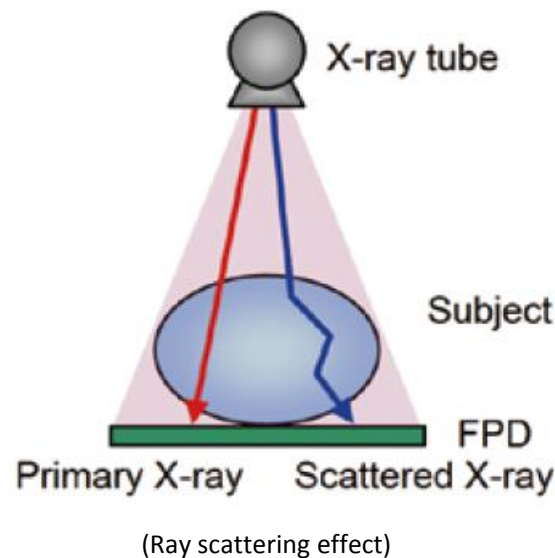


Intelligently eliminate scattered x ray

Technical Background and Advantages: In industrial radiography, scattering has a great influence on imaging, but it always exists. Whether it is a workpiece or a flat panel detector, or the detection environment and the radiograph itself, the physical angle can not be eliminated. Intelligent filter grating software improves the image quality of X-ray detection to a new level. Intelligent filter grating software automatically measures ray scattering, reduces the influence of focus and SID, and ensures the best image effect according to different projection positions. The energy filter grating can not only ensure the image quality, but also reduce the dosage.

Technical points: Intelligent filter grating software can suppress ray scattering effect, reduce image noise and improve edge sharpness. When the X-ray reaches the detector surface, it is no longer necessary to use physical filter grids to filter, and all scattering and straight rays are sampled. In this method, digital images are decomposed into multi-band images from high to low frequencies. Scattering is eliminated for low-frequency images and contrast enhancement is performed for high-frequency images. In digital radiography, scattering radiation effect is eliminated, radiation dose is reduced and image quality is improved.

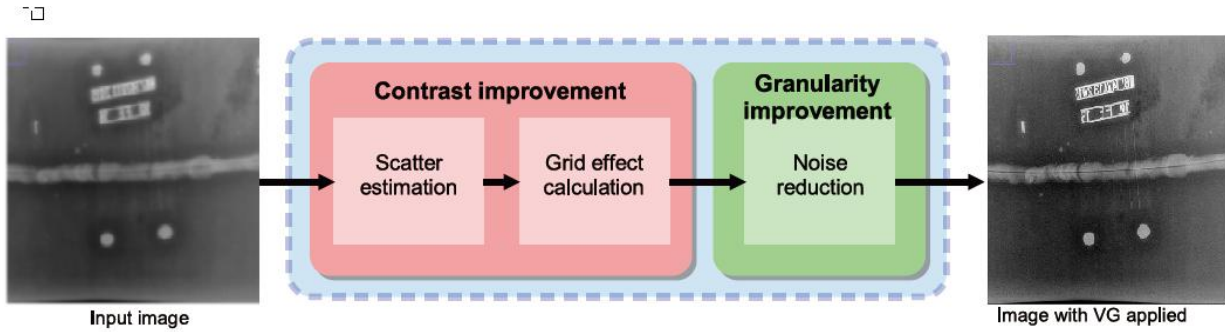


Processing steps: After the rays reach the surface of the flat plate, no filters are carried out, and scattering lines and effective rays are sampled.

The following are the processing steps:

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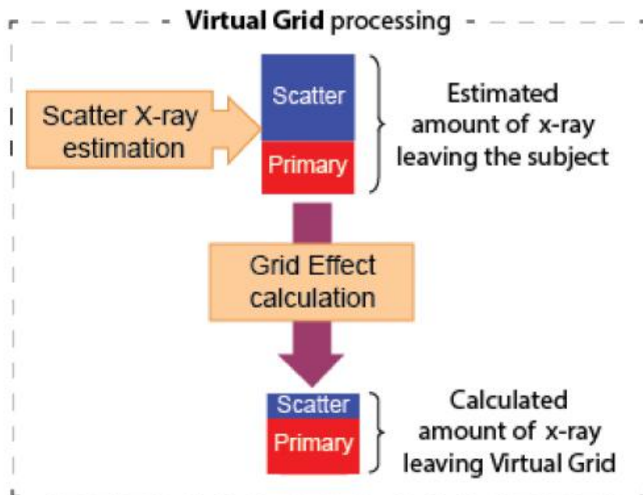
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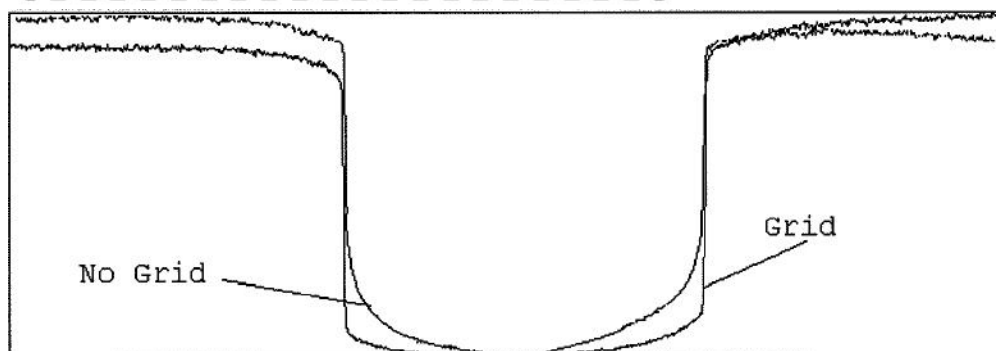
Software Processing Steps

1. Decomposition of digital images from high to low frequencies into multi-band images
2. Scattering elimination of low-frequency images directly:
3. Contrast Enhancement Processing for High Frequency Band Images

After processing in step (2) and step (3), the images of various frequency bands are merged and the output image is formed.



Software Processing Flow



Linear Tool-to-Object Edge Measurement

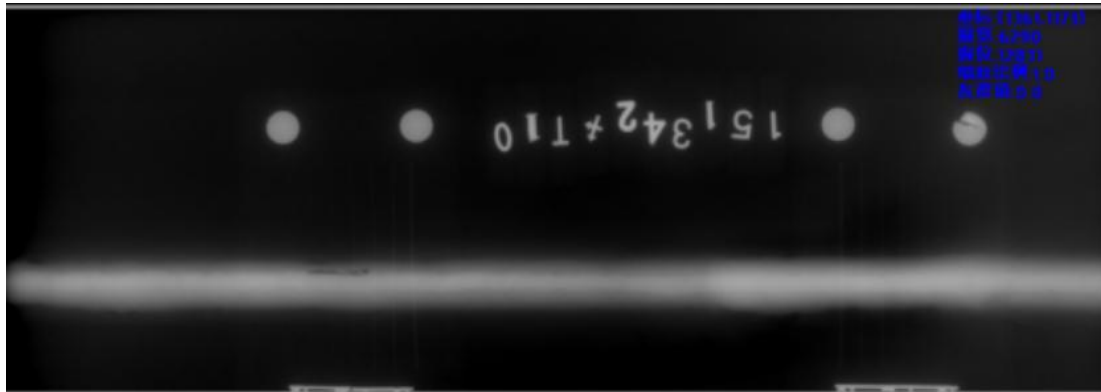
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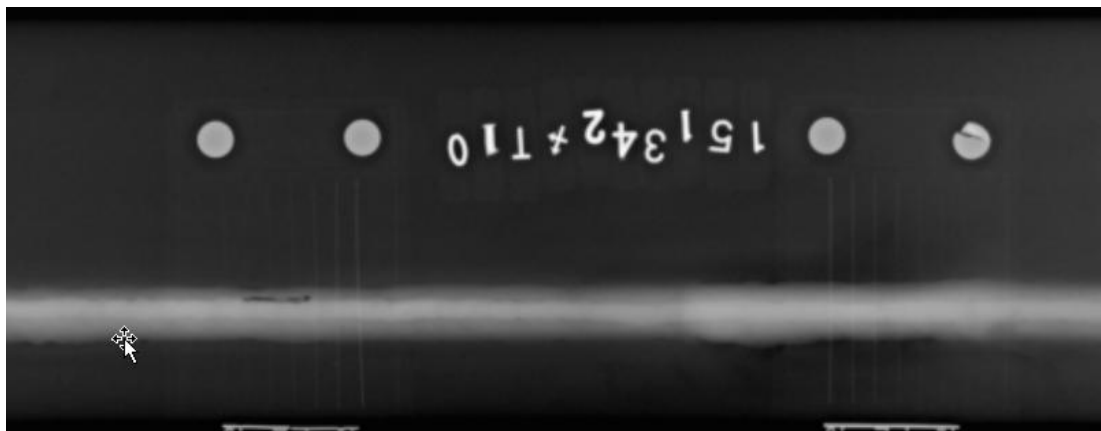
Contrast effect of image processing

1. Workpiece condition: Workpiece specification: 2800 *12; Material: ASTM A516-70 ; Radiographic mode: single-wall radiography; Technical level: AB; Qualification level: II-ray machine: MAPT 250, flat plate: Rayance 1012; Image quality meter: FE10-16 Detection standard NB/T47013.11-2015 sensitivity requirements: W12

Before intelligent filter grids processing: sensitivity W12 (0.25), unclear defect boundary, unclear argon arc welding bottom, blurred image of steel wire.



After treatment, the sensitivity of W13 (0.20) is close to that of W14 (0.16), and the sensitivity is increased by 1-2 wires. The image of steel wire is clear and the edge is clear. Improvement of defect detection ability by 0.05mm-0.09mm



2. Workpiece condition: Workpiece specification: 2000x18; Material: ASTM A516-70; Radiographic mode: Single-wall Radiographic; Technical grade: AB; Qualification grade: II Radiograph: MAPT 250, Plate: Rayance 1012; Image quality meter: FE6-12

Detection standard NB/T47013.11-2015 sensitivity requirements: W12

Before intelligent filter grating processing: scattering line has serious influence, sensitivity W9 (0.50), can not meet the standard requirements of W11 (0.32) steel wire image blurring.

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Before intelligent filter grating processing, scattering lines are removed, and the image sensitivity is too high. After processing, the sensitivity of W11 (0.32) can meet the standard requirements.



Concluding remarks: Intelligent filter grating software can suppress ray scattering effect, reduce image noise, improve edge sharpness and image sensitivity. It is very important that the original information in the sampled image can not be displayed because of the influence of scattering lines. The image must be stored with information in order to be displayed optimally.

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