

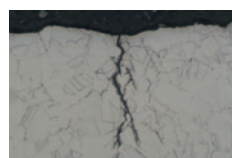
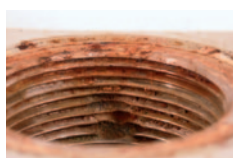


Institut de la Corrosion

French Corrosion Institute

Research & Development, Consultancies, Failure analysis, Testing

Seawater Facilities, Accelerated Corrosion Testing Chambers, Corrosion Fatigue Laboratory,
H₂S & ATEX Laboratory, Outdoor Exposure Sites



On the site of Brest, we can offer:

Accelerated atmospheric corrosion tests

Automotive manufacturer standards

- **Renault** D17 2028 (ECC1), D17 1058, D53 1762
- **Volvo** STD 423-0014 (ACT), VCS 1027, 149
- **VDA** 233-102 (N-VDA), VDA 621-415
- **Ford** CETP00.00L467
- **Nissan** M0158
- **PSA** D13 5486 (TCAC), D17 1058
- **Daimler** KWT
- ISO 16701, etc.

Salt spray standards

- ISO 9227
- ASTM B-117
- NF A05-109
- DIN 50021
- IEC 60068-2-11
- MIL 810 D
- ...etc.

Offshore/marine standards

- ISO 20340, ISO 12944
- NACE SP0108, NACE TM0304/TM0404
- ...etc.

Tests in natural seawater / Marine corrosion / Cathodic protection

- Tests in natural seawater regulated from 4°C to 90°C and treated (chlorination regulation system, oxygen control, pollution, etc.) ISO 2812
- Complete and independent in-situ «**monitoring corrosion**» system for continuous measurements of electrochemical potential, current and cathodic protection
- Experiments at smaller or larger scale for different marine applications (heat exchangers, umbilicals, connectors, chlorination units, pumps...).
- Cathodic disbonding test ISO 15711

Corrosion fatigue tests

- **In seawater:** hydraulic assist power machines with capacity of +/- 25 kN, tensile-compression equipped with a 4 points bending device with a capacity of 10 kN. Titanium chambers for chloride-containing media, temperature from 5°C to 80°C, dissolved oxygen control, possibility to polarize specimens
- **In atmosphere:** a unique tool enabling fatigue cycles in an accelerated corrosion test. Performances: 0-3.5 kN ; 0-5 Hz, with or without cycle

Outdoor exposure sites

- **In Europe:** tempered marine atmosphere according to ISO 8565 and EN 13523-19 (ECCA T19) standards with various exposure angles (45° south, 5° south, 90° north). C5M corrosivity on steel.
- **In Asia:** tropical and marine atmosphere, industrial and marine atmosphere, acid rain, etc.
- **In the United Arab Emirates** (Dubai): UV atmosphere

Corrosion sensors

- For atmospheric corrosion (steel, zinc, copper, silver ..)
- For cathodic protection monitoring (SPCT, CPC)
- ...etc

Training in cathodic protection

- Theoretical and practical training in the field of cathodic protection of metallic structures exposed to seawater
- Preparation to the examination «AFNOR Competence / Cathodic protection - Sea sector» level 1S, 1 and 2



On the site of Saint-Etienne, we can offer:

H₂S corrosion testing

- Standard tests NACE type HIC, SSC with gas combinations and controlled pH: NACE TM0177, TM0284, NACE MR0175 - ISO 15156, EFC 16, etc...
- Specific tests following specifications in different conditions: under atmospheric pressure or high pressure, temperature or under stress.

Stress corrosion cracking tests

- **Static:**
 - Constant load tensile tests, capacity up to 100kN, atmospheric pressure or up to 40 bar
 - 4 points bending devices, atmospheric pressure or in autoclaves up to 300 bar
 - C rings, atmospheric pressure or in autoclaves up to 300 bar
 - Other loading methods (U-bends, spring loaded specimens), atmospheric pressure or in autoclaves up to 300 bar
 - Fracture mechanics specimens DCB, WOL up to 300 bar, CT at atmospheric pressure
- **Dynamic:**
 - Slow-strain-rate tensile tests (limited to 40 bar)

Corrosion fatigue tests

- Rotary bending (atmospheric pressure, temperature up to 100°C)
- Alternative bending (atmospheric pressure up to 40 bar)

Autoclaves for high pressure tests

- 2 high pressure (300 bar), high capacity (15 liters)
- 4 autoclaves (40 bar), high capacity (12 liters)
- 10 autoclaves (20 bar), high capacity (12 liters)

Immersion tests in corrosive media with/without mechanical load

- Immersion tests in corrosive environments within a large range of temperature and pressure
- Electrochemical measurements, even under pressure, and particularly in H₂S media
- Tests not only on samples but also on equipment or functional pieces
- Standard tests based on immersion testing for stainless steels (intergranular corrosion, localised corrosion), aluminium and copper alloys
 - ASTM A262, A923,
 - ASTM G28, G30, G36, G38, G48, G49, G150, etc

ATEX facilities

- Tests using explosive gases (methane, hydrogen, etc)
- For testing polymeric materials according to
 - Norsok M-710
 - ISO 23936
 - NACE Standard TM0187



European leader in the field of corrosion

The French Corrosion Institute, a subsidiary of SWEREA KIMAB (Stockholm, Sweden) is an organization that focuses on corrosion and corrosion engineering. The range of services covers everything from short assignments to multi-year research projects. We can offer a wide range of testing conditions from laboratory scale to full scale experiments in various environments.

Our areas of technological strength in the field of corrosion

- Transport industry (automotive, shipbuilding, aerospace, railway, etc.)
- Oil and gas production
- Energy
- Marine corrosion
- Building and infrastructures
- Chemical and process industry

A unique industrial network

More than 180 industrial companies in the world are members of our Institute. With around 150 R&D projects and 1000 consultancies every year, the French Corrosion Institute is involved in most industrial sectors concerned by corrosion: the transportation industry (marine, land, air), building and infrastructures, military and naval construction, oil & gas industries, nuclear and chemical industries, food industry, electronics... etc

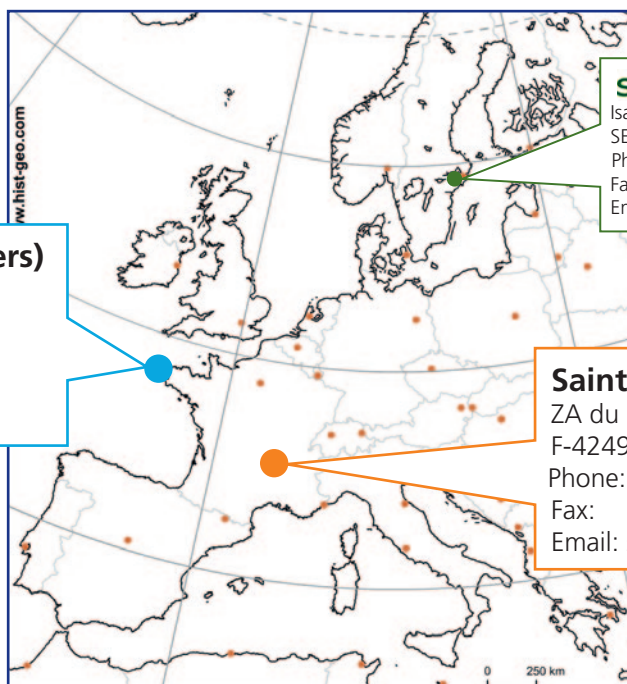
An efficient and rapid service

From our three European centres, we can quickly provide solutions to various corrosion problems (including failure analyses, testing and laboratory investigations), with a total impartiality and confidentiality.

Our competency in investigations, diagnostics and studies is available for all metallic materials (steel, aluminium, zinc, copper, titanium and various alloys), paints, polymers and composites.



LOCATIONS



Brest site (FCI headquarters)

220 rue Pierre Rivoalon
F-29200 Brest, France
Phone: +33 (0)2 98 05 15 52
Fax: +33 (0)2 98 05 08 94
Email: brest@institut-corrosion.fr

swerea|KIMAB

Isafjordsgatan 28A
SE-164 40 Kista, Sweden
Phone: +46 8 440 48 00
Fax: +46 8 440 45 35
Email: kimab@swerea.se

Saint-Etienne site

ZA du Parc – Secteur Gampille
F-42490 Fraisses, France
Phone: +33 (0)4 77 40 00 45
Fax: +33 (0)4 77 40 00 49
Email: st.etienne@institut-corrosion.fr

