

1341 Barclay Blvd | Buffalo Grove | IL | 60089

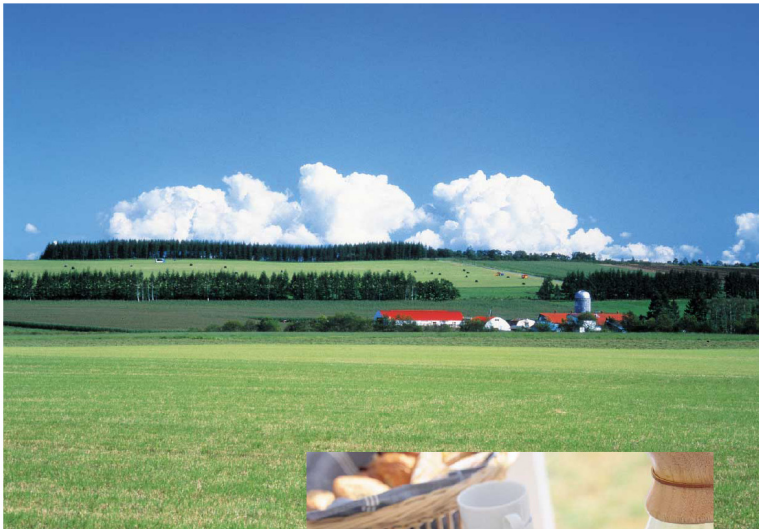
PHONE: 847-419-9729

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WEB: [www.detectionperfection.com](http://www.detectionperfection.com)

## BULK FLOW NUTS KD7416ABWH X-Ray Application Report

*Contaminant Inspection System Offering  
safety to meet every need of the ages and  
support quality assurance.*



### Quality detection technology leads to ensure clear safety.

Concerning to the food we eat every day for life, there must be clear assurances that it has been processed and distributed safely and properly processed from the original location to the consumer. This is a quality assurance that we are seriously seeking now. The Anritsu X-ray Inspection System targets integrated quality assurance with the development of various algorithms, such as missing product check or shape detection, not only a check for contaminants. Metal detectors also achieve optimal detection sensitivity for ferrous and non-ferrous metals, and prevent metal contaminated products from flowing out by the development of a simultaneous 2-frequency magnetic field detecting method. For quality management such as ISO or HACCP, our system surely ensures product quality and guarantees you a certain reliance, such as recording all the product numbers, etc. The Contaminant Inspection System, which is necessary for your food safety, reflects contemporary needs and supports customers' quality management.



Anritsu Industrial Solutions USA Inc.

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# Anritsu X-Ray Application Report

## Model

X-Ray Model: KD7416ABWH  
Reject Model: (1) Single, Dual or 5-lane Lane Pivot Reject  
(2) 16 Zone Air Blast System

## Production Line Details

Product: Various Nuts  
Dimensions: 14" wide x 1" high product depth  
Production Rate: 10,000 lbs per hour (faster possible)  
Belt Speed: 30m/min  
Orientation: Continuous Flow with a uniform 1" product depth  
Packaging: None

## Detection Accuracy Online

Ferrous Detection: 0.6 | 0.8mm sphere  
Non-Ferrous Detection: 0.6 | 0.8mm sphere  
Stainless Detection: 0.6 | 0.8mm sphere  
Aluminum Detection: 2.0 | 3.0mm sphere  
Stainless Wire Detection: 0.6mm | 0.7mm dia x 2mm long  
Glass Detection 2.39g/cm<sup>3</sup>: 2.0 | 3.0mm glass sphere  
Ceramic Detection 3.9g/cm<sup>3</sup>: 2.0 | 3.0mm ceramic (stone)  
Quartz Stone: 2mm to 5mm cubed quartz stone

## Application Notes

Almonds were fed through the bulk flow x-ray system in a consistent flow usually using a vibratory conveyor. Results using this technique are very accurate compared to online installations. Quartz stones and standard test sample spheres were introduced on top of, below and inside the product for accuracy testing. Automatic detection of 85% to 95% of the quartz stones supplied by a vendor was possible with the best results being seen with a product depth of 1.5" or less. Automatic detection is indicated by the contaminant being highlighted in red, pink, green or blue (algorithm dependent) on the x-ray image for easy analysis. (See images below)

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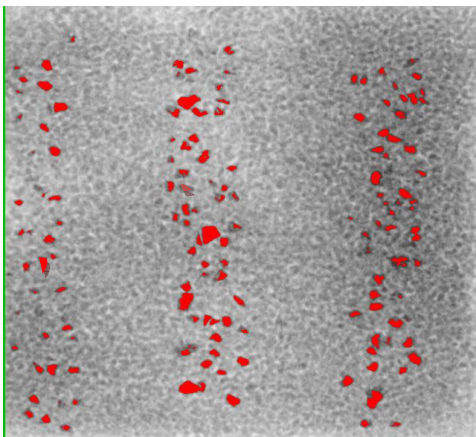
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## Imaging

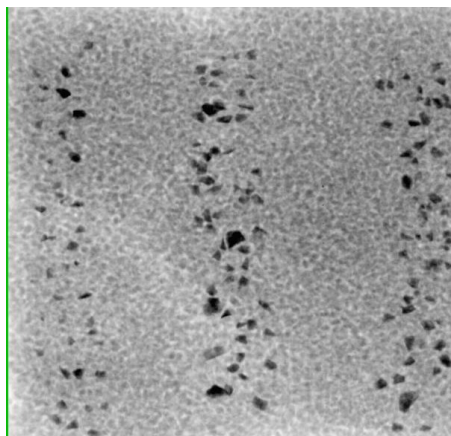
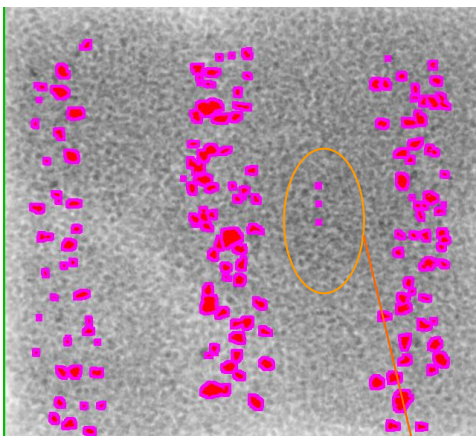
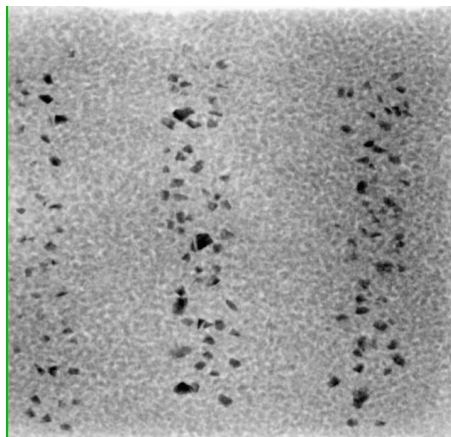
The images below show the detection of the contaminant in red on the left as compared to the raw image prior to detection processing on the right. The larger, darker, denser stones are easily detected while some of the thinner or less dense stones are marginally or not detected. Accuracy of detection is maximized with a 1.5" or less product depth allowing for lower Kv and higher Ma settings.

The image on the bottom left displays the contaminants in both red and pink highlights to allow for better operator evaluation if needed as the system is fully automatic and does not require operator evaluation.

### Detection Images



### Raw X-Ray Images



0.6mm – 0.7mm – 0.8mm stainless spheres  
automatically detected

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