



Deep Tech for Food Quality — & Safety

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collaborate to innovate

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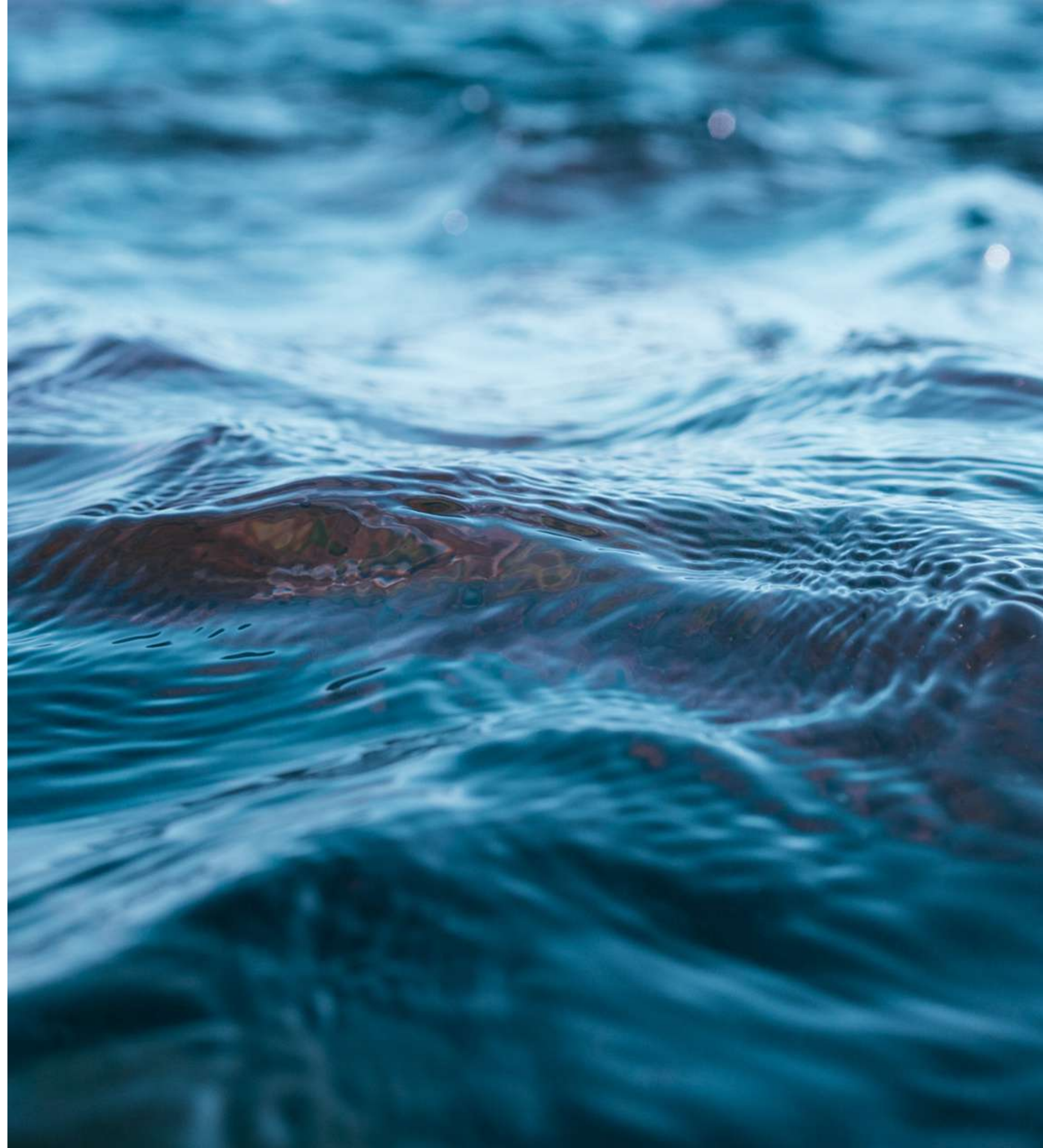
Plant Health

- /01** Drones for weed-infested areas identification and phytosanitary applications
- /02** Automated detection of pests in greenhouses
- /03** microscopy for genetic research and plant analysis

Water treatment

/01 Water quality sensors and sondes:

- pH
- Turbidity
- Conductivity
- Dissolved Oxygen
- Ammonium
- Chloride
- Algae
- Rhodamine



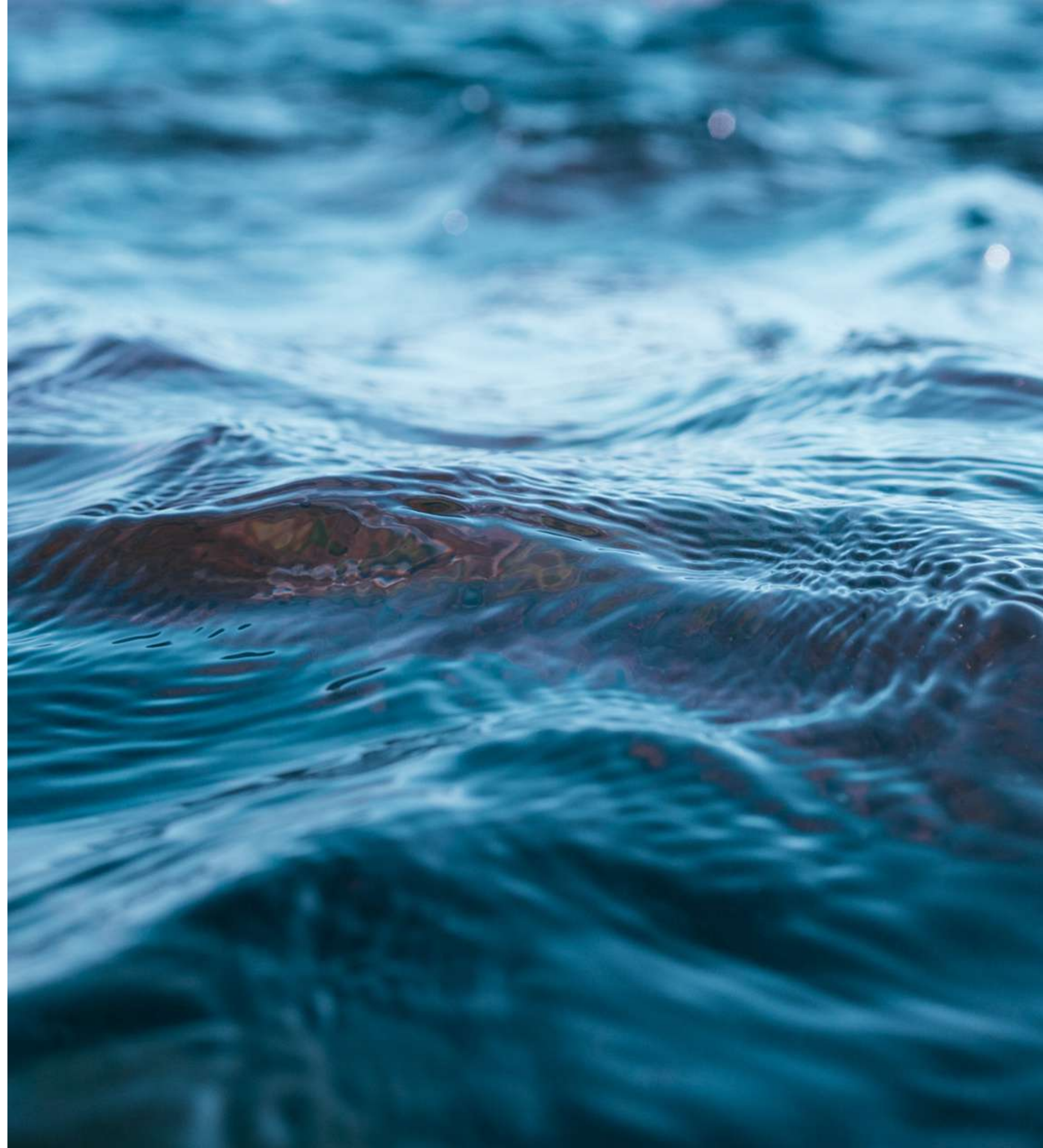
Water treatment

/02 Detection of micro contaminants /pathogens in water

/03 Detection of organic compounds (VFA, TOC, THM) in water or biotechnological processes

/04 Quantification and typifying of microorganisms in water (in-line microscope systems)

/05 Microscopy for water resources analysis





Food Processing

/01 Measurement of internal quality and composition:

- Dairy
- Fruits and vegetables
- Rice and grain
- Meat and fish
- Beverage
- Processed food
- Spices and herbs
- Coffee and tea
- Nuts and snacks
- Sugar and chocolate
- Oil



Food Processing

/02 Pre-harvest and post-harvest analysis and classification: detection of defects in food by colour analysis and by geometry (shape and alignment)

/03 Detection of foreign bodies and elements inside food: plastics, glass, insects, etc.

/04 Proliferation studies

/05 Granulometry, turbidity and concentration studies

/06 Detection of unwanted elements

/07 Shelf life determination



Food Processing

- /08** Counterfeit and adulterated products
- /09** Microbiological stability, nutritional, gluten and other allergens analysis
- /10** Detection of chemical components in air and liquid
- /11** Toxicity and eco-toxicity studies
- /12** Ingredients encapsulation
- /13** Food sorting through lasers
- /14** Pilot plant to develop and optimize food products



Food Processing

- /15** Specific plant for pre-cooked, ready-to-eat, convenience foods
- /16** Study of texture parameters and emulsion stability
- /17** Cultivation and real-time monitoring of biofilms
- /18** Monitoring of fermentation processes through detection and quantification of microorganisms
- /19** Temperature mapping of cooked food
- /20** Determination of the degree of cooking in meat or process of cooking food



Food Processing

/21 Alternative technologies to heat:

- Electrical pulses
- Light pulses
- Modified atmosphere
- Combination of techniques

/22 Control of carcinogenic and mutagenic products in heat producing processes:

- Baking
- Frying
- Cooking
- Smoking

/23 Solutions for digital security (cybersecurity) of equipment, facilities, and devices bearings, condition of robots



Food Processing

/24 Quality control of production processes:

- Artificial vision
- Laser scanner
- Thermography
- Physiochemical and microbiological analysis
- Image control
- Artificial Intelligence

/25 Development of functional surfaces: easy-clean surfaces, anti-freeze, anti-condensation, anti-bacteria, biofilm, etc.

/26 Visualization of the processed data (mobile app, VR glasses, etc.)

Packaging

- /01** Active and intelligent packaging
- /02** Hygienic design
- /03** Functional packaging using printed electronics
- /04** Materials with water-repellent and antibacterial properties
- /05** Fill level check
- /06** Thermocompression of packaging monitoring



Packaging

/07 Control of sealing:

- Induction sealing
- Frozen material inside an opaque container check
- Vacuum loss determination
- Control of filling of opaque PET containers
- Control of gluing of cartons in distribution boxes

/08 Heat sealing check

/09 Determination if the food is inside the container



Packaging

/10 Inspection of foreign bodies (fungi, hair, insects, small pieces of glass or metal etc.) in packaging materials

/11 Temperature measurement in eg. bottle filling control

/12 Colour analysis (correct printing) and packaging alignment)

/13 Labelling control, defects in containers inspection, palletizing and depalletizing monitoring

/14 Artificial vision systems, components and solutions for filling, bottling and packaging lines





Logistics

- /01** Monitoring of stored products to minimise spoilage
- /02** Monitoring of ethylene, CO₂ and O₂
- /03** Determining the storage area in the cold silo depending on the temperature of fruit when delivered
- /04** Determining the curing point of meat products

SECPHO | Best Practices

Collaboration projects between Deep Tech and Agrifood Entities fostered by secpho:

- /01 IoT platform for pest and plagues management in citric plantations
- /02 Sensing solution installed on manned vehicle for fertilizer Management
- /03 Real-time and in line monitoring of olive oil manufacturing process
- /04 Smart packaging for oxigen measurement in the cointainers
- /05 Olive oil quality and classification control
- /06 Real-time and in line detection of foreign elements in cereals sorting line
- /07 Drone for precision agriculture (water stress, crop analysis, estimation of crop yields, 3D modelling of plots)



Collaboration Opportunities

— **Access to technology providers**

— **Joint Projects**

— **Know-how transfer**



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