



ECN

Your energy. Our passion.

Failure analysis

“Failure can be prevented”

When your installation or product is not performing properly, it is important to identify the cause of the problem. We can help you find out which process or usage causes the failure. If needed, we can do this on site. ECN can help you in understanding a failure mechanism and at the same time prevent failure in the future by designing solutions.

What can ECN do for you?

- Identification of the failure and/or failure mechanism and the root cause
- Advice on repairs or modification of design
- Assistance in or realisation of the repair/modification
- Advice or design to help prevent failure

Cause and solution

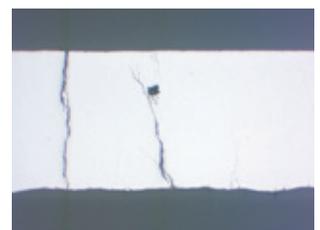
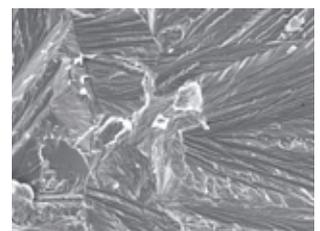
ECN is an independent organisation that conducts objective research to find the cause. This involves interaction between design, production, use and often disrupted user conditions. We are experienced in (combinations of) the following areas:

- Selection of materials and material combinations
- Joining techniques
- Load and/or ambient conditions
- Manufacturing technology and processes
- Surface treatment
- Residual and/or lifetime prediction
- Design and engineering

We believe that our job is not finished when we have identified the cause of failure. Just as important is offering advice on solutions for repairs or the choices that can be made in further optimising the product or process. This approach allows us to offer advice beforehand, thus preventing unnecessary failure and enhancing the availability of your installation.

Broad knowledge and extensive facilities

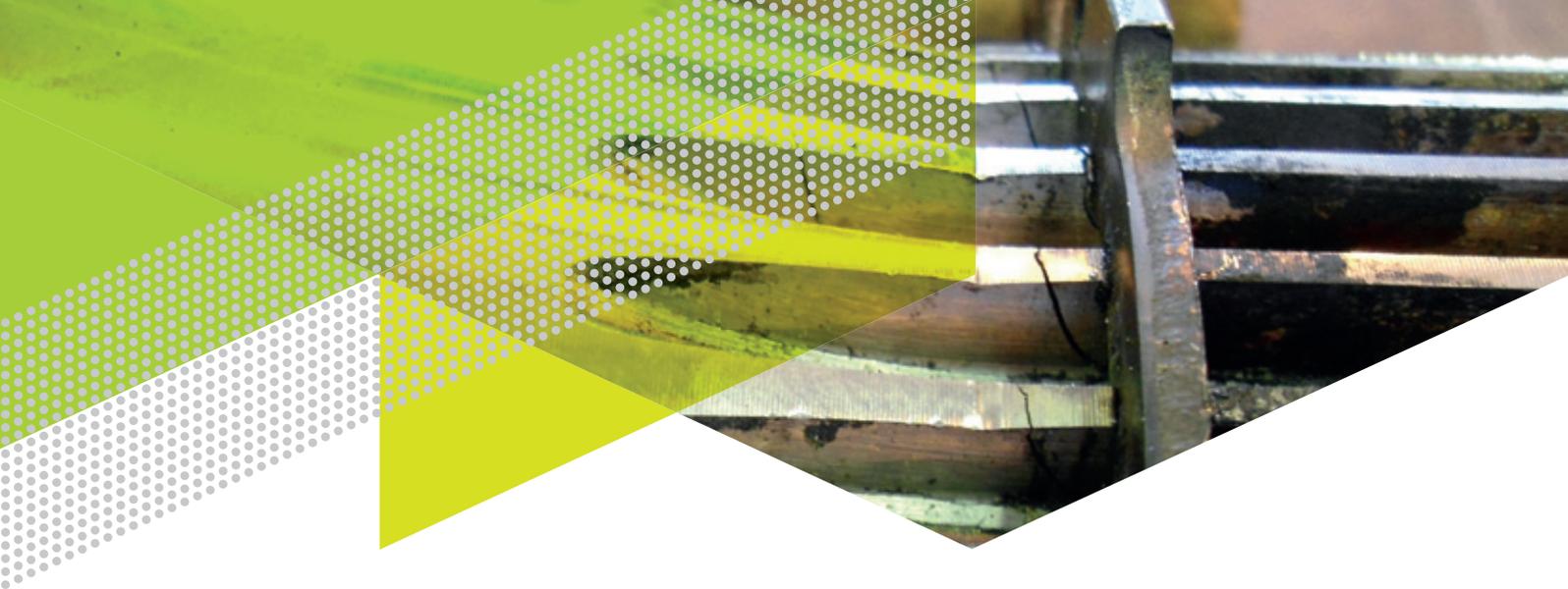
Next to materials research, our experts are experienced in mechanical engineering, manufacturing and process optimisation. ECN has well-equipped laboratories with all relevant and state-of-the-art equipment and the right experts to operate them and interpret the result in the right context. Thanks to our broad expertise, extensive infrastructure and involvement in many different projects in a multitude of sectors, we are able to solve special and complex issues and problems.



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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.

