

Dual Energy HR Type

X-ray Inspection System



XR75^h
Dual Energy

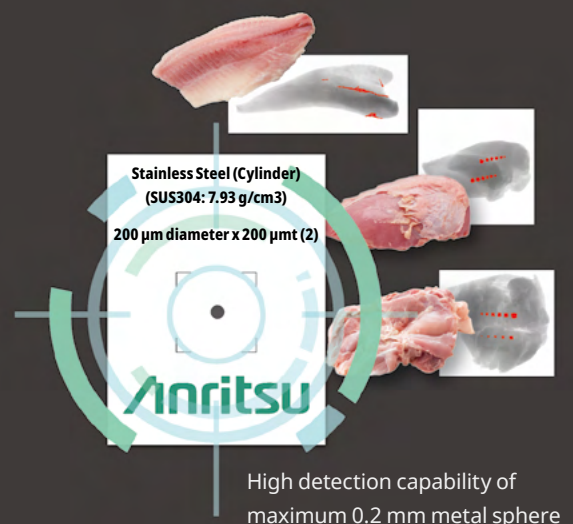
Spot fine contaminants with the sharpest eyes ever.

Standard Model

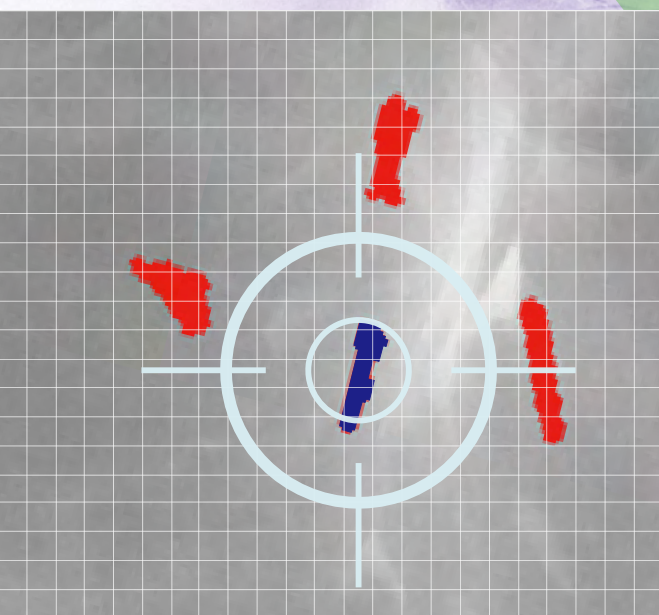


New Dual Energy Sensor That Breaks Through the Limits of Conventional Detection Performance

The standard dual energy model could not fully utilize its superiority of the dual energy inspection when it comes to thicker products or products with highly uneven surfaces. By introducing a new dual energy sensor, we have succeeded in making X-ray transmission images significantly sharper. It is now possible to clearly display the shadows of contaminants on these targets. In addition, the dedicated detection algorithms have improved the sensitivity to detect fine metals and small bones, which had been hard to detect.



HR Model



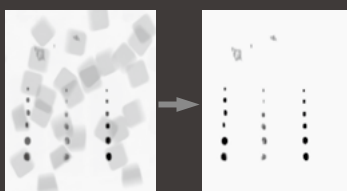
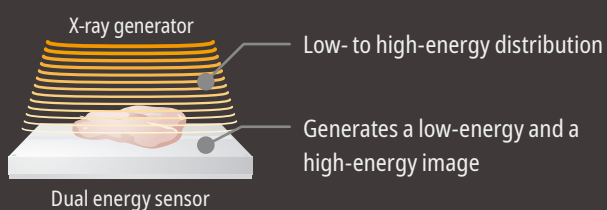
XR75^h
Dual Energy

Dual Energy Sensor Technology

Benefits

1. Detecting even thin bones (contaminants) and low-density bones
2. High sensitivity detection of products with overlaps, and rough surfaces.
3. Reduce false rejects on bulk flow product lines.

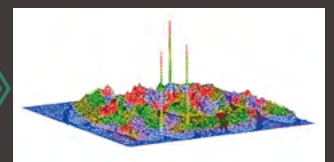
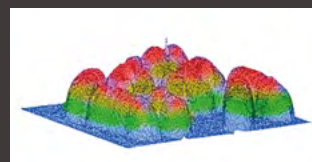
Mechanism



Dual energy subtraction better highlights contaminants.

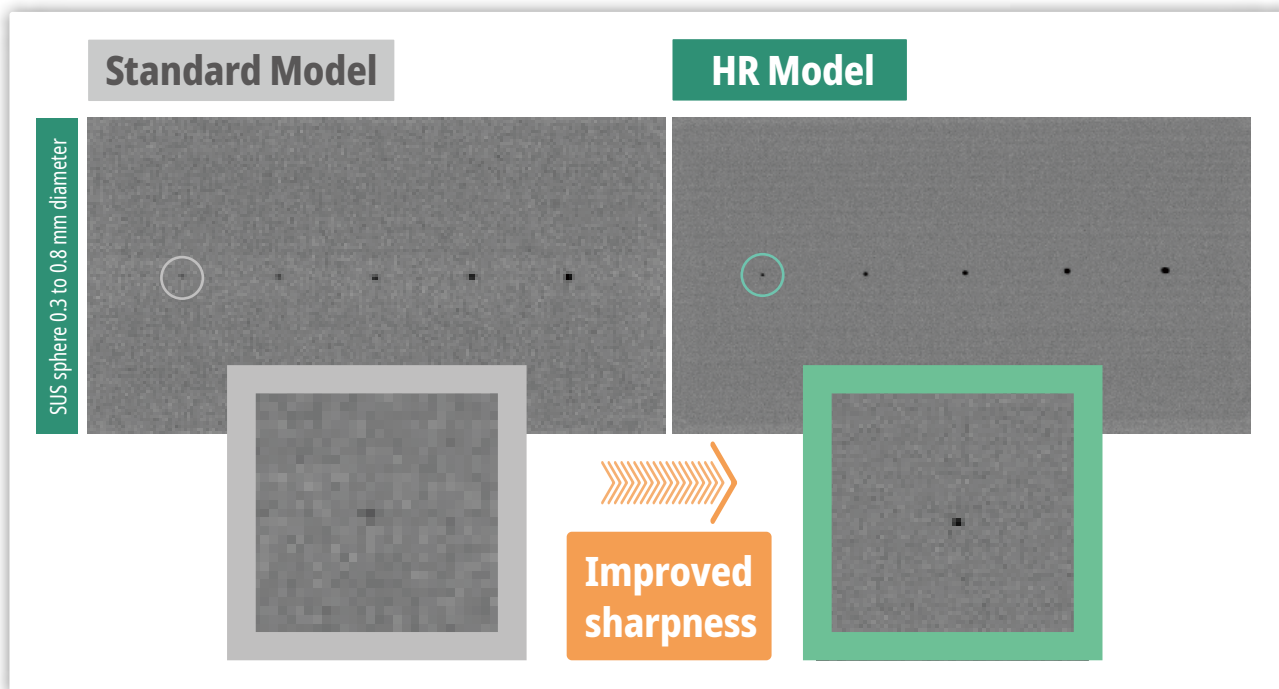
Detection Algorithm

The raw signals obtained from the transmission image created by irradiating X-rays are significantly affected by each product, which cannot be used for evaluation. To cope with this, advanced image processing is applied to reduce product effect and noise from the transmission image, leaving only contaminant signals. The Anritsu X-ray inspection systems can perform several parts of image processing simultaneously at high speed according to the characteristics of the product and type of contaminant. This optimum combination of image processing is called a "detection algorithm," which is one of the keys for achieving high-sensitivity and highly stable inspection.



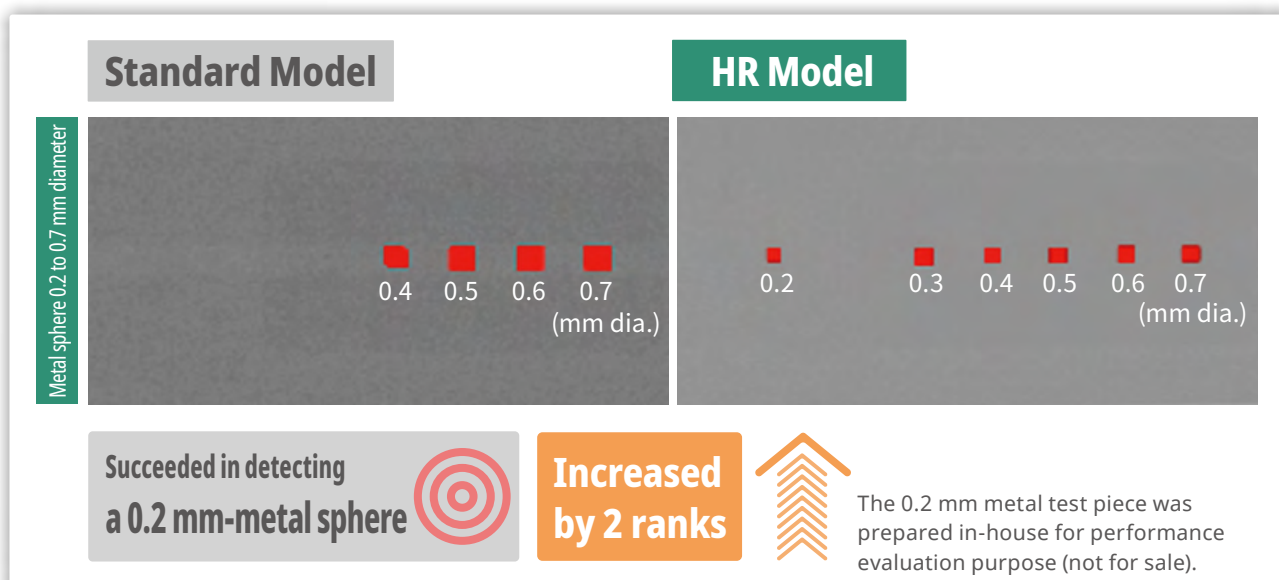
Evolution with the New Dual Energy Sensor

The new sensor has enabled high-resolution images to be obtained and improved the detection performance of fine metals and small bones. The dual energy system also significantly reduces the effects of products with rough surfaces, detecting even low-density contaminants. Especially for applications thicker than 40 mm, there is a noticeable difference compared to the conventional dual energy model.



Dedicated Detection Algorithm

The detection algorithms are tuned and optimized for high-resolution images obtained from the new sensor. Each algorithm has been developed and installed for different characteristics of products such as meat and fish, which results in improved detection sensitivity and reduced false rejections.



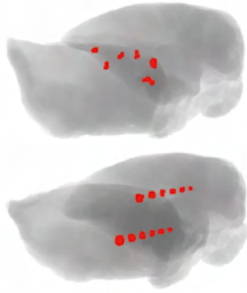
*Standard model: KXE7534AWHZE

Product Test Examples

Chicken breast



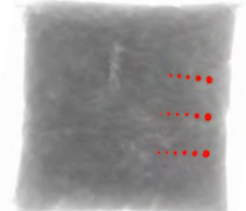
60 mm thick



Seasoned pork



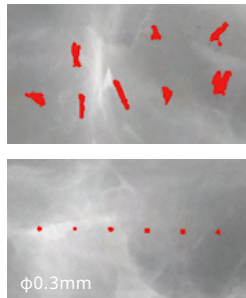
65 mm thick



Chicken leg



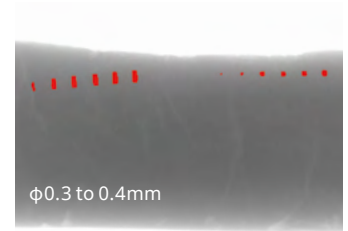
30 mm thick



Pork loin



45 mm thick



Salmon fillet



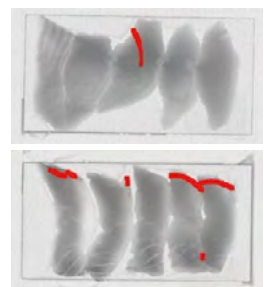
20 mm thick



Tuna sashimi



10 mm thick



Fillet (Alaska pollock)



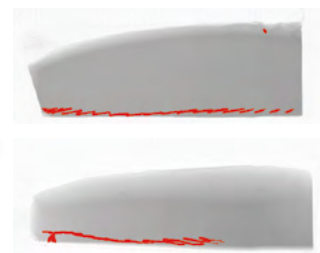
30 mm thick



Tuna block



40 mm thick



Safety in design

XR75^{IN} Dual Energy

Anritsu believes customer safety is of utmost importance.

Anritsu safety mechanism

Emergency stop switch

Cuts power to x-ray and drive circuits, stops the conveyor and x-ray radiation.

X-ray ON/OFF key

Turning the key to OFF stops x-ray radiation completely.

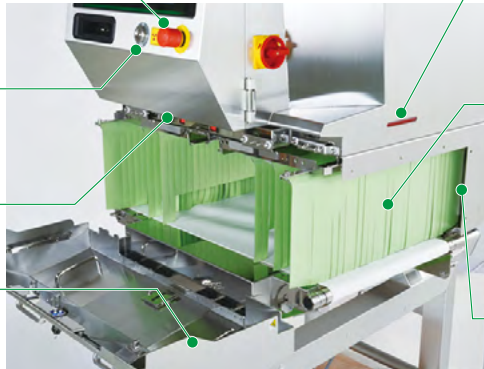
X-ray shield cover open/close sensor

Opening the cover stops x-ray radiation.

X-ray shield cover

Opened/Closed using x-ray Irradiation ON/OFF Key.

Opening the cover stops x-ray radiation due to the x-ray Shield Cover Open/Close Sensor.



X-ray irradiation display

The lamp is lit during x-ray radiation.

Leakage prevention curtain

Prevents x-ray leakage. For unpackaged or bulk products, the standard lead impregnated curtains are replaced with SUS covers - preventing direct food contact with the curtains.

Hand insertion sensor

Interrupting the sensor for a certain period of time stops x-ray radiation.

Safety management

X-ray inspection system has been designed to fully satisfy the safe operation. However, to ensure even higher safety, use the safety procedures outlined below.

① Periodic measurement and recording of x-ray leakage data

② Management of operator working hours

③ Additional safety measures

Covers may need to be mounted on upstream and downstream conveyors instead of the shield curtains, depending on the shape, weight, and package of products.

④ No disassembly or modification

NEVER modify or disassemble the main unit, covers, x-ray leakage prevention curtains, safety covers, safety interlocks, etc., otherwise the x-ray leak-proof design may no longer be functional.

X-ray Radiation Safety

Safety of Inspected Products

According to the World Health Organization (WHO), "irradiation of any food commodity up to an overall average dose of 10 kGy presents no toxicological hazard and introduces no special nutritional or microbiological problems." *

The maximum dose of x-ray radiation to the products moving through Anritsu x-ray inspection systems is 2.0 mGy, which is 5 million times lower than the WHO threshold.

*Wholesomeness of Irradiated Food: Report of a Joint FAO/IAEA/WHO Expert Committee, 1980

Safety of Humans

The average U.S resident receives a total radiation dose of 6.2 mSv/year (620 mRem). About one third (2.4 mSv / 240 mRem) of that annual radiation derives from natural sources like the sun and soil. The rest comes from manmade sources like medical procedures (a typical chest x-ray generates about 0.1 mSv / 10mRem) or air travel (a round trip flight from New York to Tokyo is about 0.2 mSv / 20 mRem).

Throughout the world, most governments consider 20–50 mSv/year (2,000–5,000 mRem) to be safe for occupational workers. Anritsu cabinet x-rays are engineered to meet some of the strictest emission standards in the world. A typical Anritsu x-ray solution is designed for maximum dosage of 2.0 mSv/year (200 mRem) This is based on the improbable scenario of a worker continually being 2 inches (5.08 cm) from the x-ray machine 2,000 hours/year (40 hours/week × 50 weeks). For typical work environments, the actual radiation dose from the cabinet x-ray to the worker is negligible.

Note: Please follow the local laws and regulations regarding the installation and use of the x-ray inspection systems.

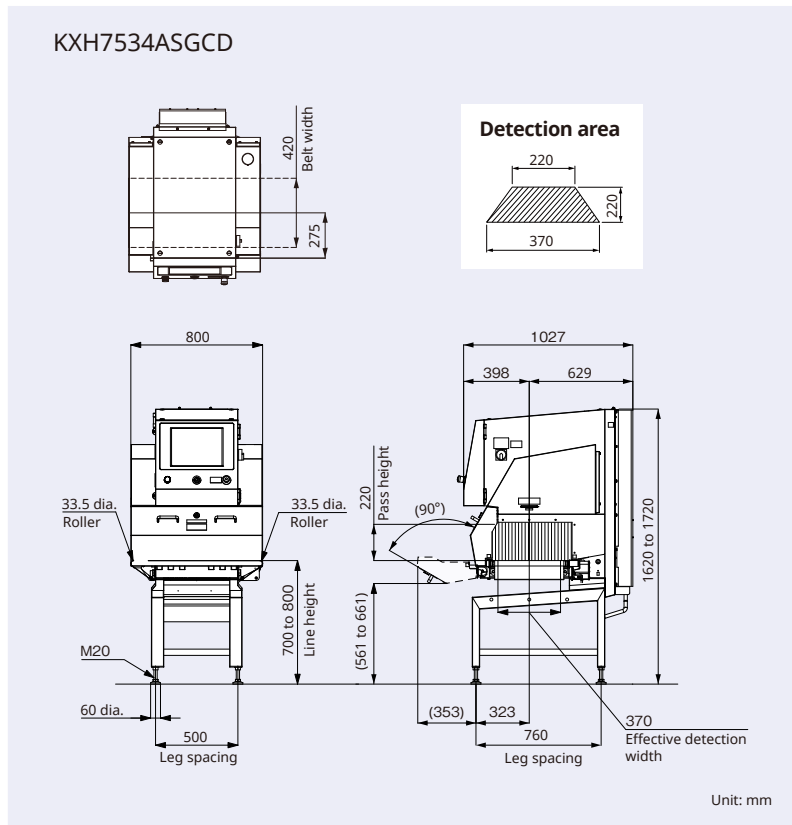
Major specifications

XR75ⁱⁿ Dual Energy

For Packaged Products

*For unpackaged products (optional), please contact our sales representative for details.

External Dimensions



Specifications



Model	KXH7534ASGCD
X-ray output	Tube voltage 30 to 80 kV, Tube current 0.4 to 10.0 mA, Maximum output 300 W
Safety	X-ray leakage maximum 1.0 μ Sv/h or less, prevention of x-ray leakage by safety devices
Display	15-inch color TFT LCD
Operation method	Touch panel (with touch buzzer)
Detection area ^{1,2}	Maximum width 370 mm, Maximum height 220 mm
Belt width	420 mm
Preset memory	200
Belt speed ³ / Maximum product weight ⁴	10 to 45 m/min, maximum 5 kg
Power requirements ⁵	200 Vac to 240 Vac, Single phase, 47 Hz to 63 Hz, 1800 VA or less
Mass	350 kg
Environmental conditions	Temperature: 0°C to 35°C, Relative humidity: 30% to 85%, non-condensing
Protection class	IP66 (air conditioner: IP54)
Exterior	Stainless steel (SUS304)

1 : The product size should fall below the detection area.

2 : The entrance and exit may require covers depending on the length of a product.

3 : Variable depending on Product No.

4 : Sum total of product weight on the conveyor.

5 : Allowable power fluctuation range is $\pm 10\%$.



ANRITSU CORPORATION

5-1-1 Onna, Atsugi-shi, Kanagawa, 243-8555, JAPAN
TEL: +81-46-296-6699 FAX: +81-46-296-6786
<https://www.anritsu.com/infivis>

Anritsu Industrial Solutions (Shanghai) Co., Ltd.
Room 703-704, Sandhill Central, No.505 Zhangjiang Road, Pudong New Area, Shanghai 201210, P.R. China
TEL: +86-21-5046-3066

ANRITSU INFIVIS (THAILAND) CO., LTD.
700/678-679 Moo1, Amata City Chonburi Industrial Estate, Tambol Panthong, Amphur Panthong, Chonburi 20160 Thailand
TEL: +66 38-447180 FAX: +66 38-447182

ANRITSU INFIVIS B.V.
Grubbenvorsterweg 10 5928NX, Venlo, the Netherlands
TEL: +31(0)20-2254220

ANRITSU INFIVIS LTD.
Unit 3, Scott Road, Luton, LU3 3BF, United Kingdom
TEL: +44(0)845 539 9729

ANRITSU INFIVIS INC.
701 Innovation Drive, Elk Grove Village, IL 60007, U.S.A.
TEL: +1-847-419-9729 FAX: +1-847-537-8266

© ANRITSU CORPORATION 2021
ISO14001, ISO9001 Certified

- Some products shown in this catalog may not be available in your country or region. Contact our sales representatives for details.
- To ensure proper operation, read the Operation Manual before using the machine.
- In addition to daily inspection, a full maintenance inspection should be completed annually.

Specifications are subject to change without notice.
No part of this catalog may be reproduced without our permission.