

Ultrasonic Non-Destructive Testing Equipment Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The Global Ultrasonic Non-Destructive Testing (NDT) Equipment Market is expected to register a CAGR of 7.29% over the forecast period. Developing countries continue to consume vast amounts of natural gas while the demand increases in developed countries. The increased demand is causing the expansion of pipelines and refineries, due to which there is a surge in the ultrasonic NDT testing market.

Key Highlights

Regular non-destructive testing is widely used as a proactive safety measure, as it is required by law in many countries. However, ultrasonic testing is gaining popularity as it creates a better map of ship corrosion and can accurately determine hull thickness, as compared to visual inspection, which is frequently used in ship inspections. Images produced through ultrasonic testing can visualize defects inside the hull that visual inspection cannot detect. Regular ultrasonic testing ensures that hull issues are identified before a costly failure. Such trends are expected to create significant growth prospects for the market studied over the forecast period.

Ultrasonic testing equipment is the most extensively used NDT equipment that is simple, lightweight, portable, can withstand temperature, humidity, vibration, and dust, and are also cost-effective in nature. Ultrasonic testing is witnessing incremental innovations aimed at filling gaps in the existing market product portfolio. Within ultrasonic testing, the market for phased array ultrasonic testing is witnessing saturation, while guided wave ultrasonic testing is being dubbed as one of the most significant techniques. Moreover, Ultrasonic testing is becoming a preferred choice amongst the end-users for fault detection, as it is non-hazardous to operators or nearby personnel and does not affect the material being tested. It also provides instantaneous results. Ultrasonic testing has witnessed the majority of applications in the power generation industry and the oil & gas industry. However, with the increasing technological advancements in the industry, technology is witnessing significant instances of applications in other industries as well.

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For instance, ultrasonic testing is being used in the marine and aviation industry, as the testing activity is regularly performed on steel and aluminum vessels to detect and quantify corrosion. It can also be used to measure the thickness and integrity of composite structures. In April 2021, Jet Aviation was approved by the Swiss Federal Office of Civil Aviation to use infrared thermography for non-destructive testing (NDT) at its Basel maintenance facility to add to other NDT techniques used in Basel, such as liquid penetrant, X-ray, magnetic particle, eddy current, and ultrasonic testing.

There has been an incremental rise in the demand for skilled technicians in ultrasonic testing activities, along with skilled NDT technicians across the world. The demand currently outweighs 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.

Technological advancements in the NDT industry have made it even tougher for workers to stay abreast of present-day practices and techniques. Acute shortage of skilled workforce can be seen in some regions, like Canada, the United States, the Middle East, and Asia. Shale oil and gas explorations in Canada and certain parts of the United States have led to a sudden surge in demand for NDT workers. The lack of quality instructors is another source of concern in emerging countries. Such trends coupled with companies operating in the market facing temporary operative issues due to the absence of site access and disruption in the supply chain might hamper the progression of the ultrasonic NDT testing equipment market.

Ultrasonic Non-Destructive Testing Equipment Market Trends

Availability of Portable and Connected Devices for Real-time Data is Expected to Drive the Market's Growth

Mobility is a key requirement for various companies to monitor critical assets continuously. The portability offered by ultrasonic NDT equipment allows NDT technicians to handle several on-site tasks. For instance, technicians can perform preparation, acquisition, analysis, and reporting of NDT on the site. The testing equipment is required to be transported to and from varying stretches of pipelines, rail, and other job sites regularly. The portable ultrasonic NDT equipment enables the technicians to perform all such activities without the need to go back to the desk, saving time and fastening the process.

Furthermore, the rise of cordless ultrasonic testing equipment and the penetration of advanced technologies, like the Internet of Things, is driving the studied market, owing to the flexibility offered. IoT solutions are being increasingly adopted across industries for optimizing operations, productivity, and safeguarding the environment. Industries such as manufacturing, oil and gas, food and beverage, and utilities face intense competition. Thus, they are increasingly investing in new technologies that leverage the capabilities of IoT, cloud, and Big Data analytics to enhance their ability to innovate and maximize return on their assets. With the advent of Industry 4.0, trends like Industrial IoT (IIoT), smart manufacturing, smart factories, predictive manufacturing, industrial robots, and sensors have made IoT the central backbone of these industries, enabling remote monitoring, continuously scanning capabilities from the equipment on the factory floor, real-time analysis, and supporting new capabilities, such as predictive and continuous maintenance.

Industry 4.0 has been aiding the industries' transition from legacy systems to smart components and machines, facilitating digital factories and, later, to an ecosystem of connected plants and enterprises. Such transformational trends are expected to act as a major driver for adopting portable and connected devices in the NDT industry. The features such as portability and connectivity provide unmatched capabilities for locating discontinuities and other flaws at remote locations without making carrying the device a restraining factor.

With the smart factory concept coming into force, companies focus on predictive and continuous maintenance and manufacturing, which is anticipated to reduce and optimize operations and maintenance costs and enhance production capacities. Moreover, according to Wollenhaupt, low maintenance strategies can reduce a company's production capacity by as much as 20%. To identify the problems and prevent them at an early stage, ultrasonic testing is one of the most effective maintenance tools.

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North America is Expected to Hold a Major Market Share

The United States is expected to command a prominent share of the market demand owing to the increasing use of testing technology for predictive maintenance, growing adoption in the oil and gas sector, and growing safety regulations in the various industries in the region especially driven by the demand from the country. The increasing use of ultrasonic non-destructive testing equipment to determine a material's thickness or any cracks in a pipeline is expected to drive its growth. Therefore, the growing investment in the construction of pipelines in the oil and refinery sector is expected to drive the studied market in the country. For instance, Pipeline construction projects, such as Pecos trail Pipeline Project, Penn East Pipeline Project, and Atlantic Coast Pipeline, are some of the projects that are destined to be completed in the next few years. These projects are expected to create considerable demand for Ultrasonic non-destructive testing equipment in the country over the next few years.

Ultrasonic Pulse Velocity (UPV) is an effective non-destructive testing method for quality control of concrete materials and detecting damages in structural components, and the growing construction sector in the United States over the past few years is augmenting the sales of equipment. After the presidential election, a particular emphasis on building new infrastructure and repairing existing capital assets that are raising safety concerns is expected to take place. Additionally, public-private partnerships (PPPs) are expected to increase to carry out large-scale infrastructure projects. According to the United States Census Bureau, the value of new commercial buildings has recovered to pre-recession levels, with USD 79.9 billion expected in 2020. In 2022, the value of construction starts in the United States is expected to reach USD 135 billion. Private offices, warehouses, and shopping/retail facilities are expected to be popular in the coming years. The increasing growth in the construction sector may boost the market for NDT testing equipment in the United States.

Moreover, Canada is experiencing a resurging economy, with continuous growth over the last few years. With the strengthening of the American economy and the resurfacing of the European economy post-recession, the Canadian manufacturing sector is expected to perform better in the coming years.

Canada is one of the significant vehicle producers globally, and this sector is the biggest contributor to the country's manufacturing industry. Over a period of time, vehicle weight has been reduced to increase fuel efficiency. Maintaining structural integrity and safety with less or alternative composite materials has created the need for more and improved ultrasonic non-destructive testing equipment in the region.

Ultrasonic Non-Destructive Testing Equipment Market Competitor Analysis

The Global Ultrasonic Non-Destructive Testing (NDT) Equipment Market is consolidated due to higher initial investments. It is dominated by a few major players like Baker Hughes, Intertek Group PKC, Olympus Corporation, and Russell Fraser Sales Pty Ltd. These significant players, with a prominent share in the market, are focusing on expanding their customer base across foreign countries. These companies are leveraging strategic collaborative initiatives to increase their market share and increase their profitability. However, with technological advancements and product innovations, mid-size to smaller companies are growing their market presence by securing new contracts and tapping new markets.

October 2021 - Intertek's non-destructive testing (NDT) experts in Derby, United Kingdom, added an X-ray computed tomography (CT) scanner to the company's extensive laboratory of advanced technology. The scanner has 240 kV microfocus and 450 kV mini focus capability. CT scanning combines multiple X-ray images taken from different angles as the inspected object is slowly rotated. Specialized software combines these images to create a three-dimensional model that can be analyzed to identify internal features and potential defects such as cracking, porosity, and delamination.

September 2021 - Bureau Veritas acquired AET France, which is specialized in laboratory testing, product development, and sustainable testing. This acquisition has strengthened BV's position in the European consumer goods retail industry.

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