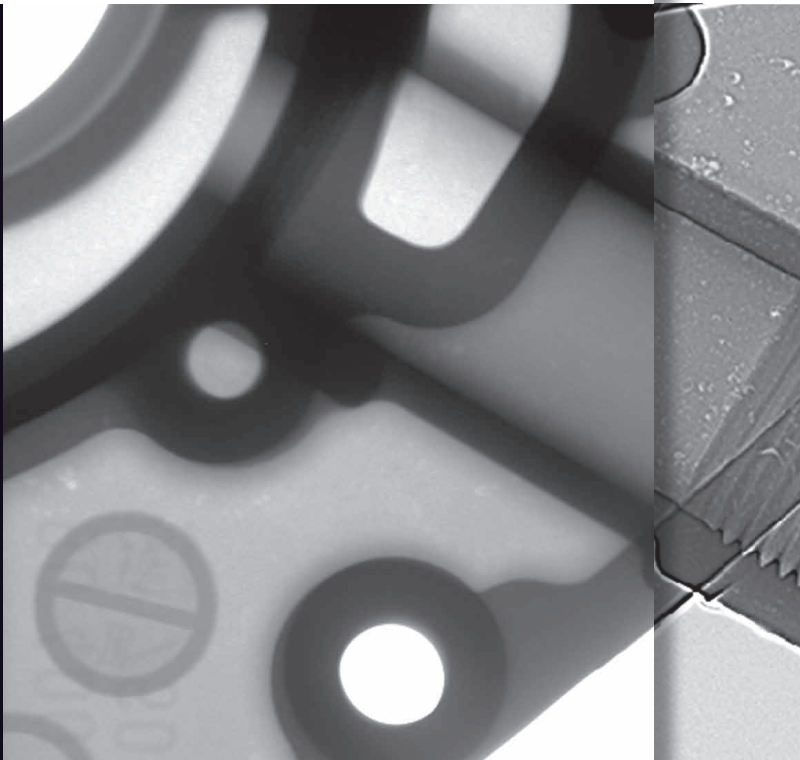




Interested in Details?



Two strong partners:

HDR – Highly Dynamic Radioscopy:

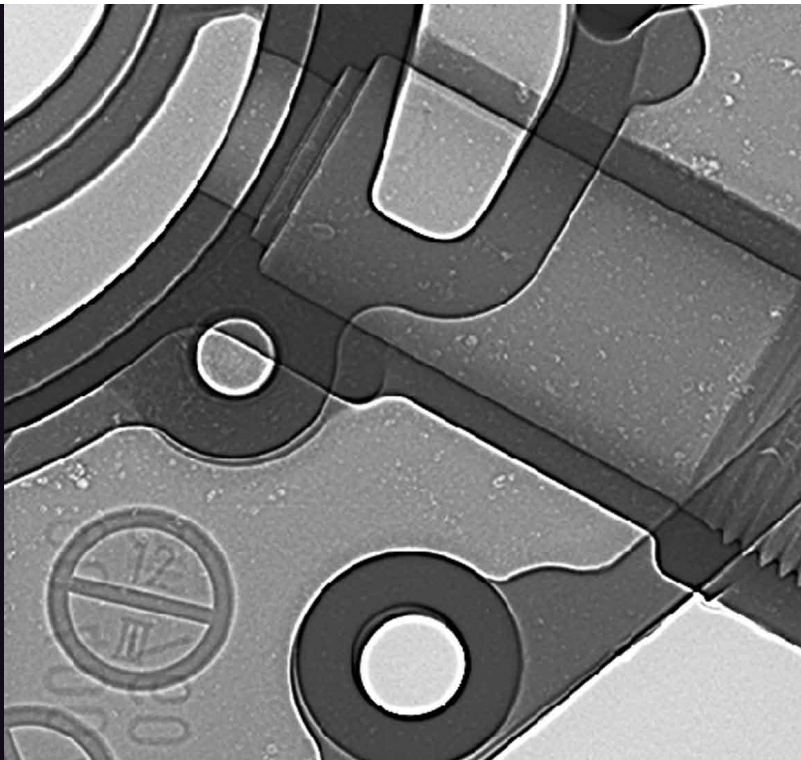
- Discloses the spatial position and shape of flaws
- Detectability of all flaws at a glance

Variofocus X-ray System:

- Enlarges the X-ray inspection's area of application
- Focuses comparable to microfocus tubes with distinctly higher output
- High long-term stability, especially in cases of high energy

YXLON. The reason why.

Y.XST225-VF and Y.HDR-Inspect



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YXLON: Evolution marches on –

Until now:

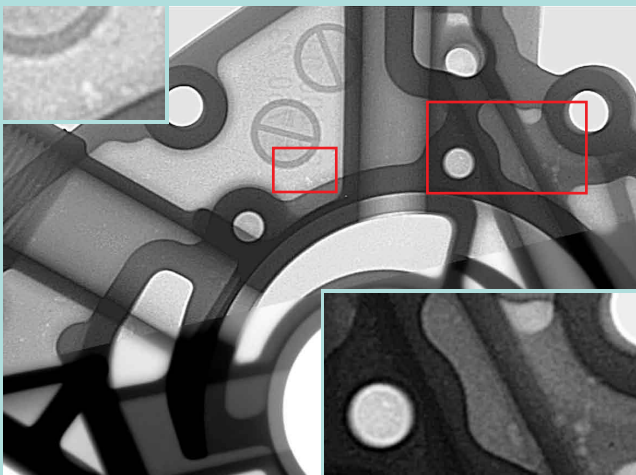
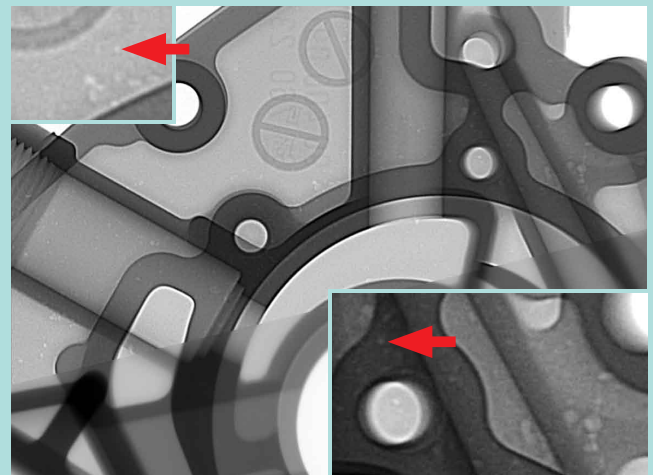


Image intensifier images tend to be noise-distorted. Without a prefilter, low-contrast flaws in the thicker area are no longer detectable.



Digital flat-panel detector images clearly have greater detail.



The image to the left acquired at a 3.5x magnification is not sharp due to the focus size.

Image Intensifiers

X-ray image intensifiers have been a reliable image source in non-destructive material testing for 50 years now. The most recent step was to upgrade them with digital cameras. Yet despite the high sensitivity displayed by image intensifier tubes, many physical given factors still cannot be overcome.

- As soon as there are slight differences in material thickness, thin areas quickly exhibit overbright hot spots, while thick areas remain insufficiently X-rayed
- The X-ray settings must be frequently readjusted
- The use of prefilters is frequently necessary
- Careful collimation is required because scattered radiation has a highly negative influence on image quality
- Distortions in peripheral areas arise
- Low dose-absorption capability tends to result in noise-distorted images

Digital Flat-Panel

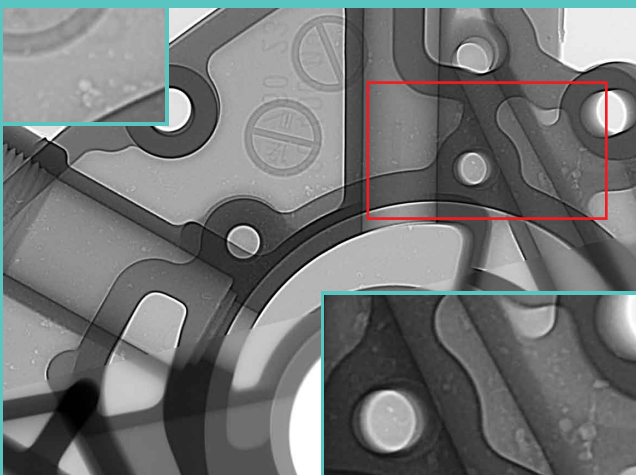
In the 1990s, digital flat-panel detectors conquered the medical sector, then rapidly established themselves in non-destructive material testing. They were subsequently optimized for this field to achieve a high level of dynamics. With a dose up to 400 times higher, the signal-to-noise ratio (SNR) can be distinctly increased, thus significantly improving detail detectability.

- Large range for gray levels and/or contrast
- A high dose enables a high SNR, and thus very good detail detectability
- An even active surface along with square pixels prevent distortions
- A high dynamic range enables large ranges of material thickness per image
- One setting of the X-ray parameters per inspection item is frequently sufficient

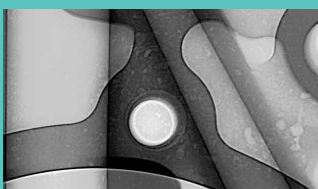


New Dimensions in X-Ray Inspection

Starting now!



A very small focus already has a positive effect at a 2x magnification.



At a magnification of 3.5x or higher, a variable focus is indispensable for smaller details.



The combination of the Y.XST225-VF variofocus system and Y.HDR-Inspect enables the optimum in currently achievable image quality.

Y.XST225-VF

For inspection tasks in which the tiniest details in high-alloy inspection items were supposed to be detected, there was often only one possibility until now: the use of an open microfocus tube in the uppermost output performance range using high levels of energy. The Y.XST225-VF X-ray system with a grid-controlled, sealed tube and variable focus is a better alternative. At an effective focal-spot size of approx. 80 μm , the system has an output of 250 W. Outputs up to 1600 W are possible for greater material or HDR live images.

- An optimum focus can be chosen for every application; that increases flexibility
- Working with a focus comparable to that of a minifocus tube at a distinctly higher output speeds up inspection and improves image quality
- By increasing geometric magnification, spatial resolution in the inspection item is improved

Y.HDR-Inspect

HDR, or highly dynamic radiography, designates a procedure in which an X-rayed inspection item seems to be "made of glass" in a low-noise live image by using a special filter. The prerequisite for HDR is the use of suitable digital flat-panel detectors for low-noise images in a live image, as well as the corresponding software functionalities.

- The operator obtains information about the spatial position of a flaw in the inspection item
- The operator obtains information about the flaw's three-dimensional characteristics
- Through movement within the X-ray beam, flaws are irradiated at an optimum angle of penetration and therefore more easily detected
- As a result of the filter, flaws in all of the inspection item's material thicknesses are visible right away
- Constant adjustment of the X-ray parameters for thin or thicker areas of the inspection item is not necessary

The Y.XST225-VF X-ray system consists of:

- the Y.XST225-VF01 high-voltage unit with 40 kHz technology and RS232 interface, R28 flange
- the Y.TU225-V01 variofocus tube with 4 predefined focal workpoints, R12 flange
- the WL3012 water cooler



Y.XST225-VF

Voltage range	10 kV - 225 kV			
Predefined focal-spot sizes				
- For film acc. to EN12543 standard	250 µm	300 µm	500 µm	800 µm
- For digital technology, measured using a duplex wire ¹	80 µm	95 µm	150 µm	320 µm
Max. output	290 W	540 W	1020 W	1600 W
Max. tube current at 225 kV	1,3 mA	2,4 mA	4,5 mA	7,1 mA
Emergent beam angle	40° x 30°			
Inherent filter value ²	0,8 mm Be + 4 mm Al			
Leakage radiation ³	< 5,0 mSv / h			

¹ EN 462-5, by > 20% modulation, measured within the central beam; higher value from a horizontal and vertical direction.

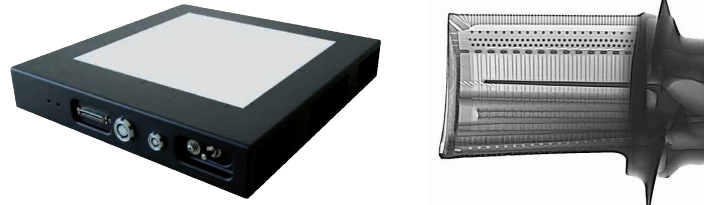
² Al filter with appropriate tools, removable in compliance with DIN 54113 or SSI F51989:2 standards.

³ Measured at a distance of 1.0 m from focal spot with closed beam emergence window and tube operation at full output.

Y.HDR-Inspect

The image-generating system Y.HDR-Inspect consists of:

- an HDR-capable flat-panel detector from the Y.Panel HDR series
- Software functionalities for filtering in the live image as with IMAGE 2500-D, IMAGE 3500 and Image x600
- Suitable detector holder incl. shielding and passive Crash Guard



Y.Panel HDR	160 kV	225 kV	Spezial
Applications	Visual inspection in motion using HDR radioscopy and inspection using programmed positions		As alongside, plus film replacement
Energy range	40 kV - 160 kV	40 kV - 225 kV	40 kV - 225 kV
Usable area		200 x 200 mm ¹	
Mode 1 ²		200 µm / 15 fps	
Pixel size (Pitch) ³ / Image refresh rate		200 µm / 15 fps	
Mode 2 ²		400 µm / 30 fps	
Pixel size (Pitch) ³ / Image refresh rate		400 µm / 30 fps	
Image Lag		< 8% (1 st frame)	
Mechanical Data			
Housing (W x H x D)		335 x 320 x 50 mm ³	
Weight	ca. 14 kg	ca. 16 kg	15 kg

¹ Photodiode matrix size is 512 x 512 (400 µm) or 1024 x 1024 (200 µm).

² Switching between these modes can be performed via software.

³ The pitch indicates the distance to the center of the photodiode areas. The peripheral length of the photodiodes is shorter.