Anritsu

ANRITSU INFIVIS CO., LTD.

Product Overview

Weighing & Inspection

Anritsu Infivis leads the world in advanced inspection technologies in x-ray, checkweighing, and metal detection.

Anritsu inspection systems are designed for the inspection of a wide range of products and are used all over the world to ensure product safety and quality.

Anritsu inspection equipment are commonly used on production lines for food and pharmaceuticals. Most processed products sold in convenience stores, supermarkets, and other retail stores are inspected during the weighing, packaging, packing and various stages of the production process. The inspection includes checking the weight of packaged contents, detecting contaminants, and checking package integrity.

In addition, Anritsu inspection systems are used in a variety of different industries such as weight inspection of machine parts and batteries, and contaminant inspection of needles in garment factory, etc.

Contaminant inspection: Detection of metals, bone, glass, ceramic, and other unwanted foreign materials

Content check: Missing/present, under/over, and counts

Package check: Product in seal, defective printing

Weight inspection: Quantitative check, grading

Weighing: High-speed automated weighing (single & multi-lane)

Production and quality management: Centralized control, monitoring, statistical analysis, traceability (QUICCA)
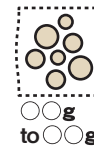

Example of product inspection line

1 Weighing
Product is weighed in a certain range.

Automatic Combination Weigher

Weigh and combine ingredients of several different weights to create acceptable combinations. (Combination Weighing)

○○g to ○○g

📷 **Inspection line at a food factory**

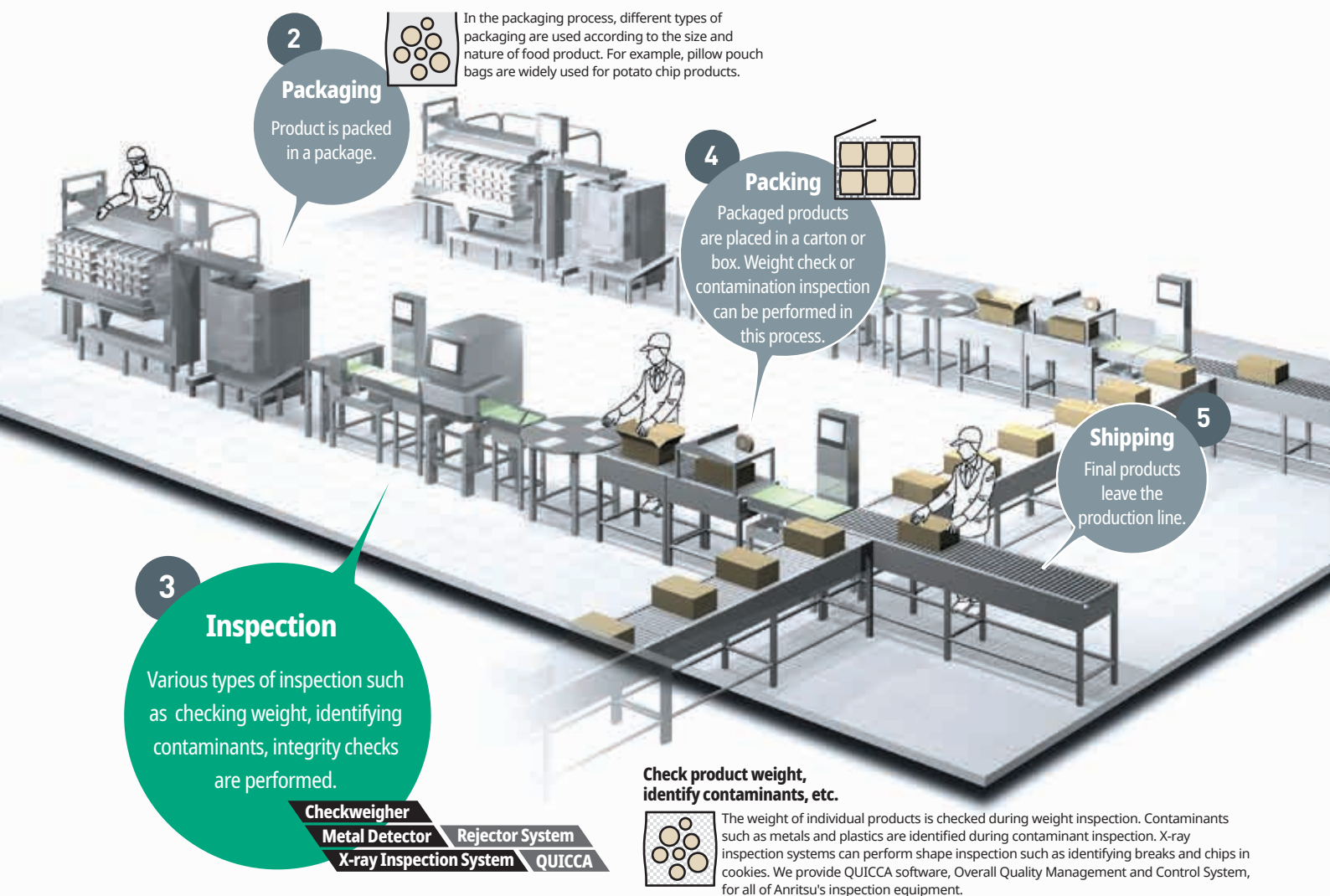Anritsu x-ray inspection system installed on a production line for contaminant inspection of imported raw materials.

Basic Operation

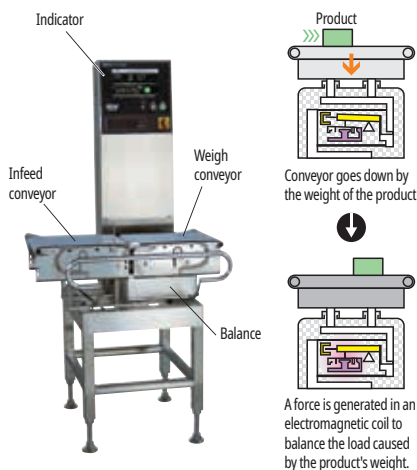### Automatic Combination Weigher
(When using the Clean Cup Scale)

❶ Ingredients on a feeder are transferred to hoppers in the first row.
❷ Ingredients are moved to hoppers in the second row for weighing.
❸ The target weight is selected from ingredients in hoppers in the second and third rows.
❹ Ingredients on a conveyor are moved to the collecting chute.

Feeders and hoppers weighing stir-fried noodle.

Working table   Feeder   Display/Operation panel

Hoppers
—First row: Stock hoppers
—Second row: Weighing hoppers   Conveyors
—Third row: Memory hoppers   Collecting chute

2

Packaging

Product is packed in a package.

In the packaging process, different types of packaging are used according to the size and nature of food product. For example, pillow pouch bags are widely used for potato chip products.

4

Packing

Packaged products are placed in a carton or box. Weight check or contamination inspection can be performed in this process.

5

Shipping

Final products leave the production line.

3

Inspection

Various types of inspection such as checking weight, identifying contaminants, integrity checks are performed.

Checkweigher
Metal Detector   Rejector System
X-ray Inspection System   QUICCA

Check product weight, identify contaminants, etc.

The weight of individual products is checked during weight inspection. Contaminants such as metals and plastics are identified during contaminant inspection. X-ray inspection systems can perform shape inspection such as identifying breaks and chips in cookies. We provide QUICCA software, Overall Quality Management and Control System, for all of Anritsu's inspection equipment.

Checkweigher

1. Stabilize the product on an infeed conveyor.
2. Weigh the product on a weigh conveyor.
3. Generate electromagnetic force that is balanced to the weight of the product in order to calculate mass (Below image shows Force Balance method).
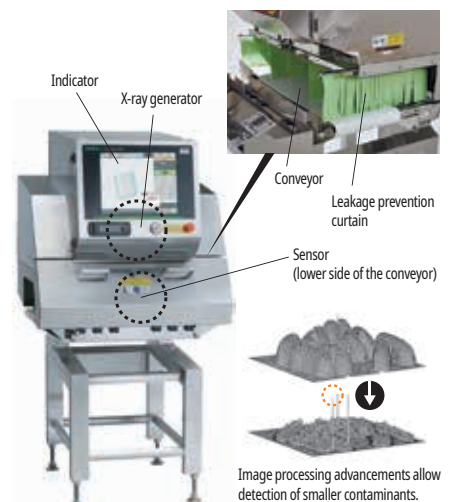4. Evaluate a product and send the signal to a rejector system.

Indicator

Infeed conveyor

Weigh conveyor

Balance

Product

Conveyor goes down by the weight of the product

A force is generated in an electromagnetic coil to balance the load caused by the product's weight.

Metal Detector

1. Generate a magnetic field in a head.
2. Fluctuations in magnetic fields can occur when a product with metals passes through the head (the image below).
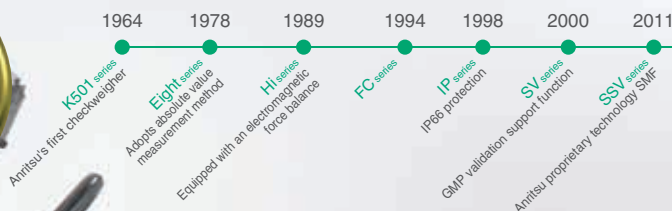3. Process and analyze signals from magnetic fields in order to detect contaminants.

Product   Head   Magnetic field   Change in the magnetic field

Indicator

Conveyor   Head
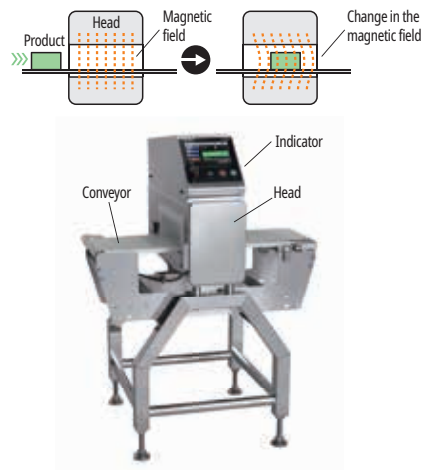
X-ray Inspection System

1. X-rays are generated by the x-ray generator to irradiate the inspected product.
2. X-ray levels after transmission is detected by the x-ray sensor and shown in an x-ray image (electric signal).
3. Image analysis is performed to identify a contaminant.

Indicator

X-ray generator

Conveyor

Leakage prevention curtain

Sensor (lower side of the conveyor)

Image processing advancements allow detection of smaller contaminants.

Checkweigher

1964	1978	1989	1994	1998	2000	2011

K501 series — Anritsu's first checkweigher

Eight series — Adopts absolute value measurement method

Hi series — Equipped with an electromagnetic force balance

FC series

IP series — IP66 protection

SV series — GMP validation support function

SSV series — Anritsu proprietary technology SMF

A diverse product lineup for the inspection of a wide range of products
SSV Series
High accuracy, waterproof, and versatile models are available to suit a wide range of products.

Compact and reliable inspection
Combination Checkweigher and Metal Detector
Provides outstanding weighing and detection accuracy with small footprint.

Dual lane simultaneous inspection
Dual-Lane Checkweigher
Suitable for lines where two lanes of products are inspected with just one unit, such as divided filling packaging or tube filling lines.

12-lane simultaneous inspection
Built-In Multi-Lane Weighing System
Suitable for a variety of products ranging from foods to precision components that are manufactured in multiple lanes simultaneously.

12-lane simultaneous inspection
Multi-Lane Checkweigher
A space-saving checkweigher for lines where multiple lanes of products are inspected with just one unit, such as a divided filling packaging or pouch filling lines.

For large size cases and packages
High Load Checkweigher
Ideal for finished products in cartons and cardboard boxes. This reliable checkweigher can weigh products up to 60 kg.

Checkweighers play a vital role in food and pharmaceutical manufacturing by ensuring consistency of product weight. Anritsu checkweighers are capable of weighing 600 products per minute with maximum accuracy of +/- 0.015 g. Our force balance weighing technology provides the industry's highest weight accuracy of +/- 0.5 mg, meeting even the most stringent standards for capsules containing high potency active pharmaceutical ingredients.

Our checkweighers offer high speed weighing of 600 products/min on high volume production lines.
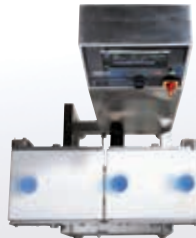
Anritsu checkweigher with unique features minimizes "a double product error" that can occur easily on high-speed production line.

Our advanced force balance cell achieves ultra-precise weighing well suited for pharmaceutical applications.

Classifies frozen scallop into 8 ranks

Frozen Scallop Grading System

Automatically grades frozen scallops based on specified quantity and mass. The system handles up to 250 scallops/minute with a maximum accuracy of +/- 1.0 g.

Classifies fresh fish into 12 ranks

Fresh Fish Grading System

Graders automatically classify fresh fish into up to 12 ranks based on specified quantity and mass. Maximum throughput is 400 sauries or 250 mackerels per minute with a maximum accuracy of +/- 3 g.

Ensures stable product transfer

Checkweigher for Instant Noodle in Bags

An extended infeed conveyor ensures proper product spacing and stable transfer for accurate weight inspection.

Side belt conveyor

Side-Belt Checkweigher for Beverage Cartons

An angle adjustable mechanism allows for handling unstable paper carton beverages. Combination with a metal detector is also available.

High accuracy weighing for capsules containing active pharmaceutical ingredients

Capsule Checkweigher

Capsules can be individually checkweighed with the industry's highest weight accuracy of +/- 0.5 mg.
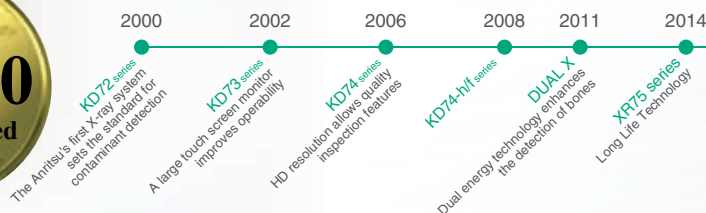

Achieve dynamic weighing for small bottles

Small Bottle Checkweigher

The weighing systems have stable transfer and high accuracy measurement for slim, small-diameter bottles including nasal drops and eye lotions that are difficult to transfer independently.

X-ray Inspection Systems

Over 10,000 units installed as of March 2019

2000 — **KD72 series**
The Anritsu's first X-ray system sets the standard for contaminant detection

2002 — **KD73 series**
A large touch screen monitor improves operability

2006 — **KD74 series**
HD resolution allows quality inspection features

2008 — **KD74-h/f series**

2011 — **DUAL X**
Dual energy technology enhances the detection of bones

2014 — **XR75 series**
Long Life Technology

Reliable and accurate inspection with reduced power consumption

XR75 Long Life

XR75 provides heightened sensitivity at reduced energy levels. Because of this, cost of ownership is significantly lowered and life cycles are extended.

For a variety of product integrity checks

Package Check X-ray Inspection System

New sensor unit delivers industry leading detection. It is ideal for detecting a small amount of the product caught in the seal area.

For unpackaged meat and fish

Bulk Fresh Food X-Ray Inspection

With no protection curtains, this system is perfect for unpackaged fresh meat and fish.

For lightweight products and those in small bags

Lightweight Product X-ray Inspection

A unique X-ray shield mechanism supports stable conveyance for small/lightweight products without being caught by protection curtains.

For overlapping products or those with uneven thickness

DualX X-Ray Inspection System

Anritsu's DualX technology analyzes two different x-ray energy signals at the same time, allowing it to distinguish between product and contaminant. Overlapping and randomly oriented meat products can be inspected without any negative effects.

Economy type for dry products

KD74-f Series

Products in packaged goods, lightweight dry products and products in small bags can all be inspected by this economy but high definition X-ray inspection system.

X-ray inspection systems are widely used in many places such as medical examination at hospitals, baggage screening at airports, etc. Anritsu x-ray inspection systems irradiate x-rays on food and pharmaceutical products in order to identify contaminants on x-ray transmission images. In addition to contaminant detection, x-ray systems can perform product verification simultaneously at high speed such as shape detection, missing inspection, seal integrity checks, etc.
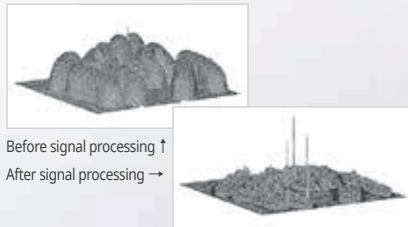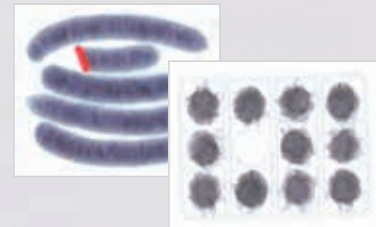

Before signal processing ↑
After signal processing →

Anritsu's unique x-ray technology allows detection of smaller contaminants.

Best-in-class inspection capability
- 0.2 mm diameter metal

Left: Cut sausage Right: Missing cupcake

X-ray control technology optimized for pharmaceutical applications

Pharmaceutical X-ray Inspection System

Suitable for the inspection of product defects such as missing pieces and products caught within hermetic seals that cannot be observed by conventional means.

For pumped products

Pipeline X-Ray Inspection System

Suitable for the inspection of fluids and semi-solid products flowing in a pipe, such as ground meat, shelled clams, sauces. etc.

IP69K protection

Poultry X-ray Inspection System

The DualX system is optimal for use in the poultry industry, detecting low density remaining bones in poultry meat, which were difficult to detect with conventional systems. Designed to withstand high pressure washdown.

For standing products

Side View X-ray Inspection System

A side view system with a different X-ray direction is specifically designed for tall, upright containers including plastic bottles and milk cartons.

For shrink packages, large bags and cartons

Large Product X-ray Inspection System

A large aperture infeed system allows for the inspection of large cartons, cases and bags, as well as those containing multiple small packs.
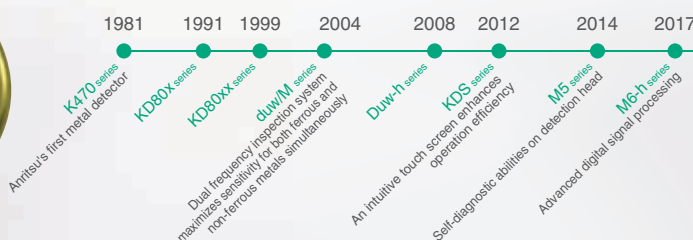

High pressure washdown protection

Sanitary Design X-Ray Inspection System

Equipped with an air conditioner, IP69K-protected cabinet and conveyors, this system is suitable for the inspection of unpackaged meat.

Metal Detectors

Anritsu's metal detectors identify metal contaminants including ferrous, stainless steel, and aluminum. We provide the most sensitive and effective metal detection technology in the industry.

Over 55,000 units installed as of March 2019

1981	1991	1999	2004	2008	2012	2014	2017

K470 series — Anritsu's first metal detector

KD80X series

KD80xx series

duw/M series — Dual frequency inspection system maximizes sensitivity for both ferrous and non-ferrous metals simultaneously

Duw-h series

KDS series — An intuitive touch screen enhances operation efficiency

M5 series — Self-diagnostic abilities on detection head

M6-h series — Advanced digital signal processing

Dual wave high sensitivity metal detector

M6-h Series

With a detection head featuring vibration, electric noise resistant and advanced digital signal processing, the M6-h delivers outstanding detection sensitivity and stability on your production line.

Equipped with stabilizing technology, HRDSP, for simplified operation

M5 Series

Easily navigated one-touch operation for frequently used functions. Simple wizard for product registration and troubleshooting.

For standing products

Tall Product Metal Detector

Suitable for tall products in containers, such as beverages and seasonings in glass and plastic bottles.

For large products

Large Aperture Metal Detector

The large aperture infeed is suitable for larger bulk and packaged products.

For aluminum packaged products

M Series Metal Detector

The unique magnetoreflection method can detect metals in aluminum-packages with high sensitivity.

For aluminum packaged products

KD821 Series Metal Detector

Suitable for aluminum packaged products including retort pouch foods and snacks.

Automatic Combination Weigher

Our Automatic Combination Weighers are designed to deliver fast and accurate weighing of sticky foods and fragile products.

Gentle product handling and ease of use

Clean Multi Scale Cube

Measures snacks, candy, cereals, and other fragile products with high speed and high accuracy. Designed to minimize impact and damage to products, this system dramatically reduces the giveaway.

Smooth handling of sticky products

Clean Cup Scale

Anritsu proprietary VM (vertical memory) method enhances production capacity and reduces raw material waste. Our unique level-off shutters enable effective weighing of difficult-to-handle sticky products such as cooked meat, Kimchi, etc.

Quality Control Management

Anritsu's quality control system, QUICCA, provides advanced system tool for quality control to exceed customer satisfaction.

QUICCA (Overall Quality Management and Control System)

QUICCA provides visualization of inspection system status, production data, and quality analysis. It also helps eliminate future problems, with a centralized control that facilitates the detection of abnormalities and allows for faster, easier data analysis.

Rejector

RJ

Anritsu rejection systems properly isolate defective products during inspection. Various types of rejection systems are available to suit a wide range of products.

Air Jet Type

Defective products are blown sideways off of the line by a powerful air blast. Ideal for small, lightweight packaged products at high speed.

Dropout Type

The rejection conveyor drops down to drop a defective product. Ideal for products in thin bags.

Swing Pusher Type

Ideal for rejecting tall products in standing containers. The tall arm pushes products off the line.

Shuttle Type

The belt on the rejector is expanded/contracted during the rejection to let the rejected products fall. Ideal for unpackaged animal products and sticky bulk products.

Flipper Type

Defective products are pushed aside by the rejector gates. Ideal for product in boxes and thick bags.

Up and Out Type

The rejection conveyor flips up so that a defective product drops out of the line. Suitable for products in thin bags.

Pusher Type

Defective products are pushed off the line sideways by the action of a gate attached to an air cylinder. Suitable for rejecting products in packages and thick bags.

Chute Type

Rejected products fall when the chute is reversed. Ideal for rejecting relatively light bulk products.

Carrier Type

Defective products are sorted horizontally without any shock due to rejection. Since the rejection process does not cause any damage, it is ideal for fragile products.

Trip Type

In this unusual belt method, Defective products are carried off either left or right by belts running crosswise to the product flow. Suitable for rejecting large packaged products.

Commitment to real solutions yields sophisticated quality control.

Total in-house system

Anritsu designs and develops all its products in-house to support every solution with 100% confidence. We are dedicating to meet your strict demands for quality—through both our products and through our support.

Global maintenance network

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Anritsu envision : ensure

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・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.

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