



WHEN TRUST MATTERS

Pipeline Advisory and Testing Services North America

Statement of Qualifications

DNV – Your pipeline experts worldwide

150 DNV
1864
2024

300 DEDICATED
PIPELINE
EXPERTS

8
WORLD CLASS
TECHNOLOGY
CENTERS

100 +
SATISFIED
CUSTOMERS

120 +
COMPLETED JOINT
INDUSTRY
PROJECTS



Partnerships: Your edge in the market

DNV has a longstanding partnership with premier industry and academic institutions with which we have shared interests.

Our team contributes in various ways including, but not limited to, joint industry projects, engaged members of various code and industry committees, e.g., ASME B31.4/31.8, ASME B31.12, CSA Z662, PRCI, API, NACE (AMPP), YPP USA, YPI, Energy Connections Canada (ECC), Energy Pipeline Institute of Canada (EPIC) and others.

Our collaboration with The Association for Materials Protection and Performance (AMPP, formerly NACE) has been ongoing for decades, focusing on the science of corrosion management.

Our Certifications

DNV’s certifications and licenses include:

ISO 9001:2015
ISO 14001:2015
OHSAS 18001:2007

ISO 9001:2015 CERTIFIED	ISO 2700:2015 CERTIFIED
ISO 14001:2015 CERTIFIED	ISO 29001:2015 CERTIFIED
ISO 45001:2015 CERTIFIED	ISOHSAS 18001
ASME NUCLEAR QUALITY ASSURANCE (NGA-1)	



American
Petroleum
Institute



What benefits we bring to you



STANDARDS DEVELOPMENT AND COMPLIANCE ASSURANCE

We write or/and co-create standards with standards issuing organizations like ASME and AMPP, and assure our customers are compliant.



RISK MANAGEMENT

We Evaluate, Benchmark, and De-Risk Pipeline Operations. Provide material testing, RCA, and Litigation services for clients globally.



EXPERT ADVICE

Our global team of experts are ready to support your every need on safety, technology, operational performance, and commercial risk.



DATA & DIGITAL

Our new pipeline ecosystem leverages advanced data analytics and cloud computing to integrate hydraulic modeling, leak detection, integrity management, and safety assessment.

Team of high-calibre experts in our Columbus, OH Technology center and testing lab

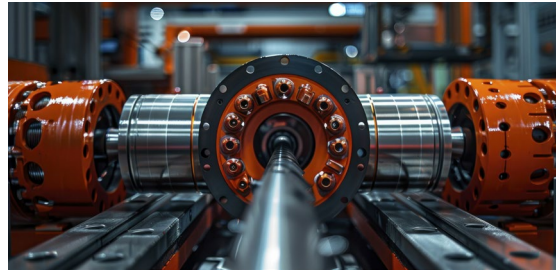
Our North American team of 44 specialists tackles tough challenges with technical expertise and hands-on experience, using a systematic approach to materials science and engineering backed by knowledge of relevant codes and standards. We evaluate various materials under various conditions, including H₂S, HF, simulated nuclear waste, H₂, CO₂, and HPHT environments. We assess corrosion, cracking, and other issues, replicating complex field conditions.

We help clients find the root cause of failures to prevent future incidents and minimize losses. We offer support from immediate cause analysis to root cause analysis (RCA).

Laboratory Facility

Did you know that DNV operates one of the premier materials and corrosion testing laboratories in North America?

Furthermore, we conduct investigations on many of the significant onshore pipeline failures in the US, and our hydrogen materials testing lab surpasses the combined size of our competitors.



Flow testing and calibration services

Our flow testing and calibration laboratories offer full-scale flow simulation of various gases (including hydrogen) and flow conditions for testing, validation and calibration of metering and valves.

The physical simulation is supported by computer modelling and multi-disciplinary advisory staff.

Our flow laboratories are based in:
Groningen, NL
Bishop Auckland, UK



Materials qualification and testing services

Our laboratories offer full-scale or simulated material qualification, testing and advisory to quantify failure behavior such as material fatigue, cracking or corrosion.

Our labs are suitable for a wide range of testing conditions, (composite) materials, coatings and assets such as valves and turbines.

Our material laboratories are based in:
Høvik, NO
Bergen, NO
Loughborough, UK
Columbus, US
Singapore



Full-scale research services

Our remote research site in the UK is used for research of fires, explosions and blasts with full-scale hazardous trials and simulation of real-world environments.

Next to testing hydrogen explosion and ignition behaviour, full-scale houses have been built at the site to test hydrogen dispersion for the H21 and Hy4Heat projects.

Our full-scale testing service is based in:
Spadeadam, UK

Let our experience become your edge

We are a leading issuer of **widely adopted standards**, and our experts have investigated over 1,000 unique pipeline failures, both onshore and offshore. DNV is also the developer of **Synergi™ Pipeline**, which is the most trusted software designing and analysing pipelines.

Our leadership in the industry is marked by groundbreaking innovations: we are actively involved in developing technologies like the intelligent pig, polyethylene piping, and ultrasonic meters.

This vast experience allows us to continuously improve our standards and ensure the safety of pipelines around the world. Governments, regulators, operators, asset owners, contractors, and manufacturers all rely on DNV's trusted investigations to determine the root cause of failures.

DNV knows pipelines from A to Z

Services



Qualification of
Hydrogen for Pipelines



CCUS, CCS,
CO2



Pipeline Integrity

- Welding



Hydraulics & Flow
Assurance



Corrosion

- Sour service
- Microbiologically
influenced corrosion



Failure
investigations



Full Scale Pipeline Testing

- Coatings
- Non-Metallic qualifications
and testing

Qualification of Hydrogen for Pipelines

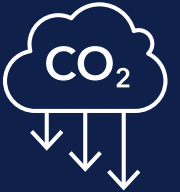


Our specialized laboratories enhance the performance of materials used in emerging fuel transport and storage. We utilize 40 hydrogen test frames for comprehensive assessments, including crack growth and fracture toughness. Combining atomic-scale modelling with experimental testing, we analyze hydrogen-induced damage and material compatibility. Through active participation in industry consortia and projects, we collaborate with other DNV labs to drive innovation.

DNV's deep knowledge of hydrogen blending through its extensive experience conducting compatibility and feasibility assessments for hydrogen integration into North American natural gas infrastructure, encompassing both distribution and transmission pipelines serving diverse customer sectors. Our expertise extends to comprehensive training programs that cover the full spectrum of hydrogen blending, from strategic and economic planning to the critical aspects of safety, integrity, risk management, and operational maintenance, effectively equipping stakeholders for the transition to blended hydrogen services.

CCUS, CCS, CO₂

DNV possesses extensive expertise across the entire Carbon Capture, Utilization, and Storage (CCUS) and CO₂ value chain, offering a comprehensive suite of services that include technical assurance, testing, advisory, and risk management. Our specialties span crucial areas such as CO₂ capture technology selection, CO₂ pipeline and shipping integrity, and secure geological CO₂ storage evaluation and certification. We are also heavily involved in developing safety protocols and risk mitigation strategies for all stages of CCUS operations, including onboard carbon capture for maritime applications. Furthermore, we actively contribute to the development of industry standards and recommended practices, demonstrated by our leadership in joint industry projects focused on areas like CO₂ flow meter traceability and pipeline integrity under hydrogen sulfide exposure. DNV's involvement extends to providing techno-economic due diligence, feasibility studies, and market development insights, aimed at accelerating the commercialization of CCUS technologies and supporting the global transition to decarbonization.



Pipeline Integrity + Welding

We excel in electrochemical measurements and utilize modelling to understand corrosion mechanisms and develop effective solutions. Notably, we support the U.S. Department of Energy in ensuring the integrity of nuclear waste storage tanks.

We also provide comprehensive welding services, adapting to evolving industry needs. Our expertise covers procedure development, on-site support, and compliance with industry standards. We specialize in in-service repairs, high-strength materials, and mechanized welding projects, ensuring weld integrity and pipeline safety. Our engineers are experienced in managing risks associated with in-service welding, particularly in challenging environments and with diverse materials. We remain at the forefront of welding innovation, researching new materials and advancing pipeline integrity.



Hydraulic & Flow Assurance

DNV provides modelling services regardless of system type or transported fluid. Our mantra is: “if it flows in a pipe, we can simulate it”. Our services include surge analysis, pipe sizing and station spacing review, pump and compressor sizing and simulation, system capacity increase analysis, leak detection and spill volume analysis, batch scheduling and interface analysis, debottlenecking, DRA modelling and field tests, pipe looping services, gas pipeline linepack analysis, BTU and composition tracking, valve and regulator design and analysis, system and/or station startup or shutdown services, power failure impact analysis, incident simulations, expert witness testimony, regulatory support, multi-phase simulation, engineering and operator qualification training, pipeline stress analysis input to Caesar & FEA and vintage pipe management.



Corrosion + Sour Service + MIC

Our lab excels in corrosion analysis and mitigation, offering diverse services and utilizing expert knowledge, advanced testing, and sophisticated modelling. We tackle diverse corrosion types, excel in electrochemical measurements, and use modelling to understand corrosion mechanisms and develop effective solutions. A notable project is our support for the U.S. Department of Energy.

Sour service testing is crucial for industries operating in H₂S environments. DNV's material testing covers metallic and non-metallic materials under extreme conditions, exceeding conventional protocols. We offer services like fatigue analysis, corrosion rate measurement, and more to predict service life and durability. We ensure compliance with standards like NACE MR0175 and FFS evaluations.

We offer comprehensive services to combat microbiologically influenced corrosion (MIC). We provide testing, analysis, and support to help clients develop and implement effective MIC management strategies, minimizing economic and environmental losses.



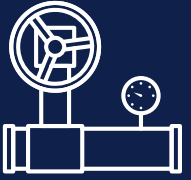
Failure Investigations

Thorough failure investigations are critical for resolving immediate issues and preventing recurrence. Our process begins with an onsite response to preserve evidence, followed by detailed root cause analysis. We adhere to industry regulations and utilize laboratory testing, modelling, and simulation to recreate failure conditions. Expert witness testimony is provided for legal cases. Finally, training programs educate staff on potential hazards and proper protocols. Each step is vital in resolving current problems and mitigating future risks.



Full Scale Testing + Coatings + Non-metallic qualifications and testing

DNV's full-scale testing replicates real-world conditions to provide crucial insights into material performance. Services include accident reconstruction, hydrostatic pressure testing, and controlled environment welding, supporting research, quality assurance, failure analysis, and safety improvements. Non-metallic material testing evaluates coatings, elastomers, and thermoplastics for resilience to various conditions, ranging from chemical compatibility and life prediction to thermal, mechanical, and comprehensive material characterization. Coating assessments and rapid gas depressurization tests ensure that materials meet the stringent demands of operators and OEMs, leading to safer and more reliable products.



Fuelling A Green Future with Hydrogen Blending

Trusted Advisor for Enbridge & Fortis BC

DNV lead the largest feasibility study in the viability of blending hydrogen into the existing natural gas network in British Columbia, analysing the gas supply chain, from hydrogen injection to end-user delivery. This initiative aimed to reduce emissions while ensuring safety, reliability, and affordability. The findings also contributed to developing codes and standards for safe hydrogen transport, paving the way for a cleaner energy future in British Columbia.

DNV value: Provided technical due diligence to ensure technical, economic, and safety aspects of blending hydrogen into the existing gas network, supporting a cleaner future for British Columbia.

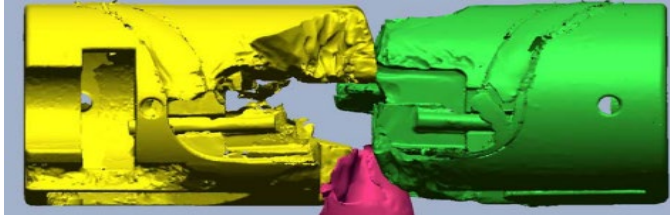


Pipeline integrity and failure investigations



DNV investigated a case of cracking that left the industry perplexed. Imagine a scenario where a client encounters a highly unusual pipeline failure.

Experts at DNV had done unique work for the customer, something that other companies might not have been able to replicate. DNV has a long history of research in the field of cracking. We have studied ethanol cracking and methanol cracking beyond the boundaries of what was known. And then a failure occurred in Canada. It was a case of stress corrosion cracking on the external surface of a pipe, hidden beneath a layer of mineral insulation. It was an instance that had never been seen before. DNV had done a lot of research on this issue, dedicating years of effort and a generous budget. And for the first time in the industry DNV had really identified the cause.



Deep Water Horizon

DNV conducted a forensic examination of the Deepwater Horizon blowout preventer, specifically analyzing the drill pipe's condition and potential causes for its off-center position. Through rigorous examinations at NASA-Michoud and our own Materials and Corrosion Technology Center, DNV ruled out variations in wall thickness as a cause, confirming uniform thickness. DNV also assessed and deemed unlikely scenarios involving rig drift and debris pushing the pipe, based on inconsistencies with physical evidence and timeline analysis. DNV's analysis provided critical insights by systematically eliminating potential failure mechanisms, focusing on factual evidence and detailed assessments to contribute to the understanding of the incident's root cause. Our work included incident simulations, metallurgical and root cause failure analysis (RCA), and expert witness testimony.



CG Real Integrity Management of >100 Pipelines

DNV provided valuable assistance in performing an ILI-based corrosion growth and remaining life assessment on over 100 pipelines. Using its CGReal analysis, which incorporated results from a 2024 ILI campaign utilizing advanced MFL and USWM tool technologies, DNV combined engineering and statistical analyses with ILI signal reviews to identify and confirm corrosion growth. This approach ensured accurate quantification of corrosion rates, assessment of tool bias, identification of critical anomalies, optimization of field inspections, and establishment of data-driven reassessment intervals, significantly enhancing pipeline integrity management.

Our latest publications presented at PPIM25 conference

[The benefits of ILI signal review analyses in ILI run-to-run comparisons – a case study](#)

This paper explores how in-line inspection (ILI) run-to-run comparisons and signal review techniques can provide a more accurate assessment of pipeline integrity, enabling operators to prioritize excavation plans, optimize resource allocation, and reduce overall risk.

[Validating crack detection ILIs with API1163](#)

This paper discusses how API Standard 1163 verification and validation processes help pipeline operators ensure the accuracy and reliability of in-line inspections (ILIs) by confirming inspection conditions and evaluating reported anomaly characteristics.

[Lessons learned using API1163 for metal loss ILIs](#)

This paper is a must-read for pipeline operators and integrity professionals as it provides critical insights into the latest developments in API 1163 (3rd edition) and its impact on In-Line Inspection (ILI) validation.

For more research and case studies [Contact us](#)

Thank you.

[Contact us](#)

www.dnv.com