

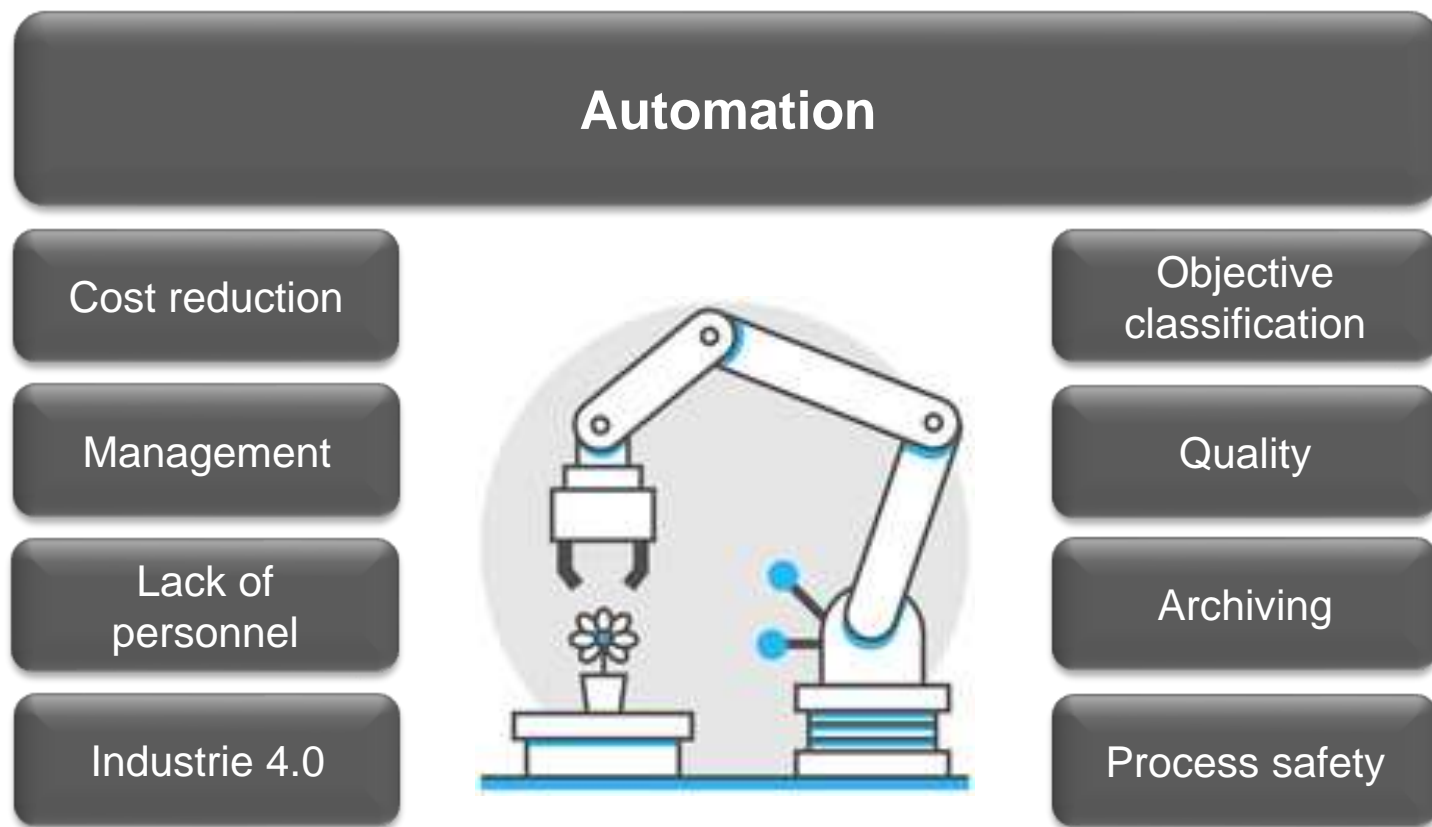
Increased process safety and efficiency through ADR

Automated Defect Recognition
and automation in X-ray
inspection

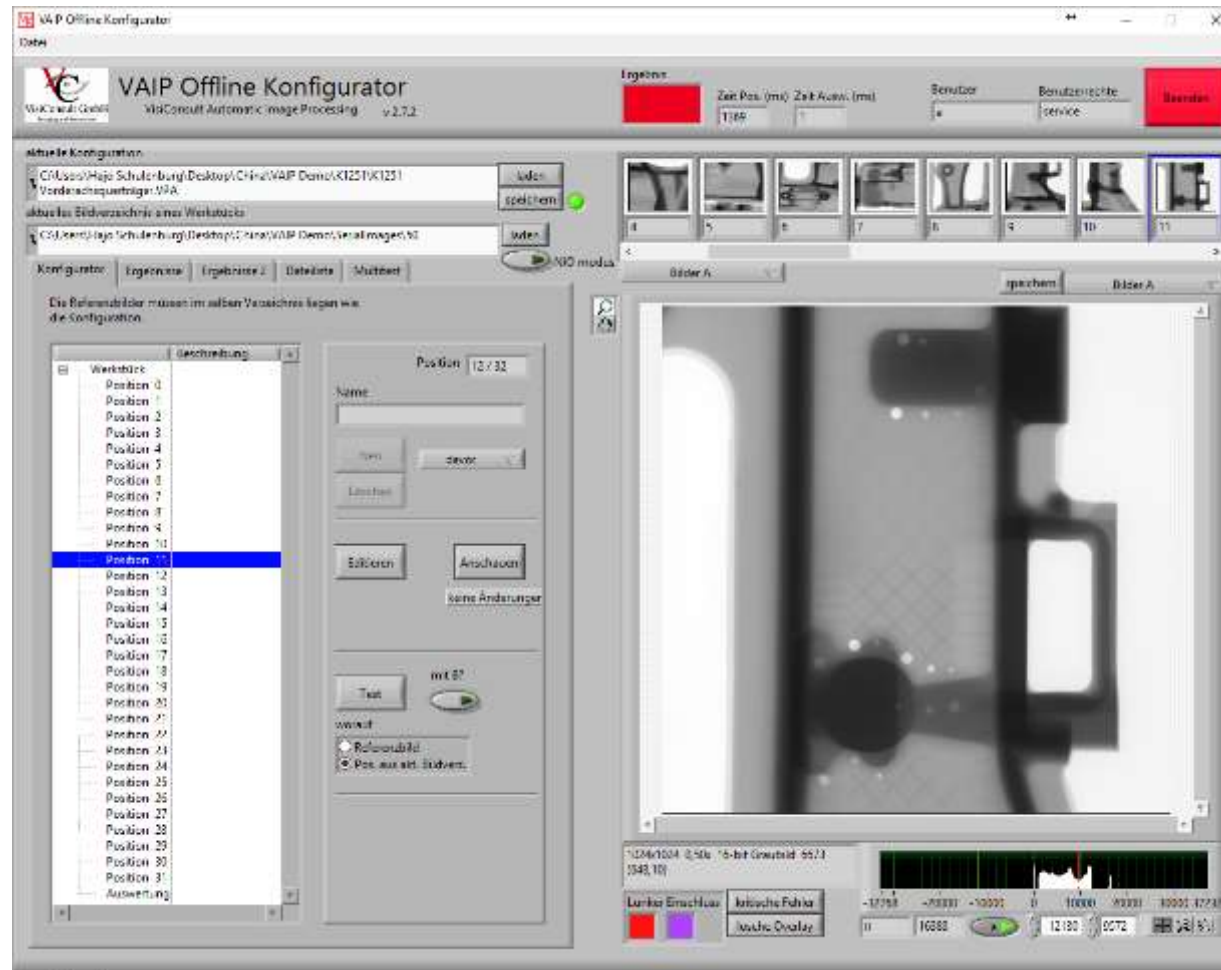
► About VisiConsult

- Manufacturer of customized X-ray systems
- Design, manufacturing, software and applications
- 70 employees worldwide
- Located in Northern Germany: Stockelsdorf
- Family owned business (second generation)
- ISO9001 certified processes
- US subsidiary based in Atlanta

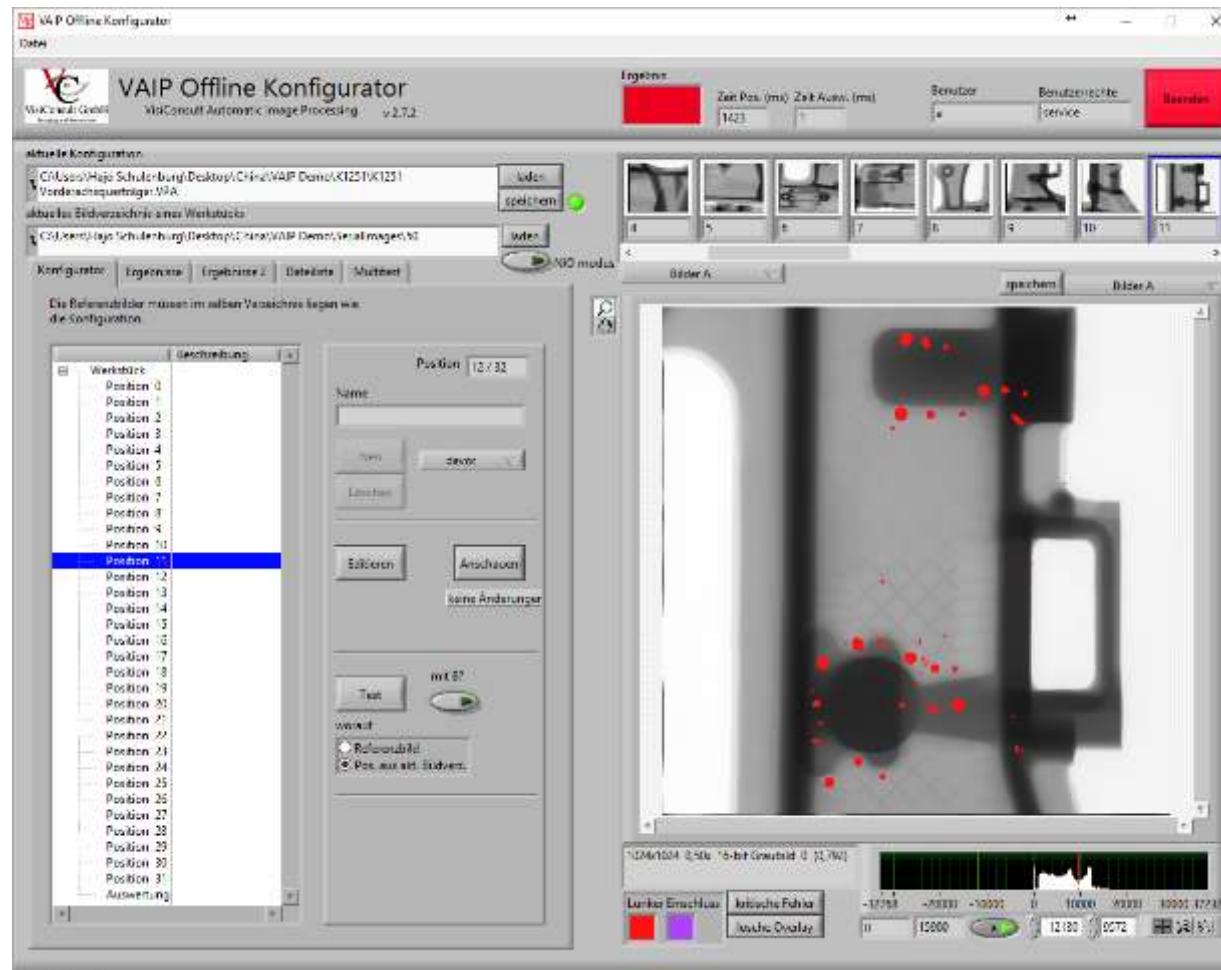
► Parameterization



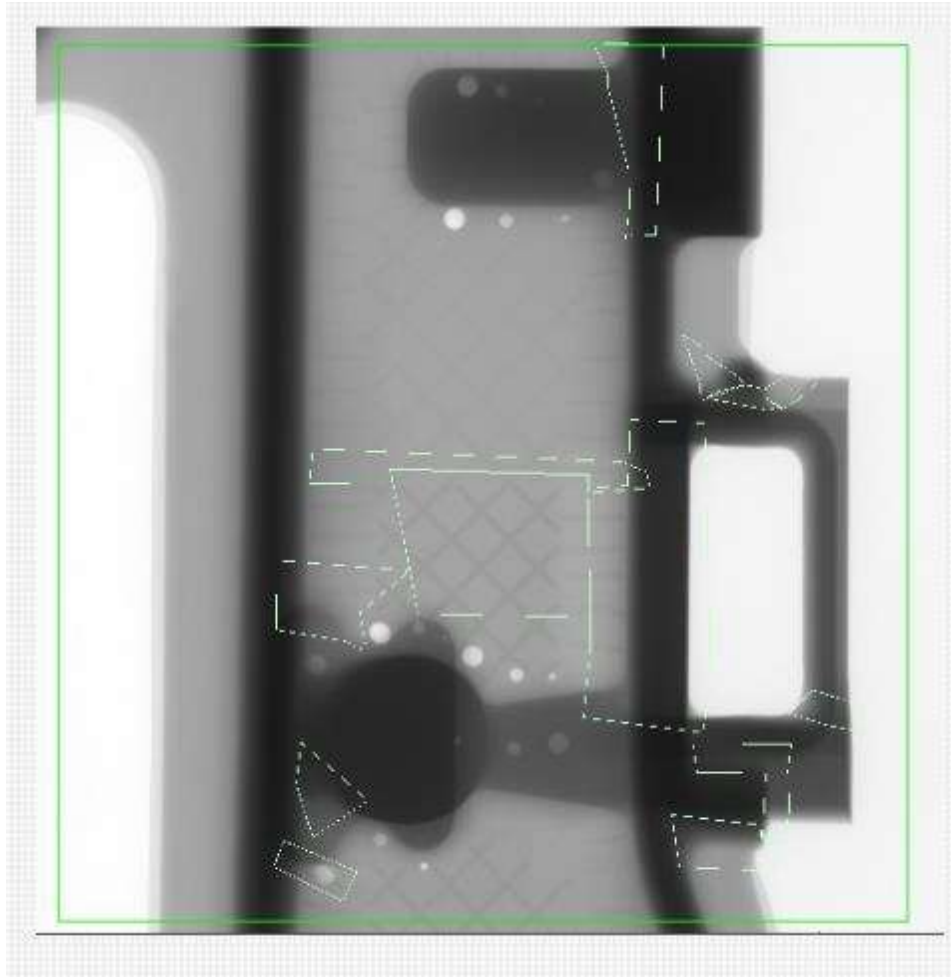
► ADR results



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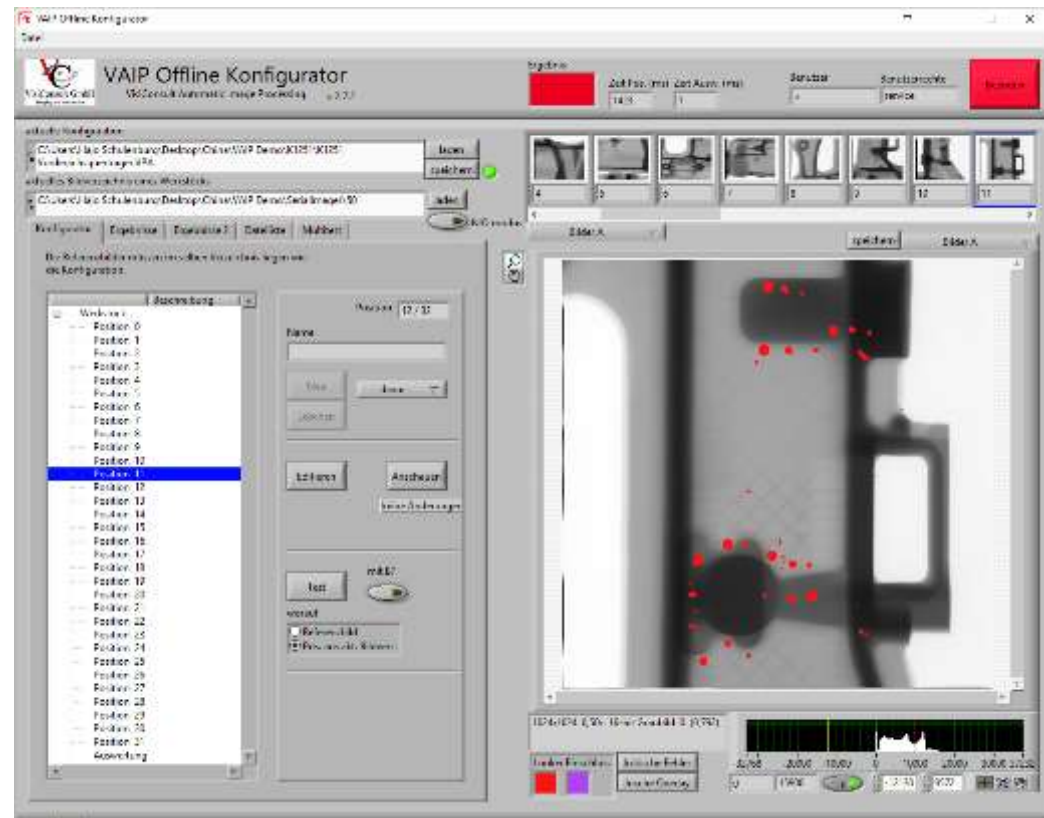


▶ ADR configuration – ROIs



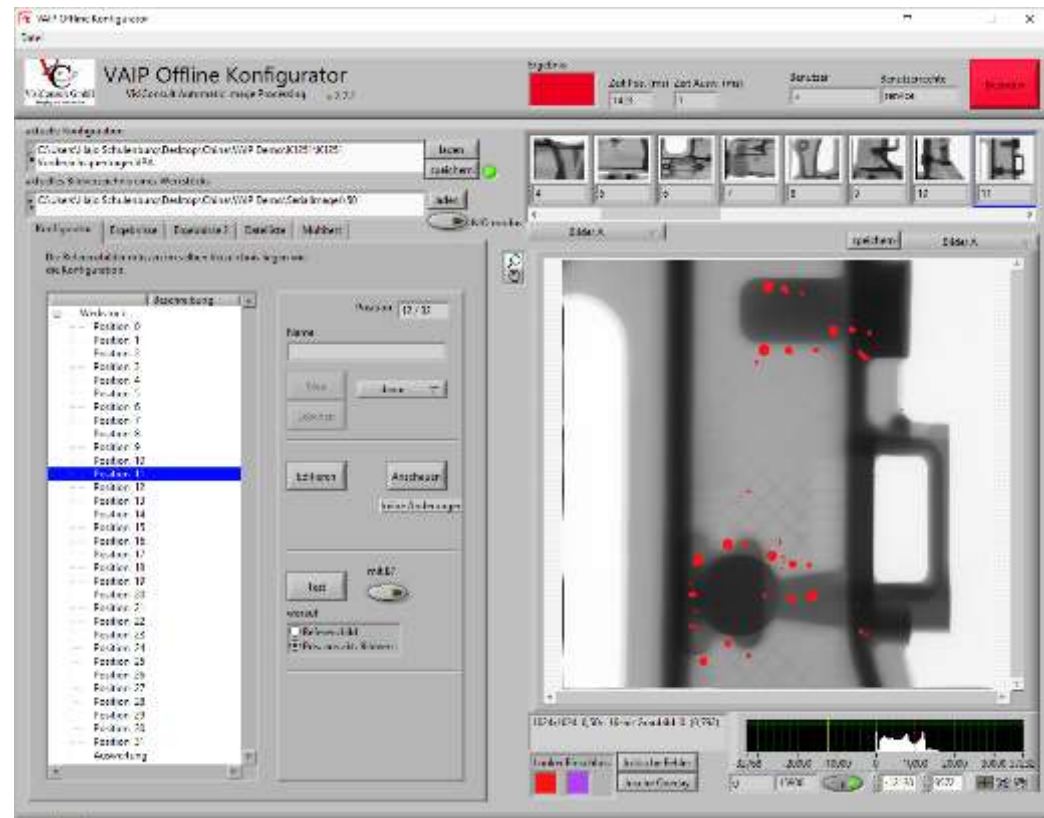
► Parameterization

- Metrics:
 - Defect size
 - Defect size per area
 - Minimum surface distance
 - Minimum defect distance
 - Etc.

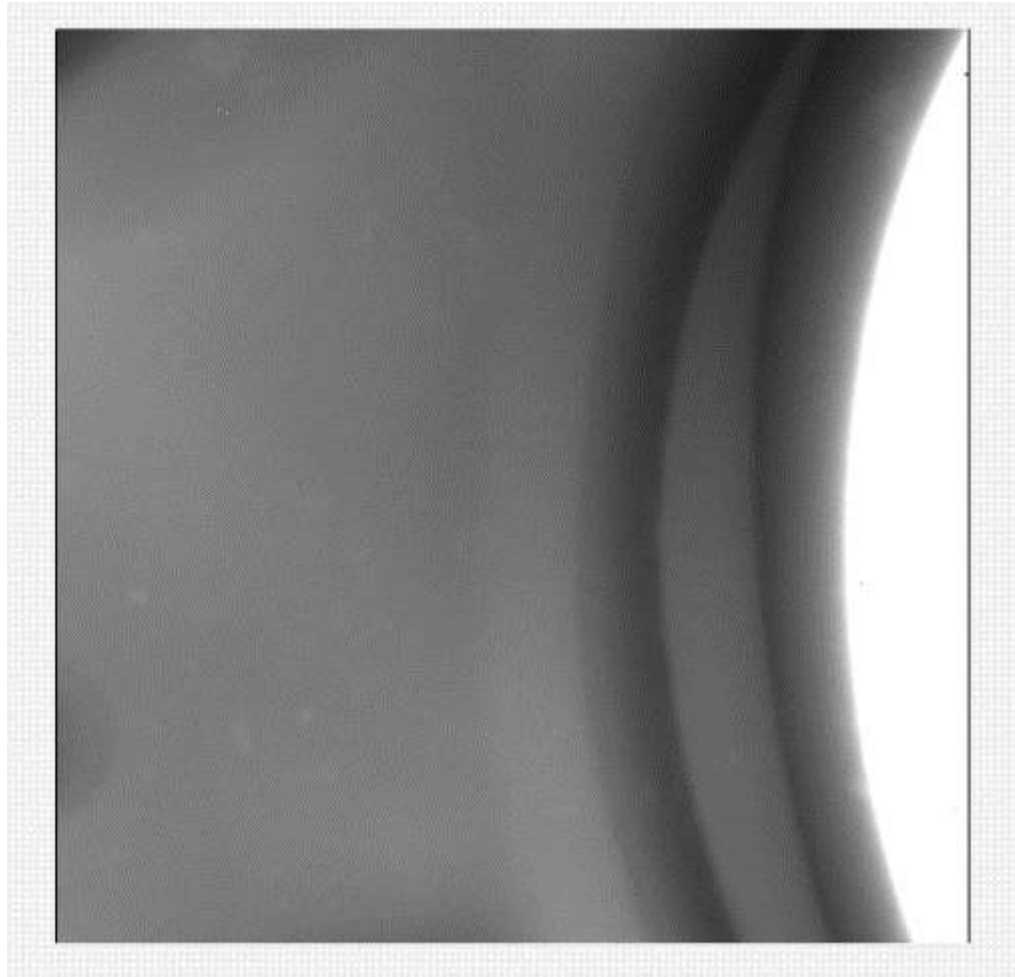


► Results

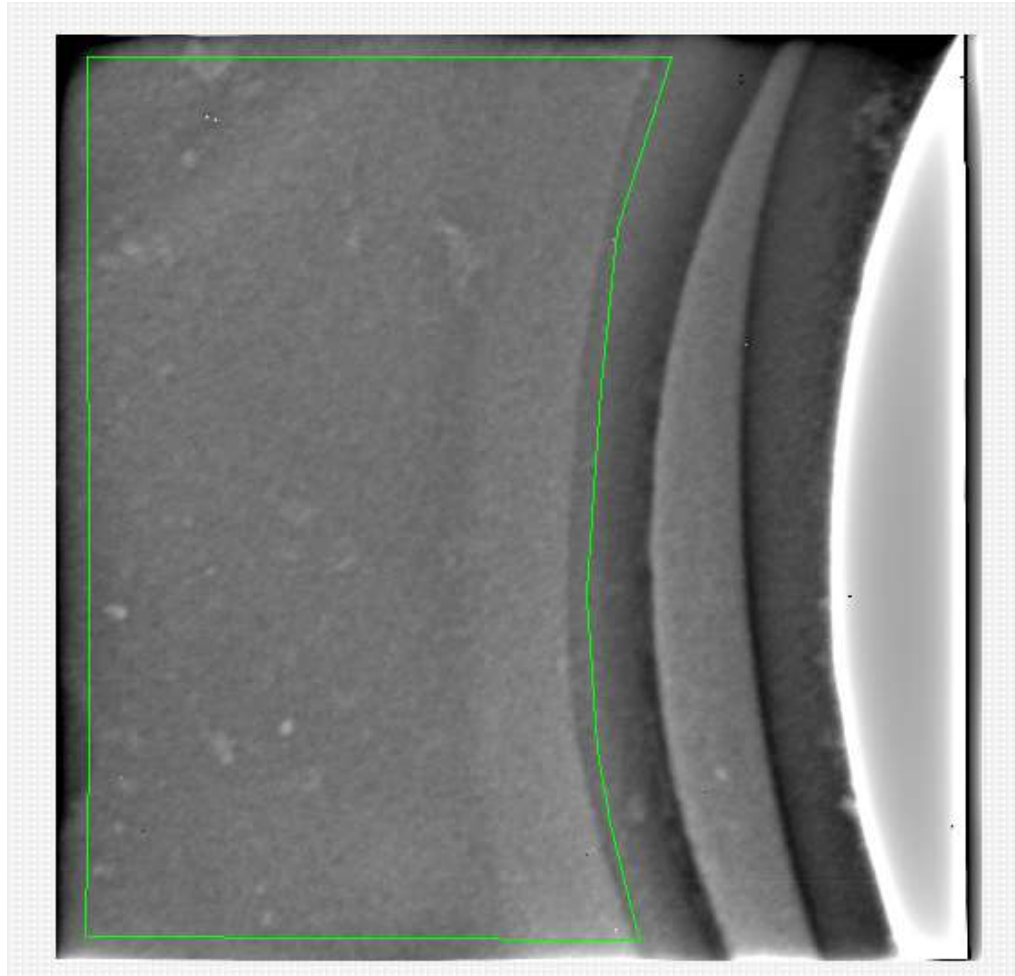
- Export:
 - Defect list
 - Decision
 - Defect position
 - Defect shape
 - Report
 - Etc.



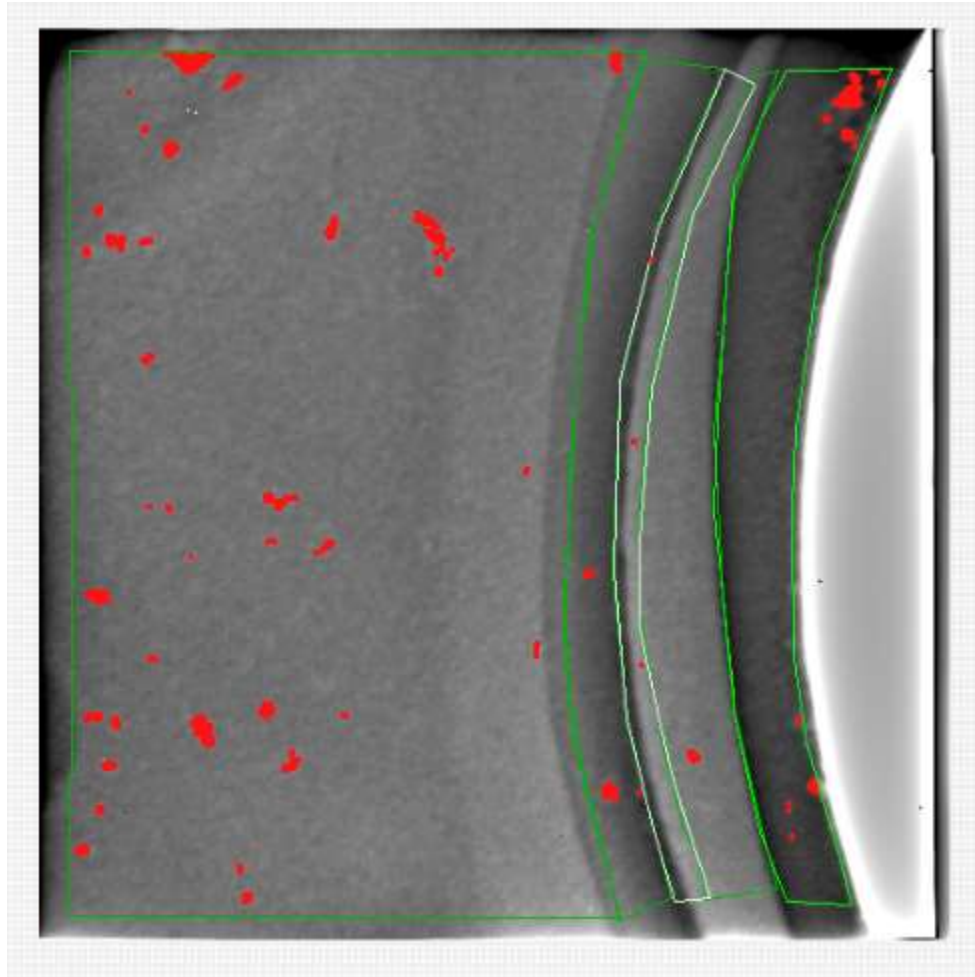
▶ ADR configuration – ROIs



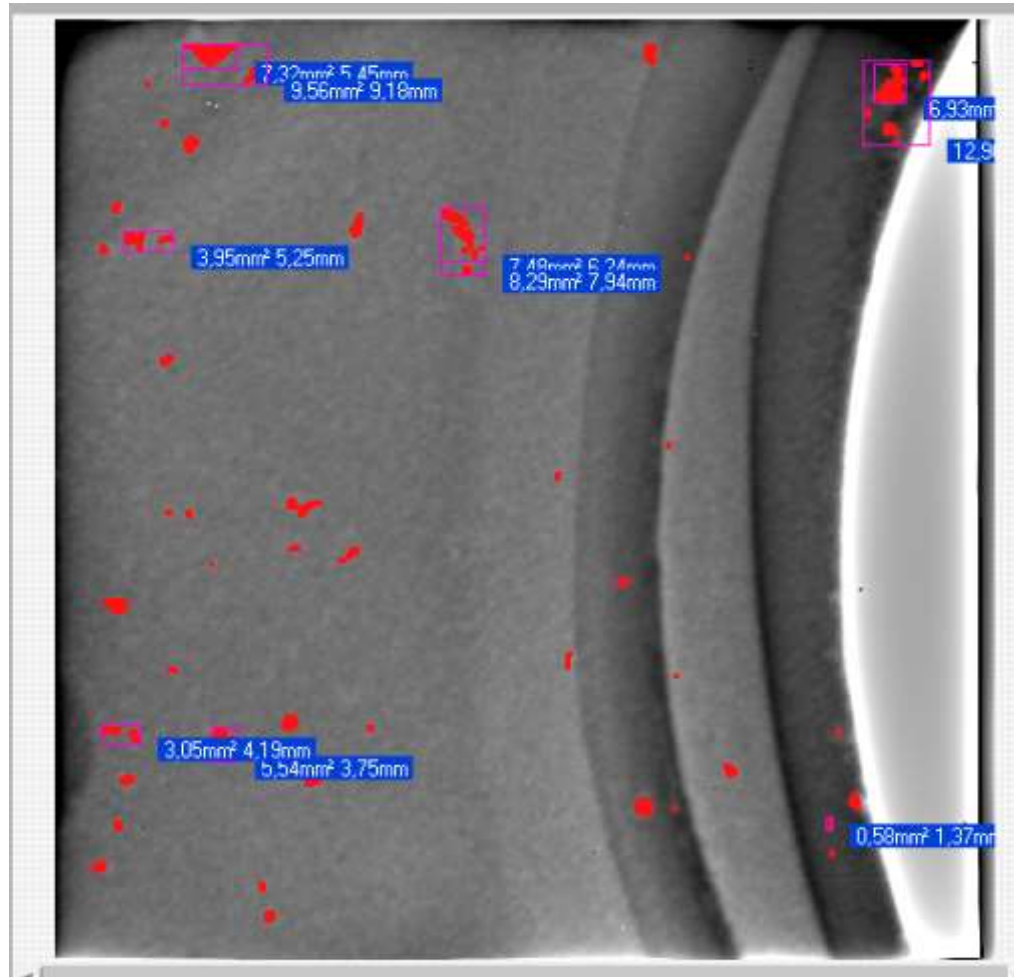
▶ ADR configuration – ROIs



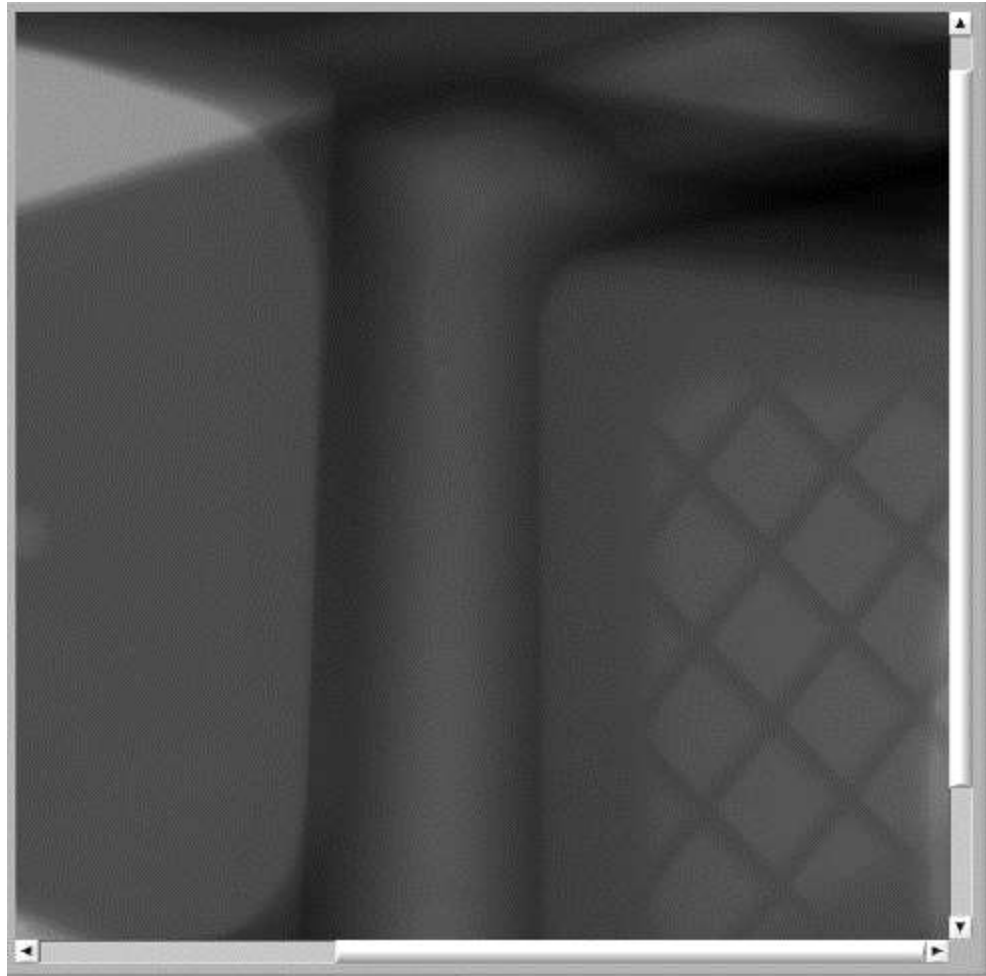
▶ ADR configuration – ROIs



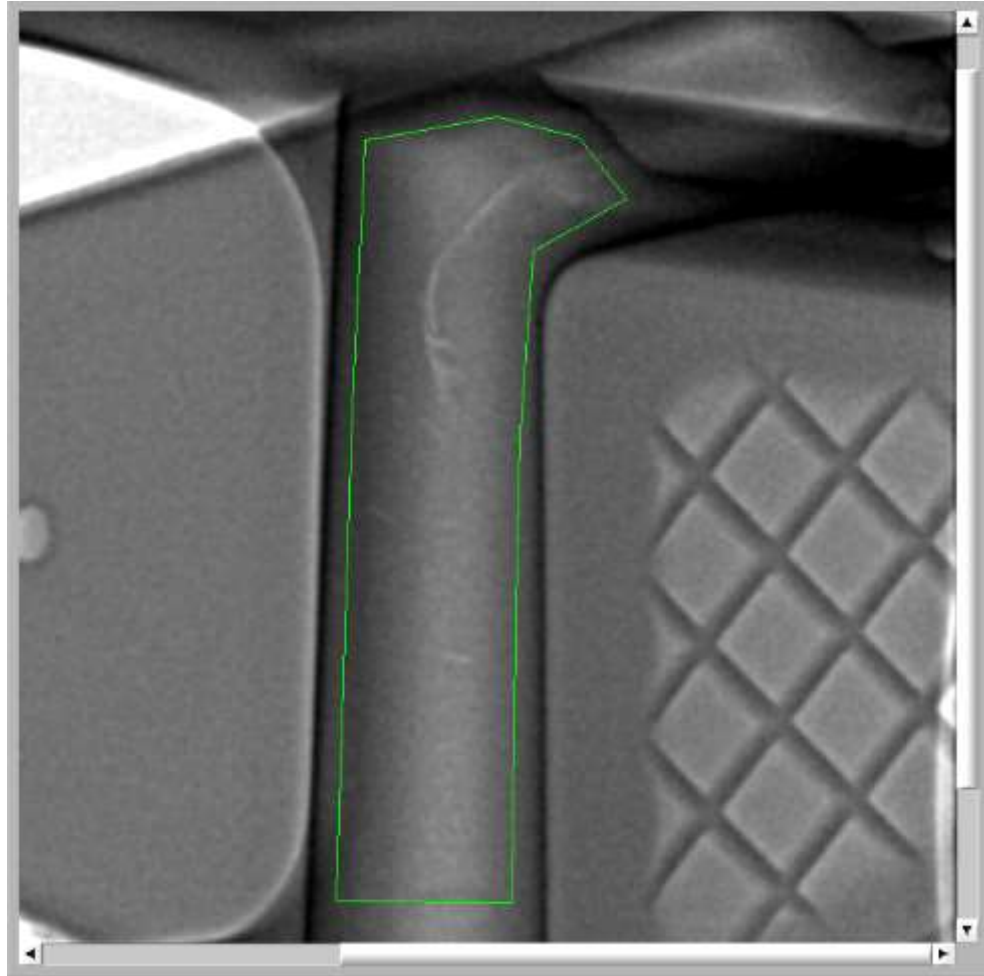
▶ ADR configuration – ROIs



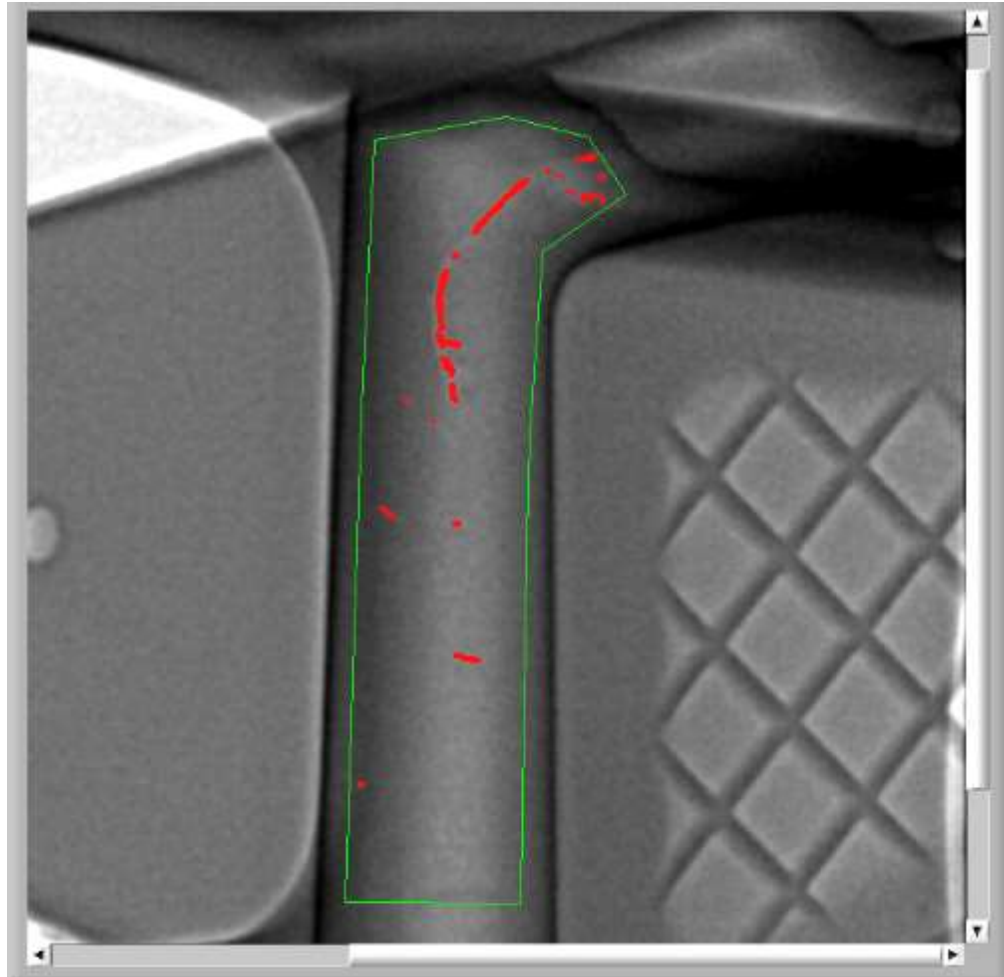
▶ ADR configuration – ROIs



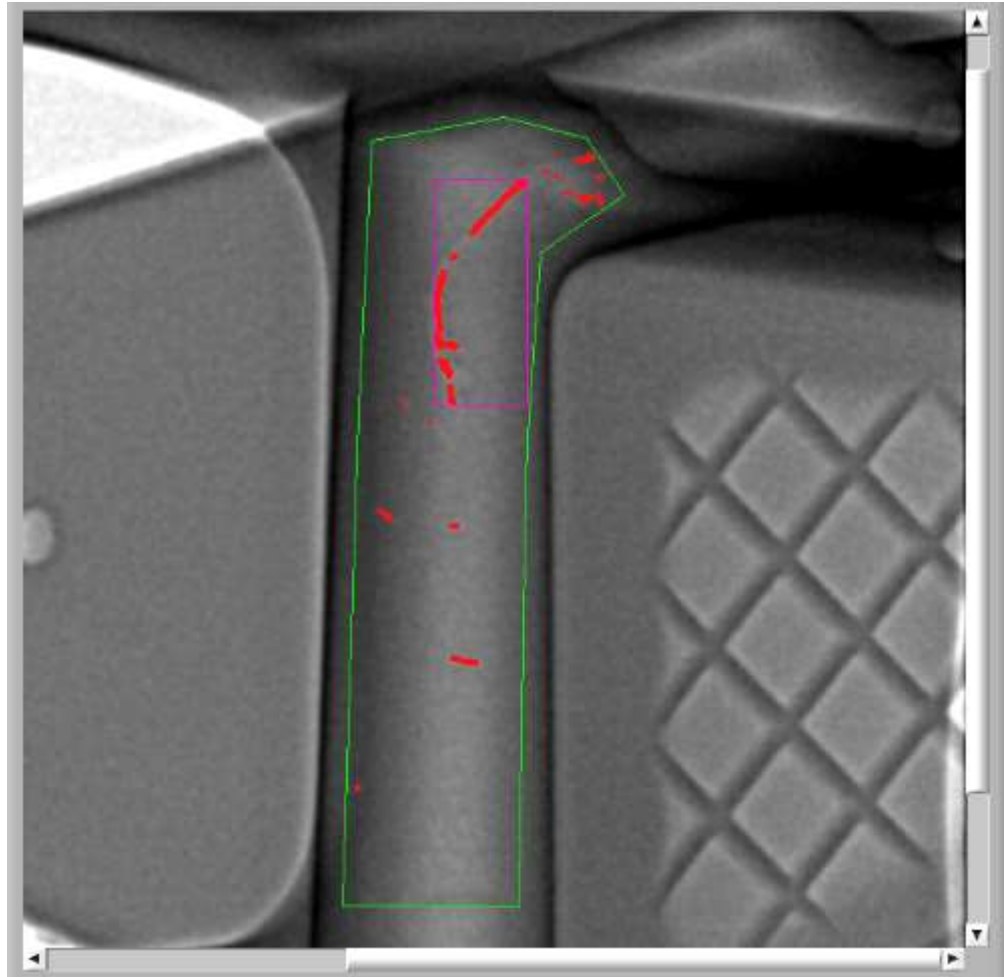
▶ ADR configuration – ROIs



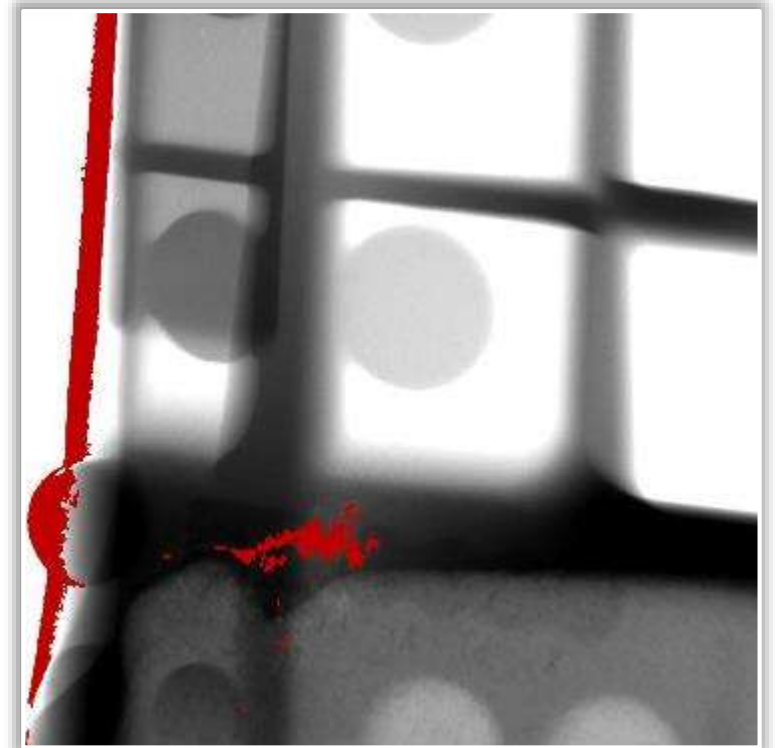
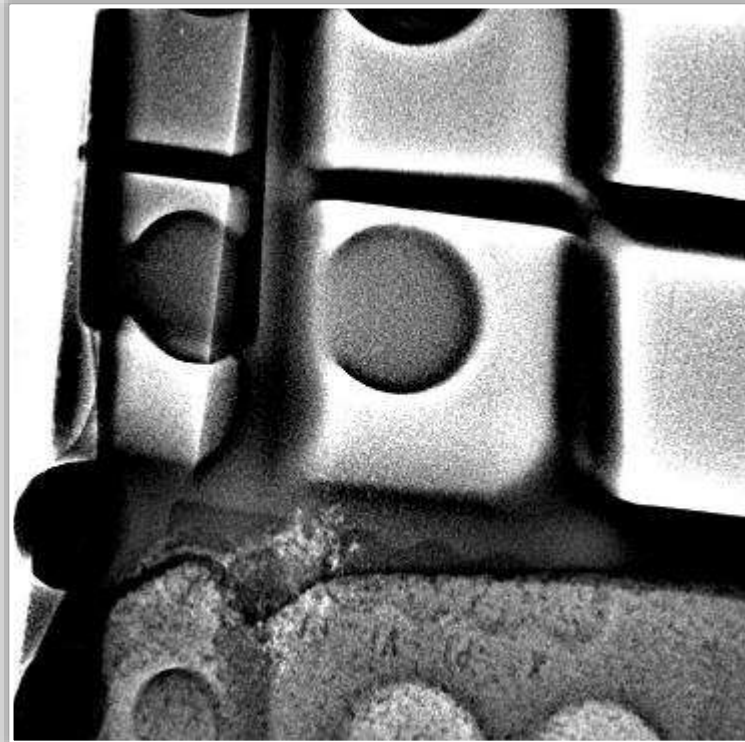
▶ ADR configuration – ROIs



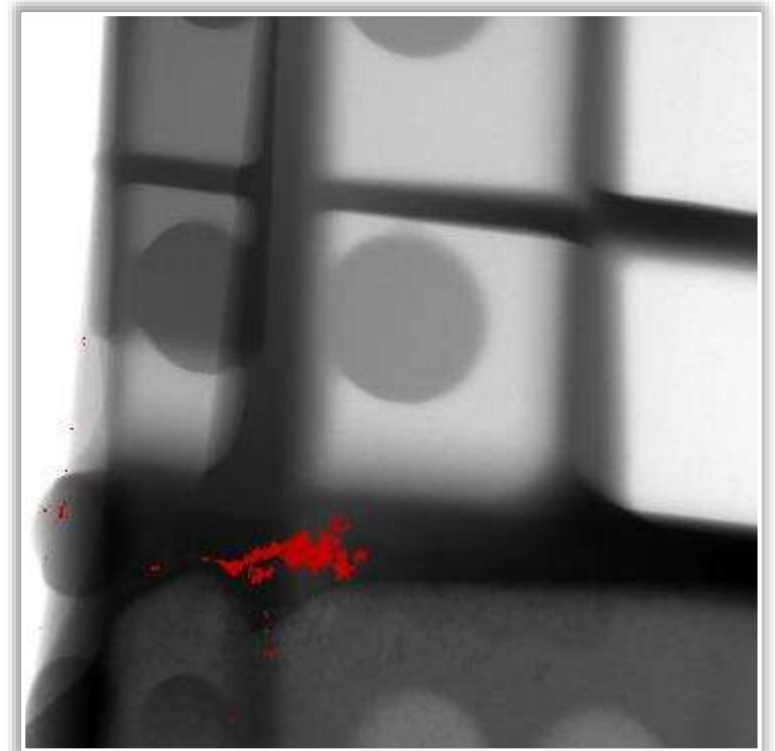
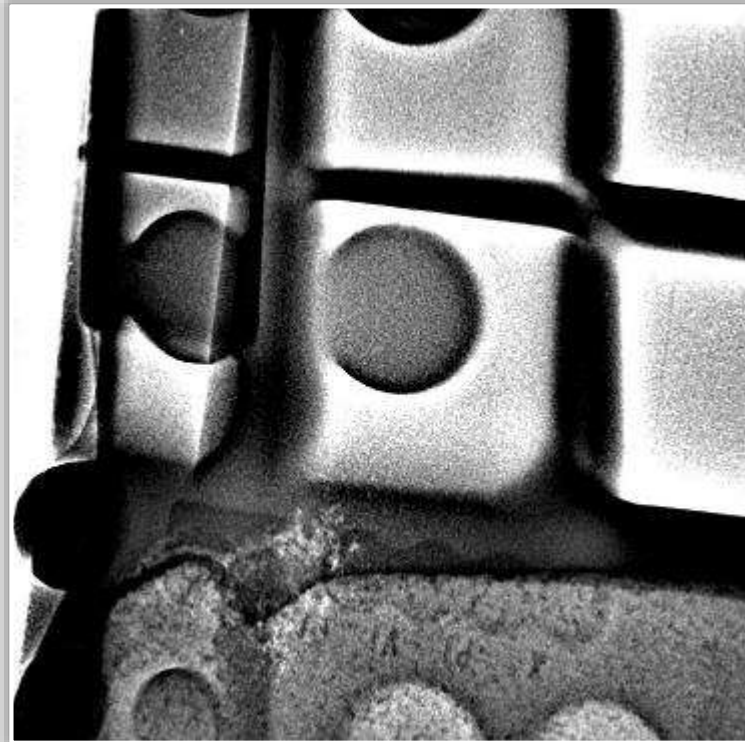
▶ ADR configuration – ROIs



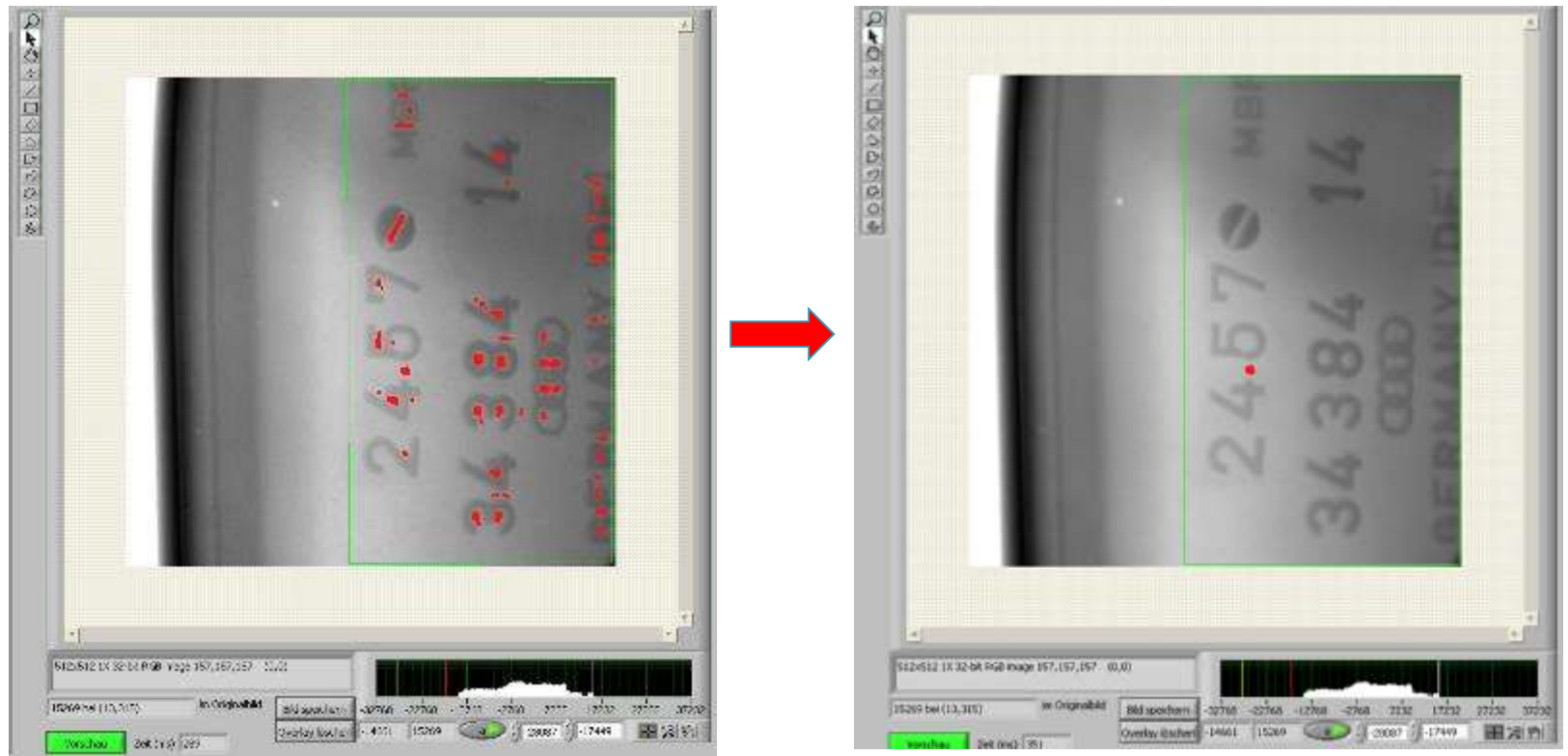
► False positive reduction



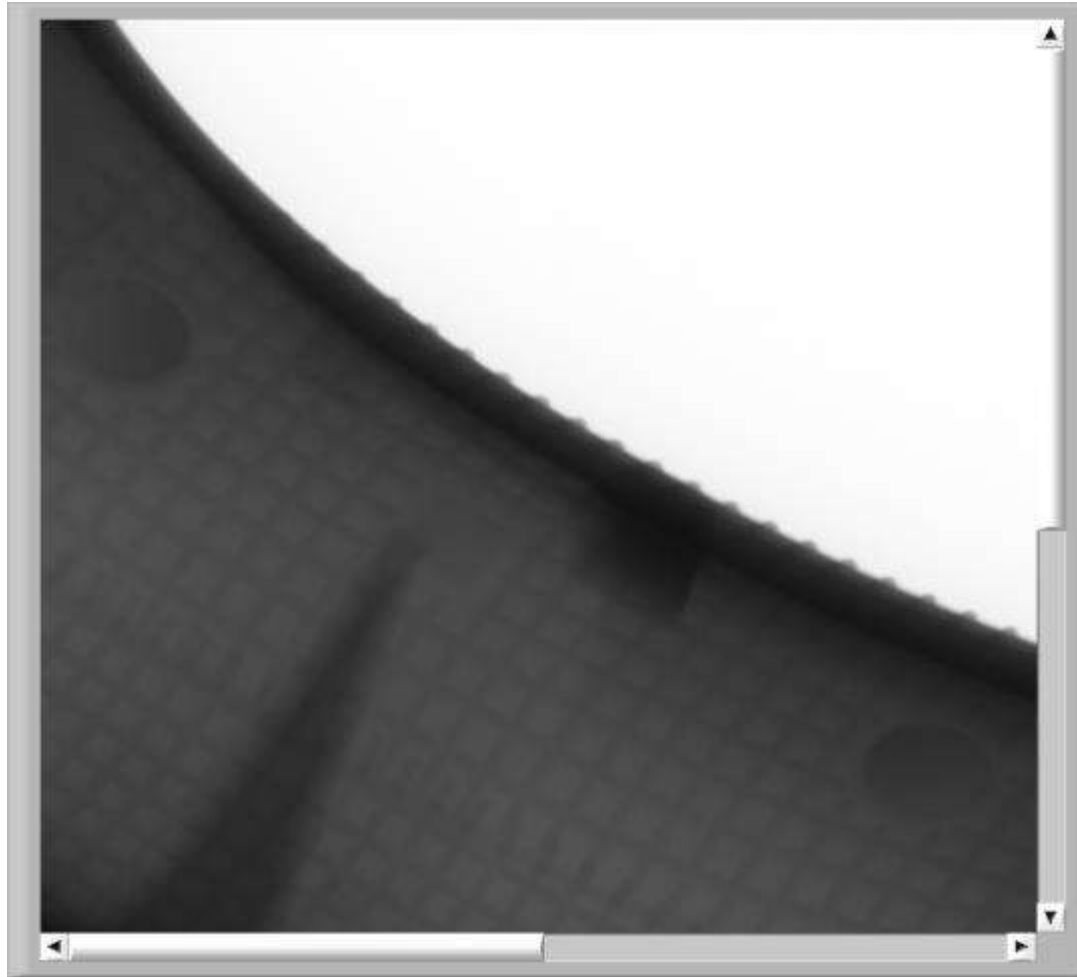
► False positive reduction



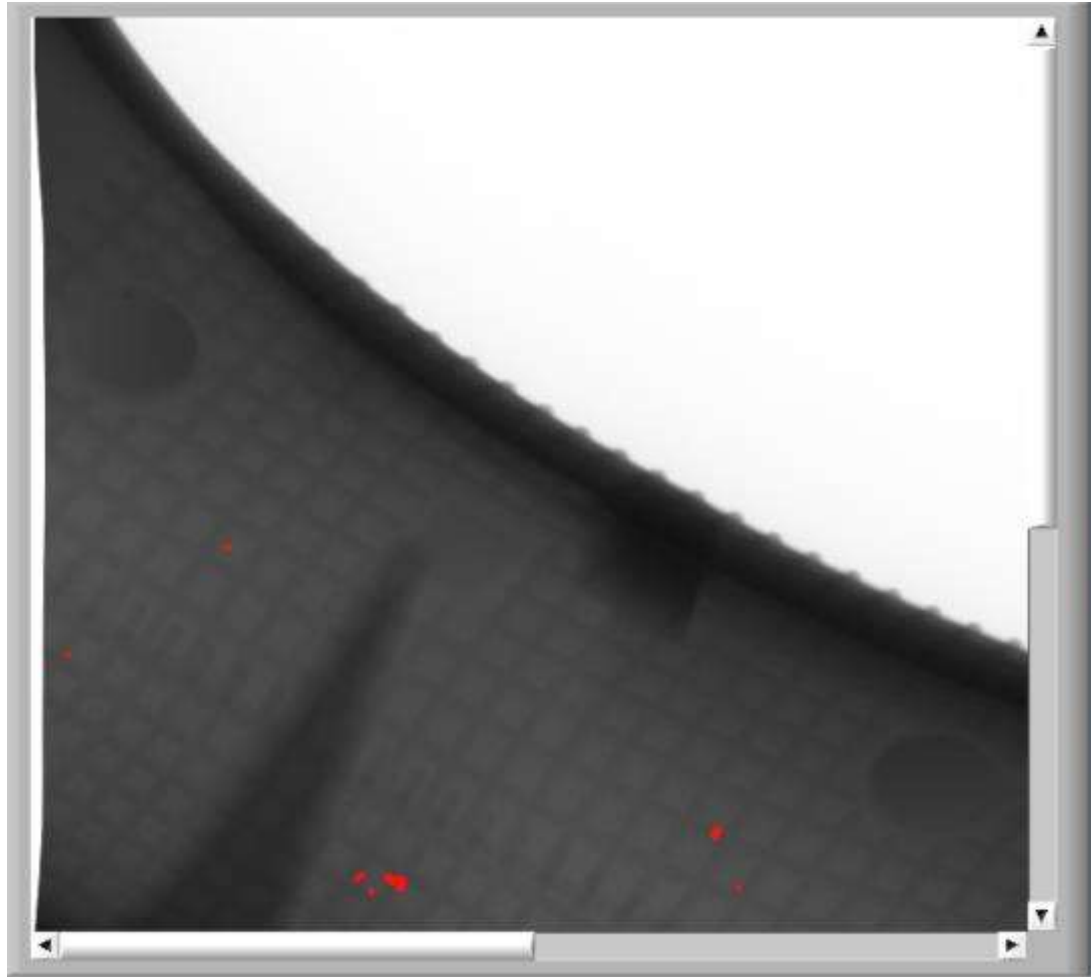
► False positive reduction



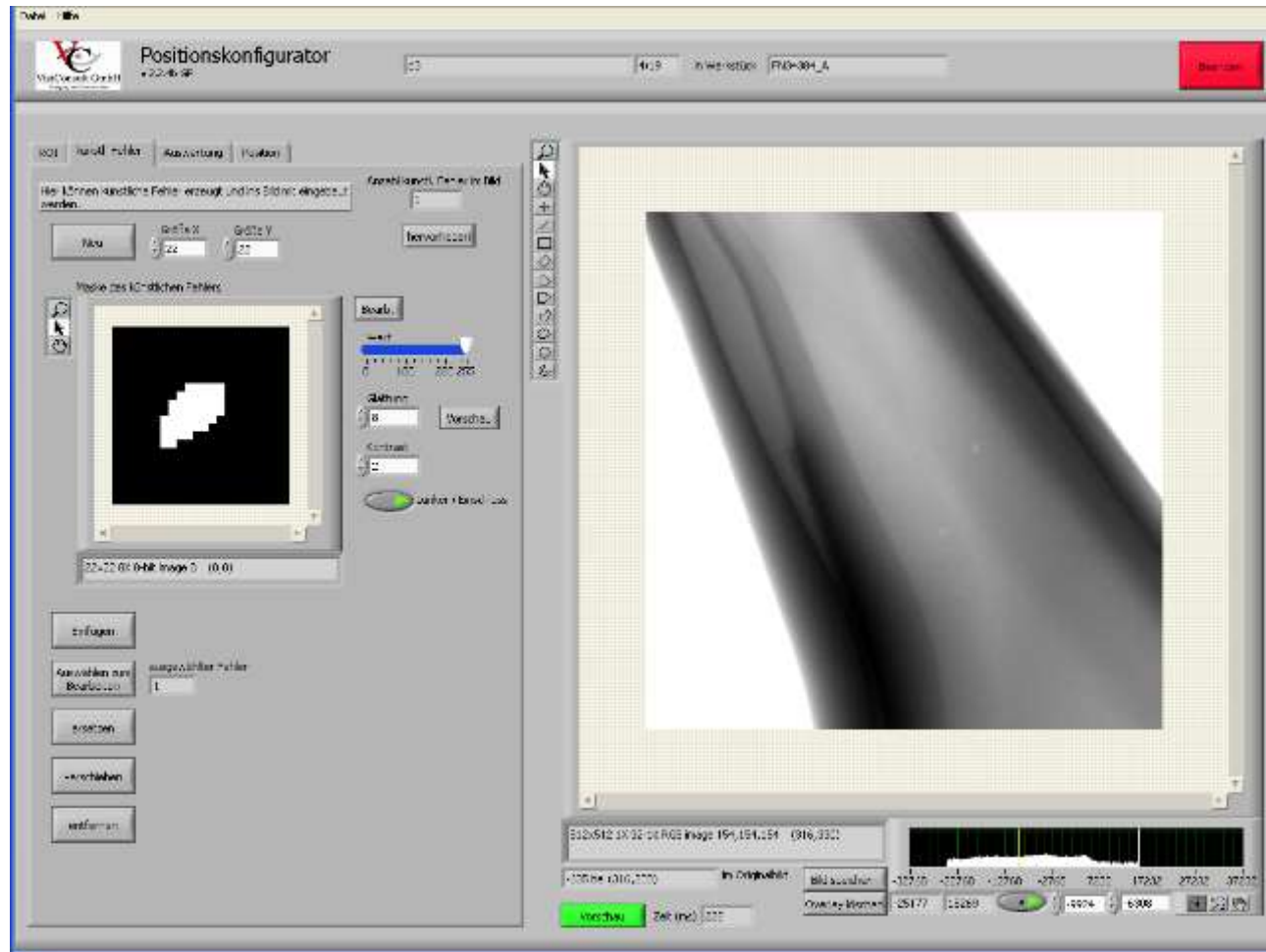
► Image registration



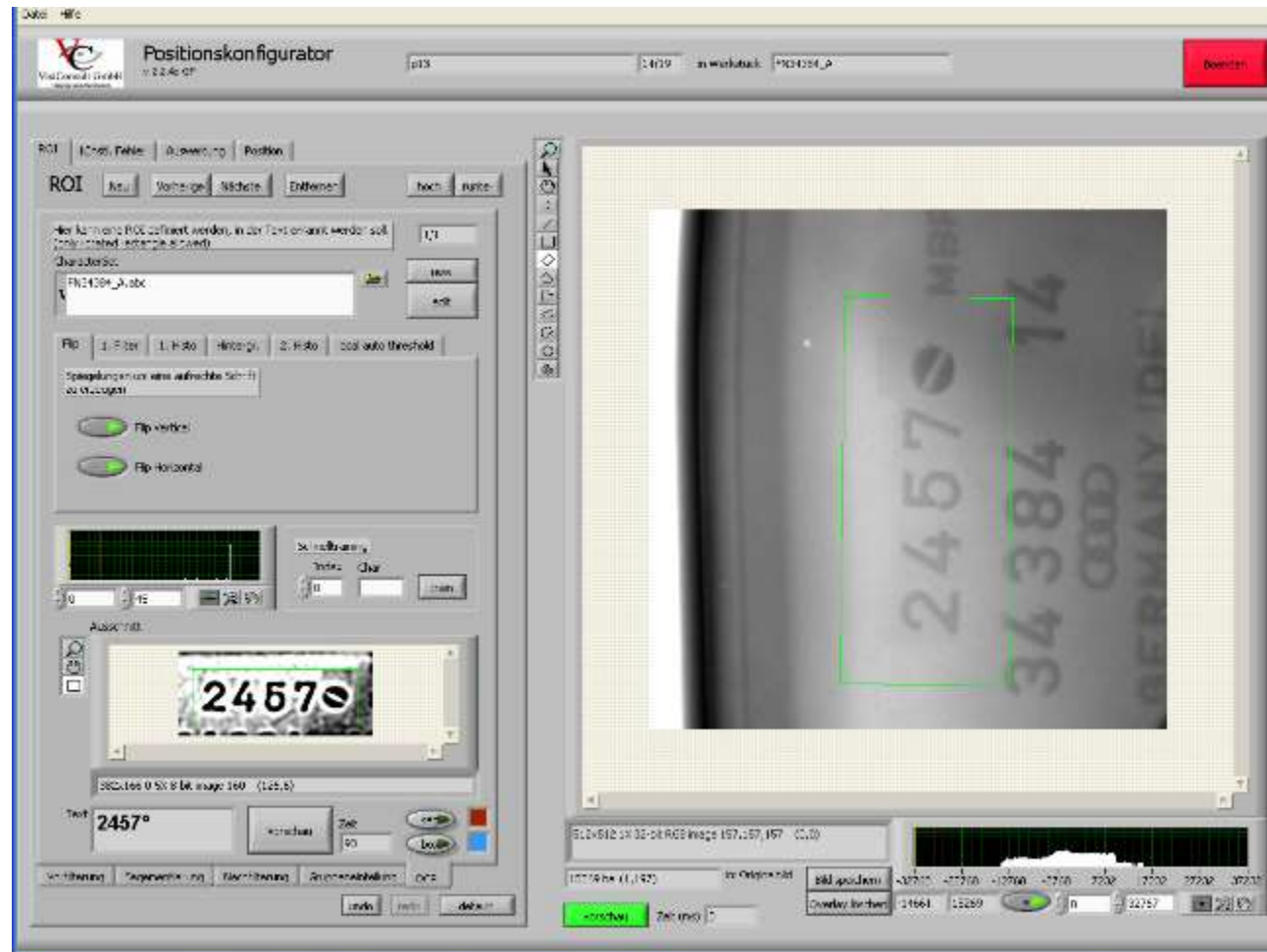
► Image registration

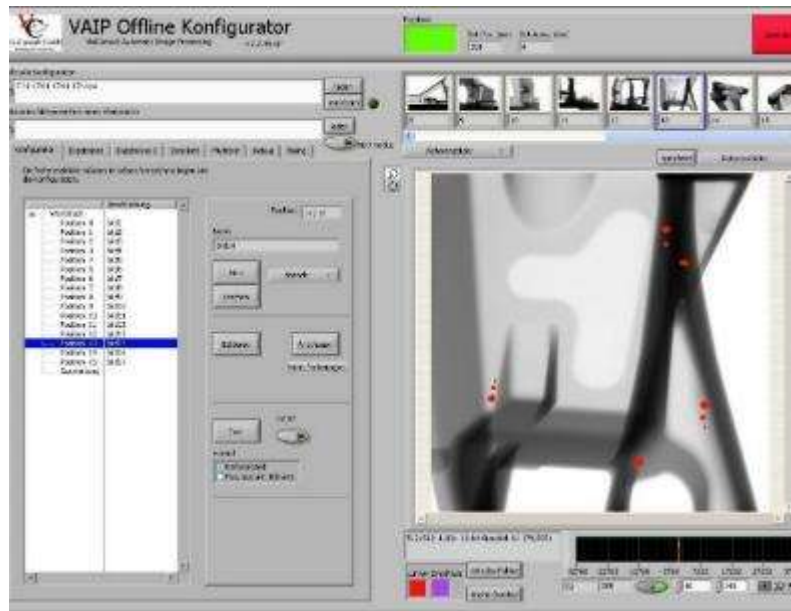
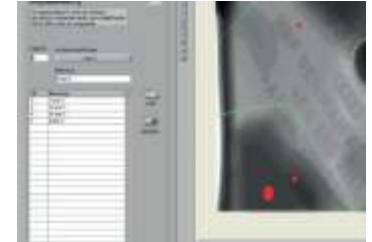


► Artificial flaws – verification



► OCR – Text Recognition

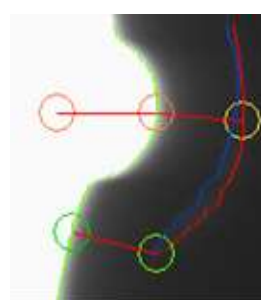
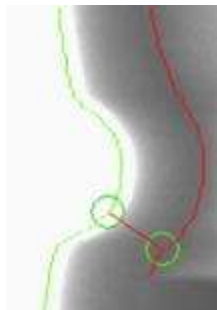
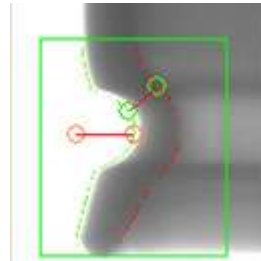




- Porosities
- Inclusions
- Geometry
- SerialNumbers

- Approved by BMW
- Fastest ADR system worldwide
- 24/7 operation
- No human operator



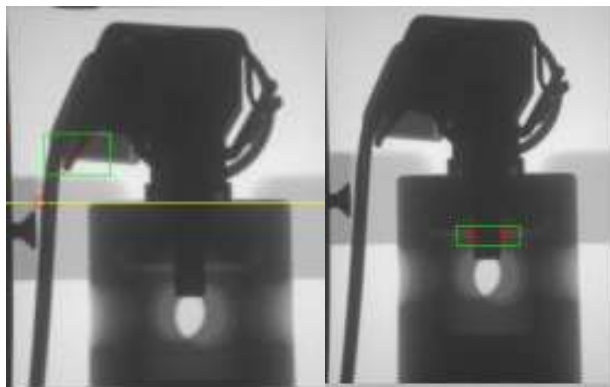
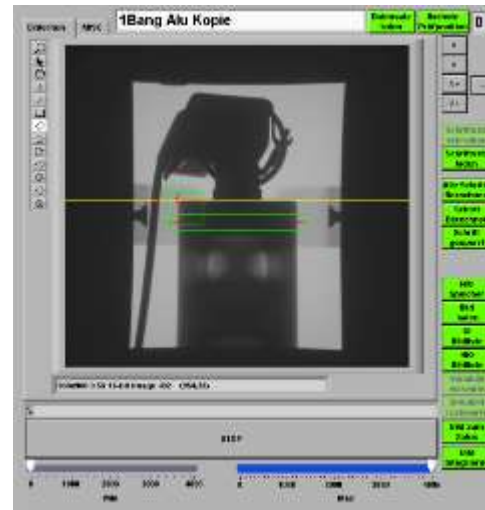


- Geometry
- Density
- Thickness
- Missing material and pores

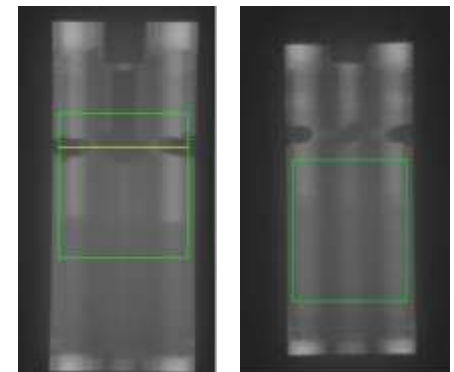


- For airbag igniters
- Automation of DR cabinets
- 24/7 operation
- No human operator





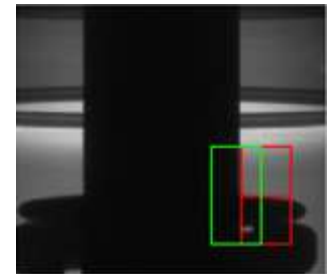
- Foreign Material
- Missing components
- Wrong component
- Destiny
- Geometry





SIEMENS

- Foreign Material
- Missing components
- Wrong component
- Geometry



- Fully automatic
- Hundreds of checks
- Rotating device
- High voltage switches

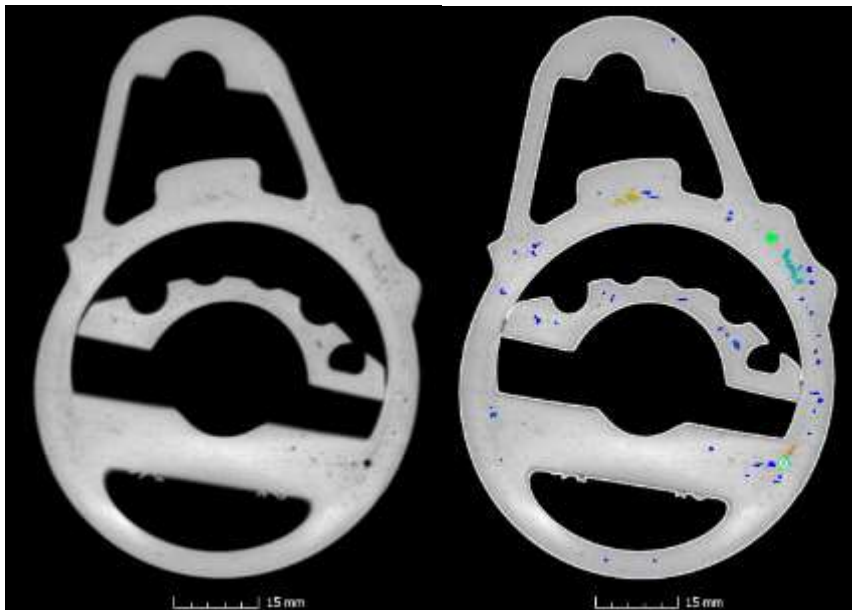


► Computed Tomography ADR

◦ Aluminum Casting

Reconstructed slice

Porosity Analysis



► Thanks for your attention



VisiConsult
X-ray Systems & Solutions

NDT X-ray Toolbox

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