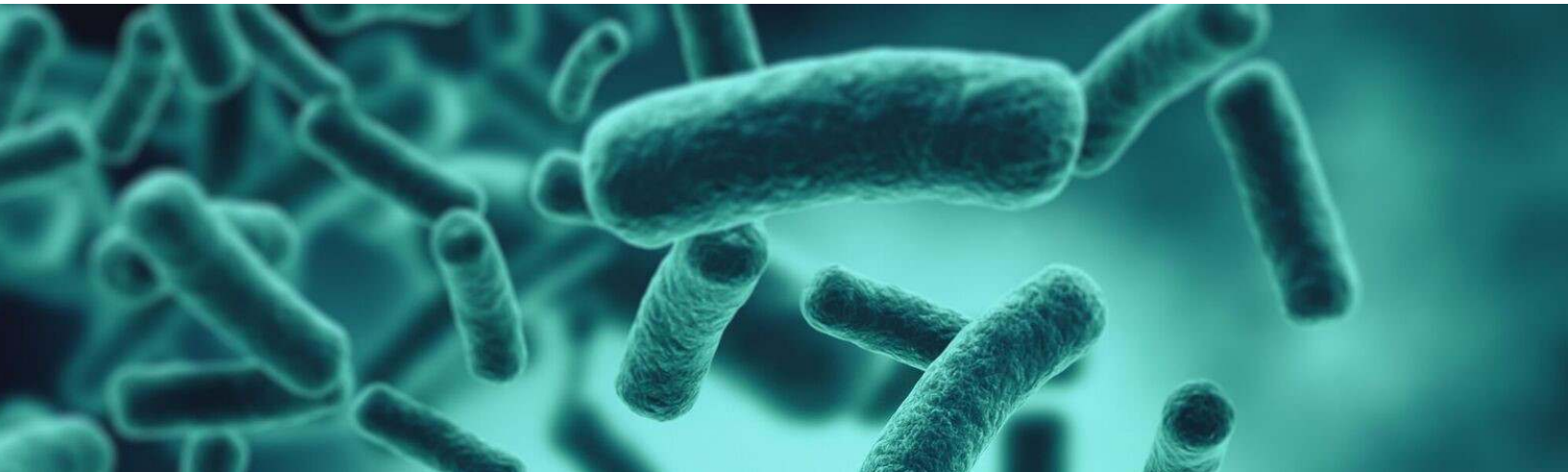
SOLUTIONS

For Microbial Corrosion & Biofouling

INSTANT LABS™



$2.5 TRILLION

Annual Cost of Corrosion Worldwide

(NACE 2016 IMPACT Study)

At Least 20% of Damage is Caused by Microorganisms

OVERVIEW

Microorganisms cause $100s of billions of dollars in corrosion and related damage annually with devastating effects to industries such as oil & gas, power generation, water treatment, aviation, maritime, fire protection, and mining.

InstantLabs has partnered with global industry leaders to develop new next-generation DNA-based tools for detecting and effectively monitoring these damage-causing microorganisms.

Detect | Protect | Save

- More accurate than ATP or bug bottles. Detect damaging microorganisms fast and accurately using DNA.
- Understand the microorganisms present in your system so you can effectively prevent and treat microbial issues before they cause irreparable damage or catastrophic failure.
- Reduce risk and save money through better treatment and monitoring.

IS YOUR BUSINESS AT RISK?

Affected Industries

The types of damage they cause:

Microbiologically Influenced Corrosion (MIC): Corrosion of metal and other materials caused by microorganisms such as Sulfate Reducing Bacteria (SRBs) and Acid Producing Bacteria (APBs). Reduces the integrity, safety, and reliability of infrastructure and equipment.

Biofouling: Accumulation of microorganisms on interior or exterior surfaces that can cause issues such as clogging or restricting flow in pipes and other equipment. Can help establish an environment that supports microbiological corrosion, etc.

Biodegradation: Degradation of material by microorganisms such as Methanogens or Hydrocarbon Degrading Bacteria (HDBs). They can aid in the cleanup of oil spills but can cause costly damage to commodities such as crude oil or aviation fuels stored in tanks.

Reservoir Souring: Souring in oil field systems is most commonly due to the action of sulfate-reducing prokaryotes that respire sulfate and produce sulfide (the key souring agent). Increases health risks, handling costs, and reduces value of product.

Only qPCR and Metagenomics Give You The Data You Need to Effectively Detect and Defeat Microorganisms

METHOD	Fast Results	Broad Coverage	Specific For Damaging Microorganisms	Quantitates Damaging Microorganisms	Identifies Damaging Microorganisms	Actionable Data?
ATP	✓	✓				Low-Mid
Bug Bottles (MPN)			✓	✓		Low-Mid
qPCR	✓	✓	✓	✓		High
16S Metagenomics Analysis	Available	✓	✓	✓	✓	Very High

OUR SOLUTIONS...

1

Rapid In-Field DNA Testing

InstantLabs has developed the industry's only system for direct on-site processing and DNA analysis of water and biofilm samples. The entire system is fully mobile, and results are delivered easily in just a few hours using InstantLabs' Hunter® qPCR device. In-field DNA testing delivers:

More Accurate and Actionable Data. Culture-based methods such as "bug bottles" and methods such as ATP testing are non-specific or don't capture the entire microbial population, leaving you with unanswered questions after tests are complete. The Hunter® system employs state of- the-art assays that target microbial DNA ensuring high specificity and maximum coverage of damaging organisms.

Faster Results. Traditional methods take weeks to generate results due to culturing time or the necessity to ship samples from the field to a laboratory. The Hunter® system delivers actionable results on-site in just a few hours allowing mitigation strategies (i.e. biocides) to begin immediately. Reducing the time to results can prevent millions of dollars in new or ongoing damage.

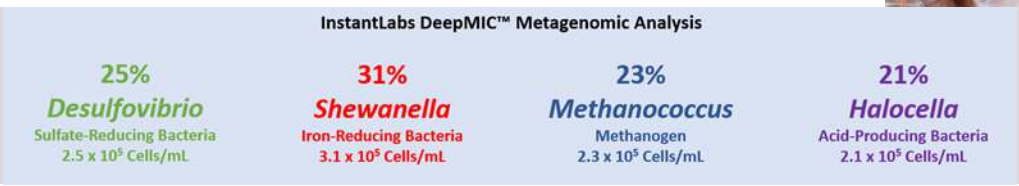
Ability to Test Anywhere. Those in the industry know that getting samples from the field to the laboratory is not always easy especially when working in remote locations or offshore. Plus it adds time to the analysis during which problems can become worse. The Hunter® system allows testing to be conducted anywhere at any time.

OUR SOLUTIONS...

2 Metagenomics Laboratory Analysis Services

We offer qPCR and 16S rRNA-based metagenomics analysis services designed specifically for measuring damaging microorganisms. By employing the latest in real-time PCR and high-throughput, next generation sequencing (NGS) technologies, our scientists can deliver genus and metabolic data at a level never before possible. Identify virtually 100% of the microorganisms present.

Know for Sure. See the ratios of microbes present in your system that are associated with different business impacts including biocorrosion, biofilm formation, biofouling, H2S production, etc. Use this data to accurately assess potential issues and devise optimized treatment programs.



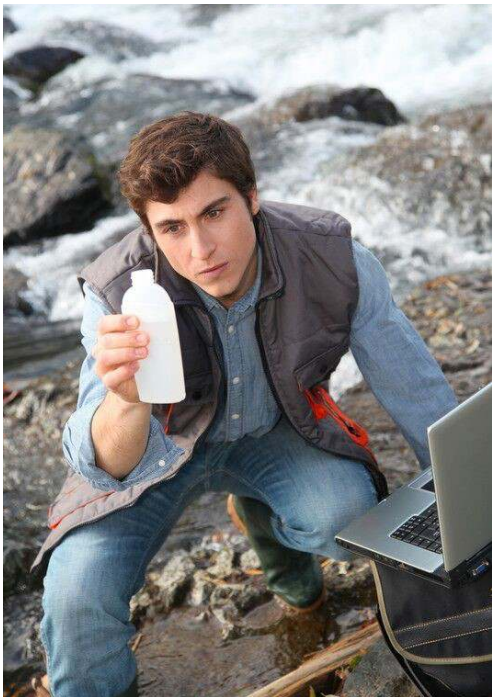
Enhanced Monitoring. Monitor your system over the long-term by tracking changes in microbial populations over time.

Greater Insight. Precisely understand how different system factors such as chemicals and temperature affect microbial ratios and concentrations over time.

More Effective Treatment. Better monitor biocide treatments by seeing the effects of the treatment on different microbial populations so that treatment parameters can be continually adjusted to ensure ongoing success.

3 Sample Collection, Stabilization, and Extraction

Historically, transporting samples to an off-site laboratory for analysis has been plagued by two significant drawbacks:



Shipping samples from remote industrial locations such as oil platforms, naval ships, or overseas bases can take days to weeks to months during which time samples can degrade or change resulting in highly inaccurate or misleading results.

OUR SOLUTIONS...

Different companies, and even different users within the same company, have employed different procedures for collecting and processing samples. The result is the generation of lots of data that is not directly comparable across users, companies, and industries.

These first-of-their-kind kits standardize the entire sample collection and DNA extraction workflow using validated plastic-ware and reagents, and overcomes previous cold-transport limitations by employing an innovative non-toxic stabilization buffer allowing microbial samples to be easily collected and preserved for shipment at ambient temperature prior to analysis.

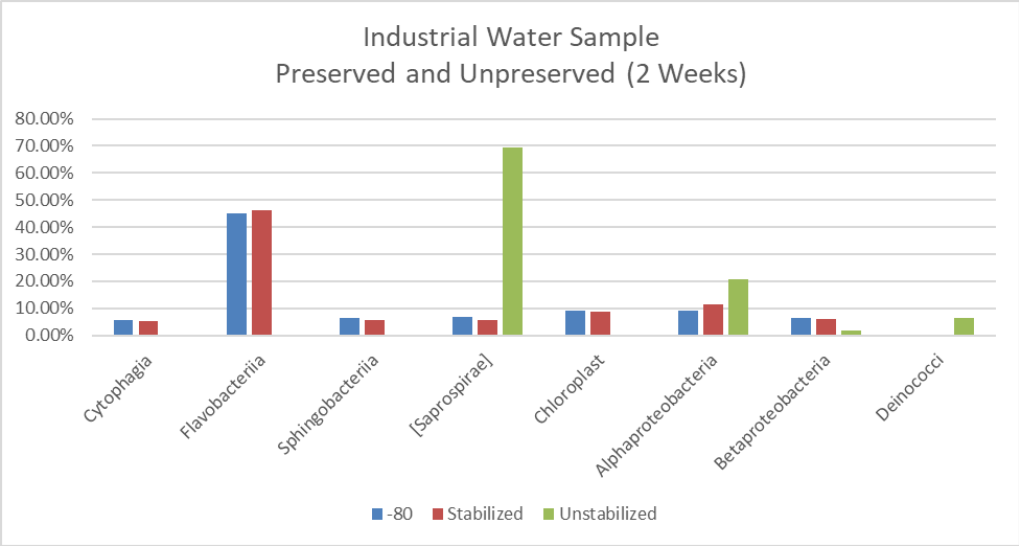


Figure Notes: Control and stabilized samples (blue and red) have virtually identical microbial populations. In contrast, the microbial population in the unstabilized sample (green) has changed significantly.

This new solution makes it possible to gather samples for microbial analysis anywhere in the world and still be assured accurate and standardized results when they reach the laboratory.

OUR PRODUCTS

In-Field Analysis	Sample Collection & Stabilization
Total Bacteria Test Kit	Water – Filter Collection Kit
Total Archaea Test Kit	Water – Capsule Collection Kit
Sulfate Reducing Bacteria Test Kit	Solid Collection Kit
Iron Reducing Bacteria Test Kit	DNA Extraction Kit
Methanogens Test Kit	Field Surveying Kit
DNA Extraction Kit	Total Microbial qPCR Assay
Hunter® Real-Time PCR Device	
Auxiliary Equipment Kit	

OUR SERVICES

Off-Site Laboratory Analysis
Total Microbial qPCR Analysis
16S Metagenomic Analysis

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