Product Specifications

Goring Kerr EZx

Contaminant Detection System

The Goring Kerr EZx™ contaminant detection system provides complete protection from metal, glass, stone, plastic and other dense foreign objects at a very affordable price. Especially attractive on lines utilizing new metallized film or foil packaging, the system is typically installed immediately after fill and seal. The Goring Kerr EZx can screen your production 100% and immediately identify contaminants so you can take fast corrective action.

Features and Benefits

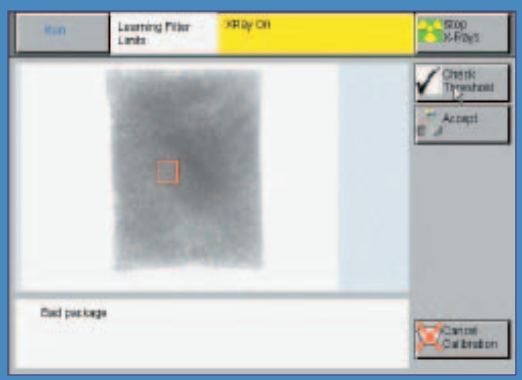
- Designed to offer the lowest total cost of ownership of any X-ray system
- Unique X-ray design eliminates blind spots
- Certified for IP65 washdown
- Machine aperture can be ordered in multiple sizes
- Intuitive on screen inspection results
- Ideal for the new, fast growing foil or metallized film packaging
- QuickLearn Wizard gets you running in minutes

The Goring Kerr EZx™ contaminant detection system from Thermo provides the optimum solution for locating foreign objects commonly found in packaged food production environments. Utilizing an innovative X-ray generation and processing approach, the system can find virtually any substance that is denser than the object it is contained in. This defect coverage is far superior to traditional magnetic metal detectors.

Designed with metal detector users in mind, the Goring Kerr EZx is very easy to learn and use. The built-in QuickLearn wizard enables you to set-up a new product in minutes. It automatically selects how to generate and process an image for you. And, once running the display shows an intuitive red light/green light status monitor along with simple summary statistics.

Unlike other X-ray systems, the Goring Kerr EZx platform was engineered to operate in typical environments metal detectors are found in. It is available in various aperture sizes and line heights; operates over a wide temperature range; meets IP65 washdown requirements; and is inherently safe adhering to even the strictest X-ray radiation standards. Although the Goring Kerr EZx is extremely reliable, in the event of a problem its modular design minimizes the time to repair.

Transfer data to any PC via the built-in USB port.



QuickLearn Wizard

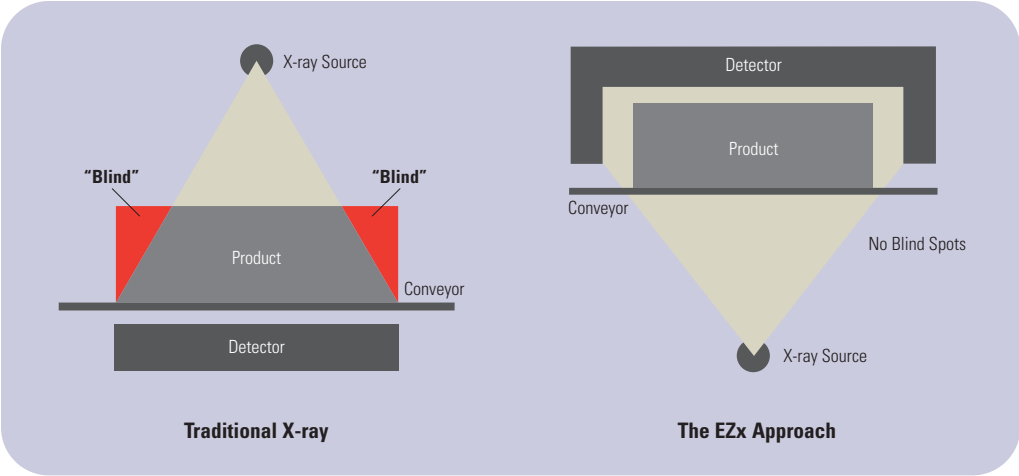
Learning a new product is accomplished in minutes with the Goring Kerr EZx touchscreen and a built-in wizard that makes all the tough decisions a snap. All you do is show the system three to five packages and it automatically determines what is "good." Then you are prompted to test your set-up by passing contaminants through the aperture—just like you would do during periodic audits when on-line. "Bad" packages are flagged and an image displays what the system found. Of course, all machine parameters can be set manually and new image processing approaches are available periodically as software upgrades.

Unique X-Ray Design

The Goring Kerr EZx is a conveyorized X-ray system designed to look and work more like a metal detector than a complex X-ray system. It utilizes a unique (patent applied for) source/detector that assures there are never any "blind spots" in the inspection tunnel. The exceptional, reliable X-ray tube can easily penetrate packaged foods at low power.

Intuitive Inspection Results

Summary inspection statistics are shown on-screen and rejected product images can be reviewed when needed to determine corrective action. The run-time statistics data is logged by shift for up to a month on the system and can be transferred to any PC for archive and further analysis via a built-in USB port. (See table 2.) Periodic machine audits can be run and that data is saved in a separate location. For complete traceability, all major machine events (e.g., program load, operator sign-in, rejects detected) are logged and can be data-mined to determine historically how the machine was being used. If machine errors occur, either on-screen messages are presented or the error is kept in an internal error log to be accessed by Thermo service personnel.



Innovative Machine Design

The Goring Kerr EZx was designed with food safety and sanitation principles in mind and has been tested to be IP65 compliant. It is compact and consumes 1.6 m (5.25 ft) of line space. All major components are modular for easy service from the front and the belt can be changed without tools. Six different conveyor heights are available and each is adjustable ±50 mm (±1.96 in) in the field. Several types of built-in reject mechanisms are available and general purpose I/O is included for external rejecters and custom applications. Photo sensors are included to trigger inspection and are available to verify both product acceptance and rejection. The system can operate in an environment up to 40°C (104°F) because of its built-in, extremely reliable vortex cooling. Positive pressure inside the X-ray cabinet assures moisture never enters.

Optimized for Performance

Like traditional metal detectors, six aperture sizes are available (see Table 1) so you can optimize sensitivity to your package size. The X-ray source scans the aperture at a high rate resulting in typical inspection rates of 400 packages/minute or more. Photodiode calibration is automatically performed when loading and running a product and the detector is thermally stable so hot or frozen products do not affect performance.

Application Analysis and Aftermarket Services

Prior to purchasing a Goring Kerr EZx contaminant detection system, Thermo applications engineers will quickly and completely evaluate your application. During this process your product samples are run on an actual system to determine what types of defects can be detected; what the typical sensitivity is; and what product line rate can be achieved. A professional report is generated for review with your Thermo field salesperson. In addition, machine specific characteristics such as aperture size, line height, line direction and rejecter requirements are reviewed prior to order, assuring the system delivered meets your exacting requirements.

After purchase, a full range of services is available to support the Goring Kerr EZx contaminant detector throughout its lifetime including; radiation testing, commissioning and validation at the time of installation. Operator, engineer and maintenance training courses are also available either on-site or at one of the Thermo worldwide training centers.

To ensure maximum operational efficiency Thermo offers on-site maintenance contracts and a full spare parts service.

Available Accessories/Options

- Built-in reject mechanisms (model 210 only) include:
  - Lockable reject bin and product accept/reject verification photoeyes
  - Air blast or pusher reject mechanisms
- Certified Metal (Ferrous, Non-Ferrous, Stainless Steel) and Soda Lime Glass test spheres from 1 mm diameter and up placed in laminated plastic cards
- Comprehensive and basic spare parts kit
- Spare belts (three widths)
- Product alignment rails (in-feed and/or out-feed)
- Additional regional radiation testing and certification
- Radiation survey meter

Table 2: EZx Data Logging

Category	Data Type
Statistics	Packages inspected, accepted, rejected by shift Audits run and passed.
Events	Alarms, faults, diode calibration performed, user log in/out, machine start/stop and x-rays off. Also changes to I/O, global variables and product set-ups

Table 1: EZx Application Parameters

EZx Model Number	Package Width	Package Height	Aperture Width	Aperture Height	Maximum Conveyor Speed
210	150 mm (5.90 in)	85 mm (3.3 in)	200 mm (7.90 in)	100 mm (4.0 in)	100 m/min (328 ft/min)
405	340 mm (13.4 in)	35 mm (1.4 in)	400 mm (15.8 in)	50 mm (2.0 in)	100 m/min (328 ft/min)
410	340 mm (13.4 in)	85 mm (3.3 in)	400 mm (15.8 in)	100 mm (4.0 in)	100 m/min (328 ft/min)
420	340 mm (13.4 in)	185 mm (7.3 in)	400 mm (15.8 in)	200 mm (7.9 in)	100 m/min (328 ft/min)
510	440 mm (17.3 in)	85 mm (3.3 in)	500 mm (19.7 in)	100 mm (4.0 in)	50 m/min (164 ft/min)
520	440 mm (17.3 in)	185 mm (7.3 in)	500 mm (19.7 in)	200 mm (7.9 in)	50 m/min (164 ft/min)

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	Specification
Application and X-Ray Specifications	
X-Ray Power	160 Watts, 80 KV/2 ma maximum
Scan Rate	Up to 2000 lines per second
A/D Converter	12 bit, 4096 gray scale images
Warm-up Time	Less than 30 minutes
Typical Sensitivity	≤ 2 mm diameter for metal, ≥ 3 mm to 4 mm for other dense contaminants (depends on the relative density of the contaminant as compared to the package)
Detection Filters Available	Simple threshold, gradient and enhanced (log contrast adjustment) gradient and Gamma correction
Other Image Processing Functions	Edge masking (for package side edges)
Aperture/Product Width and Height	See specifics in Table 1
Maximum Belt Speed	See specifics in Table 1, depends on aperture width
Conveyor Heights (specify at order time)	650 mm (25.6 in), 750 mm (29.5 in), 850 mm (33.5 in), 950 mm (37.4 in), 1050 mm (41.3 in), 1150 mm (45.3 in); Field adjustable ±50 mm/±2 in
Conveyor Length	1.6 m/5.25 ft
Belt Material	USDA/FDA approved urethane
Inspection Trigger Photo Sensor	Built-in height adjustable through beam design
Security/Safety Features	X-ray power key, four level password system, emergency X-ray/conveyor stop button, lead curtains, failsafe X-ray eminent and on indication light
Human Machine Interface (HMI)	Windows® CE touchscreen, 203 mm/8 in diagonal
Language Interfaces Available	English, Spanish. Contact the factory for additional languages.
Data File Export	See specifics in Table 2. Files are tab/space/return delimited text for easy import to Microsoft Excel.
Built-in Rejecter Option	Air blast or pusher. Lockable reject bin and reject/accept photo sensors. (200 mm aperture machine only)
Environmental, Electrical and Operational Specifications	
Operating Temperature	15°C to 40°C (60°F to 104°F)
Relative Humidity	20% to 90%
Electrical Supply	85 VAC to 250 VAC, 50/60 Hz, autosensing, single phase
Digital Outputs/Allocation	Eight outputs, form C (SPDT) relays, 250 VAC 2A provided, assignable function
Digital Inputs/Allocation	Eight inputs, contact closure, 6 NPN, 2 NPN/PNP, 10-30 VDC 10 mA, assignable function
USB Port	Watertight USB 1.1 standard. One 128 MB memory stick included.
Compressed Air	Dry 80-100 PSI (5.5-6.9 bar), 40 CFM (1135 LPM), 25 micron air filter, 6.35 mm (0.25 in) tubing, NPT 0.25 in thread.
Machine Weight	204 kg (450 lb)
Conformance Tests and Certifications	
Radiation Safety Conformance	FDA CFR 21 part 1020.40, UK IRR 1999. Others available for additional charge, contact the factory.
Export/Safety Certification	CE
IP Washdown Conformance	IP65, see factory for test results. Full stainless steel type 304 construction.
Ambient Noise at HMI	<75 dB (Meets OSHA 29 CFR 1910.95)
Emissions and Immunity	EN61326-1: 1997
Manufacturing Quality	ISO9001 certified

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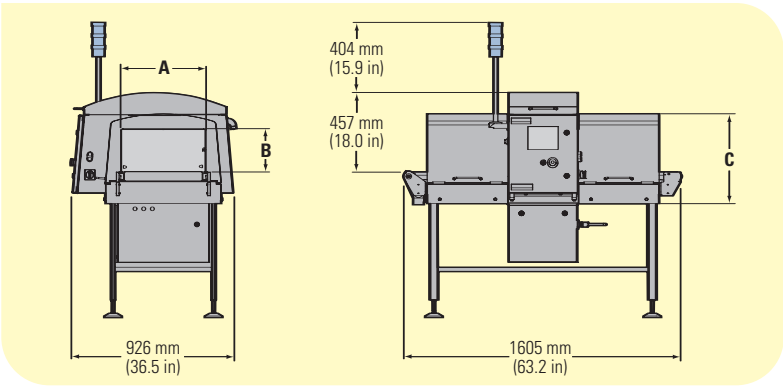

EZx Model Number	Dimension A	Dimension B	Dimension C
210	197 mm (7.76 in)	88.8 mm (3.50 in)	369.9 mm (14.56 in)
405	380 mm (14.96 in)	37.4 mm (1.47 in)	515.7 mm (20.30 in)
410	380 mm (14.96 in)	88.8 mm (3.50 in)	515.7 mm (20.30 in)
420	380 mm (14.96 in)	193.0 mm (7.60 in)	515.7 mm (20.30 in)
510	483 mm (19.02 in)	88.8 mm (3.50 in)	515.7 mm (20.30 in)
520	483 mm (19.02 in)	193.0 mm (7.60 in)	515.7 mm (20.30 in)

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Argentina
+54 (0) 11 4 334 3827
+54 (0) 11 4 334 9159 fax

Australia
+61 (0) 8 8150-5300
+61 (0) 8 8234-5882 fax

Canada
+1 (905) 888-8808
+1 (905) 888-8828 fax

Chile
+56 (0) 2-335-3388
+56 (0) 2-335-1590 fax

China
+86 (0) 21 5465 7588
+86 (0) 21 6445 7830 fax

France
+33 (0) 160 924 800
+33 (0) 160 924 900 fax

Germany
+49 (0) 208-824930
+49 (0) 208-852310 fax

Italy
+39 02-959514-1
+39 02-953200-15 fax

Malaysia
+60 323 001626
+60 323 001636 fax

Mexico
+52-55-5638-0237
+52-55-5639-2227 fax

Netherlands
+31 (0) 33-454-9000
+31 (0) 33-454-9009 fax

Poland
+48 (0) 22848 3708
+48 (0) 22848 3708 fax

South Africa
+27 (0) 11-609-3101
+27 (0) 11-609-3120 fax

Spain
+34 91-484-5954
+34 91-661-5572 fax

United Kingdom
+44 (0) 1788-820300
+44 (0) 1788-820301 fax

United States
+1 (800) 227-8891
+1 (763) 783-2525 fax

Process Instruments

www.thermo.com/EZx

Thermo ELECTRON CORPORATION