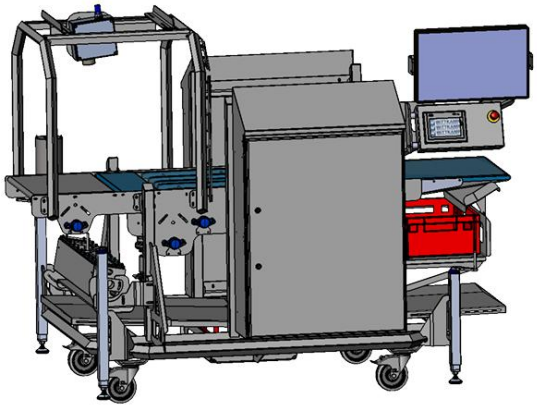
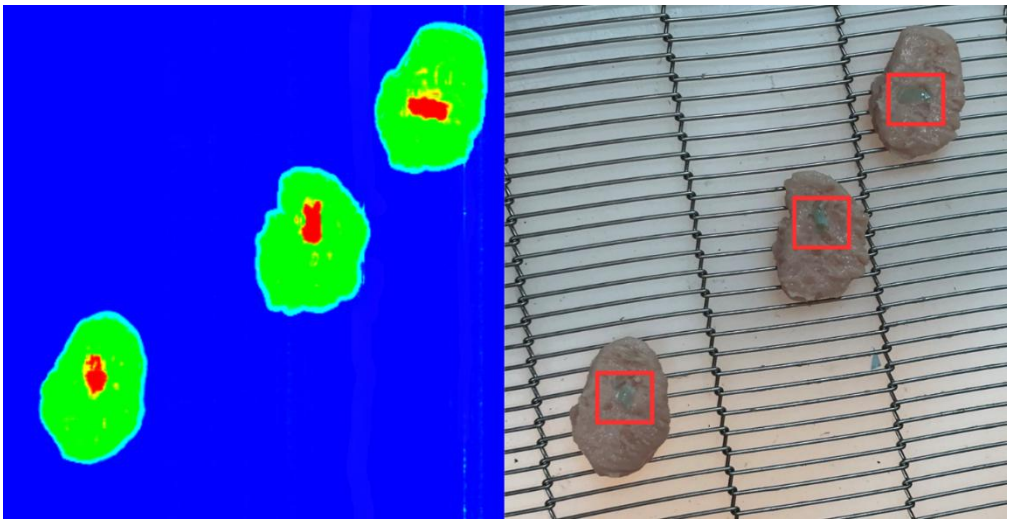
System Overview DeepHyperCheck

System Description

DeepHyperCheck is a compact, modular machine vision system that utilizes hyperspectral imaging and specialized illumination technologies to identify foreign objects in and on products during continuous processing.
The system is optimized for both inline inspection and OEM integration as a plug-in solution, with a focus on detecting plastic fragments, bones, and other solid contaminants - both on the surface and within products.
The system is designed as a transmission (through-light) unit: the hyperspectral camera is positioned above the conveyor belt, while the illumination unit is installed below it. Inspection is performed through an opening in the conveyor belt.
An automatic rejection mechanism is available as an option.





System Information

Product Characteristic

- Standard application for product thicknesses up to approx. 10 mm (reference: nuggets); within this range, the detection thresholds specified below apply
- Product thicknesses of 12–15 mm are possible; however, detection performance then depends on the product and must be specified on a project-specific basis.
- Suitable products: primarily raw meat products (e.g. fillets, sliced meat); detection performance is significantly reduced for cooked products
    - Raw and cooked meat products (e.g. nuggets, fillets, sliced meat)
    - Breaded products (e.g. nuggets, schnitzel) are not suitable
      Plant-based/vegan products are suitable only to a limited extent, likely only at significantly reduced thickness

Detection Sensitivity for Foreign Objects

Foreign Objects	Detection Sensitivity	Notes
Blue plastics (e.g. blue film, blue gloves)	from approx. 2–3 mm edge length	Highest detection sensitivity within the system's spectral range
Other colored plastics (e.g. violet/dark films)	from approx. 4–5 mm edge length	Detection threshold increases with decreasing color intensity or less favorable colors
Transparent plastics	Not detectable	Completely colorless/transparent films cannot be identified
Solid foreign objects (e.g. hard plastic)	3–4 mm edge length	Reliable detection with uniform shape
Bones (raw)	5–8 mm length	Detection performance depends on product and project-specific conditions
Bones (cooked)	Detectable to a limited extent	Detection significantly more difficult than in raw products; must be verified on a project-specific basis

Additional Boundary Conditions

- Belt speed: 300 mm/s to ensure the specified detection performance; higher speeds of up to 500 mm/s are possible, but only for significantly larger foreign objects
- Conveyor belt width: currently 600 mm; 800 mm should be feasible without issues; 1000 mm is still under evaluation
- Conveyor belt requirements: a gap of at least 7 mm width is required (to be provided by the customer); the system must be precisely aligned above this gap
- Ambient temperature: -2°C to +20°C
- Material: V4A stainless steel; polycarbonate viewing window
- Cleanability: IP69K-equivalent (suitable for food processing environments)
- System currently configured for flexible deployment; a robust flange should be provided to ensure repeatable and precise alignment