

*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 aide 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

Over the last 50 years, 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: 50 years of protein product inspection



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



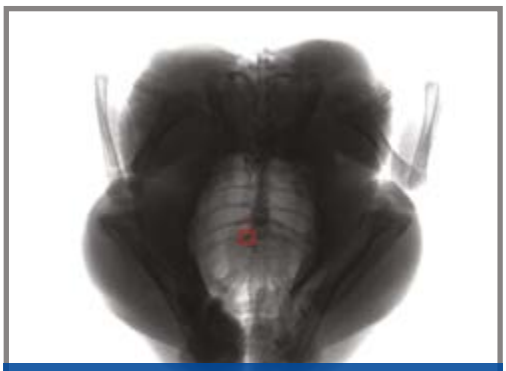
Product learn set-up on vacuum-packaged processed meat products



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



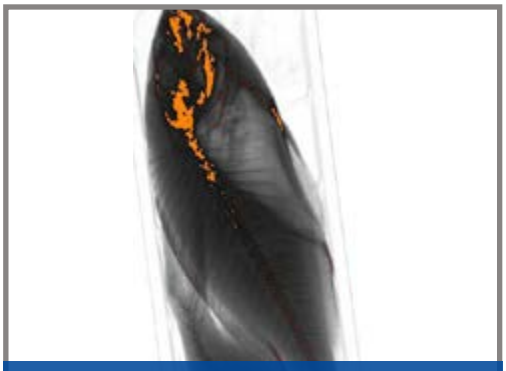
End of line checkweighing of packaged cooked meat



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 the last 50 years.

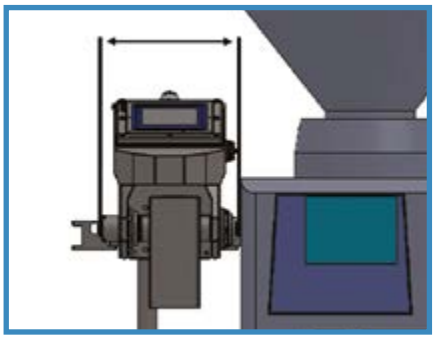


# Processing: Pumped Products

**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 maximum product quality.



## Reject valve aides 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 contaminantation 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

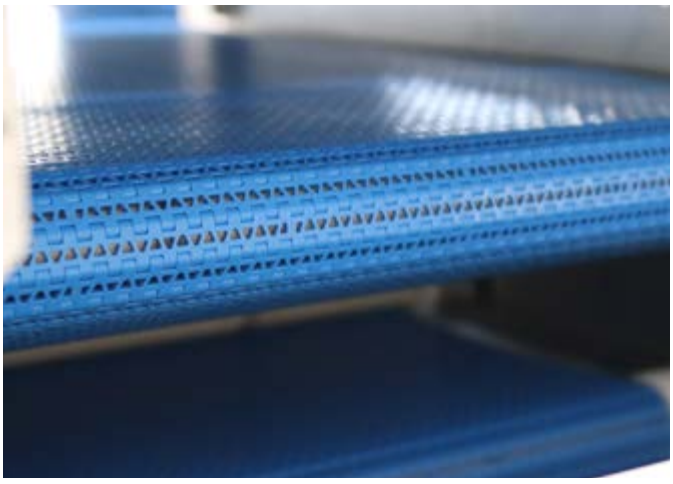
## Optimize and automate the production process

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:** Allows for as much good product to be harvested back into production if found to be not contaminated
- **Reduce giveaway:** Monitoring in-line product weight can help provide indicators to optimize portioning and filling



IQ4 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 detectors 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



Dual 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 IP69K for high-pressure washdown conditions.



IP69K 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

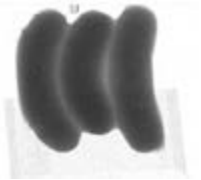


Bone fragment identified in T-bone steak





1.5mm stainless steel detected in canned fish

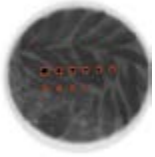


Stainless steel fragment in packaged sausage

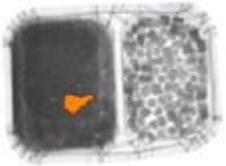


Staple identified in fish packed on foil board

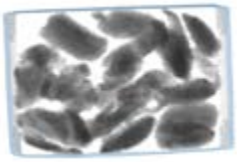




Detection of 0.8mm stainless steel in plastic tub of fish fillets



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

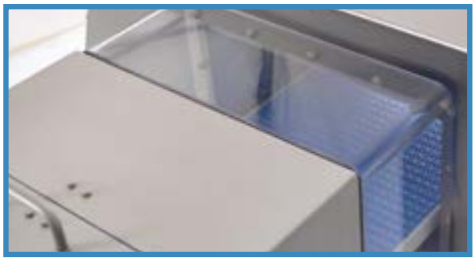
Fail-safe functionality are added features to an inspection system that help improve the security of contaminated products as well as improve the overall integrity of a Critical Control Point. Some functionality is industry best-practice, whereas others are essential for meeting Retailer Codes of Practice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



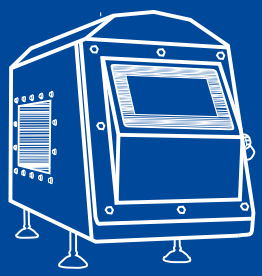

Examples of Fail-Safe functionality supplied with a full-compliance conveyorized metal detector system



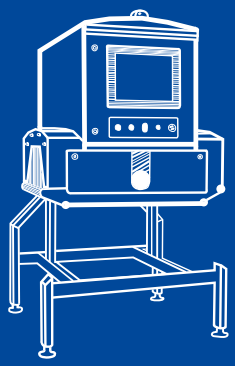
Reject Confirmation Sensor checks the pack enters the bin correctly



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



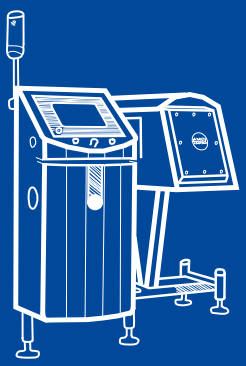
Metal Detection



X-ray Inspection



Checkweigher



Combo Systems

Local contact

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