

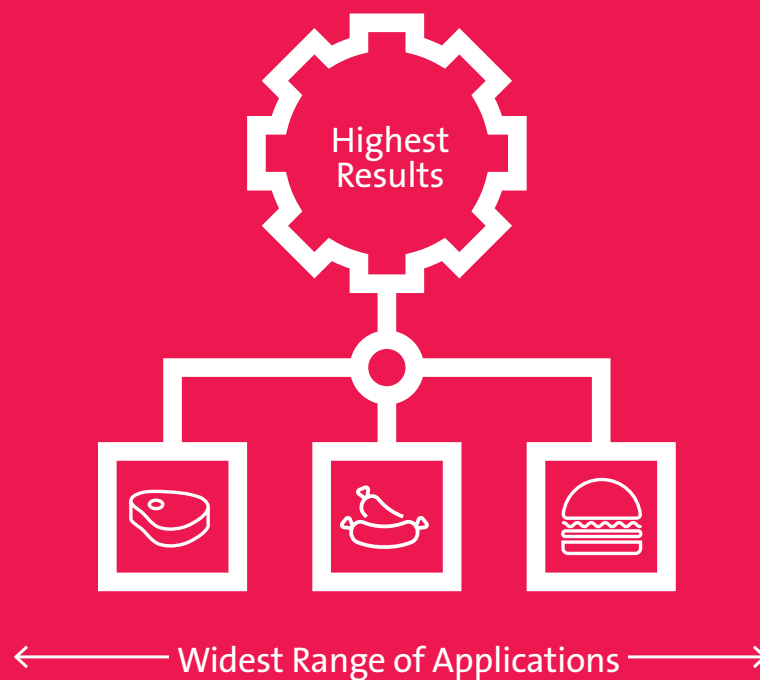


# Red Meat Inspection [Re]defined

# Eagle [Re]defines the probability of detection









When it comes to red meat inspection and fat analysis, you need confidence that you can rely on the promises made regarding your equipment. In reality, these promises are often based on measurements at peak performance in controlled environments, which may not be consistently achievable in real processing plants, like yours.

At Eagle, we don't want to make promises we can't keep. That's why we work from a framework rooted in the probability of detection. Our goal is to always achieve the best results for a wide range of applications. Our advanced technologies provide accurate and reliable results that can be achieved consistently on your lines, regardless of throughput levels or harsh environments.



# Your formula for success

From slaughterhouse all the way through to packaging, what happens inline depends on the right equation of processing and inspection systems. Putting together the right formula for production line success comes from balancing the host of variables associated with your product and the manner in which it is produced. Key topics to consider are:

-  PRODUCT ACCURACY
-  CONSISTENCY
-  RELIABILITY
-  REDUCED DOWNTIME
-  HIGHER THROUGHPUT
-  SUPERIOR PRODUCT QUALITY
-  LOWER COST OF OWNERSHIP
-  HYGIENIC DESIGN



As a leading global manufacturer of inspection and analysis systems to the meat industry, Eagle Product Inspection has been a thought leader and educator throughout the world for more than two decades. We've built a team of experts, many with meat-specific backgrounds, who ensure we remain attuned to industry needs, challenges and changes, and continually collaborate with global partners to develop and execute the latest technologies.

We invite you to explore our technologies, applications, and solutions that will ultimately make the maximum difference in performance on your processing lines.

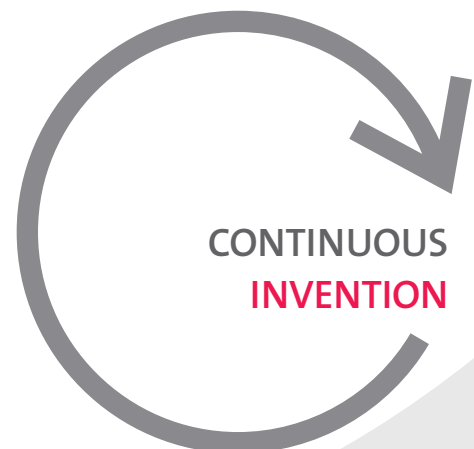
Together, let's determine the formula for your best probabilities of detection.

**Presenting the best inline solutions from our broad portfolio.**

# Technologies that deliver absolute value

Good or bad measurements mean the difference between accuracy and rejects, between profitability and recalls, and between safety and vulnerability, using the most robust, high-level technology is crucial in safeguarding your products and your brand image. Our innovations are designed to protect product quality and integrity, increase throughput, ensure compliance with national and local food safety standards, and more.

Eagle's global team of experts works to pursue and hone technologies for [superior inspection](#), detection and analysis systems. Our broad range of proprietary technologies afford you coverage across all areas of red meat production and are designed to maximize your probability for detection using algorithms that fit your business. With our high level of technological expertise, we offer flexibility for your fat analysis and x-ray inspection needs.





## Peace of Mind, Ease of Use

At Eagle, we recognize the importance of building technologies that are easy to manage, and can adapt to your unique line. We have worked successfully with red meat companies of all sizes and types in all areas of the globe, tailoring our solutions to their business needs.

Eagle offers an unparalleled depth and breadth of technologies with applications in the meat industry, providing the measurements you need to ensure product quality and safety.

- Mechanical variations allow for adjustments in your raw or packaged product variables
- A wider range of material handling options enable us to handle a wide variety of meat types, whether that's raw unpackaged fresh meat, in crates, or frozen blocks, or packaged
- Widest grey scale range used in x-ray image analysis reveals more about what's in your products
- Simple user interface with graphical displays that provide real-time recipe production of data
- Fat analysis can be linked to your inspection process for multiple benefits
- Fat analysis solutions are designed into your production processes to allow process optimization and significant improvements in product quality

## Dual Energy Inspection

Dual energy technology helps identify hard-to-find bone, metal and other contaminants in meat products. Introduced by Eagle in 2005, [Material Discrimination X-ray \(MDX\)](#) easily detects contaminants in “busy” images. It uses differential x-ray energy absorbance to discriminate between organic and inorganic materials. In 2020, Eagle debuted our proprietary [PXT™ photon-counting x-ray technology](#). This radically enhanced detector captures much higher resolution images and more detailed data about the product being inspected than has previously been possible.



**CONTINUOUS  
INTEGRATION**

# Differentiating factor: Eagle inline **x-ray** capabilities

The use of x-ray technology protects a company's brand image by preventing costly recalls, assisting in compliance with regulations and monitoring product quality and consistency. X-ray is non-invasive and effective for a variety of red meat products, including trim and primal cuts, sausages, ground meats, bone-in product and case-ready meats, among others.

## The X-ray Experts

Eagle has been manufacturing x-ray systems for more than 20 years, has thousands of successfully installed systems globally and has strong ties to the global meat industry. Eagle's extensive, far-ranging portfolio of inline x-ray systems provide superior detection at several points in the process as a multi-step approach to protecting products and enhancing consistency and quality.

X-ray technologies define detection probability by:

- Detecting physical contaminants, including bone, stone, glass, dense rubber and some plastics
- Inspecting "busy" images with high variations in density
- Providing quality checks in a wide range of packages, unpackaged and bulk goods
- Measuring mass and counting components
- Identifying missing or broken products
- Checking for inclusions such as oxidizers

X-ray systems can detect contaminants at various stages of the production process, in a wide range of applications, from raw products in bulk flow to packaged ready meals, and from unpackaged products to those encased in glass jars, bottles or metal cans. Many other packaging types can be inspected, including blister packs or sachets.

## Why Eagle?

- Robust design, exceptional longevity of components and high repeatability rates add up to systems with the lowest [Total Cost of Ownership \(TCO\)](#) in the industry.
- Hygienically constructed, robust equipment that adheres to the strict sanitary design standards of the meat industry
- Eagle's superior dual energy technologies of MDX and PXT™ leads to the accurate detection of smaller fragments of contaminants and bone previously unseen by other conventional systems.
- Eagle's own propriety operating system [SimulTask™ PRO](#), one of the most advanced image analysis platforms in the food industry allows for a wide range of image analysis techniques to be performed simultaneously. Other technologies on the market don't have the same capability, and limit throughput.
- Our technology features enhanced human machine interface (HMI) intuitive pre-programmed operational interface.
- Systems are available in a range of sizes to suit various product dimensions.
- We provide customized solutions to meet customers' unique needs.



# Inline **fat analysis:** Enables production line optimization and improvements in quality

Hitting the mark on your fat measures is critical to your business. Whether fulfilling production contract parameters or processing your own product lines, Eagle [inline fat analysis \(FA\) systems](#) will ensure that your production throughput will stay the course. Moreover, fat variability can cost you money, plain and simple. By using x-ray inline fat analysis, you can measure the chemical lean of 100% of your throughput, to better than plus or minus one chemical lean (CL). Eagle uses these measurements to build complete fat analysis systems that can optimize your production.

In addition to enabling such calculations, Eagle's inline FA systems can help you reduce lean meat giveaway, reduce fat claims, improve consistency in final products, and ensure final products are free from foreign bodies.

## A More Efficient Fat Analysis

- Eagle's [Dual Energy X-Ray Absorptiometry \(DEXA\) technology](#) is the only technology that can measure 100% of meat products and give results in real time.
- While other methods for determining fat content of meat are limited in terms of labor requirements, sampling and delays, DEXA technology overcomes such limits by providing highly accurate and real-time meat analysis.
- We offer application-specific platforms for all forms of meat, including fresh, frozen or hot-boned natural red meat, as well as processed in bulk, frozen block or combination, vacuum-packed or packaged in cartons or conveyed in plastic crates or trays.
- We offer comprehensive and complete fat measurement capability, the widest range available in the meat industry.
- Highest throughput available, with built-in automatic calibration and touch-button validation.
- Our FA machines are hygienically designed and durable, with IP69 rating for harsh wash-down environments.
- Small-footprint FA machines integrate easily into existing production lines.
- Our UPSHOT™ technology enables meat to be scanned from the bottom, with detectors over the product, meaning closer placement of the x-ray source to the detector, further enhancing contaminant detection and measurement precision.

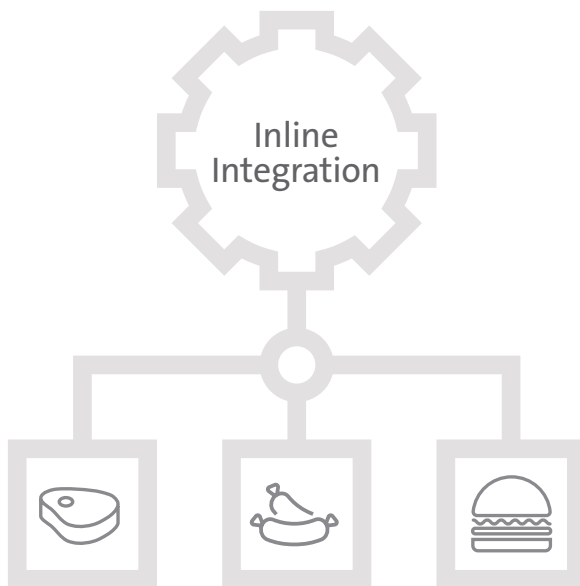


# The **BIG** picture: Inline integration

Eagle's x-ray inspection machines can be integrated with a wide variety of infeed, outfeed and reject systems to suit a multitude of different applications.

**Red Meat Recipe Management System:** Formulate meat recipes with one, two or more meat types at different fat/lean levels. By building a recipe management system around a fat analysis machine, a complete solution can be made that allows you to create a batch of meat to a specific chemical lean (CL), or recipe, at a target weight.

**Red Meat Trim System:** Combine our fat measurement solution with a trim management system to accurately pack meat to a predefined (CL) and weight target.



## **Eagle's Inline Integration Offers Several Benefits:**

- Improved process flow
- Increased line efficiency
- Real-time results
- Contaminant detection and rejection
- Reduced fat claims
- Reduction in lean meat giveaway
- Elimination of batch rework labor and lost production throughput due to inaccurate recipe formulation
- Consistent product quality
- Increased traceability
- Customer brand protection
- Protection of downstream processing equipment

# Software solutions

Eagle helps you gain a new perspective to improve probability of detection through technology powered by advanced, world-class software:



## TraceServer™

- Intelligent software for overall quality assurance with enhanced product traceability
- Single centralized database consolidates x-ray machine production data
- Effortless [product traceability](#) for tracking production through every stage



## SimulTask™PRO

- Powerful [image analysis software](#) enhances contaminant detection of products with complex density levels and innovative pack styles
- Enhances productivity with simultaneous multilane or multi-view x-ray inspection
- Intuitive auto-learn user interface allowing users to easily access reports on inspected products



## PXT™

- Radically enhanced dual energy [photon-counting detector](#) for bone and metal contaminants
- Suitable for all forms of meat, from single to multilane processing lines
- Lower false rejects resulting in less product rework and labor requirements for improved operational performance



## DEXA

- [Dual Energy X-ray Absorptiometry](#) technology inspects 100% of throughput in real-time, providing fat measurement accuracy to better than +/- 1 CL
- Eliminates fat claims and lean give away
- Increases blend efficiencies with accurate lean targets

# Broad solutions built for you

No matter how you slice it, grind it, package it, or transport it, we have inline inspection and fat analysis solutions for your red meat processing challenges. As you better define your probability for inspection and analysis, you boost your odds of success with your discerning customers.



## Fresh and Frozen

- Consistent recipes
- Bone detection
- Detection of contaminants
- Fat analysis



## Bone-in

- Fat analysis
- Inspect products for contaminants which contain bones
- Software ignores the bone but finds the contaminants



## Pumped Pipeline

- Address and prevent food safety issues
- Detection and rejection of contaminants



## Chubs

- Discover missing clips
- Avoid overfilling of ground meat chubs
- Detection of contaminants
- Discover extra clips



## Prepared Foods

- Verify accuracy of total and zonal area weight
- Ensure consistent or non-damaged products
- Ensure perfect product presentation with quality checks
- Contaminant detection in a variety of packaging, including plastic containers, cartons, boxes, pouches and trays



## Jars

- Avoid costly over- and under-fills
- Consistent products
- Detection of contaminants



## Cartons

- Greater flexibility in fat management
- Sell cartons on a point-of-lean basis



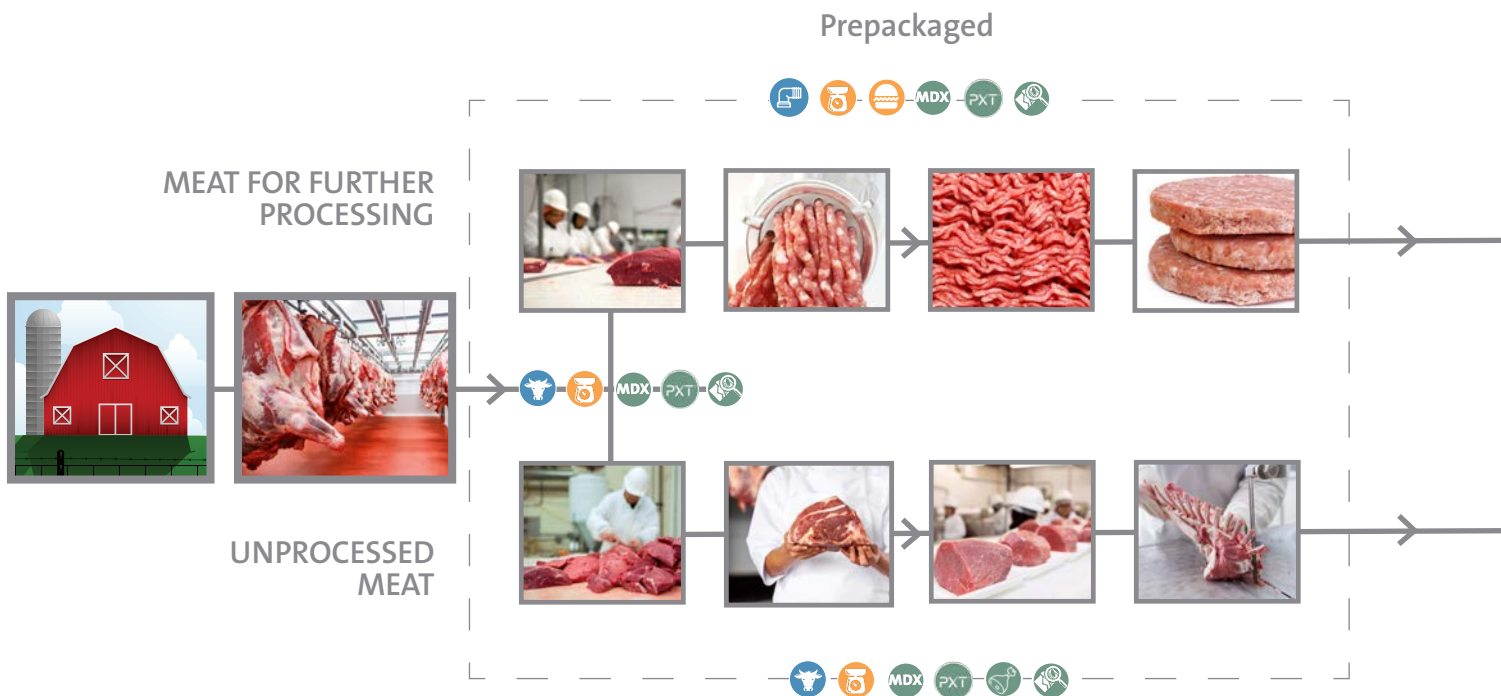
### In-store/Case-ready

- Scan of final packaging
- Ensure consistent or non-damaged products
- Determine missing items, such as missing oxidizers with ham or dried meats
- Detect metal contaminants, glass, mineral stone and calcified bone
- Measure total weight and box count, making sure the right number of burgers are in the box
- Inspect product seals for trapped product or contaminants



# Technology for every application

**From slaughterhouse to consumer - technologies that support full traceability from farm to fork.** At Eagle, we understand that there are two main routes meat can take: straight to retail, or through to further processing. There are differences in these two paths that can benefit from a different set of solutions and technologies. Below you'll see how we provide vast solutions to create the best fit for your application.



## FAT ANALYSIS



FA systems for slaughterhouse



FA systems for further processors

## ADDITIONAL QUALITY CHECKS



Weight check



Shape verification/check (eg. burgers sufficiently round)



Fat out (suet ball)

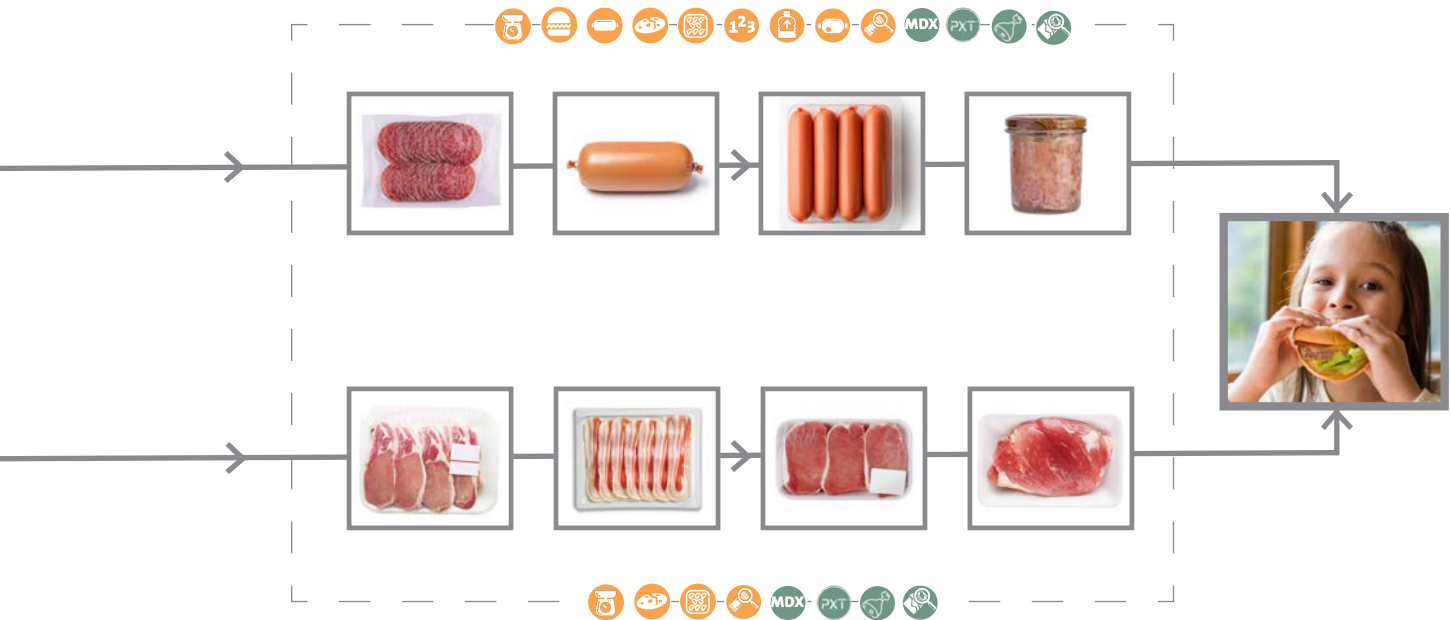


Damaged product (squashed sausage)







Missing product

## Packaged



-  Clip counting on clip closed products and chubs
-  Fill level
-  Void detection
-  Seal checking (trapped product, damaged package)

### CONTAMINANT DETECTION

-  MDX – For “busy images”
-  PXT – For best bone detection
-  Bone in product inspection
-  Single energy contaminant detection

# In-line X-ray Systems



## Eagle™ RMI3 Series

Ideal for the red meat industry, the Eagle RMI3 series of machines are built to operate in harsh wash-down environments for the inspection and detection of metal fragments, glass shards, some plastic and rubber pieces, mineral stone and calcified bone. The [RMI3/M](#) is designed for high volume bulk meat applications, while the [RMI3/C](#) inspects closed cartons or open crates of product. Each meets NAMI standards for machine construction and sanitary design.



## Eagle™ Pipeline Series

The [Pipeline](#) range of machines for pumped meat products, deliver best-in-class contaminant detection of metal, bone, stone, glass and dense materials, while promoting systematic product flow. These x-ray systems, which maximize capabilities at 3" and 4" pipe diameters, inspects meat and promptly rejects contaminants prior to packaging, leading to fewer wasted materials and reducing the potential for damage to equipment downstream.



## Eagle™ Pack 400 HC

Used for contaminant detection in packaged goods, the Eagle [Pack 400 HC](#) is a cost-effective, complete x-ray solution. Its compact design and adjustable ranges can be easily installed in a line and is suitable for meat in plastic containers, cartons, boxes and pouches. This high-speed machine is capable of imaging up to 60 meters a minute. Its hygienic design allows it to be installed in locations that demand daily cleaning. In addition, the easy-to-clean feature helps to reduce downtime.





### Eagle™ Pack Series

When it comes to inspecting packaged meat products of various sizes, our portfolio of [Pack machines](#) provides superior x-ray detection and automatic rejection of materials including glass shards, metal fragments, calcified bone, stone and some plastic and rubber compounds while simultaneously performing multiple quality checks.



### Eagle™ RMI Series

Designed for the inspection of raw and unpackaged meat, the [RMI 400](#) and [RMI 540](#) has an innovative inclined conveyor eliminating the need for radiation shielding curtains to ensure better hygiene. Available in single and dual lane configurations.



## In-line FA Systems



### The Eagle™ FA3 Series

The [FA3 x-ray systems](#) are Eagle's 3rd generation of fat analyzers using Dual Energy X-ray Absorptiometry (DEXA) technology. Eagle has refined the proven and superior single-beam geometry configuration which was first introduced by Eagle to the market in 2004 to now utilize UPSHOT technology. The systems accurately measure weight, and inspect 100% of the product for contaminants, including glass, metal fragments, calcified bone, stone, and some plastics and rubber compounds.

The FA3 series machines are powered by our proprietary SimulTask™ PRO advanced imaging software. Analysis can be performed on a variety of applications including fresh, chilled, frozen and hot-boned loose, bulk, frozen or tempered meat blocks and unwrapped meat conveyed in plastic crates.





# Strong support and training

In addition to providing industry-leading technology and unparalleled reliability, Eagle provides highly-responsive [support and service](#) coverage globally, through a network of expert partners, supported by a core team of regionally-based Eagle experts. We focus on the Total Cost of Ownership involved with the installation and ongoing efficiency associated with operating an x-ray or FA system. Our approach is to deliver a fast ROI, combined with low ongoing costs, to extend the lifetime value of the equipment.

## Expertise and Training

With decades of expertise in x-ray technology and deep meat industry experience, our team is here to help. Our training professionals provide all levels of instruction and certification:

- Radiation safety
- Basic software
- Advanced software
- Basic system training
- Advanced system training

We'll come to you, or you can schedule training sessions at our facilities. Eagle also offers specialized training curriculums, depending on your needs and requests.

## Service and Preventative Maintenance

We offer a variety of service programs to meet your needs, including those that meet auditing standards such as HACCP. You can also take advantage of our service visit program and extended parts warranty.

Eagle's Preventative Maintenance and Performance Verification Programs allow service technicians to examine your processes in depth, including product throughput, packaging variables and foreign body identification, among other variables. By doing this, you can determine the level of maintenance required to keep your x-ray systems 100% operational, 100% of the time.

# 100%

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