

Non-Destructive Testing (NDT) Equipment - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

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Abstracts

The Non-Destructive Testing Equipment Market size is estimated at USD 3.02 billion in 2024, and is expected to reach USD 4.28 billion by 2029, growing at a CAGR of 7.20% during the forecast period (2024-2029).

Key Highlights

Non-destructive testing (NDT) involves inspecting, testing, or evaluating components, materials, or assemblies. It involves examining disparities in characteristics or discontinuities without hampering the product's serviceability or part.

NDT devices can save substantial time by eliminating the need for disassembly or dismantling. For instance, the maintenance of aircraft and the examination of internal structural components (like wing ribs), carried out by removing (and replacing) the outer skin, may be accomplished by radiographic inspection equipment.

Several governmental agencies and regional bodies across the world formulated stringent measures, primarily for assuring the safety of buildings. These measures have mandated the use of NDT and other evaluation techniques for conducting fitness checks. This is important for gaining building clearances from concerned authorities for infrastructural projects. These checks include structural strength evaluation, fire safety, and emergency protocol compliance tests.

In April 2024, The Marri Lakshman Reddy Institute of Technology (MLRIT) announced the set up of a new NDT and welding laboratory that will equip students with skills in the aerospace, defense, and industrial sectors. The lab was established in collaboration

with Synergem and is equipped with advanced testing methodologies such as radiographic testing, ultrasonic testing, liquid penetrant testing, and magnetic particle testing to provide students with hands-on experience in detecting flaws and assessing material integrity.

NDT emerged as the most feasible method for monitoring the aging of structures periodically in place of traditional methods. The restrictive cost and challenge of constructing new infrastructure resulted in the notable aging of existing structures and prompted companies to explore ways to extend the life of existing assets.

There has been an incremental rise in the demand for skilled NDT technicians worldwide. The demand currently outweighs the supply due to many reasons. Non-destructive testing can only be performed by certified professionals who undergo detailed training in the presence of subject-matter experts to gain expertise on the various techniques and skills involved in analyzing the data.

Moreover, in the automotive industry, the need for rapid and accurate inspection of complex components, such as engine parts and chassis, has propelled the adoption of NDT equipment to enhance quality control and compliance with regulatory standards. Likewise, in the manufacturing and construction sectors, the demand for the market is driven by the imperative to detect flaws, cracks, and material irregularities in a non-invasive manner, thereby ensuring the safety and durability of built structures and fabricated components.

Non-Destructive Testing (NDT) Equipment Market Trends

Oil and Gas Holds Highest Market Share

The oil and gas industry accounts for the largest market share as non-destructive testing plays a critical role in the industry for both the integrity of equipment and the safety of petroleum refining and extraction operations. Ultrasonic and eddy current NDT testing solutions are often used in the industry to carefully inspect welds and metals for flaws and corrosion, which helps keep potentially hazardous chemicals and fluids safely contained within pipes and pressure vessels.

Moreover, oil and gas have carbon, hydrogen, and sulfides that can corrode steel unpredictably and at an unexpected speed. NDT provides an effective method for inspecting these materials and detecting corrosion before it creates a larger-scale issue.

One of the primary drivers of the increased deployment of NDT technologies is the rising number of oil and gas pipelines and upcoming projects globally. As per the Global Gas & Oil Network (GGON), as of October 2023, there were 1,869 operational gas pipelines in the world, with China being the country with the most significant number of operational gas pipelines worldwide.

NDT in the oil and gas industry is critical to the integrity of equipment and the safety of oil refining and production operations. Safely storing potentially hazardous chemicals and fluids in pipes and pressure vessels requires careful inspection of welds and metals for defects and corrosion using non-destructive ultrasonic and eddy current testing solutions.

The increasing cases of pipe leaks in the oil and gas industry demand the need for NDT software. For instance, in November 2023, about 1.1 million gallons of crude oil spilled into the Gulf of Mexico near a pipeline off the coast of Louisiana, according to the US Coast Guard.

In recent years, the American Society for Non-destructive Testing (ASNT) announced the Industry Sector Qualification (ISQ) for oil and gas, which is a new non-destructive testing (NDT) qualification program for the oil and gas sector. This program provides NDT personnel to the oil and gas industry, demonstrating competency for specific techniques through the hands-on performance of demonstration qualification examinations.

North America to Hold Significant Market Share

The end-user industries in the United States, such as manufacturing, transportation, aviation, oil and gas, marine, and power generation, are governed by many different federal and state agencies that require mandatory NDT testing for inspection. Non-destructive testing (NDT) ensures the continued operation and safety of infrastructure and equipment across the United States. The use of non-destructive testing equipment is often required in the United States as a law.

For instance, according to the Federal Aviation Administration (FAA), the 200,000+ aircraft in the United States must undergo periodic safety inspections using NDT. The military equipment is subjected to Department of Defense NDT standards. These standards are often made using the information provided by independent testing

associations, such as the American Society for Non-destructive Testing (ASNT).

The United States is one of the most important markets for NDT equipment in manufacturing. According to the National Association of Manufacturers (NAM), there are more than 250,000 manufacturing companies in the United States and more than 14,000 member companies in all industries across the country. Manufacturers in the United States account for 11.39% of the economy's total output.

According to the US Energy Information Administration, Texas is the largest oil-producing state in the United States. In 2023, Texas produced a total of more than two billion barrels. New Mexico is a distant second, producing 667.5 million barrels this year. The need for increased pipeline transportation capacity and increased crude oil production have stimulated the expansion of oil pipeline infrastructure. This increase in demand for oil and gas infrastructure is expected to boost the demand for non-destructive testing equipment in the market.

The Canadian GDP is majorly dominated by the oil and gas sector, with capital investments and exports. Attractive provincial incentives to encourage drilling, increased implementation of long horizontal wells, and multistage fracturing in shale resources are the major drivers in the growth of the Canadian oil and gas industry.

With NDT being one of the most common methods to evaluate the properties of oil and gas pipelines without destroying the serviceability of the original system, the increase in oil and gas production translates to a higher demand for the market.

The aerospace industry in Canada continues to be a significant contributor to the economy and accounts for a substantial portion of the total demand for NDT equipment in the region. As per the State of Canada's Aerospace Industry Report released by the Aerospace Industries Association of Canada (AIAC), in partnership with Innovation, Science, and Economic Development Canada (ISED), the Canadian aerospace industry will invest USD 1.36 billion over seven years as a part of Federal Strategic Innovation Fund.

Non-Destructive Testing (NDT) Equipment Industry Overview

The non-destructive testing (NDT) equipment market concentration is moderately high with the presence of key players like Olympus Corporation, Baker Hughes, YXLON

International GmbH (COMET Holding AG), OkoNDT group, and Applus+ Laboratories, among others. Players in the market are adopting strategies such as partnerships and acquisitions to enhance their product offerings and gain sustainable competitive advantage. For instance,

In February 2024, Pinnacle X-Ray Solutions LLC announced the acquisition of Willick Engineering Co. Inc., a supplier of NDT X-ray equipment and provider of related services to the medical device, military, and aerospace sectors. Through this acquisition, the company will expand its products and services for current and prospective customers.

In January 2024, The American Society for Non-Destructive Testing (ASNT) announced a strategic collaboration with the Center for Non-Destructive Testing (CNDE) at Louisiana State University (LSU) as a sponsor. This partnership marks an important milestone in the advancement of research and development in the area of ??inspection and sensor technologies.

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