CORROSION SERVICES
A world leader in the science and engineering of corrosion and material degradation.

DNV GL maintains a highly skilled and experienced staff of materials scientists, engineers and NACE-certified technicians - backed by one of the premier materials testing laboratories in North America.

DNV GL is a single go-to source for all aspects of corrosion control and failure investigation.

- Assessment
- Monitoring
- Mitigation
- Laboratory testing, modeling, simulation
- Failure Investigation
- Root cause analysis
- Regulatory support
- Due diligence
- Training
Protecting your assets

In a competitive market with increasing public and regulatory scrutiny towards safety, the environment and security of supply, being an industry-leading operator is critical. But operators also need to balance performance requirements, cost effective solutions and contractual obligations, while managing aging assets.

With over 400 corrosion and materials specialists at 40 locations worldwide, DNV GL is best qualified as a single-source service provider for all aspects of corrosion control and materials technology. Our un-paralleled combination of engineers, PhD scientists, and NACE-certified specialists and technicians offer cost effective solutions to corrosion and materials issues with your specific needs in mind.

Our staff includes those intimate with applicable codes, standards and regulations to maximize safety, extend asset life, and ensure compliance.

Assessment

Decisions regarding an asset’s integrity must involve an accurate assessment of the risks affecting safe and reliable operation. A first step in managing integrity is to identify potential threats. DNV GL maintains proven expertise in evaluating integrity threats to include internal corrosion, external corrosion, stress corrosion cracking (SCC), and fatigue.

We played leading roles in the development of direct assessment (DA) processes and carry expertise in all aspects of DA to include ECDA, ICDA and SCCDA.

We have the tools and proficiencies to assure asset integrity, safety and compliance:

- API, ASNT and NACE-certified inspectors
- Established, proven procedures
- Robust statistical support
- Functional support software
- Materials and corrosion laboratory support
Monitoring
Our monitoring of corrosion rates and their related mechanisms helps us identify risk and facilitates appropriate mitigation.

We have the expertise to monitor an asset's internal and external environments and to provide solutions for dealing with a range of integrity issues to include coating damage, microbiologically influenced corrosion (MIC), stray current, and interference.

We can assess the effectiveness of chemical treatment and offer expertise in all aspects of corrosion monitoring and cathodic protection programs.

Our staff utilizes proven tools and strategies to identify the locations and causes of corrosion:
- Close interval survey (CIS)
- Direct current voltage gradient (DCVG)
- Current attenuation (PCM)
- External corrosion coupons
- On-line corrosion monitoring
- Evaluation and monitoring (EM) internal coupons
- Sample collection and testing
- Pipeline cutout analysis
- ILI analysis, data alignment & integration, corrosion growth assessment

Mitigation
DNV GL provides expertise in all aspects of corrosion mitigation efforts to include cathodic protection, coatings, material selection, maintenance pigging, operational controls and chemical treatments. Not only can we design effective corrosion mitigation plans, but our research scientists can run tests on these systems using advanced modeling methods or by simulating real-life scenarios in our industry-leading laboratory facilities.

Our knowledge of cathodic protection helps you choose the most appropriate systems to achieve your technical objectives while satisfying economic drivers. Our engineers and NACE-certified specialists have designed systems to control corrosion in virtually every environment where cathodic protection presents a viable solution.

Modeling
Our staff utilizes latest generation tools to assist in the assessment of conditions affecting the corrosion and corrosion control of structures. We offer advanced computer modeling of corrosion and cathodic protection systems and can analyze variables such as current density, surface potentials, potentials in the surrounding electrolyte, and electric/magnetic fields.

We can reliably assess and predict the performance of impressed current and sacrificial CP systems and review multiple design scenarios. We can design CP systems to optimize anode placement and current distribution and determine current requirements for adequate protection.
Services to extend asset life

- CP design, troubleshooting, and modeling
- Corrosion / Cracking defect assessment
- Fatigue assessment
- Corrosion monitoring
- HVDC / HVAC interference troubleshooting
- Grounding and stray current studies
- Field surveys
- Fitness-for-service assessment
- Risk assessment
- Data management software (Corr MD)

Integrity Management Program (IMP) development, benchmarking, audit, compliance
- In-line inspection (ILI) support
- Failure analysis, forensic investigation
- Incident root cause analysis
- Laboratory testing and research
  - Materials
  - Soils
  - Coatings
  - Inhibitors

Specializing in challenging mediums, environments, and operating conditions

Regardless of the asset’s operating conditions, location, environment or medium, DNV GL maintains depth and breadth of subject matter expertise to assist when and where you need it.

Mediums and Operating Conditions
- Ammonia ($\text{NH}_3$)
- Hydrogen sulfide ($\text{H}_2\text{S}$)
- Carbon dioxide ($\text{CO}_2$)
- Microbiological influences (MIC)
- Biofuels
- Ethanol
- Multi-phase
- Slurry
- Vintage pipelines
- Slack line conditions
- High cycling

High Consequence Areas (HCA’s)
- Unusually Sensitive Areas (USA’s)
  - High population densities
  - Built-up areas
  - Crossings, waterways
  - Subsea

Upstream, Midstream, Downstream
- Transmission
- Distribution
- Gathering lines
- Export lines
- SPM’s
- Subsea umbilicals, risers and flow lines
- Branch connections
- System components

Across a Range of Industries
- Oil & Gas
- Energy
- Refining
- Chemical
- Utilities
- Infrastructure
- Aviation
- Aerospace
- Medical devices
- Food processing

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DNV GL is a leading provider of risk management, technical advisory and technical assurance services. We have global reach with offices in over 100 countries. DNV GL endeavors to drive industry to be Safer, Smarter and Greener by offering unique technical competence and innovation.

Our science and engineering expertise can be applied to a wide range of disciplines related to materials & technology (testing, selection, verification), degradation, integrity management, flow optimization, forensic investigation and management systems.

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