Joint Industry symposium

Unseen Corrosion: Unveiling Hidden Threats and Innovating Monitoring Solutions

15 – 16th May 2025

Venue: Norwegian Research Centre, NORCE/ Hybrid Meeting

Agenda

May 15th, 2025, 12:00 -17:00 (CET)

12:00 – 12:30 Check-in, registration & coffee

12:30 – 12:40 Welcome (NORCE, NTNU, Chair & Vice-Chair, COST Norway)

12:40 – 13:10 Keynote speaker - Marianne Videm, FORCE Technology, Norway

Session 1: 'Smart' corrosion and corrosion within renewables

13:10 – 13:30 Innovative green anti-corrosion coating system

-Scott Mitchell, CSIC, Spain

13:30 – 13:50 Corrosion and H_2

- Roy Johnsen, NTNU, Norway

13:50 – 14:10 Coffee break

14:10 – 14:30 ODIMS and FKP: Two innovative measurement approaches for tackling corrosion in the energy industry

- Cecilie Hvammen and Peter James Thomas, NORCE, Norway

14:30 – 14:50 CETP project-MORE

- Johan B Lindén, RISE, Sweden

14:50 – 15:15 Walk to DNV Bergen

15:15 – 15:45 DNV Presentation

15:45 – 17:00 DNV lab tour (no photograph allowed)

17:00 Departure

18:00 Dinner @ Frk. Schmidt

EURO MIC
EUROPEAN NETWORK FOR MIC MANAGEMENT

Agenda

May 16th, 2025, 9:00 -17:00 (CET)

9:00 – 9:20 Check-in, registration & coffee

9:20 – 9:30 Welcome (NORCE & NTNU)

Session 2: Corrosion and microbiologically influenced corrosion

9:30 – 9:45 Euro-MIC 2021-2025, our journey, and paths forward

-Andrea Koerdt, BAM Germany (online) & Torben Lund Skovhus, VIA University College Denmark (in-person)

9:45 – 10:05 A guided tour through corrosion potentials

-*Andreas Erbe*, NTNU, Norway

10:05 – 10:25 Industry's stance on corrosion and MIC

-Turid Liengen, Equinor, Norway

10:25 – 10:45 Corrosion in the city

-Ole Øystein Knudsen, SINTEF, Norway

10:45 – 11:05 Involvement of microorganisms in different corrosion forms -learned lessons-

- Abdelkader Meroufel, RISE, Sweden

Session 3: Marine corrosion

11:05 – 11:25 Biofouling in marine industrial system

-Maria Salta, Endures, Netherlands

11:30 – 12:15 Lunch at NORCE

12:20 – 12:40 Approaches to Corrosion Management in Offshore Cooling Systems

- Afrooz Barnoush, SLB Scandinavia, Norway

12:40 – 13:00 Coastal corrosion and MIC

-Geert Potters, Antwerp Maritime Academy, Belgium

13:00 – 13:20 Aluminium corrosion

- Malgorzata Chojak Halseid, Hydro, Norway

NORCE NTNU

13:20 – 13:40 MIC case studies in the marine system

-Nanni Noel, Endures, Netherlands

13:40 – 14:00 Coffee break

Session 4: Corrosion around us – urban systems and beyond

14:00 – 14:20 Corrosion management in drinking water systems

-Torben Lund Skovhus, VIA University College, Denmark

14:20 – 14:40 Pump designs and operations to prevent corrosion

-Bo Hojris, Grundfos, Denmark

14:40 – 15:00 Corrosion monitoring in aquaculture systems

-Roman Netzer, SINTEF Ocean, Norway

15:00 – 15:05 End of scientific program – concluding remarks and early departures

---

15:15 – 16:15 Working group work Discussion period –

How to maintain user engagement beyond EuroMIC?

How to maintain collaboration between the interdisciplinary players of corrosion research?

16:15 – 16:20 Concluding remarks (NORCE & NTNU)

16:30 – Departure

Optional: Join the local organizers for a hike up Floyen.

Abstracts

Keynote

Hydrogen assisted cracks in jack-up rigs

Marianne Videm and Ditte Bilgrav Bangsgaard

FORCE Technology Norway and Denmark

Following the recent observation of relatively long cracks in the lower part of the legs of a jack-up rig in the Norwegian sector, a study of hydrogen-related cracks in the legs of jack-up installations has been performed on behalf of Havtil performed. The cracks were located at the welds connecting the spud can to the chords and were determined to be hydrogen cracks. The legs of a jack-up rig are constructed from high strength steel (500 – 690 MPa). The failures are most likely caused by a combination of fabrication flaws and crack growth due to ingress of hydrogen from cathodic protection into the steel, i.e., hydrogen assisted cold cracking (HACC) resulting from welding and crack propagation by hydrogen induced stress cracking (HISC) in service. The experience is that the cracking is more related to lack of effective QA-QC during fabrication, rather than to deficiencies in the steel, the welding consumables or the structural design. It is emphasised that there is no experience of fast propagating brittle cracks or situations close to collapse. The development of the observed cracks is described by the following sequence:

- The welding process provides a susceptible microstructure and residual stress enabling initiation of HACC due to hydrogen uptake during welding.
- In service hydrogen charging through bare steel surfaces due to cathodic protection triggers further growth of preexisting cracks by HISC.
- Structural stresses composed of weld residual stresses, service and environmental loads drive the crack growth due to stress concentration at the crack tip.

The main conclusions derived from the study are:

- Although cathodic protection contributed to cracking, the root cause is usually linked to the presence of undetected fabrication defects.
- Coating prevents bulk hydrogen charging of the steel thereby reduce the damaging effect of hydrogen from cathodic protection.
- The 690 MPa structural steels can retain structural integrity under hydrogen charging provided coated structures free of welding defects.

Referanse:

Hydrogenassistert oppsprekking av oppjekkbare innretninger (havtil.no)

Session 1: ‘Smart’ corrosion and corrosion within renewables

Innovative green anti-corrosion coating system

Scott Mitchell

CSIC, Spain

Recently, molybdate has emerged as a potential alternative to traditional biocides and nitrate. Our hypothesis is that metal surfaces could be coated with polyoxometalate-based ionic liquids (POM-ILs), which exhibit antimicrobial and anticorrosion properties, shielding and protecting them from the extreme acid environments produced by MIC microorganisms. In this talk I will discuss how prototype polyoxomolybdate-based demonstrated antimicrobial activity at microgram per millilitre concentrations, metal surface-active biocidal activity, and resistance to harsh corrosive acidic environments. Furthermore, impedance measurements were commensurate with electron microscopy studies showing that POM-IL-coated metal coupons withstood extremely corrosive environments. These proof-of-concept results demonstrate how multi-functional POM-IL coatings represent promising MIC mitigation solutions by providing a hydrophobic acid-resistant and biocidal protective layer that prevents biocolonisation and acidic corrosion by MIC microorganisms.

Corrosion and H_2 or *Hydrogen and Corrosion*

Roy Johnsen

Department of Mechanical and Industrial Engineering (MTP), NTNU.

Corrosion can cause hydrogen embrittlement (HE) in a metal due to the release of hydrogen as part of the reduction reaction accompanying the oxidation reaction of a corrosion process. HE is a well know degradation process that can cause cracks and fracture in most of the metals used in the construction industry. During the last 20 years thousands of research papers on this topic have been published. But what about the opposite question: *Will atomic hydrogen cause increased corrosion of a metal?*

This presentation will document how atomic hydrogen entering the surface oxide of 25Cr super duplex stainless steel will affect the corrosion properties of the alloy. The background for this work was corrosion problems in components exposed to seawater with temperature lower than 20^0C (safe temperature region according to ISO 21457). The components had been protected by sacrificial anodes, but the anodes were removed to reduce the probability of HE.

In the presentation an overview of the outcome from a test program examining the effect of pre-cathodic polarization of 25Cr duplex stainless steel on critical crevice/pitting temperature and the anodic polarization curve will be given. Exposure in 3.5% NaCl solution and natural seawater to different cathodic polarization levels were examined. The effects of cathodic polarization on the oxide layer thickness and composition were examined with SEM, EDS and XPS.

The test results show that there is a dramatic reduction in critical crevice corrosion temperature due to pre-cathodic polarization. A temperature reduction from approximately 60^0C to 25^0C was observed on samples exposed to natural seawater after polarization to -1100 $mV_{Ag/AgCl}$. This effect is caused by a change in the composition and thickness after cathodic polarization.

ODIMS and FKP: Two innovative measurement approaches for tackling corrosion in the energy industry

Cecilie Hvammen, Peter James Thomas

NORCE, Norway

Corrosion continues to erode efficiency, safety and budgets across the energy value chain. This presentation showcases two complementary innovations that reduce direct and indirect costs associated with corrosion maintenance.

The Online Distributed Integrity Monitoring System (ODIMS) embeds novel fibre-optic sensors beneath pipeline and container insulation to detect the first appearance of water—the key precursor to corrosion under insulation (CUI). ODIMS, that is ATEX certified for use in explosive environments, can pinpoint wet zones in real time, allowing operators to eliminate costly blanket inspection campaigns and significantly reducing CUI maintenance spending.

The Field Kelvin Probe (FKP) is a portable, non-contact device designed for the efficient detection of both external and internal corrosion. It accurately measures corrosion under protective coatings and internal corrosion, specifically where produced hydrogen diffuses through metal. FKP is versatile and can be used on all metal structures, including cars, boats, oil and gas rigs, and airplanes. Performance of testing under market-relevant conditions has shown highly positive results and our ambition is to make it an essential tool for informed decision- making in companies.

Together, ODIMS and FKP provide a corrosion toolkit for production plants, pipelines and transport infrastructure.

Testing new materials and coatings for tough marine environments – Lab Scale Multi-Degradation (LSMD) Rig for Resilient Offshore Renewable Energy

Johan B Lindén[1], Leandro de Oliveira[1], Giacomo Alessandri[2], Christian B von der Ohe[3], Kjell-Åke Andersson[1],
[1]RISE Research Institutes of Sweden, Corrosion department, Borås, Sweden
[2]VGA, Via Ugo Foscolo 1, Deruta (PG), 06053, Italy
[3]GCE NODE, Kristiansand, Norway.

The MORE project (Next Generation Marine Materials for Resilient Offshore Renewable Energy Devices) addresses the multi-degradation challenges in offshore renewable energy (ORE) systems through an innovative material validation methodology. The **Lab Scale Multi-Degradation (LSMD) Rig** plays a pivotal role in bridging the gap between small-scale material screening and full-scale industrial validation. The LSMD rig replicates real-world offshore conditions by simultaneously subjecting critical ORE components to corrosion, wear, and fatigue, enabling a robust assessment of multi-degradation mechanisms. Unlike small-scale laboratory rigs that focus on isolated tribocorrosion and fatigue at the micro-scale, the LSMD rig provides a more holistic and scalable testing platform, ensuring direct applicability to real-world offshore environments.

By integrating **accelerated multi-degradation testing**, the LSMD rig enhances the predictability of material performance, significantly reducing the time and cost associated with traditional qualification methods. This approach supports the development of **resilient materials and coatings** optimized for offshore applications, ultimately improving the longevity and reliability of ORE components. The insights gained from LSMD testing will contribute to the creation of industry guidelines and recommended practices, promoting the widespread adoption of advanced materials within the renewable energy sector.

ACKNOWLEDGEMENTS

This research was funded by CETPartnership, the European Partnership under Joint Call 2022 for research proposals, co-funded by the European Commission (GA N°101069750) and with the funding organisations listed on the CETPartnership website. Project No CETP-2022-003

Session 2: Corrosion and microbiologically influenced corrosion

European MIC Network: New paths for science, sustainability and standards executed via the new COST Action CA20130

Koerdt. A.[1] & *Skovhus T.L.*[2]
[1] *Bundesanstalt für Materialforschung und -prüfung (BAM), Unter den Eichen 87, 12205, Berlin, Germany*
[2] *VIA University College, Horsens, Denmark*
**Presenting author:*
Andrea.Koerdt@bam.de

Microbiologically Influenced Corrosion (MIC) refers to the detrimental effects on materials caused by microorganisms, and it is becoming an increasingly significant issue for society. Unlike the USA, Canada, and Australia, Europe has less developed cooperation on MIC. Although several research groups and industrial stakeholders are addressing MIC, discussions remain fragmented, and information exchange is limited. A truly transdisciplinary approach is rarely seen.

As a result, Europe often relies on methods, preventive measures, and standards from other regions, as there are no equivalent European standards. This situation makes Europe a) highly dependent, and b) in some cases, unable to use certain measures or standards due to European legal restrictions (e.g., the use of biocides).

In 2021, researchers established the “Euro-MIC” network, financially supported by the EU project “COST-Action,” to tackle these issues. Through COST-Action, Euro-MIC aims to facilitate necessary interactions, communication, knowledge sharing, and training for personnel and researchers across various disciplines. COST-Action supports network activities, workshops, training schools, conferences, and more. Euro-MIC aspires to position Europe as a leader in MIC, promoting ideas on par with other nations while upholding European values and ensuring greater protection for people, property, and the environment.

In this presentation, I will briefly introduce the principles of COST Action and highlight the significant opportunities provided by this EU-funded project. COST Action fosters interdisciplinarity, networking, training, scientific exchange, and the promotion of young scientists. By showcasing some examples of CA20130 COST ACTION Euro-MIC, I hope to demonstrate that COST Action is not only relevant for addressing MIC but can also be applied to other important topics and sectors.

A guided tour through corrosion potentials

Andreas Erbe
Department of Materials Science and Engineering NTNU, Norwegian University of Science and Technology
7491 Trondheim, Norway

Increase in corrosion potentials is often observed in connection with biofilm formation on the surface of engineering materials. As open circuit potentials, corrosion potentials are easy to measure. Despite the fact that mixed potentials are in principle understood for almost a century, the interpretation of the evolution of the corrosion potential is not always straightforward and also often misunderstood. This presentation will briefly introduce the concept behind the interpretation on mixed potentials and discuss how changes in the potential may relate to changes in the corrosion rate.

Industry's stance on corrosion and MIC

Turid Liengen

Equinor, Norway

A general corrosion management system provides a progressive framework that in Equinor's case is compatible with the requirements of an offshore safety management system concerned with ensuring the integrity of subsea and topside pipelines, piping, processing equipment, and mooring systems. The work process shall ensure that a "Corrosion management program" is established, activities are executed, data evaluated, and improvements are implemented as given in governing documents.

Equinor follow up MIC in subsea and topside pipelines, in piping and in process equipment. This is done by MIC monitoring leading to a diagnosis for the system. The MIC monitoring estimates the MIC potential in each system, and based on this an inspection interval and monitoring interval is given.

Further, Equinor has investigated corrosion on mooring chains on floating installations with special focus on the bottom chains going from the water column into the seabed sediments and down to the anchoring systems. General corrosion due to oxygen and MIC takes place along the bottom chains. The data has led to lifetime extension for the bottom chains investigated.

The last focus area with respect of MIC is pitting corrosion on corrosion resistant alloys (CRA's) in natural, oxygenated seawater. Maximum exposure time for different CRA's in raw, oxygenated seawater is set to avoid pitting corrosion during tie-in or hook-up operations of pipelines or risers during installation offshore. This ensures safety and qualification of CRA's that may lead to cost savings for the company.

Corrosion in the City - corrosivity, microclimate and lifetime of metallic infrastructure

Ole Øystein Knudsen

SINTEF, Norway

Corrosivity has been measured at about 70 locations along the coast of Norway according to ISO 9226. The results showed surprisingly low corrosivity. In addition, a corrosivity map has been developed, based on data from the Copernicus climate database. The main driver for corrosivity on Norway is salt, since emissions of SO_2 was mainly eliminated during the 1990s. However, we see large local variations in corrosivity, depending on distance to seawater, application of de-icing salt during the winter and shielding from rain. The very long lifetime of public infrastructure, e.g. 100 years for road bridges and 200 years for water supply systems, is challenging even in low corrosivity environments. Materials selection, corrosion protection and maintenance must be optimised with respect to life cycle costs.

Microorganisms involvement in different corrosion forms -learned lessons-

Abdelkader Meroufel

Research Institutes of Sweden, Kista, Sweden

Microorganisms are participating in various equilibrium processes with complex mechanisms. For materials durability, they have been considered by many authors in many corrosion forms and mostly as accelerating factors. The debate continues on their role and possible inhibiting or accelerating role with several research questions. In the present overview, their participation in different corrosion forms was studied including crevice corrosion, soil corrosion and seawater corrosion. Through laboratory tests under controlled conditions, the extent of their contribution could be assessed for different exposure times. The aims are to explain in some cases the premature failures that surprise industry and quantify their accelerating factor or to exclude their contribution in other cases.

Biofouling in marine systems: impact and future directions

Maria Salta

Endures BV, (Biofilms, Biofouling and Fouling Control) Bevesierweg 1 DC002, 1781 AT, Den Helder, The Netherlands

Biofouling, the accumulation of microorganisms, plants, algae, and animals on submerged structures, poses significant challenges in marine systems, for instance within the shipping and offshore industries. This phenomenon increases hydrodynamic drag, leading to higher fuel consumption and greenhouse gas emissions in maritime transport. Additionally, biofouling accelerates material degradation, necessitating frequent maintenance and increasing operational costs. Furthermore, biofouling serves as a vector for invasive species, disrupting marine ecosystems and threatening biodiversity. In this talk the economic, environmental, and operational impacts of biofouling on shipping and offshore structures will be presented. Additionally, case studies will be discussed to illustrate the real-world implications and effectiveness of different biofouling management approaches. Addressing biofouling effectively is essential for improving energy efficiency, reducing ecological harm, and ensuring the longevity of marine infrastructure.

Approaches to Corrosion Management in Offshore Cooling Systems

Afrooz Barnoush

SLB, Bergen, Norway

Corrosion in cooling water systems poses a significant challenge in offshore oil and gas operations, affecting asset integrity, safety, and economic performance. Glycol-based coolants, particularly triethylene glycol (TEG), are widely used to manage heat and prevent freezing. However, the presence of contaminants such as chloride ions, dissolved oxygen, and glycol degradation products introduces complex corrosion mechanisms that hinder effective control. This study investigates the corrosion behavior of carbon steel in 25 vol% TEG-water mixtures with sodium chloride concentrations ranging from 10 to 400 mg/L. Electrochemical techniques—including Linear Polarization Resistance (LPR), Cyclic Potentiodynamic Polarization (CPP), and Electrochemical Impedance Spectroscopy (EIS)—were employed under both aerated and deaerated conditions to evaluate uniform and localized corrosion phenomena.

Results highlight the limitations of LPR in low-conductivity and inhibited systems, particularly under passivated conditions where corrosion currents approach detection limits. EIS emerged as the more robust technique for evaluating corrosion in such environments, and the use of nitrite-based inhibitors proved effective in suppressing both general and pitting corrosion, emphasizing the importance of integrated monitoring and tailored chemical treatment in TEG-based closed loop systems.

The hunt for FeSsie, the "iron-devouring bacterium": assessing (microbial) corrosion in ports, rivers, canals

*Wikke Witteveen, Katrijn Verhasselt & Geert Potters**

** Presenting author - AMACORT, Antwerp Maritime Academy,*

Noordkasteel-Oost 6, 2030 Antwerp, Belgium

geert.potters@hzs.be

While many MIC monitoring methods seem reasonable and feasible in themselves, putting them to good use for monitoring large public assets (like ports, canals, rivers…) poses both practical and theoretical issues. These can be illustrated through a recent campaign, monitoring the presence and activities of *Gallionella ferruginea*, suspect of accelerating corrosion of the underwater part of small yachts in the Zelzate marina (Belgium) in the spring of 2021.

40 sites were chosen along the neighbouring canal between Ghent and Terneuzen, on which grids with SA 2 ½ sandblasted S235 carbon steel were exposed and collected monthly. Corrosion data based on mass loss as well as microbiome analysis point out that regular assets along the canal do not have to fear for increased occurrence of MIC.

Technical issues to be kept in mind for future campaigns of similar type and size are the use of properly sandblasted coupons, how to deal with seasonal variation, the confounding variable of macrofouling, and the possibility of performing electrochemical measurements to offer an additional line of evidence. A more theoretical issue deals with the number of data points (i.e. coupons) being collected per time point to allow proper statistical modelling.

Sustainable Aluminium in Marine Structures: Corrosion Mitigation and Recycling Strategies

Malgorzata Halseid

Hydro Aluminium, R&D, Karmøy, Norway

The use of aluminum in marine multi-material constructions presents an opportunity to take advantage of its low weight, high corrosion resistance, and environmental benefits. Aluminum alloys, particularly those in the EN AW 6000 and 5000 series, are well-suited for marine environments due to their corrosion resistance and welding properties. Additionally, the extrusion technique offers a significant advantage in creating complex profiles for marine applications.

Moreover, the recycling potential of aluminum offers significant environmental benefits. With a recycling energy demand of only 5% compared to primary production, aluminum becomes an increasingly sustainable option. Effective recycling strategies, sorting techniques, and the role of recycled aluminum in reducing the material's environmental footprint will be discussed.

One of the major challenges faced when using aluminum in marine environments is galvanic corrosion. When aluminum comes into contact with more noble metals, corrosion accelerates, especially in the presence of seawater. Presented work, performed as part of MARINAL project, examines various methods to mitigate galvanic corrosion. It will be presented results from laboratory testing in corrosion chambers and outdoor and marine environments, to evaluate the performance of aluminum-steel connections.

MIC case studies in the marine system

Nanni Noel

Endures, Netherlands

Diagnosing Microbiologically Influenced Corrosion (MIC) requires a comprehensive and multifaceted analytical strategy, often organized within a Multiple Lines of Evidence (MLOE) framework. The complexity of MIC arises from diverse microbial communities, varying environmental conditions, and biofilms that collectively influence corrosion patterns. These complexities make it challenging to rely on a single analytical method to accurately identify and characterize MIC. The MLOE approach addresses this challenge by integrating microbiological, chemical, physical, and material science methodologies, providing a more holistic understanding of MIC processes. In marine environments, MIC poses a critical threat to material integrity, safety, and operational efficiency. The presence of MIC in this sector not only increases maintenance costs but also risks significant economic losses and environmental contamination due to infrastructure failures. This talk presents two different MIC industrial failure cases in marine and brackish water environments. The first case involves unexpected mass loss and full perforation of a quay wall structure. The second case details several leakages in an industrial water distribution system using brackish canal water. The identification of MIC in both cases follows the MLOE approach.

Session 4: Corrosion around us – urban systems and beyond

Corrosion management in drinking water systems

Torben Lund Skovhus

VIA University College, Denmark

Effective management of drinking water corrosion is crucial for ensuring safe and reliable water supply. This study highlights some of the challenges faced by water companies regarding biofilms in the distribution network, new materials and microbiologically influenced corrosion (MIC).

A practical case study is presented on the investigation and management of MIC in a stainless-steel pipe for drinking water in Denmark. The study involved a detailed analysis of the pipe's internal and external surfaces, identifying material degradation through a Multiple Line of Evidence (MLOE) approach. The findings highlighted the presence of MIC and how it was mitigated.

Finally, we provide a brief update on the application of EUR-WATER through COST, which aims to enhance water management practices across Europe. This initiative focuses on integrating advanced technologies and collaborative frameworks to address drinking water-related challenges effectively.

Highlights from this study:

- This study addresses the challenges faced by water companies and emphasizes the importance of setting up research programs through co-creation and collaboration. By involving water companies, consultants, researchers, and manufacturers in research, we aim to develop comprehensive solutions that benefit society and consumers.
- The urgency of this endeavour is heightened by global climate change, which exacerbates the need for water companies to deliver sufficient safe drinking water.
- Educating and training the next generation of water professionals is essential to sustain these above efforts.

Pump designs and operations to prevent corrosion

Bo Højris

GRUNDFOS Holding A/S, Bjerringbro, Denmark,

As with all other components, subject to fouling, scaling and corrosion, designing and manufacturing pumps builds upon numerous compromises in terms of materials selection, performance, and sustainability. Peek into the process of component manufacturing and the decisions behind current and future designs.

Parameters like strength, durability, and corrosion resistance are well documented for bulk raw materials, but less known for machined or surface treated parts. These factors often point in different directions and require constant attention throughout the design and construction phases to reach a reasonable product.

Adding the complexity of microbiological influence within the final application and the fact that pumps and other components are sometimes not used in the context they were designed for, makes it almost impossible to predict the life and fate of such, but we do our best anyway.

Managing microbial H_2S production in Norwegian key industries

Roman Netzer

SINTEF Ocean, Trondheim, Norway

Sulphate-reducing bacteria (SRB) play a critical role in both the offshore oil and aquaculture industries, presenting significant challenges and operational risks. SRB are a group of typically heterotrophic bacteria using sulphate for respiration and producing highly toxic and corrosive hydrogen sulphide (H_2S). In the offshore oil industry, SRBs contribute to several unwanted processes due to H_2S production, such as reservoir souring, and severe damage of infrastructure mediated by Microbially Influenced Corrosion (MIC). In aquaculture operations, in particular in intensive land-based production in Recirculating Aquaculture systems (RAS), SRB can produce significant amounts of H_2S resulting in water quality deterioration and sudden mass mortality incidents. Moreover, chronic exposure to low levels of H_2S may compromise fish welfare and fitness. Reliable monitoring and managing of SRB and H_2S are crucial for industrial operations in various areas (offshore installations, oil- and gas production, aquaculture systems) and highly relevant for assessment of safety and risk management. Our toolbox for monitoring and managing H_2S -associated risks is continuously being developed. In various projects, we have in concert with other methods employed quantitative PCR and next generation sequencing for mapping abundance of SRBs in aquaculture and offshore infrastructure, contributing to a better understanding of H_2S -associated risks. Different sensors have been tested for detailed monitoring of dissolved H_2S in aquatic environments. In addition, we have identified advanced water treatment methods that can be used as potent firewall against H_2S.