

Lenz Instruments

QMEAT-Analyser™



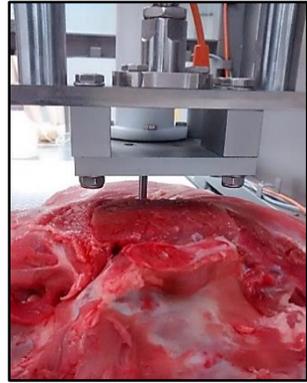
- Automatic detection and sorting of PSE and DFD meats
- Quality control of raw meat
- Yield improvement in sliced dry-cured and cooked ham
- Yield improvement in cooked ham
- Optimisation of the salting process in dry-cured ham
- Product standardisation
- Product segmentation

QMEAT-Analyser™

DESCRIPTION

QMEAT-Analyser™ is an automatic inspection and sorting system able to identify PSE and DFD meats in line, at 600 pieces per hour.

The system incorporates a stainless steel penetration probe, which is coupled to a high sensitivity fiber optic spectrometer. The probe is actuated by a robotic arm to inspect meat at different depths.



TECHNOLOGY

The system provides a meat quality index, which is related to the water holding capacity of meat. This index is established based on the depth profile Vis-NIR spectra of the internal meat tissues.

The patented technology has been developed in collaboration with several meat producers.



MAIN APPLICATIONS

- Automatic detection and sorting of PSE and DFD meats
- Quality control of raw meat
- Yield improvement in sliced dry-cured and cooked ham
- Yield improvement in cooked ham
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- Product standardisation
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QMEAT-Analyser™

Applications: Optimisation of the cooked ham process



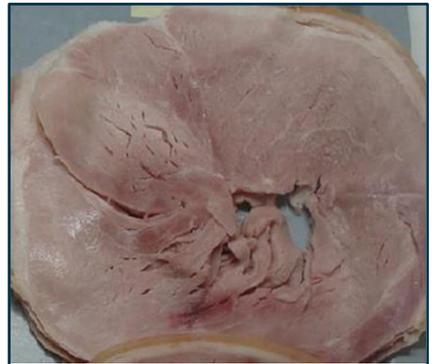
Water holding capacity (WHC) is a key quality parameter in the production of cooked ham.

Raw meats with low WHC – PSE meats, lead to substantial cooking losses. In the production of natural extra cooked ham, cooking losses can be up to 40%. In addition, PSE meat favours texture and colour defects in the final product, which further reduces the production yield, particularly in the case of sliced products.

QMEAT-Analyser™ can be used in the meat processing line to implement product segmentation strategies, and quality control of the raw meat.

The system allows to define different threshold levels or PSE index to sort the incoming raw meat into different quality groups.

- **PSE defect in a cooked ham slice**

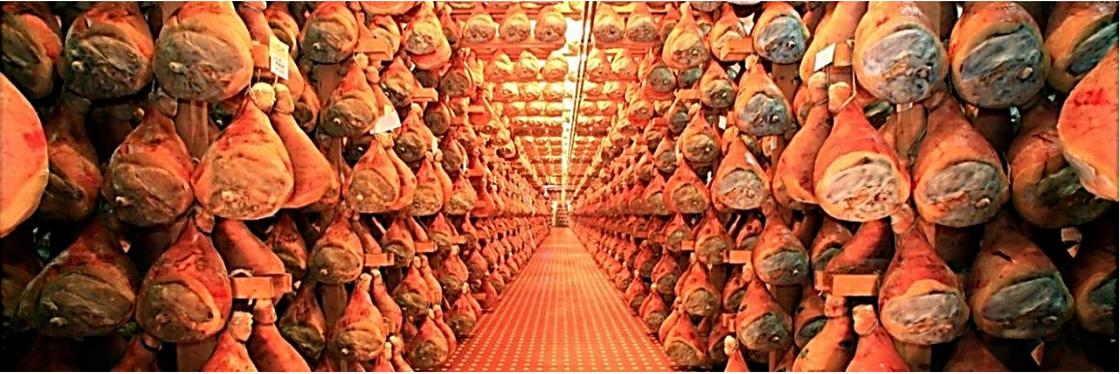


- **QMEAT-Analyser™ in-line sorting**

The screenshot displays the QMEAT-Analyser™ software interface. At the top left is the LENZ INSTRUMENTS logo. The main display area shows a green color calibration target on the left and a white box containing the text "PSE INDEX: 0.63" on the right. Below the target is a "Cleaning Mode" button. At the bottom right, there is a "PSE LIMIT VALUE:" label above a box containing "1.15". The interface also shows a date and time "01/07/16 13:35" and two icons (a wrench and a bell) in the top right corner. At the very bottom, there is a small text line: "Ready for testing a new product" followed by a small URL.

QMEAT-Analyser™

Applications: Optimisation of the dry-cured ham process



Water Holding Capacity (WHC) is an intrinsic meat quality parameter of significant relevance for the dry-cured ham process.

In a dry-curing process, meats with excessive WHC - DFD meats, increase the risk of spoilage, the formation of phosphate crystals, and undesirable pastiness and adhesiveness of the final product, decreasing consumer acceptability.

On the other hand, meats with poor WHC - PSE meats, are prone to quality defects such as red ring of nitrification, white film and, pastiness.

The incidence of PSE meats can vary from 10% to 30% depending on the abattoir, having a direct influence in the quality of the final product. Texture defects due to PSE and DFD meats reduce the slicing yield, and lead to product quality problems (broken slices, holes), which increase the production cost.

QMEAT-Analyser™ can be used in the meat processing line to implement product segmentation strategies, and to control the quality control of raw meat.

- ***Yield losses in the slicing operation***



- ***White film in in vacuum packed hams***



QMEAT-Analyser™

Technical specifications

General description

QMEAT-Analyser™ includes an inspection technology able to identify PSE and DFD meats. The system allows to configure different threshold levels or PSE index to perform an optimum segmentation of the raw meat into different categories.

This analyzer has been designed to work automatically in an industrial environment. The system is able to perform an in-line inspection of raw meat at a speed of 600 pieces per hour. The system includes a flexible communication interface to be connected to a sorting machine and/or to the ERP of the plant.

The system may incorporate (optionally) a weighting system and a barcode or RFID reader.

Main features

- Automatic sorting (600 p/h)
- Guided User Interface
- Real-time monitoring of the production. Statistics by batch and by provider
- Control via PLC
- Connection to industrial bus
- Dynamic weighting (optional)
- Conveyor auto-cleaning system (optional)
- Code bar or RFID reader (optional)



QMEAT-Analyser™

Technical features

Weight	350 kg
Dimensions	150cm (L) x 100cm (W) x 205 cm (H)
Power supply	Monophasic 230V, 50Hz
Consumption	≤1kW
Operating Temp	0°C – 35°C
Humidity	0% - 95% (No condensation)
Construction details	Mechanical structure in stainless steel AISI-304. All parts potentially in contact with meat are made of food grade materials.
Index protection	IP65 or IP69K
Drive motor	Drum motor (IP66), Stainless Steel body (Interroll España, S.A.).
Conveyor belt	Modular band, food compatible PP – Habasit AG. Autocleaning system (optional) – Habasit HyCLEAN
User interface	Tactile screen (IP65)
Data interface	Ethernet 10/100, OPC

Standards

Lenz QMEAT-Analyser™ is CE labelled and complies with the following directives:

- EMC (Electromagnetic Compatibility Directive) 2004/108/EEC
- LVD (Low Voltage Directive) 2006/95/EEC
- MD (Machine Directive) 2006/42/EEC

About LENZ INSTRUMENTS S.L.

Lenz Instruments S.L. is a technology-based company focused on the development and commercialization of Instruments and systems for industrial applications, as well as on providing engineering services in fields related to process optimization and monitoring, process control, traceability, electronic design, software, and automation.

Our key fields of expertise include non-destructive or contactless inspection technologies based on ultrasound, electromagnetic sensors, vision systems (2D, 3D), and spectroscopy (UV-Vis-NIR, SWIR, Raman, and LIBS).

Created in 2011, the company is part of an international group of Applied Research and technology transfer employing over 100 engineers, scientists, and consultants.

We are located in a single two story building in the 22@ innovation district in Barcelona. The 22@ innovation district is a business area integrated by many technological companies, universities and research and technology transfer centres. We have a mechanical workshop and laboratories for the development, manufacturing, testing and certification of our own systems.



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