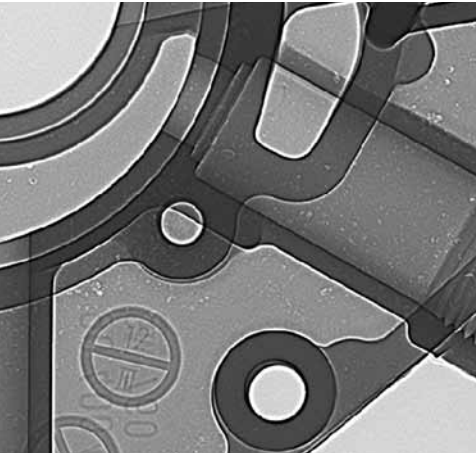


Y.HDR-Inspect – Highly Dynamic Radioscopy

Helps to see “the big picture”!



- Allows impressive detail detectability in a live image
- Makes spatial position and shape of flaws visible
- Enables detectability of all defects at a glance
- Saves added work of adapting parameters to thick or thin areas of inspection items
- Increases inspection certainty and speed

Y.HDR-Inspect is the unrivaled YXLON software-filter concept which makes an inspection item look as if it is "made of glass" in a low-noise live image. The prerequisite for this is the use of suitable flat-panel detectors for low-noise live images and corresponding software functionalities.

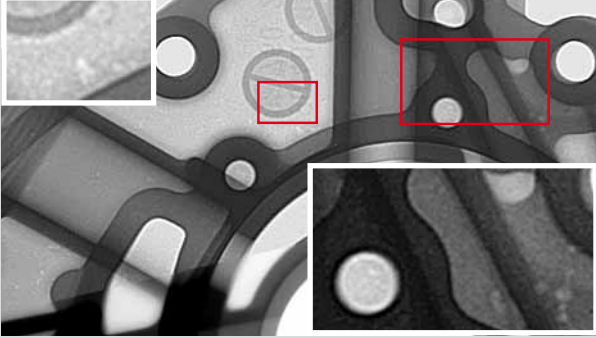
With Y.HDR-Inspect the inspection operator obtains information about the spatial position of a flaw within the inspection item as well as its three-dimensional characteristics.

Flaws are X-rayed at an optimum projection angle by moving the X-ray beam. This enables better detection. Y.HDR-Inspect makes flaws visible in all thicknesses of the inspection item's materials right from the start using one setting, and without the inspection operator having to change the parameters. The result: new dimensions in X-ray inspection.

YXLON. X-ray technology at its best.

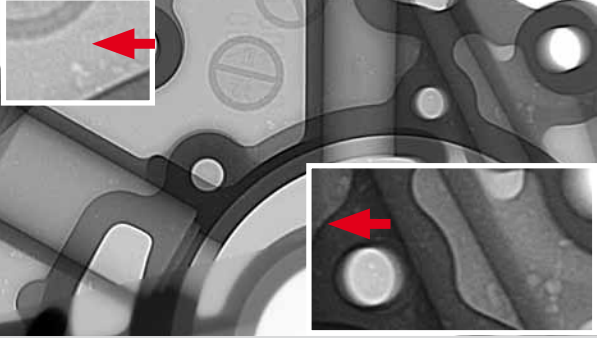
YXLON – Evolution on the march. Until now:

Image intensifier images tend to be noisy.



Poorly contrasting flaws in the thicker region are no longer detectable without pre-filtering.

Digital flat-panel detector images clearly have greater detail.



Taken at a magnification of 3.5, the image on the left is not sharp due to the focus size.

Image intensifiers

For 50 years a dependable source of images in the non-destructive testing of materials. Even though upgraded lately via digital cameras, a large number of physical factors cannot be surmounted due to the sensitivity of image intensifier tubes.

- Thin areas rapidly flare as soon as slight differences in material thickness occur, while thick areas are still not sufficiently irradiated.
- The X-ray settings frequently have to be readjusted.
- The use of pre-filters is often necessary.
- Careful collimating is required because stray radiation has a negative influence on image quality.
- Distortions in peripheral regions
- Low dose absorbability tends to lead to noisy images.

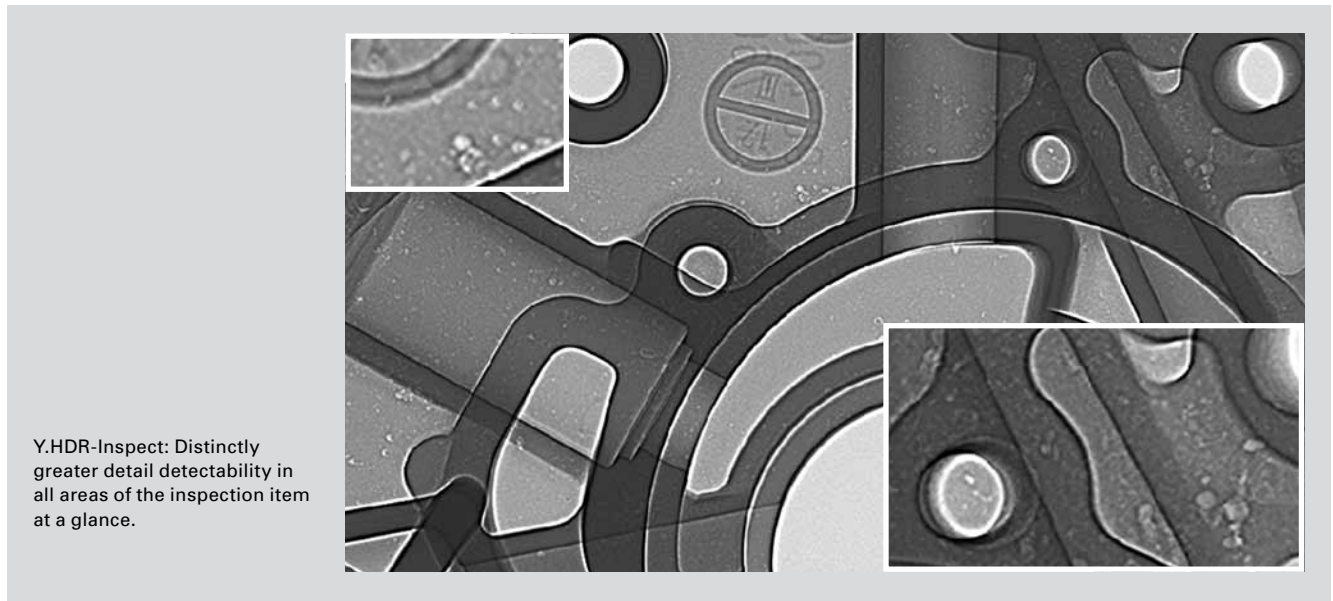
Digital flat-panel detectors

Digital flat-panel detectors established themselves in the non-destructive testing of materials during the 1990s. They have been optimized to achieve high dynamics.

- An up to 400 times higher dose increases the SNR*, and thus significantly increases detail detectability.
- Greater gray scale and/or range of contrast
- The flat surface area and square pixels prevent distortions
- Higher scope of dynamics enables large ranges of material thickness per image.
- One setting of the X-ray parameters per inspection item is frequently sufficient.

* SNR: Signal-to-noise ratio

Now: Y.HDR-Inspect – The optimum in currently achievable image quality



Y.HDR-Inspect

Y.HDR-Inspect lets the operator see:

- the spatial position of a flaw within the inspection item
- the flaw's three-dimensional characteristics
- flaws in all thicknesses of the inspection item's materials

In a live image:

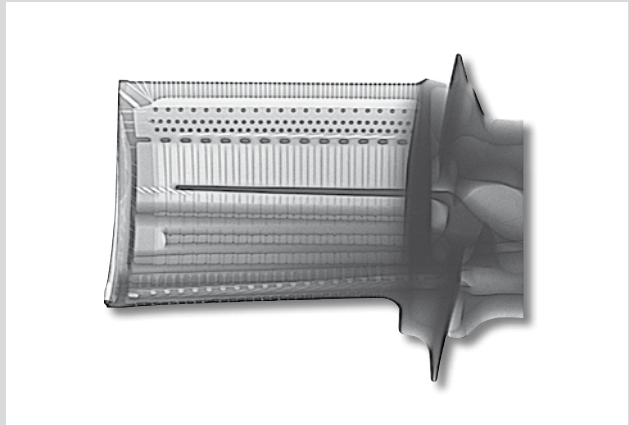
- at a glance
- without constantly adapting the X-ray parameters for thin or thick areas

➤ This leads to the following results:

- reliable defect recognition
- more information
- relieves burden on inspection operator
- reduced inspection times

Y.HDR-Inspect is a product that enables the inspection operator to test the entire inspection item with assurance at a glance, even in areas with different densities, by using flat-panel detectors in combination with a special software.

- The inspection operator obtains information about the spatial position of a flaw within the inspection item as well as its three-dimensional characteristics.
 - Flaws are X-rayed at an optimum projection angle by moving the X-ray beam, allowing better detection.
 - Due to the filter, flaws in all thicknesses of the inspection item's materials are immediately visible.
 - Removes necessity for constant adaptation of X-ray parameters for thin or thick areas of the inspection item.
- Significant increase in inspection certainty and speed



The Y.HDR-Inspect imaging system consists of:

- an HDR-capable flat-panel detector from the series Y.Panel HDR
- software functionalities for filtering within the live image
- a suitable detector mount, incl. shielding and passive crash guard

Y.HDR-Inspect: Suitable digital flat-panel detectors

Y.Panel	0822-14 HDR	0822-16 HDR	0822-C14 HDR	0822-C16 HDR
Available pixel qualities	YXLON selected	YXLON special, YXLON premium	YXLON selected	YXLON premium
Applications	Metallic parts: Visual inspection in motion and inspection using programmed positions	As adjacent, plus ADR and replacement for film	Plastic and CFRP or GRP: Visual inspection in motion and inspection using programmed positions	As adjacent, plus replacement for film
Analog digital conversion	14 bit	16 bit	14 bit	16 bit
Energy range ¹	40 keV – 15 MeV	40 keV – 15 MeV	20 keV – 60 keV	20 keV – 60 keV
Mode 1 ² pixel size (pitch) ³ / max. refresh rate	200 µm / 15 fps	200 µm / 25 fps	200 µm / 15 fps	200 µm / 25 fps
Mode 2 ² pixel size (pitch) ³ / max. refresh rate	400 µm / 30 fps	400 µm / 50 fps	400 µm / 30 fps	400 µm / 50 fps
Usable surface area ⁴	200 mm x 200 mm			
Environmental temperature Operation/Ingress protection rating	10 – 40 °C / IP-65			

¹ An additional shielding for the detector is required in all cases. Housings with shielding for up to 225 kV (approx. 24 kg), 320 kV (approx. 25 kg), 450 kV (approx. 27 kg) and 600 kV (approx. 33 kg) are available as standard YXLON products. The assembly drawing is available upon request.

² Switching between these modes can be performed via software. Time for switching: approx. 2 to 4 seconds.

³ Pitch indicates the spacing at the center of the photo diode areas. The edge length of the photo diodes is shorter.

⁴ The size of the photo diode matrix is 512 x 512 (400 µm) or 1024 x 1024 (200 µm) pixels. Real usability amounts to 500 x 500 or 1000 x 1000 pixels.



Technology with Passion

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