framatome

Material Testing

Qualified Determination of Material Property Values

The material testing laboratory helps resolving issues occurring in course of plant operation, and supports quality assurance in product manufacturing

Challenge

Properties of materials need to be tested when component problems are to be resolved, or in course of component manufacturing activities. Materials may need to be qualified, or previous material qualifications need to be validated or supplemented. In course of R&D activities, material properties may need to be tested.

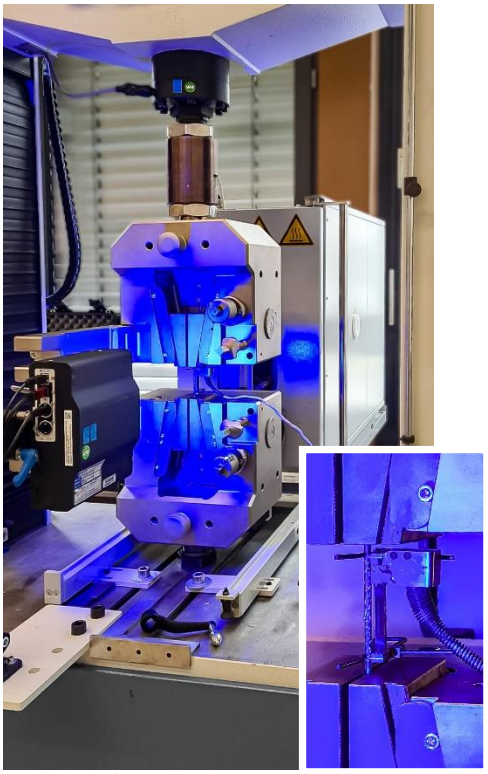
Solution

Framatome's material testing laboratory provides a comprehensive set of services, from the preparation of material testing and sampling plans, to sample processing, testing and reporting, including acceptance certificates or independent experts.

Our experts perform various test procedures for determining the behavior and the material properties of standardized specimens or finished components under mechanical and thermal stress. The tests are carried out in conformance with respective standards. The results are documented in the form of test certificates or comprehensive work reports.

Our service portfolio:

- Work preparation / CAD
- Handling of test specimen manufacturing
- Optical and tactile measurement of samples and components
- Hardness tests, e.g., as per Vickers, Brinell, Rockwell
- Tensile tests on standard and micro-specimens
- Compression tests
- Notched bar impact tests on standard, micro- and reconstituted specimens
- Bend tests
- Fracture mechanics tests and fatigue tests
- Customer-specific component tests
- Acceptance certificates 3.1 (DIN EN 10204).



Mechanical materials testing in the laboratory

Customer benefits

- Obtain reliable results through our longstanding experience in the field of mechanical material testing and experimental fracture mechanics
- Rapid response times even for complex test setups
- High quality: your tests are carried out by qualified personnel

Your performance
is **our** everyday **commitment**

Technical information

Testing equipment

Universal testing machines:

- Force measuring ranges: ± 250 N to ± 600 kN
- Vertical test space: max. 1600 mm
- Temperature range: -196 °C to 650 °C (higher temperatures upon request)

Resonance pulsators:

- Force measuring ranges: ± 250 N to ± 20 kN
- Dynamic travel range: ± 4 mm
- Frequency: 70 to 220 Hz
- Oscillation mode: sinus

Servo-hydraulic testing machine:

- Force measuring ranges: ± 250 kN
- Dynamic travel range: ± 50 mm
- Frequency: ≤ 70 Hz
- Oscillation mode: sinus, triangle, single ramp, sawtooth, rectangle, individual profile

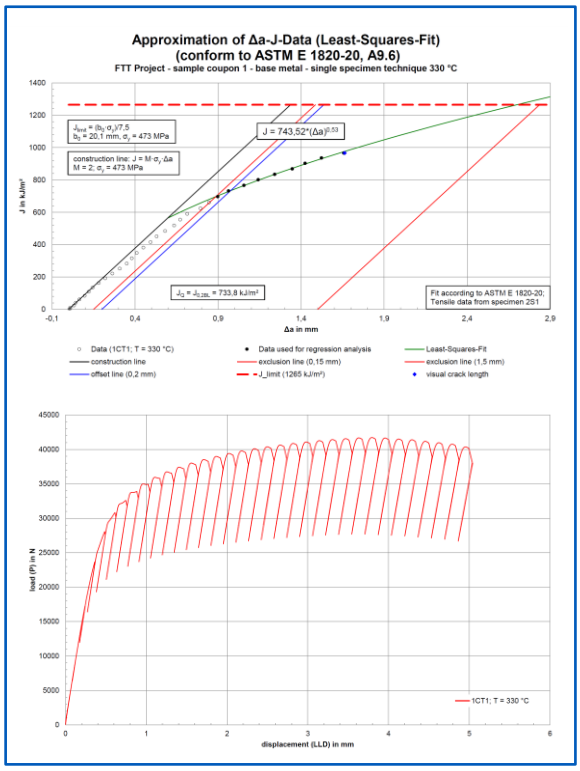
Impact testing machines:

- 450 J (instrumented) for standard specimens

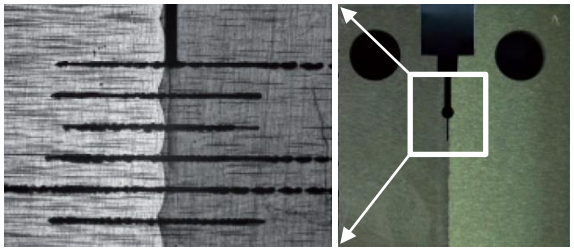
Hardness test equipment:

- Vickers, Brinell and Rockwell hardness testing machines

The Technical Center of Framatome Germany is a center of competence in the field of mechanical material testing and experimental fracture mechanics.



Methods for the determination of crack initiation values and crack resistance curves regarding stable crack expansion in the elastic-plastic fracture mechanics



Fracture-mechanical specimen CT-25 with pre-fatigued crack

Key figures

Up to **500** tension test specimens, approximately **2000** charpy impact tests, approximately **600** fracture toughness tests are carried out on average per year in our test lab

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