

Gas bottles testing



Gas bottles and gas cylinders are usually tested using 2 techniques simultaneously: Visual inspection & Hydraulic test. These techniques are easy to handle and may be sufficient for some applications.

But several applications require other NDT tests as some defects can not be detected with above trials.

The visual inspection combined with hydraulic testing reveals some weaknesses:

- Grooves, mechanical damage and longitudinal defects in the cylinder wall are sometimes difficult to detect by visual inspection, especially on internal surfaces. However, when submitting to a radiography, these defects can be detected.
- Lamination in the vessel material can be detected by the hydraulic test only if the vessel fails. With the X-ray method, these defects will be reliably detected before failure occurs.
- If gas pressure vessels are operated with corrosive gases, any humidity remaining in the cylinder after hydraulic testing will result in an accelerated corrosion rate. This is avoided when X-rayed.
- Very stringent demands on particle cleanliness are required for process gases used for the manufacture of electronic components. The contamination introduced by hydraulic testing cannot be fully avoided even after considerable efforts. X-rays inspection does not produce such contamination.
- Water is a relatively viscous fluid so that pinholes and very fine cracks may be difficult to detect. Again here, an X-ray inspection will detect those small dangerous defects.

Solutions implemented by Balteau...

This proposal describes 3 different systems able to perform X-ray inspection of welds of gas bottles and cylinders having the following specifications:

AIS202

Manual loading/unloading system using standard film technique



The advantages:

- Recall a memory that contains the X-ray parameters
- Select new X-ray parameters through the keyboard
- When the user introduce the film type, the FFD and the required density. The control unit will select automatically the most appropriate X-ray parameters

It includes:

CERAM 235 high voltage generator
CF2000 control unit
Shielded cabinet

AIS201, manual version

Manual loading/unloading system using a remote controlled manipulator and a real time technique



The advantages:

- Real time radiography
- Compliance with the most stringent regulations
- Large motorized door
- 4 axis manipulator
- Rotating plate
- Image processing software

It includes:

XSD160 high voltage generator
H.V. cable and tubehead
LS1 control unit
Shielded cabinet
4 axis Manipulator
BIX 220 real time detector
Image processing system

AIS201, automatic version

Automatic loading/unloading system using a remote controlled manipulator and a real time technique



The advantages:

- Real time radiography
- Compliance with the most stringent regulations
- Large motorized door
- Robot that brings the bottles from an external conveyor and places it on the manipulator
- 4 axis manipulator
- Rotating plate
- Teaching software module
- Image processing software

It includes:

XSD160 high voltage generator
H.V. cable and tubehead
LS1 control unit
Shielded cabinet
4 axis Manipulator
6 axis robot
BIX 220 real time detector
Image processing system

