CLIENTS

- ArcelorMittal
- Anses
- Allures Yachting
- Areva NC
- Areva SGN
- Carrier Transicold Europe
- Cetim
- CETMEF
- DCNS
- DGA
- ECA GROUP
- EDF
- EMCC
- ENTREPOSE Contracting
- Fives Cryo
- GEOCEAN
- Les Grands Ports Maritimes : Le Havre, Nantes Saint-Nazaire, Dunkerque, Marseille
- France Télécom Marine
- PNA
- Renault
- Saint-Gobain Recherche
- Saipem
- SNCM
- Sogefibre
- STX Europe
- Technip
- Veolia Environnement
- VULCAIN Ingénierie ...

corrodys

145 Chemin de la Crespinière
BP.48 ZA Les Fourches
50130 Cherbourg-Octeville
FRANCE

Phone : 00 33 233 018 340
corrodys@corrodys.com
www.corrodys.com

*Corrodys is an **expert in corrosion**, particularly in **marine corrosion and biocorrosion**. It is a partner of industrialists worldwide. Its multidisciplinary organization gathers complementary specialists able to **assess and study all aspects of the corrosion phenomena**.*

CORRODYS

Technical center : corrosion and biocorrosion

The **doctors**, **engineers** and **technicians** of our laboratory are specialists in **materials**, **corrosion**, **microbiology**, **molecular biology** and **physical chemistry** providing our clients with the best skills in these fields.

Fields of intervention

All sectors dealing with corrosion issues in France and abroad: energy (oil and gas, nuclear, Marine Renewable Energy), port, shipbuilding, yachting, food-processing industry, building and public work, water treatment ...

Service provision

- **Analysis**
  - metallographic
  - physico-chemical
  - microbiological

  Corrosion profile ... / Quantitative analysis of sulphides and sulphates, deposits and fluids characterisation ... / Quantification of SRB sulfate-reducing bacteria, TRB thiosulfate-reducing bacteria, APB acid producing bacteria, IRB iron bacteria...
- **Expert assessment** (on site and/or in laboratory)
- **Study**
  - Qualify, validate and choose metallic materials and protection treatments : coatings, biocides, corrosion inhibitors ...
  - Measure the biological impact
- **Consultancy**
  - Choice of materials, their assembling, their protective treatment for structures and industrial systems design (anticorrosion, antifouling)
- **Technological intelligence**, support to innovation

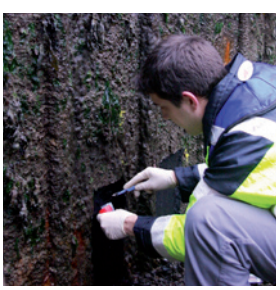
Research & Development

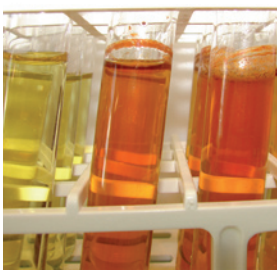
Study of the interface between material/biofilm, fouling in marine environment

- European research projet
  MICSIPE - RFCS (7e PCRD), Microbiologically influenced corrosion on port infrastructures
- Collaborative research project
  REI - DGA, biocorrosion on stainless alloy in seawater

CRT label
Centre for Technological Resources

Research Tax credit
Authorized by the French government





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*Answering to its clients' requests, Corrodys provides them with **failure analyses,** corrosion and biocorrosion **assessments**, on-field and/or in lab, on all metallic materials and alloys.*

CORRODYS

Expert assessment and Consultancy

Expert assessment

- **Throughout inspection** of the facilities
- **Review of the commissioning, the operating procedures and the maintenance** of the failed system
- **Analyses** on metals, biofilms, deposits, water and any industrial environment
- **Detailed report** is provided, gathering all analyses results, the experts' conclusions and advice to **increase the lifespan and the security of your industrial structures and systems**

Some cases of expert assessments

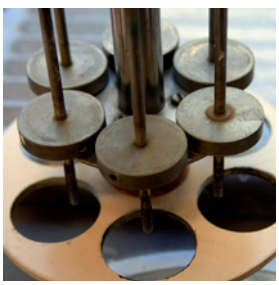
- Heat exchangers on ships
- Cooling circuit inbuildings
- Sheetpiling
- Chilling system on-board or on earth
- Fresh water tanks
- Desalination facilities
- Sprinkler circuits
- Pipelines

Consultancy

- Design of structures or systems
- Cathodic protection potential
- Risk assessments

Some cases of consultancy

- Equipment marinization
- Choice of metallic material and antifouling solution for the designing of a tidal turbine system



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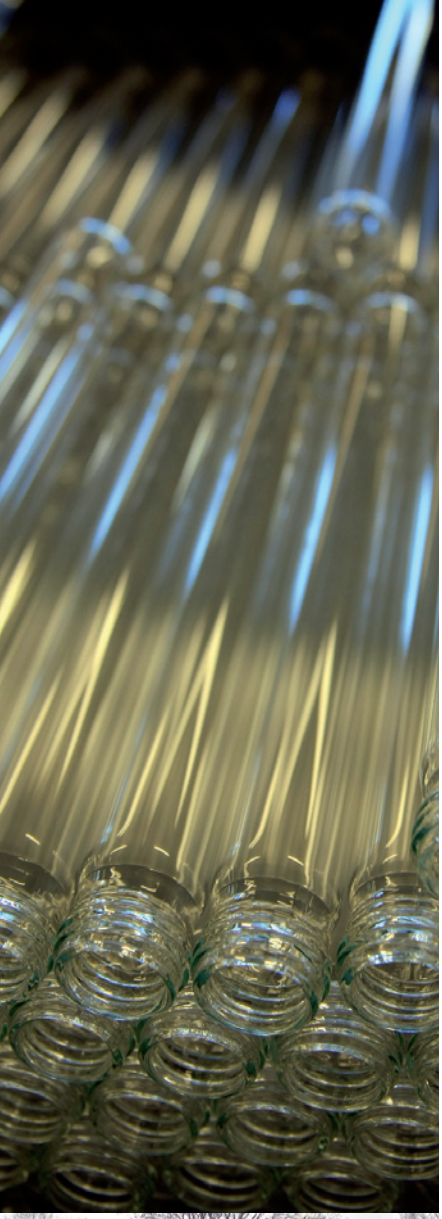


*Our corrosion and biocorrosion assays allow you to **qualify your materials** and **test your protection system effectiveness** : coating, biocide (page 4), cathodic protection ...*

CORRODYS

Corrosion and biocorrosion study

Objectives

You will be able to choose :

- Metallic materials
- Anticorrosion, antifouling protection
- Biocides

Standard or customized studies

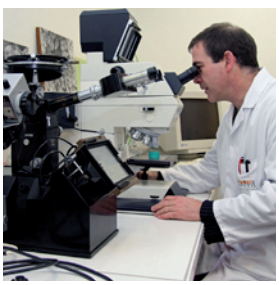
We carry out standard tests, according to norms **(ASTM, ISO, NACE** ...) but also customized tests, according to **your conditions of service**.

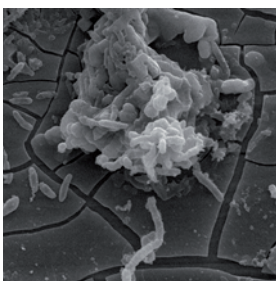
Different types of tests

- **Immersion test**
  Seawater, fresh water, process water, ...
- **Tests in atmosphere**
  Acid or salted
- **Stress test**
  U-bend, 4-point bending tests

Our testing facilities

- Laboratories
  - electrochemistry
  - metallography
  - microbiology
  - molecular biology
  - Physics and chemistry
- Sea spray chamber
- Testing hall supplied with natural seawater
- Renewed seawater test loop
  - in open or closed circuit
  - adjustable test parameters
    flow speed, temperature (from ambient to 60°C), level of oxygen ...
- Flow loop in renewed environment
  - in open or closed circuit
  - adjustable test parameters
    flow speed, temperature (from 30°C to 60°C), level of oxygen ...





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*Corrodys has developed, in collaboration with Total®, a testing loop whose aim is to **test the antimicrobial products** regarding their **efficiency against biofilms** and their **corrosivity towards materials**.*

CORRODYS

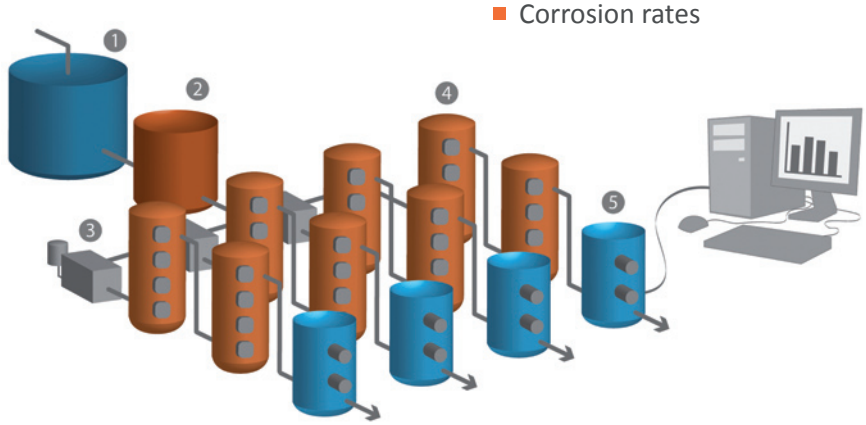
Evaluation of biocides effectiveness

Adjustable testing loop

Our **testing loop** is equiped with a chemostat, a tank containing **active microorganisms**, which continuously feeds 4 circuits. Samples are placed in those circuits so biofilms grow on them.

Each circuit is instrumented with **measuring sensors** recording in a continuous manner the evolution of the:

- Circulating medium temperature
- Dissolved oxygen
- pH
- Redox measurement
- Corrosion rates

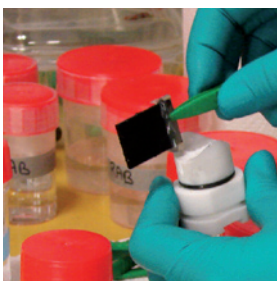


1 Nutrients 2 Chemostat (tank of active microorganisms)
3 Injection pumps 4 Specimen holders 5 Sensor holders

Objectives

By insuring the growing of biofilms on metal samples, subjected to temperatures from ambient to 60°C, we can :

- **Evaluate the effectiveness of different biocides**
  Preventive or curative treatments on biofilms, regarding the reduction of microorganisms and their recolonisation after treatment
- **Assess the safety of those treatments on the corrosion of materials**



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*CorroVision highlights and gives an **added value to scientific information**, **techniques** and the **best practices** in marine corrosion and Microbially Influenced Corrosion fields.*

CORROVISION

Monitoring and innovation

Intelligence platform on marine corrosion and biocorrosion

www.corrovision.com

CorroVision is a **R&D innovative observatory**, dedicated to scientific and technical information which **keeps its users up to date** in their fields of interest. Only Corrodys members have access to CorroVision. They are actors in marine corrosion and biocorrosion.

Purposes

- **Get a premium access to the scientific, technical and technological environment** in marine corrosion and biocorrosion
- **Survey and analyse knowledge and state of art evolutions**
- **Point out emerging trends and subjects**

Personalize your dashboard to obtain information on

- R&D and innovation on products, process and services
- National or European rules and standards
- Industrial property and patents
- Exhibition, conferences, news

A dashboard exemple

Display of information through diagrams to point out emerging subjects, the market trends and identify the experts. Each window of the dashboard can be widen to visualize and analyse all documents

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