

# Marine Corrosion

## Cathodic Protection Design and Monitoring Research and Consultancy

*Research and Development,  
Corrosion prevention,  
Tests in natural seawater, etc.*

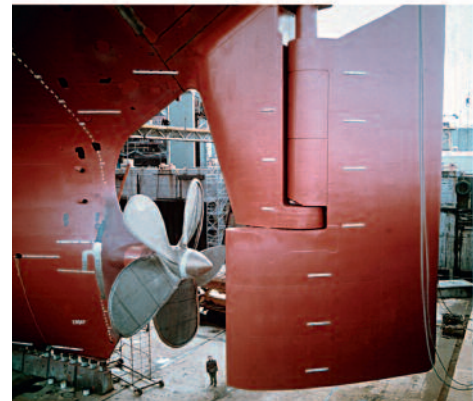
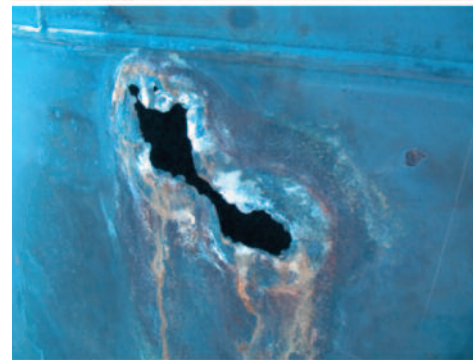
**T**he French Corrosion Institute, a subsidiary of **SWEREA KIMAB** (Sweden) is one of the leading organizations in Europe in the field of corrosion and corrosion protection. It includes two sites located in Brest and Saint-Etienne, with a task force of 40 engineers and technicians. Together with SWEREA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

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

- To evaluate the corrosion resistance of materials in seawater
- To develop and to evaluate corrosion protection methods
- To design and monitor cathodic protection for offshore and harbour structures
- To study the corrosion-fatigue properties of materials with or without CP

### We can offer

- **Participation to cost-shared projects**
- **Consultancy and Advices**
  - Selection of materials and protection methods
  - Cathodic Protection (design, monitoring and inspection)
  - Failure analysis
  - Corrosion probes for the design and monitoring of cathodic protection
- **Testing in natural seawater from laboratory scale to full scale experiments**
- **Training in cathodic protection**
  - Preparation to the examinations "AFNOR Competence / Cathodic protection – Sea sector" Levels 1S, 1 and 2



# Facilities

## From Laboratory Scale to Full Scale Experiments

### On the Institute seawater station

- Natural seawater
  - Immersion, Tidal range, Splash zone
  - Immersion in flowing circuit at controlled temperature
  - Monitoring of open circuit potential and corrosion current
  - Chlorination device / Oxygen control
- Fatigue corrosion equipments
  - Hydraulic assist power machine +/- 25 kN
  - Equipped with a 4 points bending device
  - Titanium cells for chloride-containing media
  - Temperature regulation 5-80°C / Possibility to polarize the specimens
- Hyperbaric vessel
  - 300 bar
  - Renewed artificial seawater, T°C and dissolved O<sub>2</sub> control

### On real structures

- Monitoring and control
  - Open circuit potential
  - Potential and current of cathodic protection
  - Sensors for design and monitoring of cathodic protection
  - Micro-reference electrodes & micro-oxygen probes

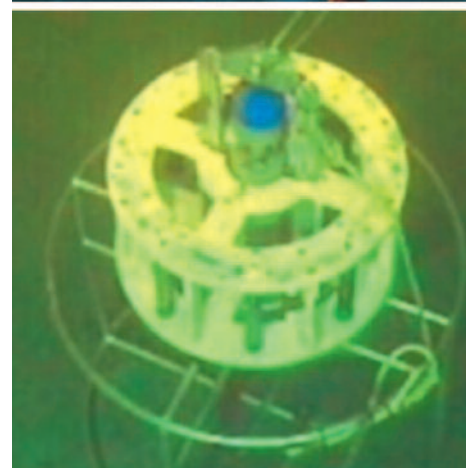
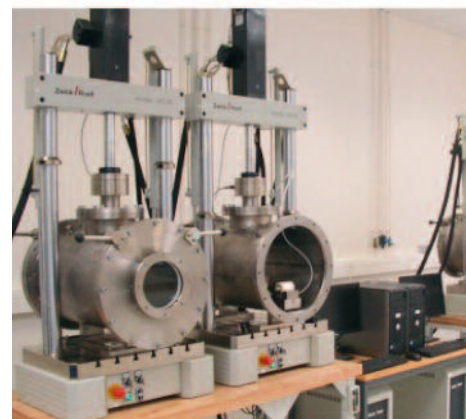
### Methods of analysis

- Electrochemical techniques
- Scanning Kelvin Probe (SKP)
- Scanning Vibrating Electrode (SVET)
- Infrared spectroscopy and micro-spectroscopy
- Scanning Electron Microscopy (SEM / EDX)
- Ion chromatography

#### Contact

#### Cathodic Protection and Marine Corrosion :

Nicolas Larché  
nicolas.larche@institut-corrosion.fr



 **Institut de la Corrosion**  
French Corrosion Institute

Technopôle de Brest Iroise - 220, rue Pierre Rivoalon  
F – 29200 Brest - France  
Tel : +33 (0)2 98 05 15 52 – Fax : +33 (0)2 98 05 08 94  
www.institut-corrosion.fr