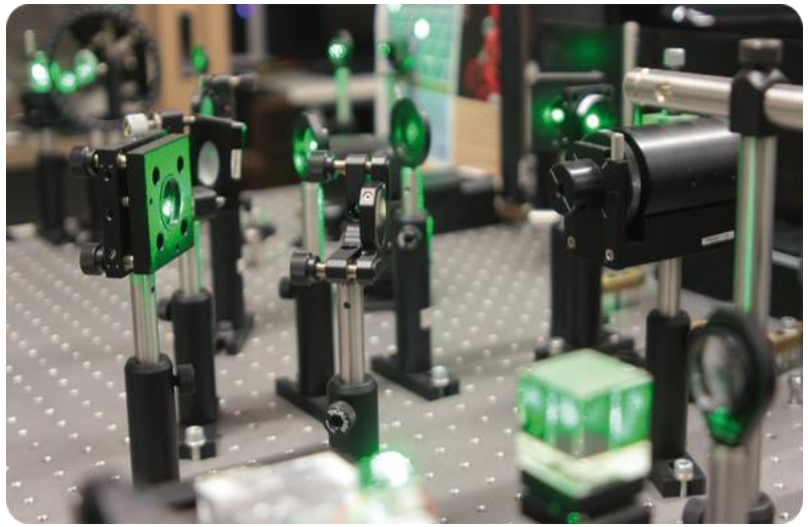
ABOUT US

Technology-based company located in Barcelona with a multidisciplinary and highly qualified technical team. We actively participate in various research, development and innovation projects. We work in close collaboration with our clients, creating long-term relationships based on trust and mutual success.



SECTORS

Our main sectors of activity are the **food** industry, the **recycling** industry and the **photovoltaic** industry.

PRODUCTS

Non-destructive measuring instruments and systems for industrial applications, particularly for the meat sector.

I+D+i SERVICES

Engineering and technical consulting services in mechanical design, optical design, electronic design, automation, programming, artificial vision, data processing and analysis and development of Artificial Intelligence algorithms.

TECNOLOGIES

Vibrational Spectroscopy (**NIRS, Raman, FTIR**), optic Spectroscopy (**UV-Vis**), **Photoluminescence**, Elemental Analysis (**LIBS, XRF**), **Hyperspectral Image**, **Artificial Vision** and **Magnetic Induction**.

SECTORS

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We develop and manufacture advanced inspection systems for different industrial sectors.

Our extensive experience in **non-destructive industrial inspection techniques** together with our knowledge in engineering and industrial design allows us to offer a wide range of solutions to our clients.

Our measurement systems are designed to help companies **control and optimize their processes**, guaranteeing precision and reliability at each stage of the process.

MEAT

- ✓ Online determination of meat quality and composition parameters
- ✓ Automatic reading of barcodes and RFID
- ✓ Detection of foreign bodies

RECYCLING

- ✓ Classification of waste (LIBS or HIS)
- ✓ Waste characterization and classification (NIR/SWIR)

PHOTOVOLTAIC

- ✓ Multisensor system based on spectroscopic techniques for the characterization of thin-film polyvinyl
- ✓ Process control and monitoring

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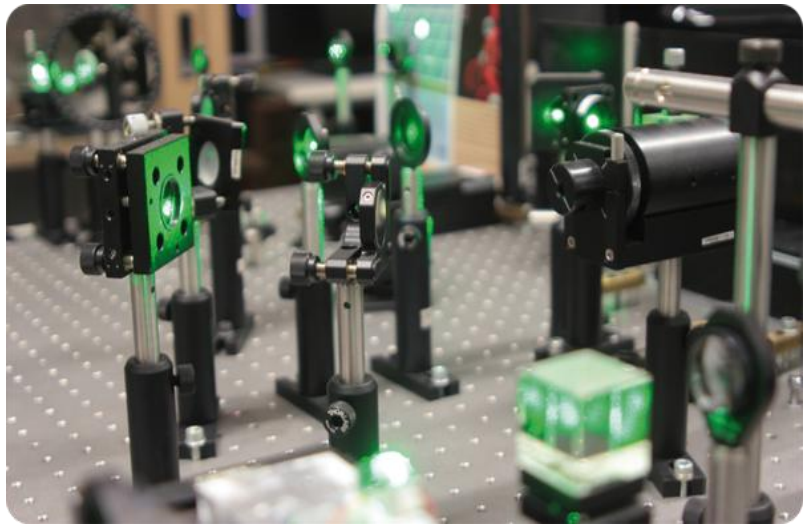

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PRODUCTS

HAM INSPECTOR II™

Online measurement of **fat and salt content** in pieces of meat

- Automatic reading of barcodes and RFID
- Dynamic weighing
- Up to 1.200 pieces/h
- Accuracy in salt measurement <0.15%
- Accuracy in fat measurement <1.5%

MAIN APPLICATIONS

- ✓ Online classification of hams, shoulders and bacon
- ✓ Quality control of the raw material
- ✓ Optimization of the cured ham salting process
- ✓ Monitoring of salt absorption during the salting process (salting in two stages)
- ✓ Optimization of the curing process (loss control)
- ✓ Selection of pieces with reduced salt content

MAIN APPLICATIONS

- ✓ Detection and classification of PSE, DFD and acidic meats
- ✓ Quality control of the raw material
- ✓ Optimization of the salting process in cured ham
- ✓ Product standardization and segmentation
- ✓ Improved yield in cooked ham
- ✓ Improved performance in the slicing of cooked ham and cured ham

QMEAT ANALYSER™

Meat quality analyzer for the **detection of acidic meats** and **PSE/DFD**

Automatic reading of barcodes and RFID

Automatic inspection

Dynamic weighing

Up to 1.200 pieces/h

pH measurement and Vis-NIR spectroscopy

QMEAT PROBE™

Manual probe for the non-destructive analysis of **meat quality parameters**

- Determination of PSE/DFD meats
- Determination of the fatty acid profile
- Determination of Board Taint
- Up to 1.200 carcases o pieces/h
- Small diameter probe (6mm)
- Integration with database or ERP

MAIN APPLICATIONS

- ✓ Online detection of PSE meats
- ✓ Quality control / Supplier control
- ✓ Improved yield in cooked ham
- ✓ Reduction of slicing defects
- ✓ Product segmentation

TRIM SCAN™

Online fat analyzer in
lean cuts/trimmings

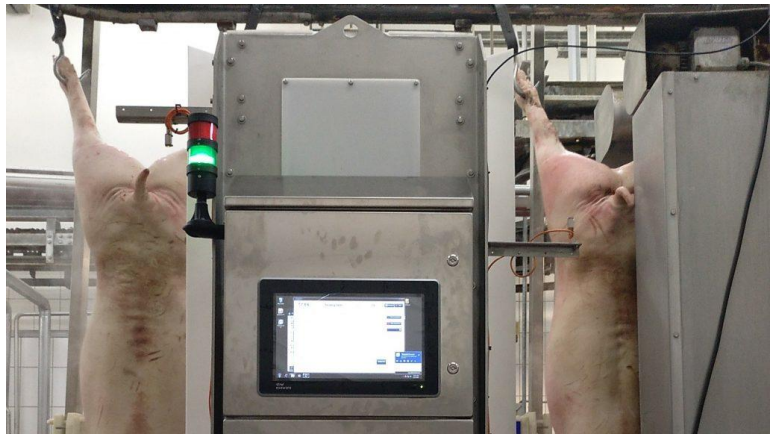
- Recipe and traceability manager
- Up to 30t/h of production
- Dynamic weighing
- Integration with database or ERP
- Metal detection (e.g. knives, bolts, screws)

MAIN APPLICATIONS

- ✓ Determination of fat/lean content in trays of meat
- ✓ Determination of the commercial value of lots of meat
- ✓ Online control of fat/fat content in batches of meat
- ✓ Automated control of fat/fat content in product recipes
- ✓ Preparation of batches of meat with specific fat/lean content

MAIN APPLICATIONS

Through the implementation of a traceability system based on RFIDs inserted in the hooks, online information is obtained on the **composition of the carcass** at any point of the line for the control and optimization of the production process.



gm SCAN
PIG CARCASS GRADING

Automatic and contactless classification of **white** and **Iberian pork carcasses**

- Up to 1.000 carcasses/h
- Approved for the **SEUROP** classification system
- Independence of race or genetics
- Prediction of the **total lean/fat** percentage
- Prediction of the percentage of lean/fat and weight of **primary cuts** (ham, bacon and shoulder)

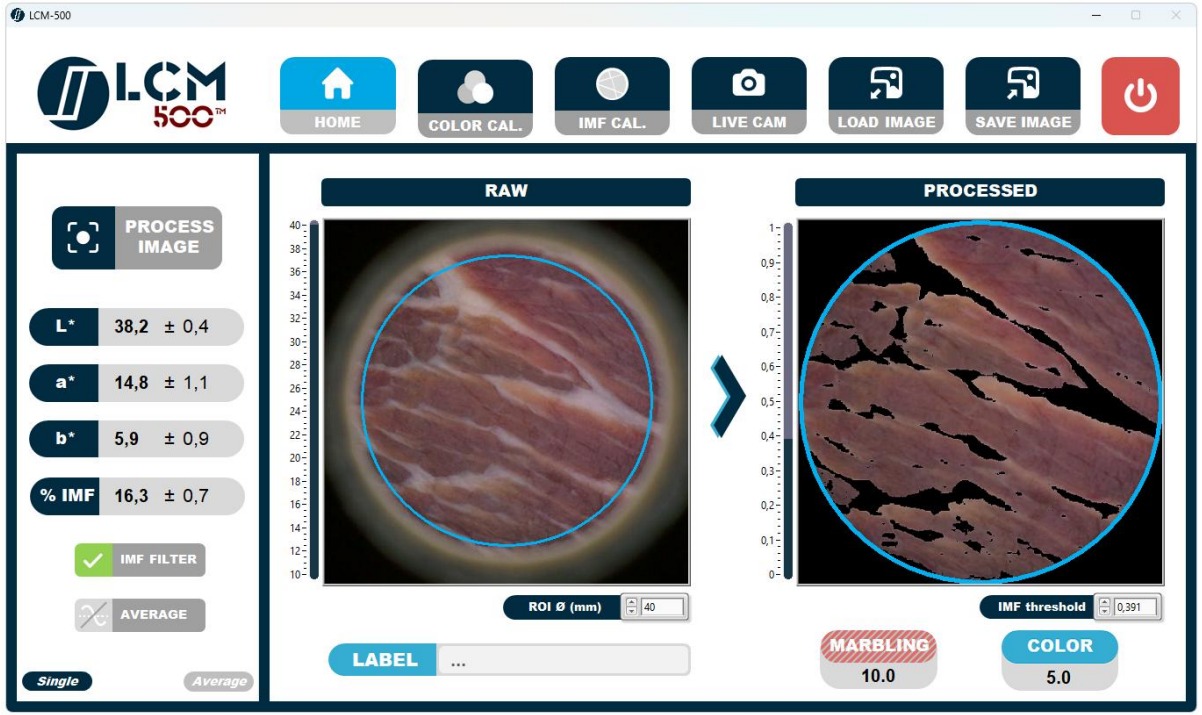
LCM 500™

Meat **colour and marbling** analyser

- Portable imaging colorimeter
- Color measurement filtering out the fat
- Image segmentation for %IMF calculation
- Dedicated software
- Food-grade polymer probe head

MAIN APPLICATIONS

- ✓ Objective colour assessment of fresh, cooked and dry-cured meat
- ✓ Quality control of raw meat and processed meat products.
- ✓ Detection of PSE (Pale, Soft, Exudative) and DFD (Dark, Firm, Dry) defects
- ✓ Estimation of Intra Muscular Fat (IMF) in fresh hams
- ✓ Evaluation of marbling in meat



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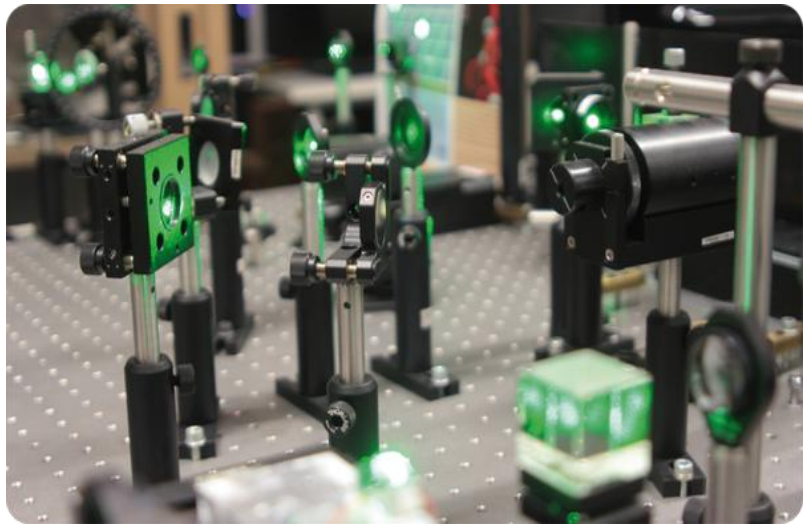

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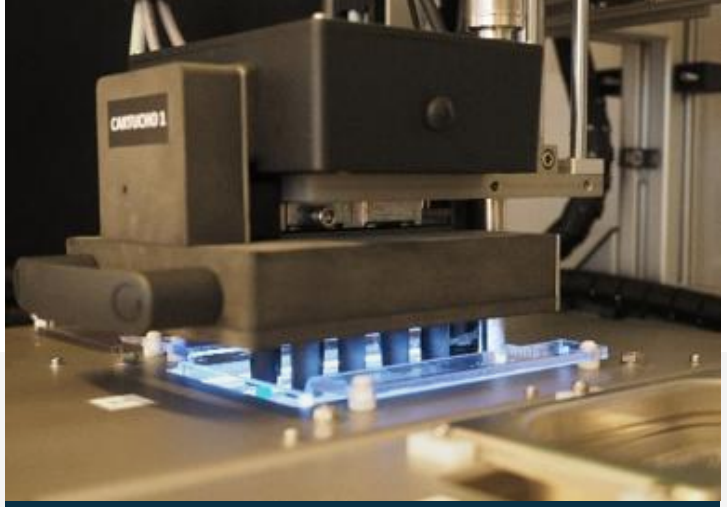


Control and Automation

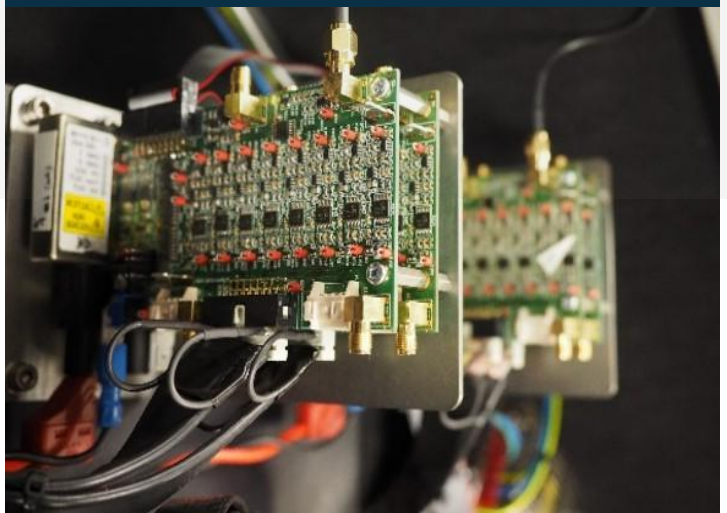
Industrial Inspection Systems

Artificial Intelligence

Traceability systems

Advanced Optical Systems

Electronics and Software



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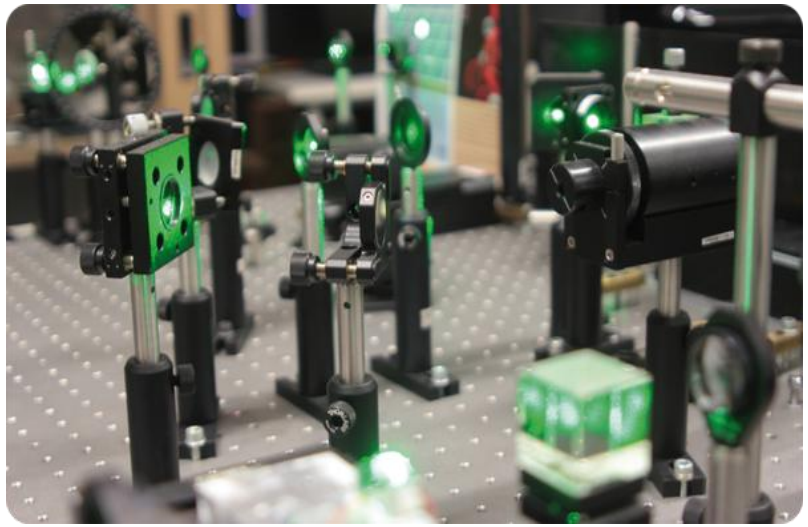

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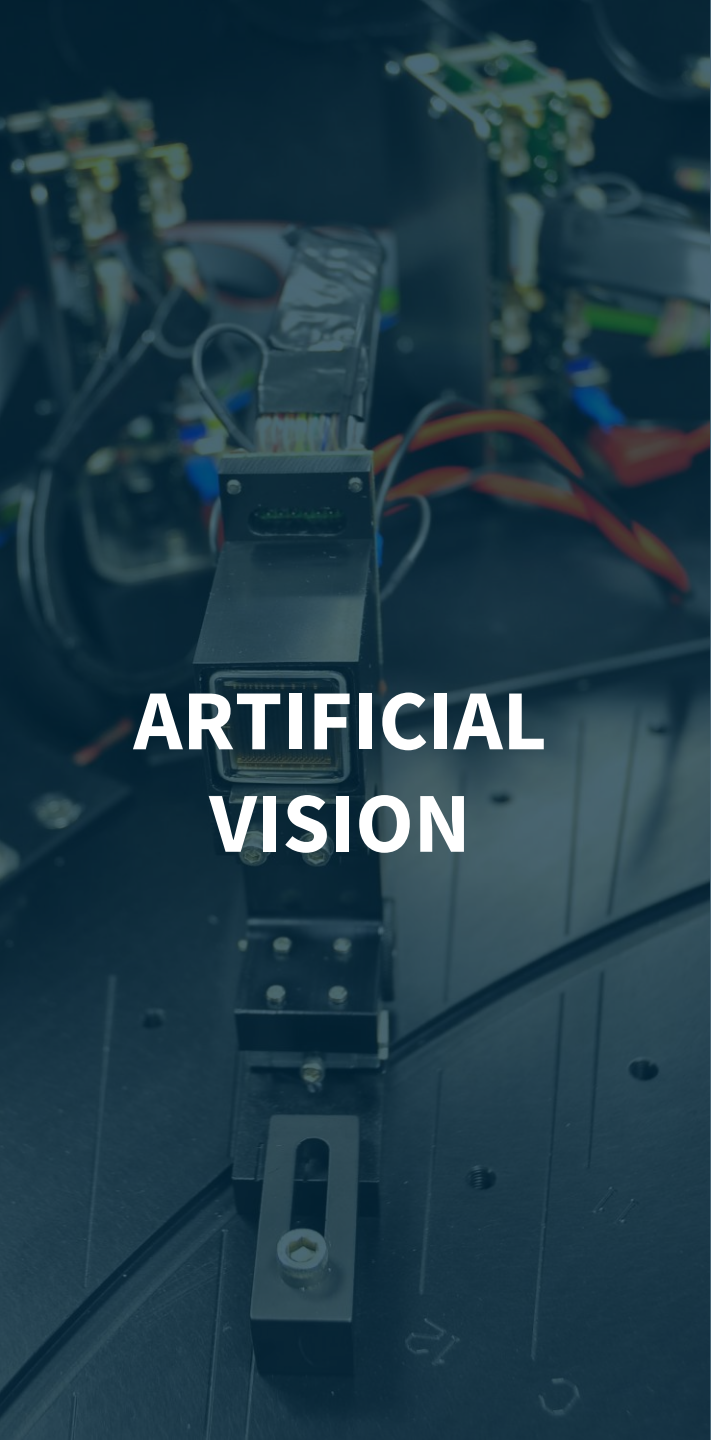
TECNOLOGIES

ARTIFICIAL VISION

TRACEABILITY SYSTEMS FOR MEAT PRODUCTS

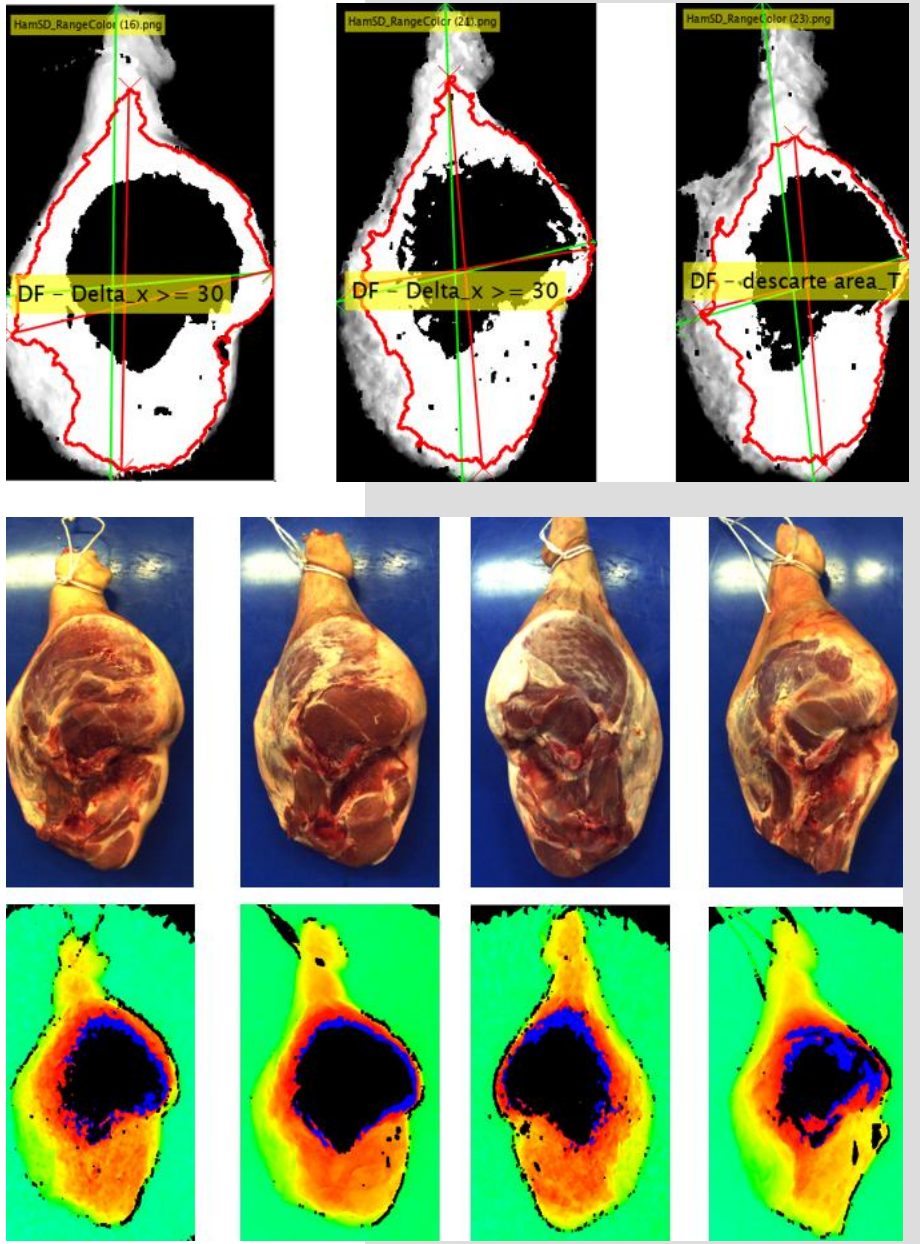
✓ System based on vision cameras for the **automatic reading** of barcodes for the labeling of meat products



ARTIFICIAL VISION

AUTOMATIC QUALITY CONTROL IN THE MEAT INDUSTRY

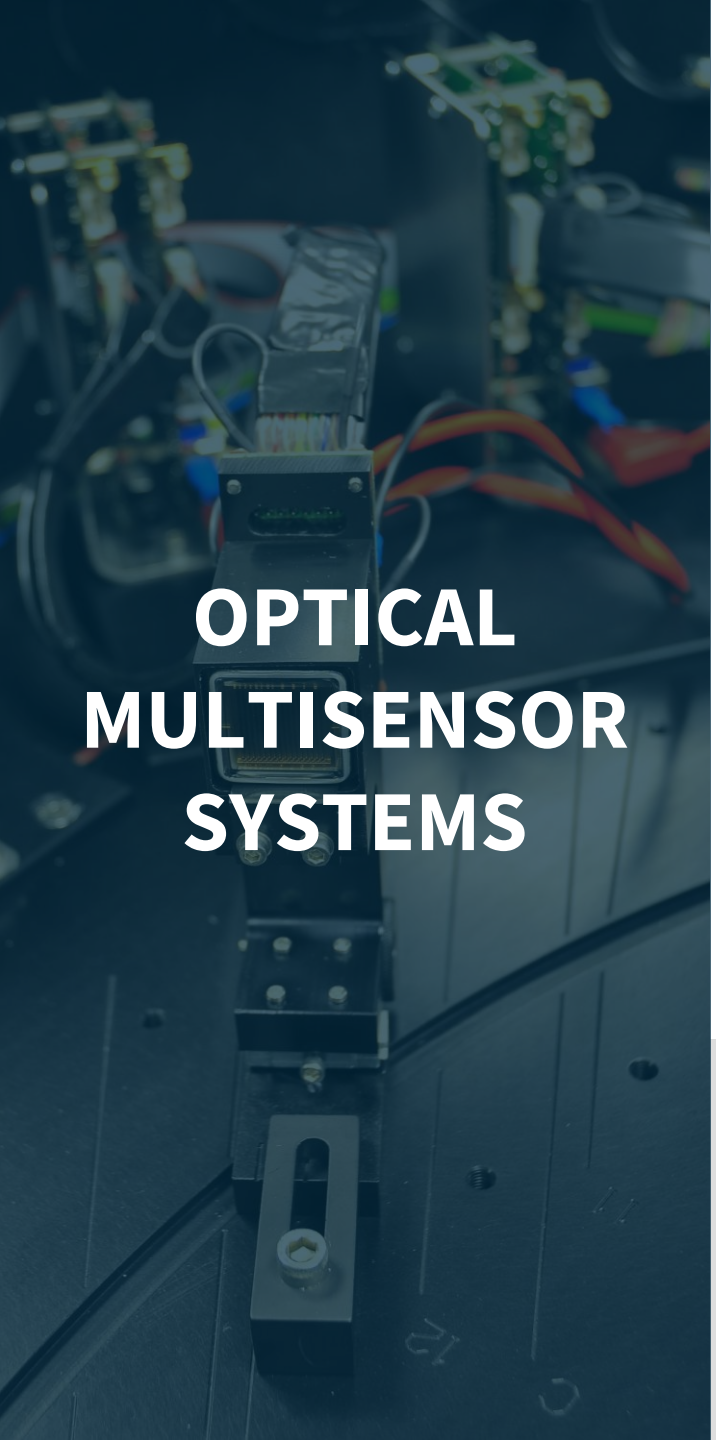
- ✓ Detection of polishing defects in fresh hams: skin cut defect and fillet defect
- ✓ **Image processing** for online control
- ✓ Automated process



HYPERSPECTRAL IMAGE (HIS)

CHARACTERIZATION AND SEPARATION OF CONSTRUCTION WASTE

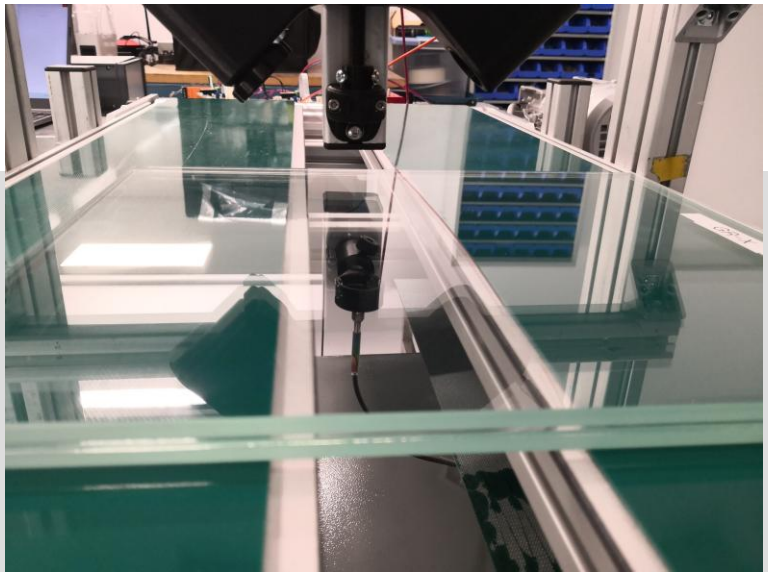
- ✓ Separation of three fractions: concrete/ceramic, plaster and foams
- ✓ Size of fragments: 20 – 50mm
- ✓ **SWIR** spectral region (930 – 2,500nm)
- ✓ Belt speed: 1.0 – 2.0 m/s
- ✓ Processing speed: > 1tm/h



OPTICAL MULTISENSOR SYSTEMS

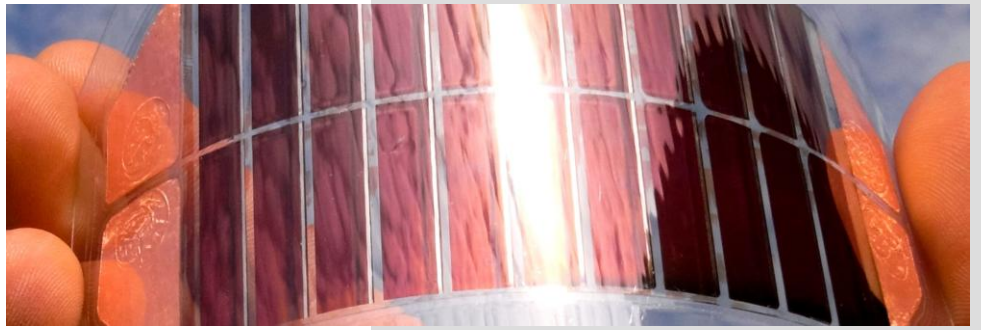
CHARACTERIZATION OF THE PROPERTIES OF LAMINATED GLASSES FOR CLASSIFICATION AND RECYCLING

- ✓ **Raman**, **IRS** (Infrared Spectroscopy), **Fluorescence** and **OS** (Optical Spectroscopy)
- ✓ Evaluation of optical parameters (yellowing, turbidity, transmittance) and chemical/structural properties of the PVB layers (degradation of the polymer, content and type of plasticizer)
- ✓ Artificial Intelligence algorithms for classification in real time
- ✓ Inspection capacity: 2,700 kg/h of laminated glass

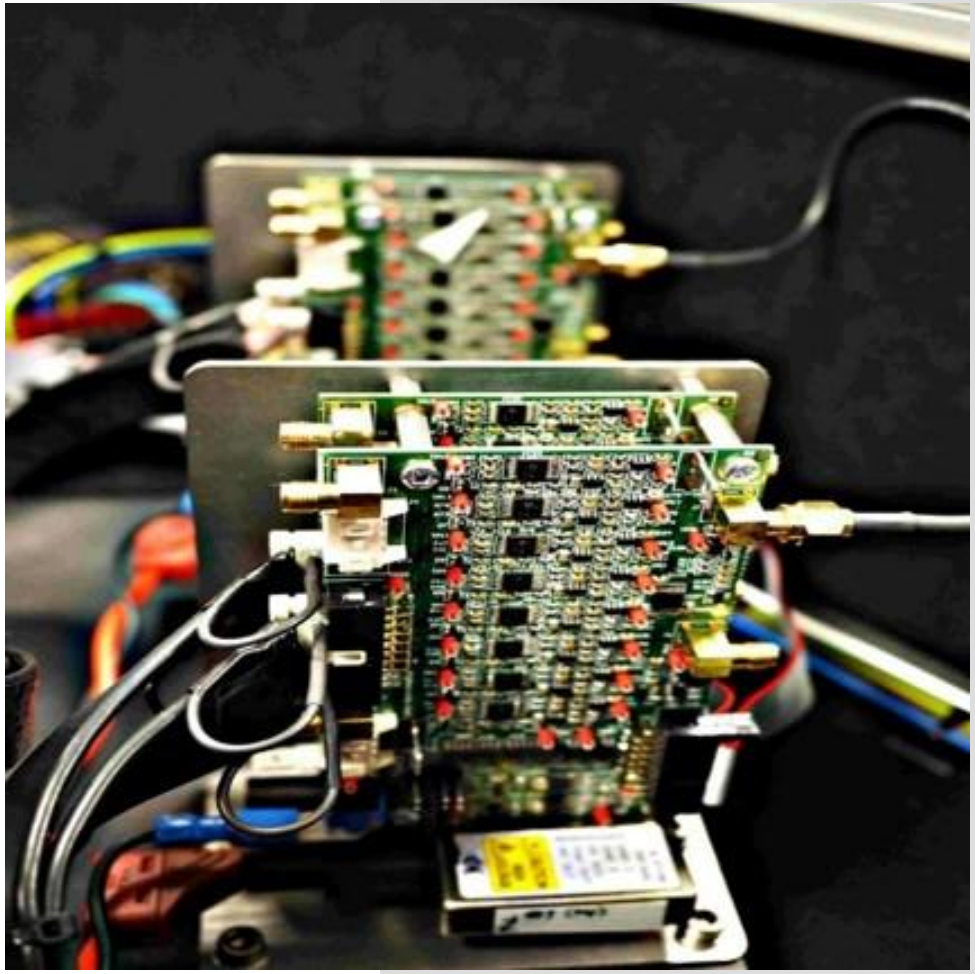


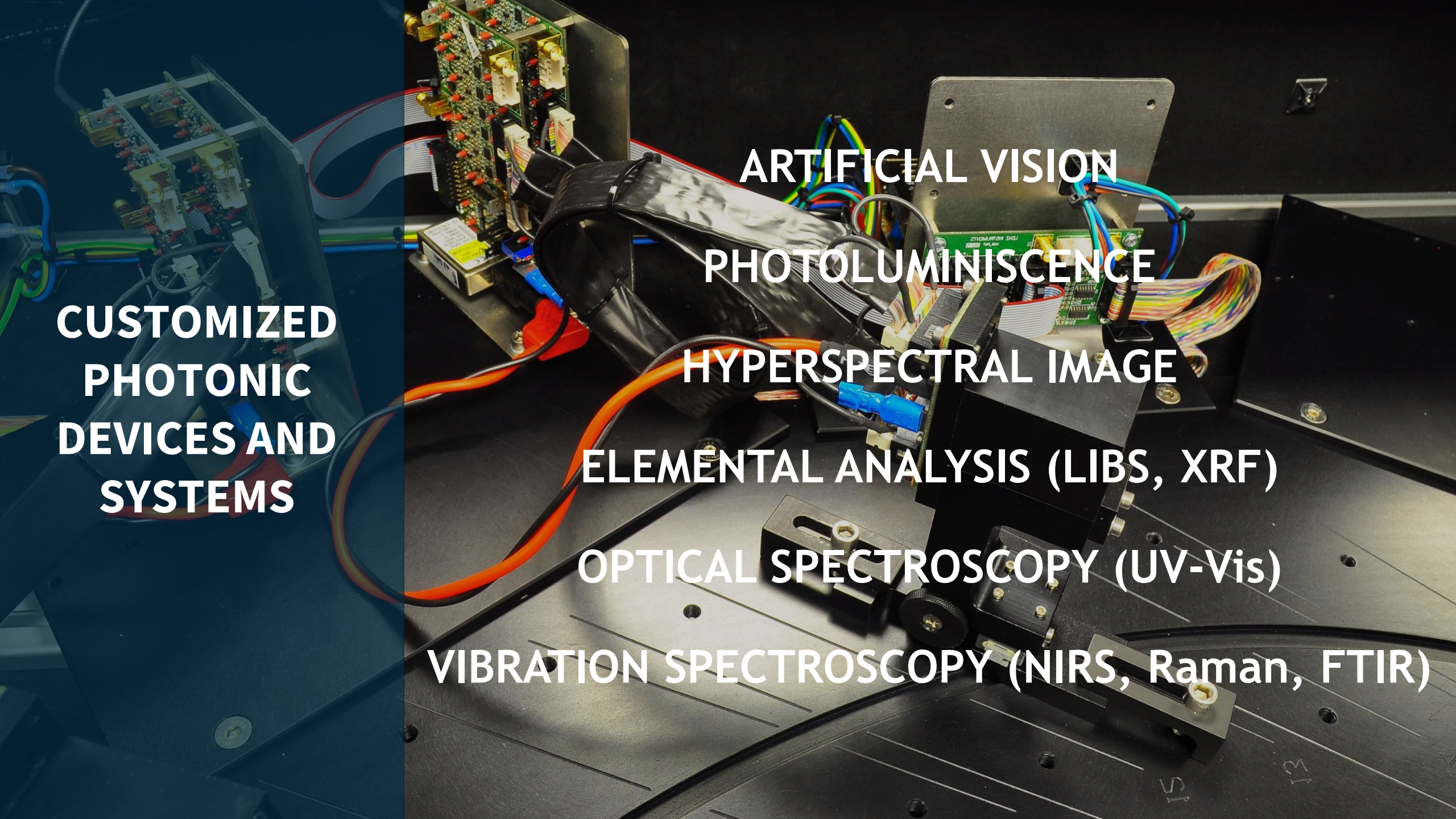
OPTICAL MULTISENSOR SYSTEMS

CHARACTERIZATION OF PHOTOVOLTAIC COATINGS



- ✓ Inspection systems based on non-destructive methods for the detection of defects in solar cells, including flexible and transparent ones
- ✓ Process monitoring





CUSTOMIZED PHOTONIC DEVICES AND SYSTEMS

ARTIFICIAL VISION

PHOTOLUMINISCENCE

HYPERSPECTRAL IMAGE

ELEMENTAL ANALYSIS (LIBS, XRF)

OPTICAL SPECTROSCOPY (UV-Vis)

VIBRATION SPECTROSCOPY (NIRS, Raman, FTIR)