



## INSPECTIONS & TESTING

The qualified inspectors of our Quality Control department guarantee the compliance of our products by completing the following inspections:

- Visual and dimensional inspections
- PMI testing (Positive Material Identification)
- Dye-penetrant inspection
- Magnetic particle inspection
- Hydrostatic testing
- Hardness testing

All our inspection equipment is quality controlled at the frequencies required by the main policy standards applicable to the verification of inspection equipment.

- ◆ **Metrology**
- ◆ **PMI testing**
- ◆ **Dye-penetrant inspection**
- ◆ **Magnetic particle inspection**
- ◆ **Hydrostatic testing**



## ◆ Metrology

All our machined and mechanically-welded products undergo various dimensional quality controls, in addition to systematic visual inspection, using a comprehensive range of equipment:

- FARO mobile arm for 3D inspections
- Calipers with a measuring range of up to 2,000 mm
- Profile projector, 600 mm in diameter, 10/20/50 magnification
- Outside and inside micrometers with a measuring range of up to 500 mm
- Drift detection as per API and VAM®
- Gagemaker equipment
- Thread inspection gauges for ISO, API and other threads
- Digital roughness tester and touchscreen display.
- Other types of metrology equipment.
- Hardness testing

VAM® is a registered trademark of Vallourec Oil and Gas France.

## ◆ PMI testing

PMI (Positive Material Identification) testing, performed under the supervision of our in-house Radio-protection Safety Officer, allows us to identify the main chemical compositions of our materials and thus complete our raw material verification process.

This inspection is carried out on all our incoming raw material flows and on samples of our production flows.



## ◆ Dye-penetrant inspection

Controllers are certified COFREND<sup>(1)</sup> Level 2 in compliance with NF EN 9712 and have taken an annual visual acuity test.

Our in-house procedures, applicable to dye-penetrant inspections in accordance with the main construction codes (RCC-M, CODAP, NF EN 13480, CODETI, ASME), have all obtained COFREND Level 3 validation.

Compliance with PMUC<sup>(2)</sup> requirements

Checks are performed on our products at different manufacturing stages (on machined parts, during welding, after welding).

Dye-penetrant inspections of welds can be supplemented by other NDT.

<sup>(1)</sup>COFREND: French Confederation for Non Destructive Testing

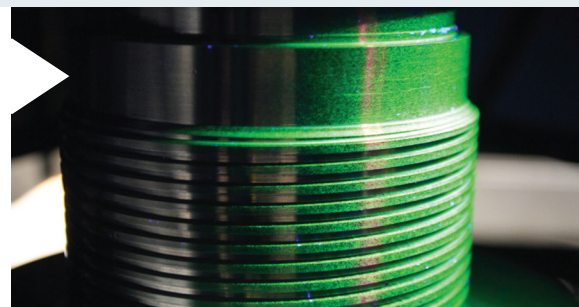
<sup>(2)</sup>PMUC: French accreditation of Products and Materials used in NUCLEAR POWER PLANTS

## ◆ Magnetic particle inspection

Controllers are certified COFREND<sup>(1)</sup> Level 2 in accordance with NF EN 9712 and have taken an annual visual acuity test.

Our in-house procedures, applicable to magnetic particle inspection in accordance with the main policy standards (API, ASME), have all obtained COFREND Level 3 validation.

<sup>(1)</sup>COFREND: French Confederation for Non Destructive Testing



## ◆ Hydrostatic testing

Hydrostatic testing is used to check the structural integrity of pressure equipment. It involves filling the equipment with water and increasing pressure to a level that exceeds its normal operating pressure. This test ensures that the equipment has no defects.

Available resources:

- Maximum pressure up to 14,500 psi and manometers with class 0.5 accuracy
- Possibility of recording the cycles using special software
- Dedicated testing area
- A large number of testing tools available (*blind flanges, threaded rods, gaskets*)
- Tests monitored by clients or notified bodies
- Testing pit for special equipment
- In-house sizing and manufacturing of testing tools
- Periodic verification of water quality