



# ECN

Your energy. Our passion.

# Corrosion analysis

## *“Corrosion is predictable”*

It is not easy to predict corrosion behaviour during usage based on material characteristics. Corrosion is determined by the construction, process conditions and often also by circumstances other than regular use, such as cleaning and maintenance. Corrosion resistance is not a material characteristic. Still, corrosion can be predicted through insight and/or tests.

### What can ECN do for you?

- Accelerated corrosion testing (electrochemical)
- Lifetime predictions
- Chrome free surface treatment, process development and testing
- Advice on material selection
- Coating quality and performance testing and advice

### Enhanced installation availability

Our discipline covers all types of corrosion. Corrosion is caused and influenced by the process factors and ambient factors, the construction, the applied material combinations and joining, the environment and the temperature. In the end, it is the combination of physical, mechanical and chemical processes, in conjunction with design, deployment, choice of materials and production of the installation, which determines the extent to which corrosion occurs.

This makes corrosion a system characteristic rather than a material characteristic. ‘Corrosion resistance’ involves a combination of materials and application. We have the knowledge and the experience to make substantiated choices or simulate applications in a test environment. We will offer you advice or a solution in which corrosion rate, safety, maintenance and costs have been weighed.

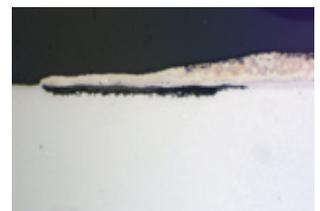
### Sound advice

We have the specialised knowledge that enables us to make the right choices in a particular process environment with its specific requirements. Databases that are available on the market usually focus on material characteristics and often do not provide tailored answers. That is why we focus on process or system characteristics.

### Innovative methods

We can simulate conditions at an accelerated speed and, based on several days of measuring, we can determine what the behaviour in practice will be over many years. For example, the results of a salt spray test of several months can now be predicted in just a few days.

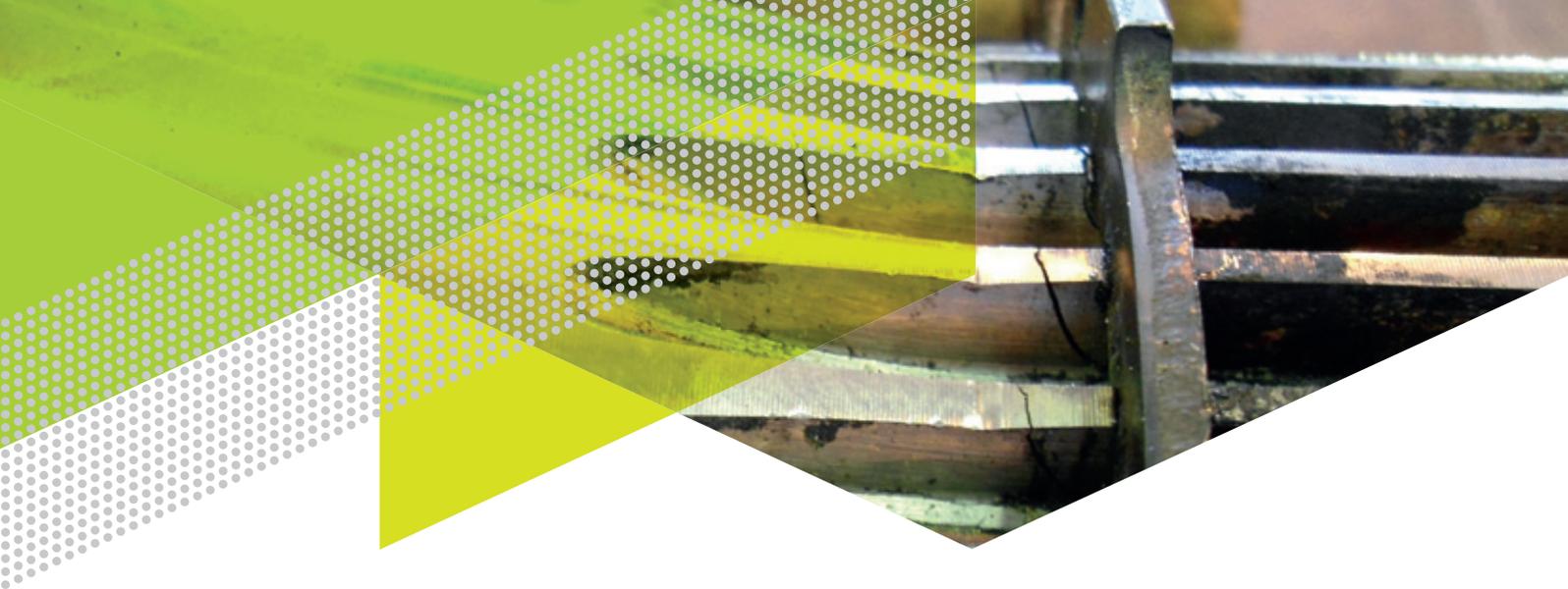
If you are interested in learning how we can develop accelerated corrosion and life tests with you or for you, please feel free to contact us.



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## Materials, testing & analysis

Are you faced with a problem in your installation, process or product? In most cases, the ECN experts can solve this together with you. Our group of complementary specialists covers a broad knowledge area, enabling us to help you quickly with practical solutions or clear advice.

### We can offer you the following expertise:

- Failure analysis
- Corrosion analysis
- Materials engineering
- Joining technology
- Manufacturing technology

### Strong solutions

ECN can solve both complex and more practical engineering issues. We have built many pilot set-ups and installations that involved extremely highly demanding process conditions. They involve deployment of chemicals, high or low temperatures and/or high or extremely low pressure. Required process purity and interaction with media (fluids/gases) are also critical.

Solutions are often found through practical combinations of different materials such as glass, ceramics and metals. This way the special process demands can be met in a cost-effective manner.

Common material combinations are:

- Construction materials such as high-strength steels and high alloys
- Refractory metals and ODS steels
- Aluminium, non-ferrous materials
- Composites
- Glass and quartz
- Ceramic materials
- (Fibre reinforced) graphite
- (Fibre reinforced) plastics
- Coatings; organic, hybrid and inorganic

### References

We are a valuable partner for small and medium-sized businesses, but also for multinationals in the following markets: the energy sector (nuclear, biomass, solar, wind), aviation, aerospace, offshore, defence, process industry, environment and infrastructure. Our clients comprise the following organisations: Fokker, Alcoa, CEA, Soterem, Stork, ASML, FEI, Shell, Friesland Campina, Bravilor, RGS, Covidien, NRG, EADS, ITER, CERN and Attero.

