



## Visual inspection

Are you an operator of nuclear power plants, conventional power plants, steam turbines, gas turbines or combined heat and power plants? Do you use welding installations? Thanks to our years of experience, we inspect the structural integrity of your components.

### Your tailor-made solution

Visual inspection is an essential basic technology in non-destructive testing.

The external appearance of a unit can provide essential information about the condition of the piece:

- clearly visible faults (such as folds, breaks, wear and tear, corrosion, open cracks, etc.)
- hidden underlying defects that cause an irregularity on the external surface may indicate a more serious fault within.
- select the most suitable NDT technology for detailed investigations
- determine the limitations of the other NDT techniques selected (access, surface condition, etc.)

The leak-tightness tests, the pneumatic tests and hydraulic tests shall also include a visual examination to detect possible leaks.

The training and experience of the inspector are extremely important:

- knowledge of the manufacturing and assembly methods and the possible faults such as rolling defects, casting or forging defects, drawing defects, bending defects, welding defects, etc.
- knowledge of the problems that may occur during operation (corrosion, erosion, fatigue, creep, IGSCC, embrittlement caused by hydrogen, etc. + evolution during operation, of the inherent faults that were caused by wear and tear)
- knowledge of other NDT techniques for more thorough-going inspections in addition to visual inspection (detection of hidden defects and dimensions)
- knowledge of the manufacturing and operating codes
- the training must be suited to the sector: aeronautical, medical, thermal centres and nuclear power station, industry, etc.

Example:

aspects of visual inspection of welds (for example, the ISO 5817 standard) : basic material, preparation for welding, the welding process, dimensional checks, surface inspections, working conditions during operation (pressure, temperature, overload, variable loads, etc.)

Restrictions:

- Technique limited to visible surfaces.
- Visual acuity of the operator.
- Need to train the operators.
- The characterisation of the faults is limited.

### Your result

Based on our long years of experience, we can offer the following in various cases:

- Advice to our clients concerning the conduct of programs for inspection during manufacturing and during operation (periodic inspections).
- Investigation of new parts at the time of delivery.
- Based on the findings made during the visual examination: proposing– additional non- destructive and destructive tests during manufacture (for example, tensile test, hardness test, bending test, Charpy impact test) and during operation (for example, replica for the detection of inter-granular corrosion).
- Expert assessment of the problems that occur during operation.

### **Please note**

If no standards or regulations have been prescribed, the inspection program and the NDT techniques can be developed together with the manufacturer and the operator on the basis of our many years of experience.

ASME (American Society of Mechanical Engineers) III, ASME V, ASME XI, ISO 17637, ISO 11971, ISO 10042, ISO 5817, ANSI B 31, API 1104, Various ASTM (American Society for Testing and Materials).

### **In which situation?**

The operators of nuclear and conventional power stations, steam turbines, gas turbines and combined heat and power generation plants.

Furthermore : all installations where inspection of welding work is required, leaks detection has to be carried out, and inspection of supports for piping and components for structural integrity has to be carried out.