Designed to Survive®

INSPECTION SOLUTIONS FOR PROTEIN

MEAT POULTRY FISH

Protein

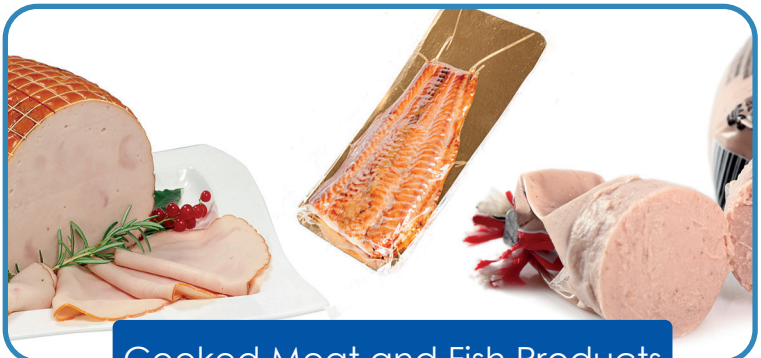
Meat, Poultry and Fish Inspection

The Meat, Poultry and Fish sector covers a wide variety of different animal based protein products, which starts with raw, primary-processed meat (i.e. beef, pork, lamb), poultry (chicken or turkey), fish and seafood.

It extends to secondary processing and beyond, which includes marinated, fermented or cooked meats, bacon, sausages and hot dogs, speciality meats, meat puddings, pâté and terrines, and includes ready to cook raw meat and fish products, whether they are fresh or frozen.

Raw Meat, Poultry and Fish

Raw Prepared Products

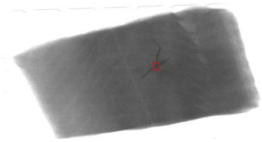


Cooked Meat and Fish Products

Raw Cured and Fermented

Inspection challenges with protein applications

Wide variety of sources of contamination



- Failed processing machinery (i.e. bolts, screws, washers)
- Blade fragments produced from cutters, grinders, mincers, mixers, etc. damaged during processing
- Needles from enhancing products introduced during processing
- Bone fragments remaining after deboning
- Materials introduced to aid preservation and packaging (i.e. chub clips)

Products can be tough to inspect and difficult to handle

- Wet products can be challenging for metal detection as they create product signal that affect the metal detector. This is particularly the case with fresher meat and whole chickens
- High salt or high iron content can affect sensitivity with metal detectors
- Wet and slimy - difficult to handle
- Variation in shape, size and condition

Packaging types present their own challenges

- Metal and foreign body detection in a variety of packaging types (plastic, containers, foil, metallized film)
- Foil trays and metallized packaging present challenges for metal detection

Hygiene and robustness are critical

- Processing environments are cold, wet and high-care
- Equipment needs to be tough enough to withstand repeated harsh washdown wet cleaning, including CIP and SIP where applicable
- Hygienic design for optimal cleaning, removal of food debris and prevention of parasites and bacterial harbor - particularly to prevent cross contamination of good product

Why Loma is the right choice

Long-standing Experience

Since 1969, Loma has developed a significant experience in the inspection of meat, fish and poultry products and understand the challenges that apply to check and detect equipment

Designed to Survive® Robustness

Understanding how to make inspection equipment endure your production, your cleaning regime and your operators is critical to what Loma does

Specialist for Check & Detect

Loma focuses on developing the right inspection technologies to provide best in class detection and weighing performance, combined with systems that are easy to learn and easy to use

A Wide Range of Solutions

Loma provide a range of inspection solutions that cover in-line processing as well as end-of-line packaged product applications

Inspect across the production process

The choice of where in the production process to put inspection equipment into the factory both depends on risk and the established Food Safety management procedures. Further processing adds cost and eliminating a problem closer to the beginning of the production process helps to reduce product wastage in the event contaminated product is found.

In-Line Processing

- Arrival of raw materials after slaughtering, particularly if primary processing occurs at a different facility
- At the introduction of raw ingredients into the production process
- After cutting, trimming, mincing or grinding to protect other down-line processing equipment (i.e. formers, portioners, fillers, linkers, clippers) from damage caused by metal shards
- For early detection of contaminated product to minimize wastage prior to packaging (i.e. after deboning)
- In process weighing to verify correct portioning and reduce giveaway prior to packaging

End-of-Line Packaging

- Metal checks at the end of the line prior to boxing/shipping
- Verify correct product weight to meet regulations and local legislation as well as monitor giveaway
- When the integrity of product packaging needs to be checked
- Check product integrity and to identify product defects or missing items
- Final contaminant and foreign body checks to ensure product meets quality standards

Pipeline metal detectors help protect a clipping machine from damage caused by broken metal blade fragments

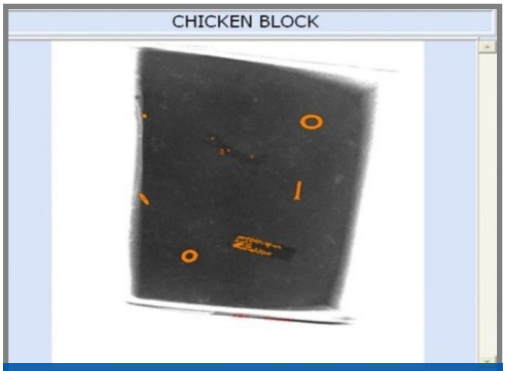
X-ray Combo systems provide detection, weighing and product integrity checks during final packaging

Loma: inspecting protein product since 1969

Combo system detecting and weighing processed poultry

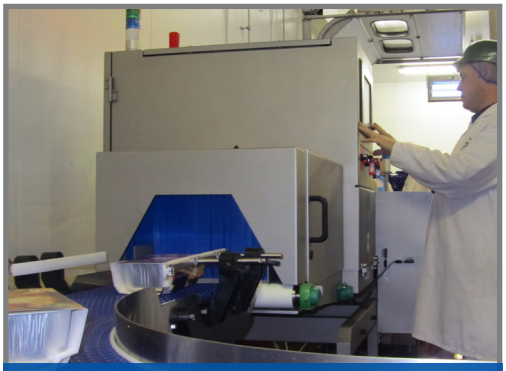
Pipeline system detecting metal in meat slurries prior to stuffing

IQ4 metal detector with carriage-retract reject for packaged meat



Failed processing machine identified during end of line X-ray inspection

Product learn set-up on vacuum-packaged processed meat products



X-ray system inspects foil tray packed meat joints

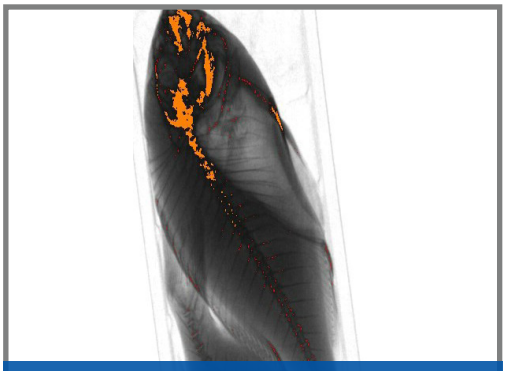
Inspection of bulk frozen meat joints following primary processing

X-ray system finds stainless steel within whole chicken

End of line checkweighing of packaged cooked meat

X5 Pipeline inspecting pâté meat slurries prior to filling

Pipeline X-ray system searches for bone, teeth and nails after mincing



X5 Bulkflow provides excellent detection of bone in filleted fish

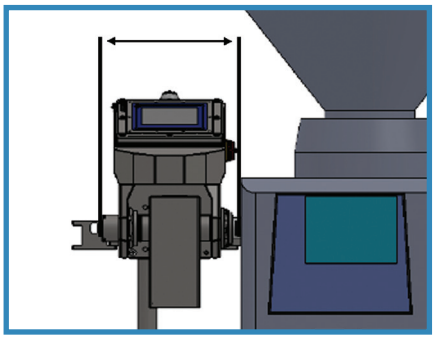
Established in 1969, Loma has been leading the way in aiding food safety and quality for more than 50 years.

Processing: Pumped Products

LOMA's IQ4 Metal Detector and X5 X-ray Pipeline systems are designed to be some of the most compact and hard-wearing systems to fit into the harshest of protein environments. All of our pipeline systems are designed to IP69K and can be put in-line with a range of fillers from manufacturers such as Handtmann, VEMAG or Risco.

Intelligent pipe design reduces smearing

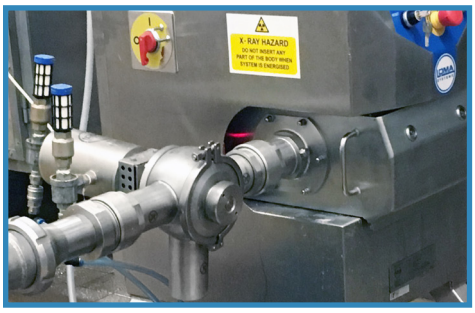
LOMA's Pipeline systems are intelligently designed to minimize the mechanical interaction of the inspection system on the product during the filling process. Using the shortest pipe lengths possible and avoiding mechanical pipe designs which induce friction, Loma's Pipeline systems help to reduce product smearing and maximise product quality.



Reject valve aids maximum uptime

Pipeline systems can be installed with or without a reject station depending on the application. If a contaminant is detected without using a reject, the line will need to be stopped and the line cleaned to remove any potential contaminant. Using an integrated reject will increase uptime and reduce product wastage and all the systems are designed to be cleaned in place (CIP).

ARU Piston reject valve used for inspecting meat slurries on a metal detector



ARL Rotary reject valve used for inspecting whole muscle meat on the X5 Pipeline

ARI Piston reject valve combined with a linker drive for integration with Handtmann vacuum fillers

Why use an X-ray Pipeline in combination with a vacuum filler?

Improved detection of metal

An X-ray system can detect smaller metal fragments compared to conventional pipeline metal detectors.

Detect bone and other physical hazards

Help improve quality by removing these unwanted contaminants which may still exist after secondary processing.

Protect other processing equipment

Identify and remove contaminants prior to stuffing, portioning or further processing.

Reduce cost through less wastage

Bad product is rejected early in the production process helping to reduce cost.

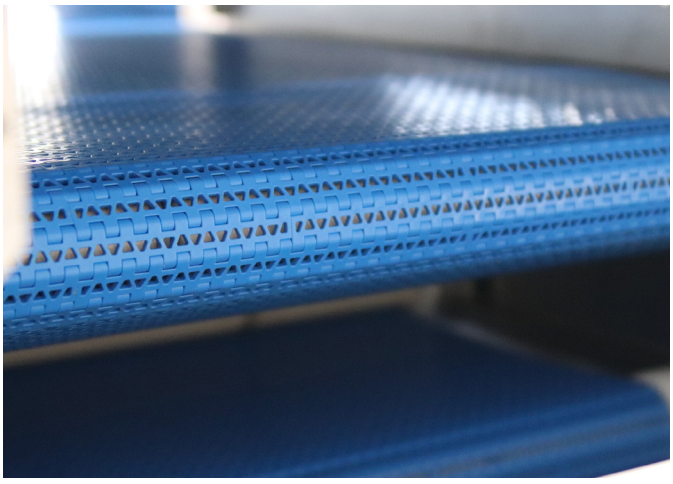
In-Line: Bulk or Loose Products

Optimize and automate the production process

Scanning products in-line which are either loose, unpackaged or bulk/large during processing helps to optimize factory processes by:

- **Protects equipment:** Protects down-line machinery from damage caused by harder contaminants damaging expensive processing and packaging equipment
- **Reduces waste:** Allows contaminated product to be isolated and dealt with prior to going through more costly processing stages and packaging
- **Product efficiency:** Maximises the quantity of good product to be harvested back into production that has been inspected and confirmed contaminant free
- **Reduce giveaway:** Monitoring in-line product weight can help provide indicators to optimize portioning and filling

IQ4M Conveyorized Metal Detector identifies contaminated raw product by stopping on detect and alarming



A carriage retract is an alternative to a belt-stop / alarm reject and removes contaminated product from the line

A "Stop on Detect" Metal Detector Conveyor inspecting frozen raw meat blocks following primary processing

Why use X-ray Inspection?

Improve detection of metal
Detect smaller metal fragments compared to metal detector systems.

Detect bone and other physical hazards
Help improve quality by removing these unwanted contaminants which may still exist after secondary processing.

Less susceptible to product conditions
X-ray systems are less susceptible to variations in temperature and humidity, as well as product presentation.

X5 XL is designed for inspecting bulk and large products for metal, bone and glass

X5 Bulkflow scans fast-flowing loose product

Multi X-ray system inspecting loose chicken fillets

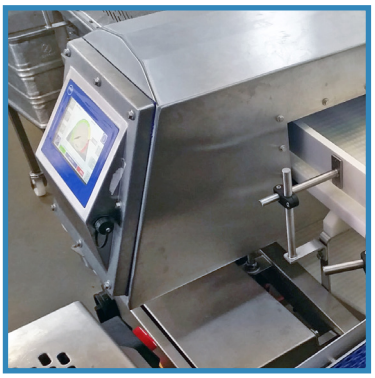
End-of-Line: Packaged Products

End-of-line inspection protects brands and the consumer

Loma produces a range of inspection equipment designed for the end of the production process where product is packaged and ready for shipment to the wholesaler or retailer. As part of a HACCP / food safety management plan, the systems normally form a Critical Control Point (CCP) and helps identify issues prior to the product being placed on the market.

Create a comprehensive CCP with a Combo System

Combination systems create a more comprehensive CCP and save factory space by combining a detection system (metal detector or X-ray) with a MID/R51 accredited checkweigher.



Improve robustness & sanitation with hygienic design

Hygienic system design forms a fundamental philosophy for ensuring an inspection system is easy to clean as well as having the necessary robustness for a system to survive in high-care factory conditions. Loma's systems are designed to have an IP66 ingress rating for low-pressure washdown or up to IP69k for high-pressure washdown conditions.

RUN-WET® IP69 rated metal detector system for high pressure harsh washdown cleaning

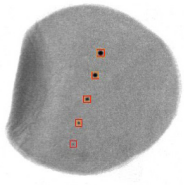
Low-pressure washdown of X-ray system

Increase efficiency and food safety with X-ray inspection

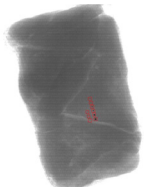
X-ray inspection systems provide the ability to improve factory efficiency and increase food safety through:

- Better detection of metal in comparison to conventional metal detectors
- Able to inspect protein products packed within foil or metallized packaging
- Automate manual checks by using X-ray Object checking algorithms to identify product defects and missing items
- Can integrate into a Combo for combined detection and weighing at end-of-line

Bone, glass and metal within packaged chicken fillets

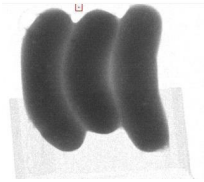


Stainless steel detected within packed deli meats



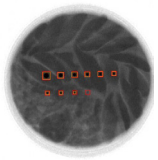
Bone fragment identified in T-bone steak

1.5mm stainless steel detected in canned fish

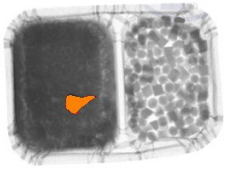


Stainless steel fragment in packaged sausage

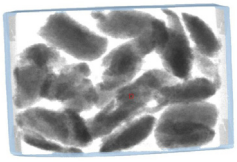
Staple identified in fish packed on foil board



Detection of 0.8mm stainless steel in plastic tub of fish fillets



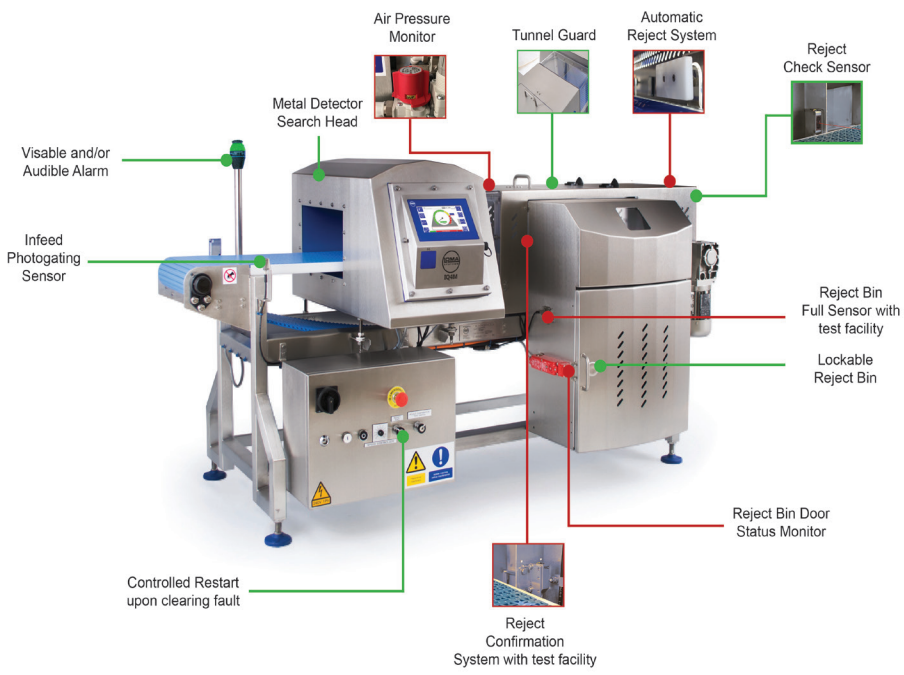
Bone fragment within foil tray packed convenience food



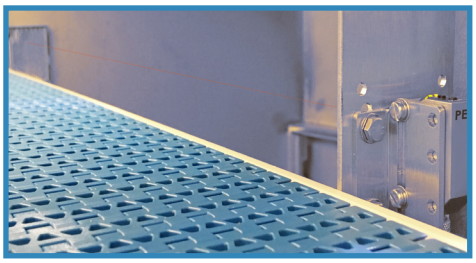
Detection of 1mm stainless steel in a bag of chicken nuggets

Maximise CCP integrity with Fail-Safe functionality

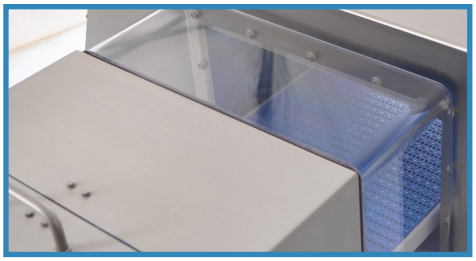
Fail-safe functionality are added features to an inspection system that help improve the security of contaminated products as well as improve the overall integrity of a Critical Control Point. Some functionality is industry best-practice, whereas others are essential for meeting Retailer Codes of Practice or for demonstrating a zero-tolerance attitude towards foreign body contamination.



Examples of Fail-Safe functionality supplied with a full-compliance conveyorized metal detector system



Reject Confirmation Sensor checks the pack enters the bin correctly

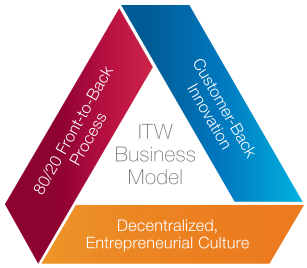


A Tunnel Guard ensures contaminated packs cannot be put on line after the metal detector

About LOMA SYSTEMS

Established in 1969, LOMA SYSTEMS designs, manufactures and supports inspection equipment used to identify contaminants and product defects within the food, packaging and pharmaceutical industries. Operating from several locations in the Americas, Europe and Asia, and through a worldwide network of OEM and distributor partners, LOMA supplies and supports inspection equipment in over 100 other countries.

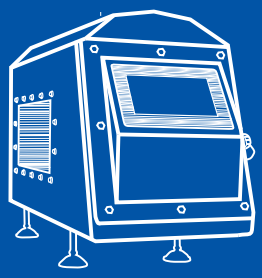
With the addition of the LOCK Inspection, Cintex and Brapenta brands into the portfolio, Loma is a trusted partner to many production facilities around the world. Our long-standing reputation is based on consistent quality and advanced technology, the result of continuous and far-reaching research and development programmes.

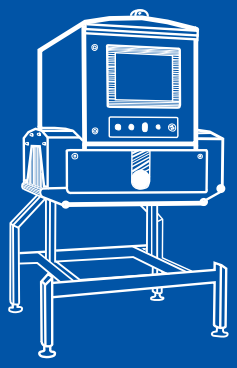


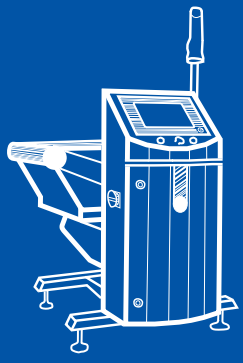
LOMA is part of Illinois Tool Works (ITW), a global Fortune 250 diversified industrial manufacturer of value added consumables and speciality equipment with related service businesses.

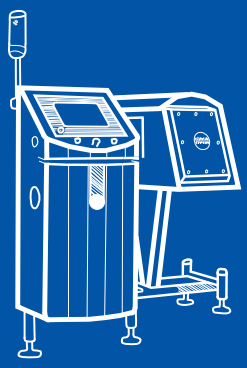
ITW's seven industry-leading segments leverage the ITW business model to generate solid growth with best-in-class margins and returns in markets where highly innovative, customer-focused solutions are required. ITW's revenues totalled US$16 billion in 2025, with approximately 43,000 employees worldwide.

LOMA operates under the core philosophies of 80/20 business processes, customer-back innovation and a decentralized entrepreneurial culture.


Metal Detection


X-ray Inspection


Checkweigher


Combo Systems

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