

IX-PD

Photon Counting Dual Energy
X-ray Inspection System





X-ray Inspection System



Photon Counting Dual Energy X-ray Machine

A new type of X-ray sensing technology from Ishida, dual-energy processing combined with a new sensor achieves high sensitivity on both extra-small and low-density foreign objects.



Excellent Accuracy

Combined with Ishida’s already proven Genetic Algorithm (GA) and Dual Energy technologies, the new machine produces an ultra-high resolution and clearer image than conventional X-ray systems. This allows the Ishida IX-PD to offer enhanced detection for low-density items including bones in fish fillets and also minute foreign bodies such as stainless steel wires.



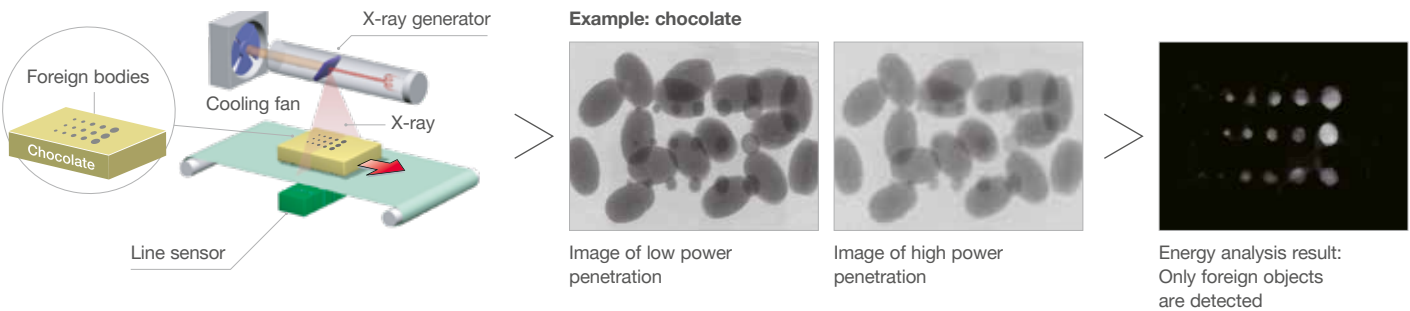
Performance

In tests, the IX-PD demonstrated near 100% detection rates for bones in a variety of products including chicken, diced meat and sausages, for example achieving an increase from 40% to 100% compared to existing X-ray technologies for the detection of bone in chicken breast fillets.

The performance enhancement of the IX-PD has been designed for high-volume production lines and where there is a tendency of overlapping or standing up in a pack in densely packed food products, which makes fine contaminants difficult to detect.

Dual energy analysis

Image processing compares two images with different characteristics and detects foreign objects by recognising the differences of the physical property.



Examples of complex products



Features and Benefits



Easy Integration
Compact dimensions for easy integration into packing lines. The Ishida IX-PD will be available in two sizes to meet the requirements of the widest variety of product and pack sizes. The options of 360mm and 450mm width allows flexibility of application detection from unpackaged meat products to boxed food applications where products are overlapped.



High Productivity Rates
The enhanced detection capabilities of the IX-PD further minimise the need for manual inspections, and the machine's ability to recognise the difference between food and foreign bodies with high accuracy reduces the rate of detection errors. In this way, companies can maintain stringent quality control procedures without compromising on throughput rates.



Energy Efficient
Direct Conversion technology enables the X-rays to be directly converted to electrons rather than through a photodiode. Maximum output for the system is 300W, while tube voltage is between 25 and 75kV, with Ishida's user-friendly auto-set technology this is adapted to the precise requirement of the product and foreign bodies to be detected. The energy-efficient operation also helps to extend the shelf life of the X-ray tube.



Flexible
Like all Ishida X-ray inspection systems, the IX-PD also has the ability to carry out other quality control functions including weight estimation and identifying damaged product or packaging or missing items.

Performance Tests

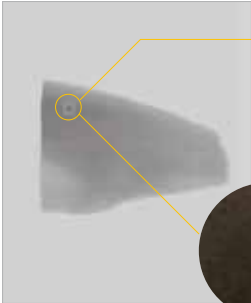
Fish Fillet



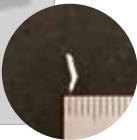
Inspection image
Conventional model



Inspection image
IX-PD-36A2



Improved detection sensitivity

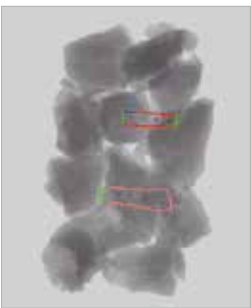


Foreign object imitating fishbone

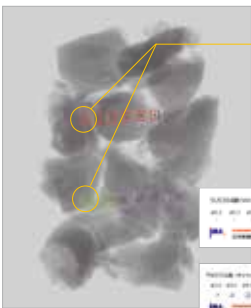
Diced meat



Inspection image
Conventional model



Inspection image
IX-PD-36A2



Improved detection sensitivity



Stainless steel ball

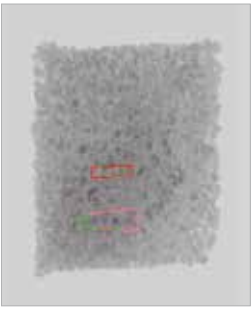


Aluminium ball

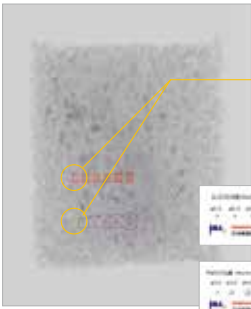
Cereal



Inspection image
Conventional model



Inspection image
IX-PD-36A2



Improved detection sensitivity



Stainless steel ball



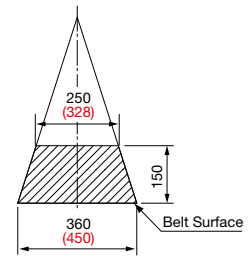
Aluminium ball

Inspection Area

Height	Width		Height	Width	
	36A2	45A2		36A2	45A2
0	360	450	80	301	385
10	352	441	90	294	377
20	345	433	100	286	369
30	338	425	110	279	360
40	330	417	120	272	352
50	323	409	130	264	344
60	316	401	140	257	336
70	308	393	150	250	328

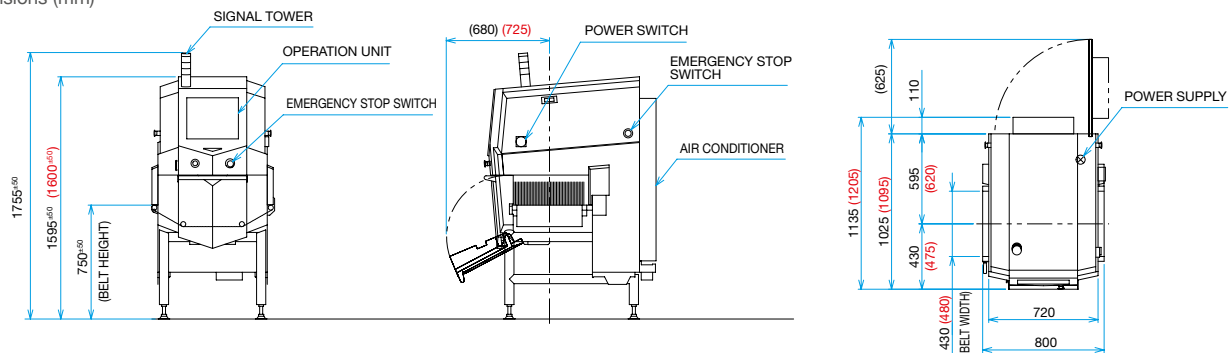
Inspection area

The figures below show the permissible inspection range. Portions of the product which are not within the shaded area are not irradiated.



*Red number dimension is IX-PD-45A2

Dimensions (mm)



Performance		IX-PD-36A2	IX-PD-45A2
Inspection area (max)		360(w)*1 x 150(h)mm	450(w)*1 x 150(h)mm
X-ray	Maximum output	300W	
	Tube voltage	25-75kV	
	Tube current	1-8mA	
Belt speed*2		10-60m/min	10-48m/min
Product length*3		20-450mm	
Loaded weight*4		5kg	
Protective curtain		Tungsten curtain (Detachable)	
Cooling unit		1.0kW Air conditioner originally installed	
Display		17" colour LCD touch panel	
Number of presets		100 items	
Specification			
Power supply*5		Single phase AC200V-240V 1400W (8.0A in case of AC200V)	
Machine material		Stainless steel	
Ingress Protection		IP66*6 (This rating is applied only if the cover of air conditioner is closed)	
Working Environment	Temperature	0-35°C	
	Humidity	30-85%*7 (without dew condensation)	
Machine weight		Approx. 340kg	Approx. 370kg

*1) Conveyor width *2) 1m/min interval setting is available *3) This dimension should be followed under Snap-Mode only. Do not apply under Bulk-Mode. *4) On a whole conveyor
 *5) Voltage fluctuation: within $\pm 10\%$. Power supply specification will differ depending on local regulation such as CE or options. *6) Based on internal test results
 *7) For temperature range of 25-35°C, 30-55%RH (without dew condensation)

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