

# IX-GN Series



# A certain choice for wide range of products

**ISHIDA patented Genetic Algorithm (GA) image processing delivers superior accurate inspection.**



- High versatility for wide range of packed and unpacked products
- GA image processing automatically generates optimal sensitivity achieving the fastest product change-overs
- Integrated air cooling system, user-friendly 17" touch screen control

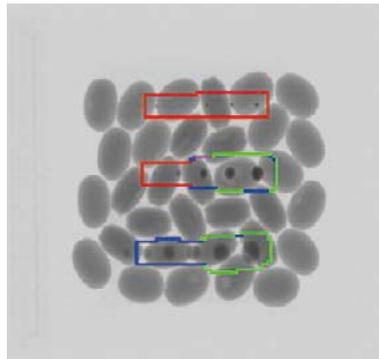


# Seven-Step Image Analysis for High-Sensitivity Inspection

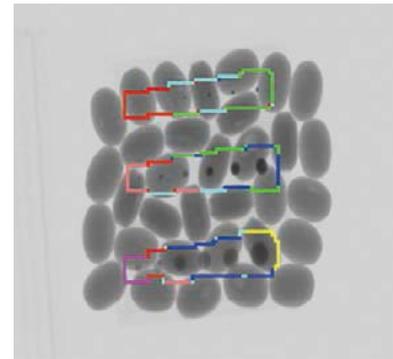
Proprietary 7-step image analysis technology detects foreign objects with high sensitivity. Supports increased sensitivity in foreign object detection with selections from a library and the ability to register up to four GA programs created for a product.



Maps stainless steel, glass, rubber and foreign objects.



With inspection images from conventional models  
Unable to detect some



With inspection images from IX-GN  
All detected

## Easy to Operate

### Easy Setting with Auto Set

It only takes a few passes of an item to be inspected for the machine to automatically optimize settings for x-ray output (tube voltage and current), contrast (image enhancement), sensitivity level and other factors. With Auto Set you can achieve a sensitivity setting that meets your objectives by selecting a setting level balance from three patterns. Increasing the number of settings enables accurate sensitivity design. This improves the validity and reliability of the inspection.



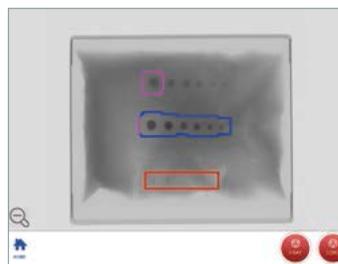
Sensitivity Setting Screen



Auto Set Screen

### Full Screen Image Display

Zooms in to fill the screen with the inspection image. This large view of the inspected items and foreign objects is convenient for visual inspection or other activities.

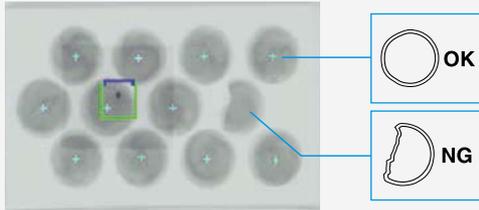


Large  
17-Inch  
Display

# Uses Image Processing Technology to Improve Product Quality

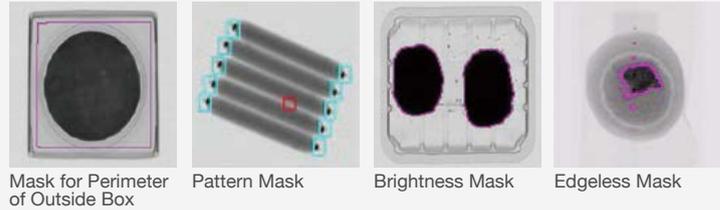
Uses high-level image processing technology to simultaneously detect foreign objects and accurately inspect products.

## Standard Features



## Defect Inspection

Determines whether a product has passed the inspection or not based on factors including the area of an individual product, its perimeter length and its shading.

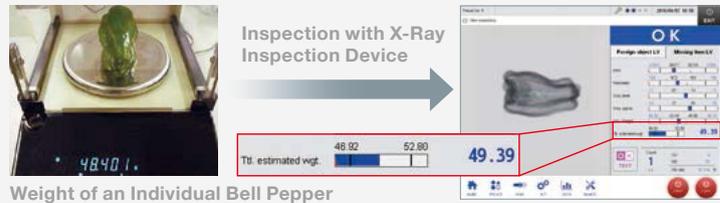


## Masking Feature

The sensitivity of foreign object detection is improved by taking into consideration individual product attributes and masking areas that may cause false positives.

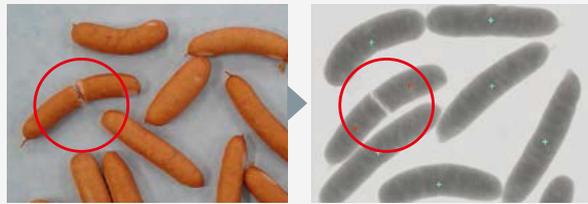
## Weight Estimation Feature Comes as Standard

Analyzes x-ray inspection images and accurately estimates the weight of the inspected item. This feature can be useful for example for continuous packaged goods where individual weight inspection is not possible, and for ranking agricultural and marine products.



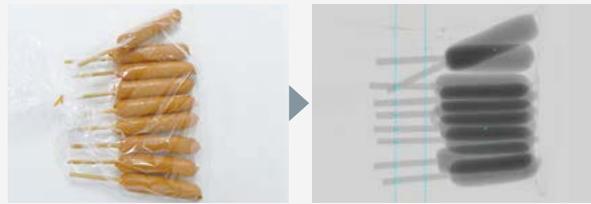
Weight of an Individual Bell Pepper

## A Variety of Image Processing Features



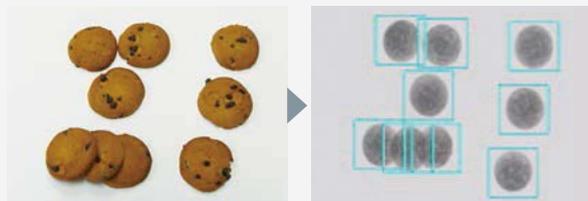
## Defect Inspection for Loose Products

Inspects for defects such as cracks even for loose products.



## Multiple Cylindrical Object Inspection

Specifies the count area, and counts the number of skewers. Prevents missing and broken skewers.



## Multiple Flat Object Inspection

Counts the number of pieces of overlapping flat products.



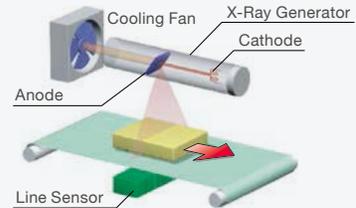
## Individual Weight Inspection

Simultaneously measures the weight of each specified area.

# Using GA for Highly Sensitive Foreign Object Detection

Employs Ishida's unmatched, proprietary image processing technology to detect foreign objects with high sensitivity. We have assimilated our technical expertise and past experiences, and have made a system that has advanced easier usage with GA programs that support multiple inspection types.

## Principle of the X-Ray Inspection Device



X-rays irradiate items to be inspected that are traveling on the conveyor. A proprietary 5-level image analysis technique is applied to the x-rays that pass through the object and are received by the line sensor, making it possible to detect and eject mixed-in foreign objects, defects, etc.

## GA Evolutionary Image Processing

\*GA Evolutionary Image Processing is a registered trademark of National University Corporation, Yokohama National University.

Employs the latest image processing technology of GA Evolutionary Image Processing. The computer automatically creates the optimum image processing program for differentiating between foreign objects and food products.

### Sausages

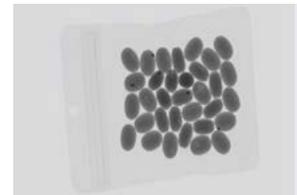


### Example: Detecting Foreign Objects mixed in with Sausages

Gen1	Gen10	Gen100
<p><b>Image Processing Before Evolution</b>  <b>Foreign object extraction in the first generation</b>                      There is no foreign object extraction, only the unevenness of the sausages.</p>	<p><b>Image Processing during Evolution</b>  <b>Foreign object extraction around the 10th generations</b>                      The three foreign objects are largely extracted from the sausages.</p>	<p><b>Image Processing after Evolution</b>  <b>Foreign object extraction around 100th generations</b>                      The foreign objects are more comprehensively extracted.</p>

## It Is Easy to Create GA to Meet Work Requirements

GA is easy to create. With programs optimized for each inspection object, anyone can inspect with high sensitivity.



Map a provisional foreign object

## GA Can be Easily Created to Meet Work Requirements

We support high-sensitivity foreign object detection. All you have to do is select the program that matches your requirements from our abundant selection of pre-registered programs. You select by viewing actual detection images, so you will be able to select the optimum program for your objective.

<p><b>A</b> Minute, high-density foreign objects</p> <p><b>B</b> Minute, low-density foreign objects</p>	<p>Without GA</p>	<p>Select a program that targets <b>A</b></p>	<p>Select a program that targets <b>B</b></p>	<p>Using GA</p>
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# Many types of data management are possible

## Data Collection Software **i-STATION LINK 2** Option

This application allows you to check—by using the PC—x-ray images, inspection data and the operating status for machines that are working together.



## Comes with a USB Port Option

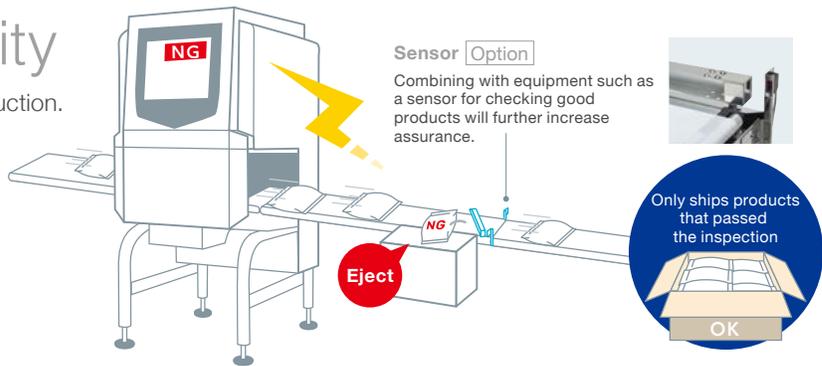
You can export inspection data via the USB port. Use a PC for more convenient data management.

# Safety and Security

Failsafe design. Supports safe, secure production.

## Only Ships Products that Passed Inspection

Products that did not pass the inspection will not be mixed in with shipped products, even if the connected sorting device malfunctions.



# Ease of Cleaning

This model supports the general requirement for easy cleaning. It is made of entirely stainless steel construction and the inspection chamber is of a water-proof construction.

The protective curtain and conveyor can be easily removed without tools.

## Easy to Attach and Remove Parts



Protective Curtain



Non-Contact Switch



An optional non-contact interlock switch for the protective curtain simplifies attachment and removal from the main body, reducing the risk of damage to the switch.



Belt

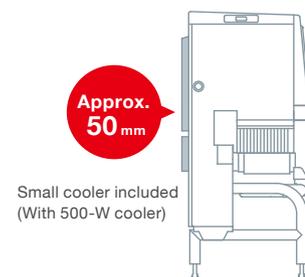
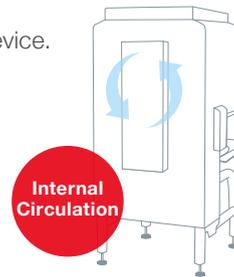


Conveyor Frame



# Sealed Construction Reduces Risk

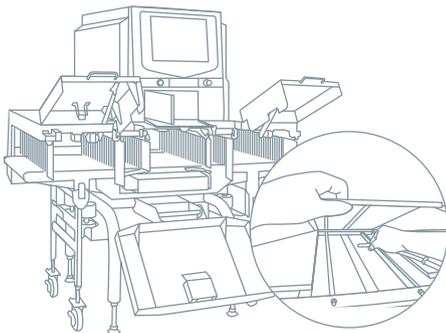
The sealed construction reduces internal problems by preventing fine particles, etc. in the air from entering the device. A small cooler makes for a clean exterior appearance.



# Comes in Various Models

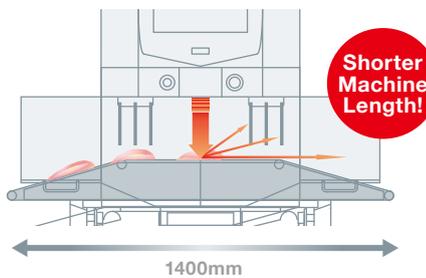
## Support for Heavy Products [-S model]

Used to inspect heavy products. Higher sensitivity inspection is even possible for products that are unstable because of the time it takes for them to stabilize after loading.



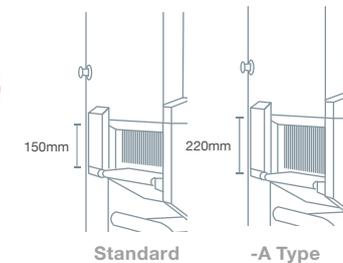
## For Loose Products [-H model]

Targeted for unwrapped products like meat and loose products such as solid spices. With a trapezoidal conveyor even a short protective cover will prevent x-ray leakage, shortening the machine.



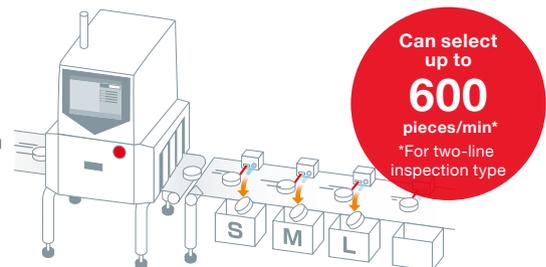
## For Tall Products [-A model]

Taller opening for high-sensitivity inspection of tall products.



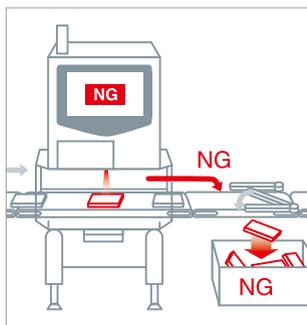
## Fast Rank Selection

Widely used at production sites for oysters, scallops, bell peppers, etc. To match production volume, you can select the two-line inspection type, or the high-speed inspection type. Capable of a maximum of 16 selection ranks. Foreign object detection can be done simultaneously with rank selection, contributing to quality improvement.



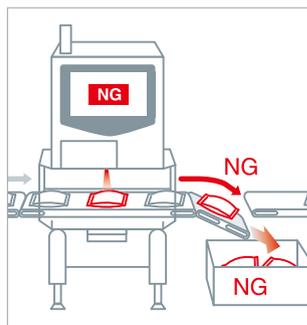
## Rejector lineup

A variety of rejection systems are available to suit different products and production lines.



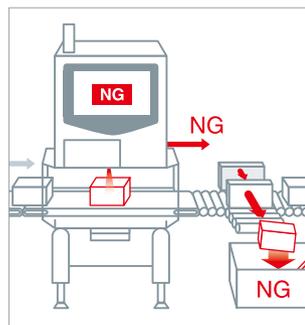
### Arm rejector

Arm rejector is a general-purpose system, appropriate for thick products.



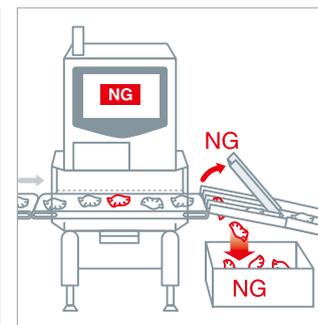
### Drop belt rejector

Drop belt rejector sorts products with a vertically movable belt. It is suitable for rejecting thin products.



### Push plate rejector

Push plate rejector sorts products on a conveyor using an air-driven device. It is suitable for rejecting heavy items such as cardboard and kraft paper products.



### Up flap rejector

Up flap rejector has a vertically movable flap that allows product to drop below it. It is suitable for separating small bulk items.



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