

# Radiographic Testing (RT)

Radiographic testing (RT) is one of the most fundamental volumetric testing methods performed in the industry. Radiography encompasses a wide range of techniques from film usage to digital, with digital techniques ranging from computed (CR) and direct (DR) to real-time radiography (RTR) and computed tomography (CT). All of these techniques involve either X-ray or gamma radiation generated from a tube or from an isotope of Iridium-192, Selenium-75 or Cobalt-60. RT has the ability to penetrate wide ranges of material with varying densities to detect internal defects in weld quality; profile in-service systems to determine if corrosion or erosion is present; evaluate castings for fabrication flaws or foreign objects; and detect damage in composites.



## THE Applus+ SOLUTION

Applus+ is a world-leading authority in radiographic testing, a technique ideally suited to the detection of imperfections in materials throughout industrial operations and applications. Radiographic testing is used to meet the challenge of identifying issues across production assets and equipment applications in the oil and gas industry.

Additionally, Applus+ leads the field in advanced technology with its own RandD laboratories, worldwide resources and geographical coverage. We work closely with industry leaders and subject experts.

Applus+ has developed the Rayscan System, a real-time digital radiographic inspection system capable of completing a full inspection of a production pipe in a single scan rotation. This same technology has transcended into Rayscan Tankscan, the real-time digital radiographic inspection system that can complete a full inspection of LNG storage-tank welds in a single scan, producing a high-quality image of each weld.

## Target customers

Radiography has a number of applications within the industry. Whether it be conventional film or digital, RT can be used to verify weld quality or to profile in-service piping to determine the presence of corrosion under insulation (CUI), flow-accelerated corrosion (FAC) or remaining wall thicknesses.

RT has been employed in several industries and for a variety of inspection types, including:

- Petrochemical
- Nuclear
- Fossil
- Chemical
- Military
- Aerospace
- Foundries
- New construction
- Post-construction
- Corrosion monitoring
- LNG fabrication

Radiography is also a widely used volumetric-testing technique, and Applus+ is a time-tested provider of this service in the industry.

## Key customer benefits

Advantages of using digital radiography:

- Direct results after scanning on site
- Large dynamic range
- Dose reduction (up to 90% in some cases)
- Smaller boundaries
- No use of chemicals or darkrooms
- Use of image-processing tools
- Digital archiving, reporting and transporting
- Significantly fewer re-shoots
- Digital images
- Increased probability of detection

Advantages of Rayscan/Tankscan Real-Time Digital Radiography over conventional film radiography:

- Cost efficient; no consumables
- Quick cycle-time
  - High scan-speed
  - No development time
  - Direct interpretation and feedback
- Quality equal to/better than film

- Increased safety
  - Reduced radiation required
  - Collimated X-ray beam
  - Shielded scanner design
- Environmentally friendly; no chemical waste management required
- High suitability for:
  - Pipes with diameters of 5cm to 142cm (2" to 56")
  - Thin walls
  - Austenitic materials
  - Dissimilar welds
  - CRA pipelines
  - Root and hot-pass inspections