

Oil & Gas Production

Stress Corrosion Cracking Corrosion Fatigue H₂S Corrosion Tests

*Research and Development,
Failure analysis, Corrosion testing, etc.*

The French Corrosion Institute, a subsidiary of **SWEREA KIMAB** (Sweden) is one of the leading organizations in Europe in the field of corrosion and corrosion protection. It includes two sites located in Brest and Saint-Etienne, with a task force of 40 engineers and technicians. Together with SWEREA KIMAB, more than 80 employees work in the area of corrosion protection.

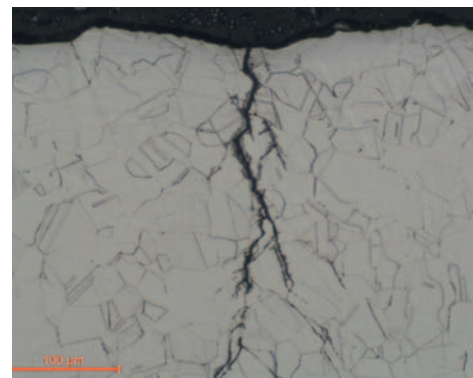
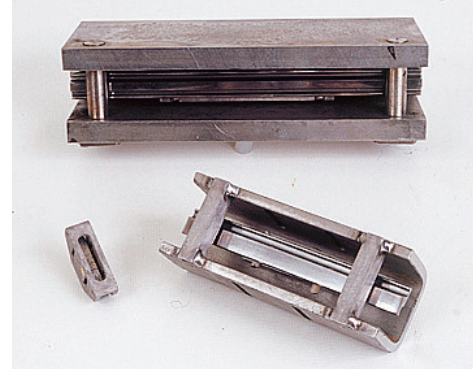
The site in Saint-Etienne is specialized in corrosion resistance of materials used for oil & gas production, which requires specific facilities such as H₂S and ATEX laboratories.

Partner and coordinator of numerous R&D projects in collaboration with the Industry, our objectives are :

- Evaluate the resistance of materials to environmental cracking in H₂S containing environments (SSC, CSC)
- Evaluate the resistance of materials to corrosion fatigue in H₂S environments
- Use and develop monitoring techniques for mechanistic studies and improve test method reliability

We can offer

- **Participation to cost-shared projects**
- **Consultancy and Advices**
 - Selection of materials
 - Failure analysis
- **Laboratory tests**
 - Standard NACE tests (HIC, SSC), fit for purpose tests with CO₂-H₂S gas mixtures and controlled pH
 - Specific tests following specifications in different conditions :
 - At atmospheric or high pressures (up to 300 bar)
 - Temperature (up to 350°C)
 - With applied stress using various loading devices
 - Specific tests for polymers



Facilities

Laboratory testing

- H₂S laboratory (600 m²) including an ATEX laboratory for tests using explosive gases, oil, etc (for metallic and polymer materials)
- Corrosion fatigue test machines
 - Alternate bending (atmospheric pressure, up to 40 bar)
 - Rotary bending (atmospheric pressure, temperature up to 100°C)
- Environmental cracking (SSC, SCC up to 300 bar)
 - Static:
 - 4 points bending devices (up to 300 bar)
 - Constant load tensile tests (limited to 40 bar, capacity up to 100 kN)
 - C-rings (up to 300 bar)
 - Other loading methods (U-bends, spring loaded specimens), atmospheric pressure or in autoclaves (300 bar)
 - Fracture mechanics specimens DCB, WOL (up to 300 bar), CT (atmospheric pressure)
 - Dynamic:
 - Slow-strain-rate tensile tests (limited to 40 bar)
- Autoclaves for high pressure tests
 - High capacity 15 and 12 liters autoclaves:
300 bar (2 autoclaves), 40 bar (4 autoclaves), 20 bar (10 autoclaves).
- Immersion tests with electrochemical measurements (up to 40 bar)

Methods of analysis

- Electrochemical techniques
- Mechanical tests
- Optical microscopy and image analysis
- Scanning electron microscopy (SEM)
- X-ray diffraction
- Raman spectroscopy

Contact

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