

NEW

X-ray TDI camera C15400-30-50A

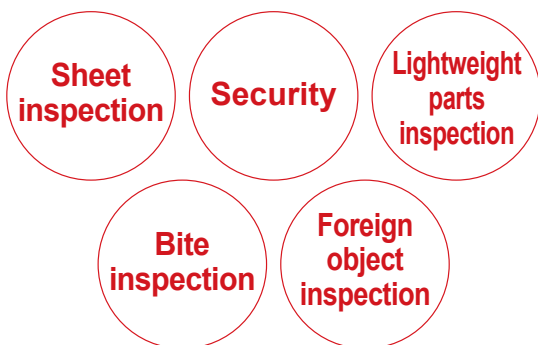
Pursuing New Possibility of X-ray



Clear Images even for Thin/Light Element Materials!

By using our newly developed method with high sensitivity along with the TDI, C15400-30-50A enables you to obtain high-contrast images in inspecting thin/light element materials even with low energy X-ray.

Application examples



Features

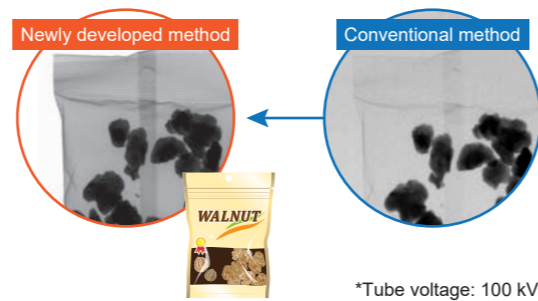
- Line speed: 153.8 m/min
- Detection width: 300 mm, 2048 pixels
- Pixel size: 146.5 μm \times 146.5 μm
- Dual energy detection supported



Amazing to see such detail in an X-ray image of a **thin/light element material!**

New possibilities of "low energy" X-ray realized by new method

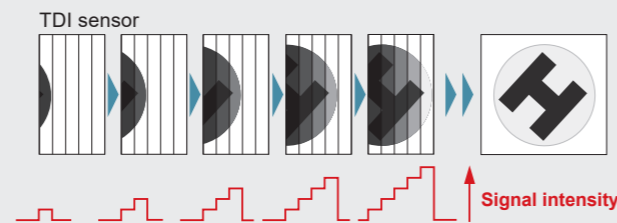
In the non-destructive testing of a thin/light element material, low contrast of images has been a major problem due to a lack of sensitivity with low energy X-ray. Using the TDI technology*1 and our newly developed method with high sensitivity, C15400-30-50A enables you to obtain high-contrast images in inspecting those materials even with low energy X-ray. With this device, for thin objects such as light element/lightweight materials (ex. CFRP) and other sheet materials, inspections of thickness, dents, streaks, and uneven bonding, which have been difficult until now, have now become possible. C15400-30-50A will help you build up a novel in-line X-ray non-destructive testing system in your process.



*Tube voltage: 100 kV

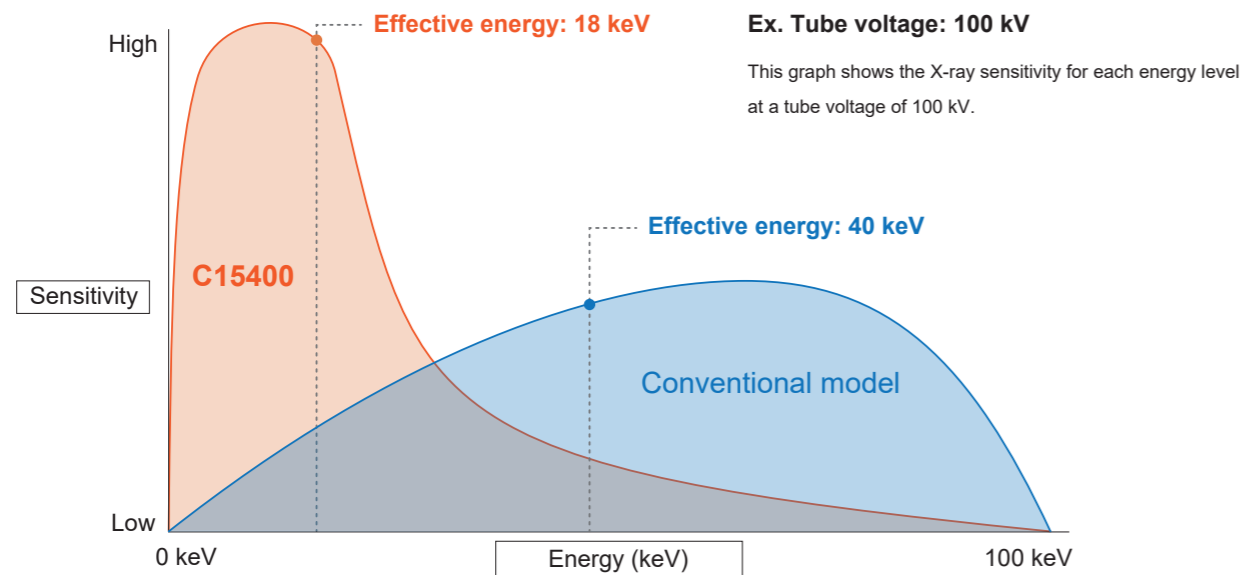
*1 TDI technology

Time Delay Integration (TDI) is a special CCD readout method that can capture images of moving objects at high speed and with high sensitivity. The CCD performs vertical transfer line by line when reading electric charges. If the transfer timing is matched with the movement timing of the target image incident on the CCD surface, exposure can be performed by the number of vertical stages of the CCD.



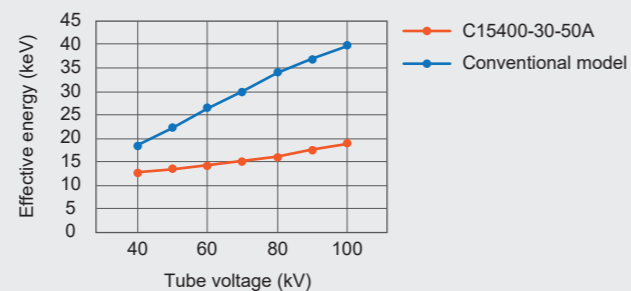
Comparison with conventional model

It is necessary to achieve low effective energy*2 to increase the sensitivity of low energy X-rays. C15400-30-50A achieves an effective energy of 18 keV at a tube voltage of 100 kV, less than half that of the conventional model. This makes it possible to acquire a high contrast image without X-ray passing through even when imaging a thin/light element material with low effective energy.



*2 Effective energy

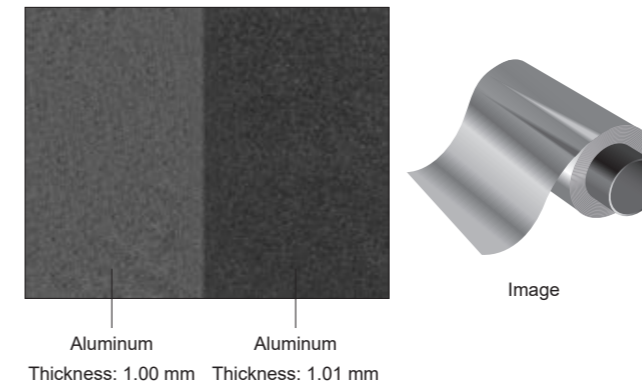
White X-rays having a broadened energy spectrum are treated as single-energy X-rays having the same interaction, and the energy is called effective energy. When X-ray sensitivity characteristics of cameras are different for the same radiation source, the effective energy is also changed, and the effective energy is higher for a camera having higher sensitivity on the high energy side.



Application examples

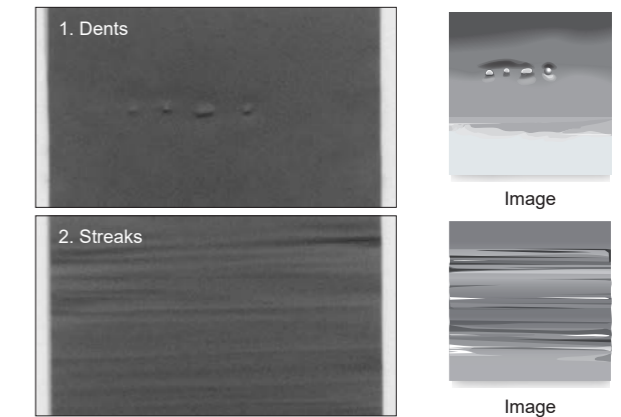
Sheet inspection 1: uneven thickness

Even slight unevenness of aluminum sheet can be observed.

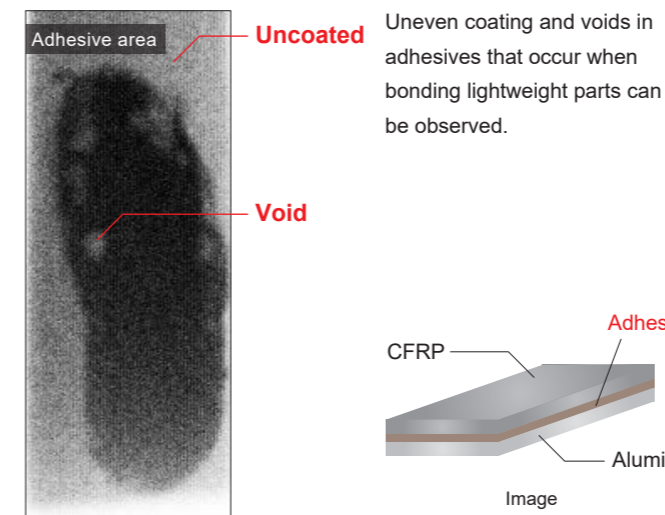


Sheet inspection 2: dents and streaks

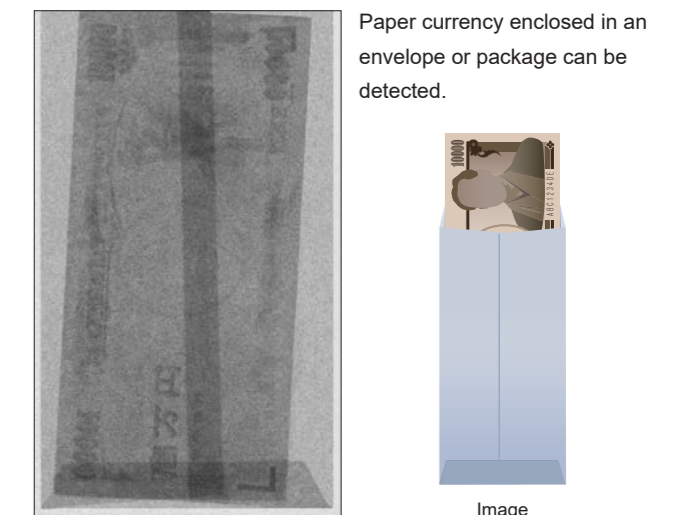
Dents and streaks occurred on aluminum sheet can be observed.



Lightweight parts inspection



Security



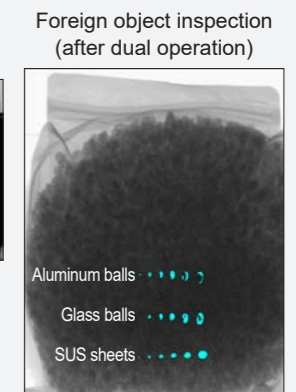
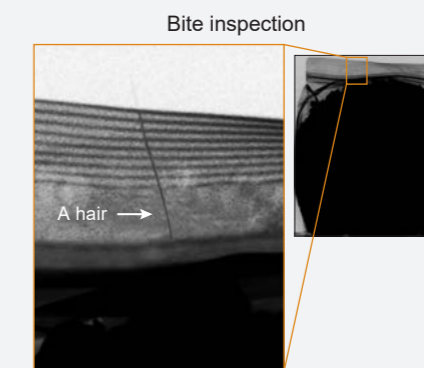
Even for Dual Energy Detection



C15400-30-50A also supports dual energy detection that captures two low-/high-energy images simultaneously from one X-ray source and performs arithmetic processing. Using dual energy detection enables you to perform an inspection that is difficult to perform only by shading of one image, such as an object having a complicated shape with uneven surface, or foreign objects in a product which is made from a mix of various substances.

Application example: bite inspection and foreign object inspection

Scanning just once can detect foreign substances, even a stray hair stuck in the package, in cereals made from a mix of ingredients including oats and dried fruits.

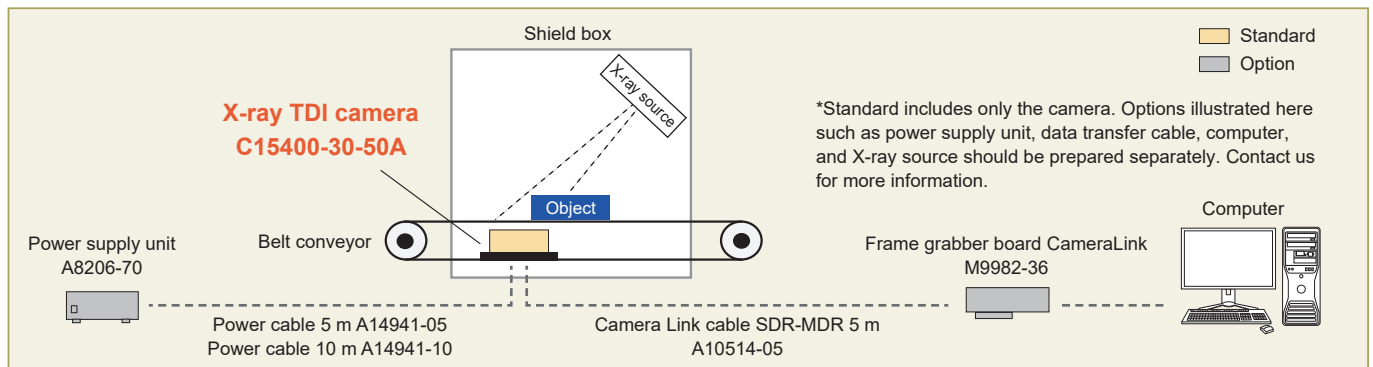


Specifications

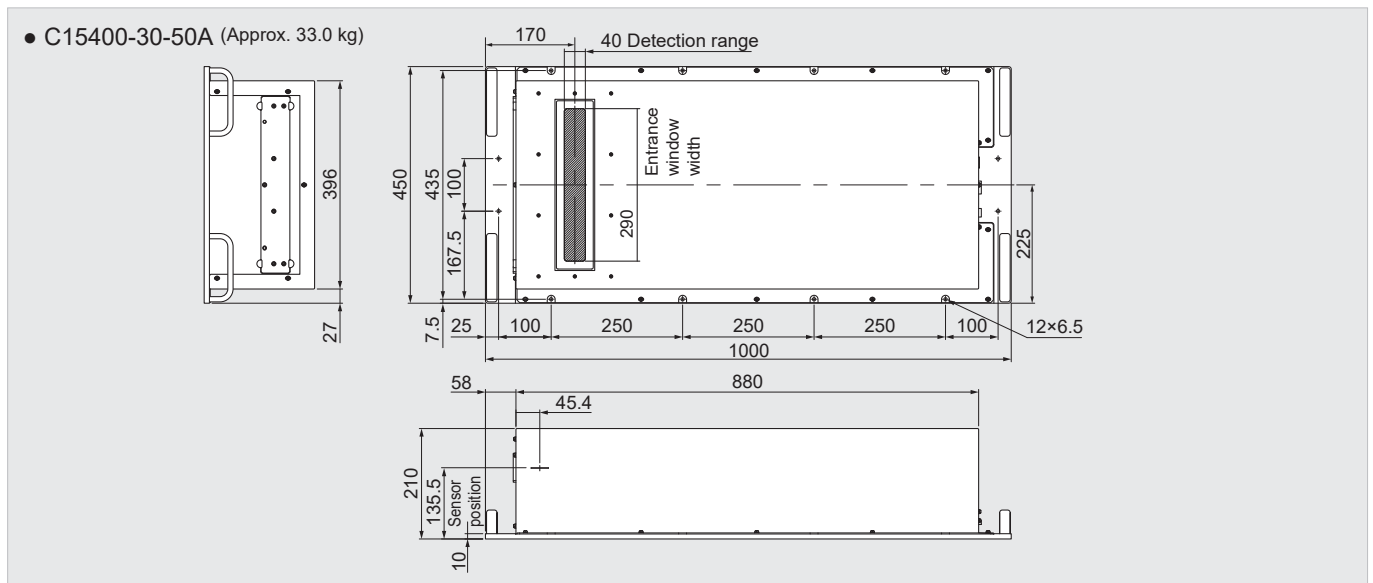
Type number	C15400-30-50A	
Scintillator	GOS/GOS	
Window	Polyethylene	
Effective X-ray tube voltage range	Approx. 25 kV to 110 kV	
CCD pixel size	146.5 μm × 146.5 μm	
Number of pixels*	4096 (H) × 128 (V)	
Detection width	300 mm, 2048 pixels	
Line speed	1.758 m/min to 153.8 m/min	
TDI line rate	1×1	Max. 17.5 kHz (153.8 m/min)
	Binning 2×2	Max. 17.0 kHz (298.8 m/min)
A/D converter	12 bit	
Interface (Camera Link)	Base Configuration	
Pixel clock (Camera Link)	40.0 MHz	
Output signals (Image data)	12 bit digital output	
External control	Camera Link	
Power supply	DC +24 V	
Power consumption	Approx. 45 VA	

*The horizontal pixel count is the sum of the low and high energy side counts.

Example of system configuration



Dimensional outlines (Unit: mm)



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 - Please note the X-ray images in this brochure are taken for test purposes; the images do not reflect actual qualities of the products on the market.
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