Infrastructure Monitoring Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The Infrastructure Monitoring Market is expected to register a CAGR of 15.6% during the forecast period. The growing use of advanced sensor technologies, declining cost of sensors, growing demand for preventive maintenance, and increasing capital investments to ensure better maintenance of critical infrastructure across the end-user industries are driving the growth of the infrastructure monitoring market.

Key Highlights
The growing demand for predictive maintenance to reduce life cycle maintenance costs is one of the primary drivers of this industry. MEMS inertial sensors are extensively used in predictive condition monitoring of buildings, production systems, and even vehicles. This has been further augmented by the emergence of IoT and advanced analytics that continually improve such systems' functionality.
In April 2021, Several South African aerospace and defense companies finalized a collaboration to move the industry forward as part of an Aerospace and Defense Masterplan. The Aerospace and Defense Masterplan aims to increase local production of selected products by 50% from current baseline levels by the end of 2024. The partnership includes testing facilities like the African NDT Centre, Damen Shipyards Cape Town, GEW, Hensoldt Optronics, Paramount Group, and the Council for Scientific and Industrial Research (CSIR).
Moreover, the ability to remotely monitor critical infrastructure using smart sensors has led to the proliferation of the market. This is extremely helpful in the end-user segments, like mining, where structural monitoring using smart sensors enables companies to save money and lives. Inertial sensors from First Sensor that can achieve resolutions of 10 □g or 0.0005□ (2 arc seconds) are extensively used for remote monitoring of buildings, bridges, and wind turbines.
Ground-penetrating radar (GPR) is growing in importance because of its cost advantages. It is increasingly being used for bridge and tunnel inspections, roadway investigations, and to ensure adequately compacted asphalt on roads. Using the GPR technology,

Kentucky Transportation Center found the location of large voids in the Cumberland Gap Tunnel, which links Kentucky and Tennessee. It also significantly reduced the repair costs by using GPR, to confirm that no voids needed to be fixed on one end of the tunnel.
During the COVID-19 pandemic, the companies operating in the Infrastructure Monitoring market faced temporary operative issues due to the absence of site access and disruption in the supply chain, which negatively affected the market's growth. Various associations, including those that provide various certifications, have also taken a hit. However, companies such as Bureau Veritas reported a 900% rise in demand for the remote inspection of offshore assets and equipment since the pandemic outbreak.

Infrastructure Monitoring Market Trends

Energy Sector is Expected to Account for a Significant Share of the Market

The energy segment is anticipated to get significant traction in the infrastructure monitoring market owing to the increasing demand for improving energy efficiency, sustainability, and cost-effective practices. Additionally, the growing importance of timely and predictive maintenance for energy sector assets provides a promising future for the growth of infrastructure monitoring in the energy sector.
Further, the remote maintenance benefits that Structural Health Monitoring Systems offer is extremely beneficial for both onshore and offshore systems in this sector. In a wind turbine, for instance, central data modules are being increasingly used to transmit data about structural conditions. The introduction of cloud solutions has enabled this structural health monitoring data to be continually collected and evaluated for predictive maintenance. Most wind farm operators leverage SCADA data for remote monitoring and management.
Moreover, Structural Health Monitoring solutions led to substantial cost savings through early detection, thereby facilitating higher investment in future predictive maintenance solutions. Duke Energy deployed Schneider Electric's Avantis PRiSM technology to save USD 7.5 million through early crack detection in a turbine rotor. This has ensured the prevention of cost overruns through asset optimization and maintenance.
In addition, non-invasive structural monitoring remains highly critical to the nuclear energy sector, which, by design, supports such technologies. The sensors in nuclear reactors are installed during concrete casting or by inserting them into holes that are drilled into the existing structures.
Moreover, as per World Nuclear Association, as of May 2022, globally, there were 95 nuclear reactors planned worldwide. China recorded the largest figure with 33 units., followed by Russia and India with 27 and 12. Further, as nuclear power plants age, maintenance's importance increases, which is expected to create market opportunities for the market studied.

Asia-Pacific is Anticipated to Grow at a Significant CAGR

The rapid expansion of the end-user industries that have major avenues for the application of structural health monitoring systems is leading to the expansion of the market in the region. For instance, according to World Nuclear Association, Asia-Pacific region is witnessing significant growth in terms of electricity generating capacity and specifically nuclear power. The region is home to about 135 operable nuclear power reactors, and about 35 are under construction, with fastest growth in nuclear generation, expected in China. Thus, the need for maintenance of those power plants will also increase, which in return will create a market for structural monitoring.
The application of infrastructure monitoring equipment within Aerospace and Defense is further driving the market. For instance, according to the according to the Stockholm International Peace Research Institute (SIPRI), China and India have enhanced their

nuclear arsenal over the last year. The Swedish think-tank pointed out that China is significantly modernizing its nuclear arsenal. According to the SIPRI Yearbook 2020, China, Pakistan, and India have 320 160 and 150 nuclear warheads. Such existence mandates the need to monitor them so that they don't fall into the wrong hands.
Further, China has approximately 500 smart city pilot projects, the highest in the world, covering big and small cities. The Chinese Government had invested about USD 74 Billion of public and private investment in these cities by 2020. According to China Academy of Information and Communication Technology, the annual investment into Smart City projects is expected to rise to CNY 1.23 Trillion (approximately USD 181.7 Billion) in 2021 from CNY 375.2 Billion (approximately USD 55 Billion) in 2017. Additionally, growing smart city projects are expected to provide opportunities for the growth of the market in the country. For instance, Smart City Mission, a scheme in India is worth USD 35.7 Billion and consists of 2301 projects across various states. In the Indian Union Budget for the FY 2020-2021, five new smart cities have been announced under the smart cities' mission. The development of smart infrastructure is expected to open up new avenues for structural monitoring systems.
There has been an increased count in the aging infrastructure in China, making it essential for the use of infrastructure monitoring services to identify and secure the integrity of these structures. As a result, the deployment of these solutions in the country is expected to grow rapidly over the forecast period, due to the increasing need to conduct periodical assessment operations to preserve aging infrastructure and the need to optimize infrastructure expenses.

Infrastructure Monitoring Market Competitor Analysis

The competitive landscape of the infrastructure monitoring market remains fragmented, with several small and medium-sized players operating in the market. The evolving needs of the end-user segments are driving the market vendors to offer innovative products. In addition, growing opportunities in the market are attracting new players and investments in the market.

September 2022 - Equinor and Norwegian technology Vissim have completed the development of a new and expanded ocean space surveillance system for energy operators on the Norwegian and UK continental shelves. The new and expanded ocean space surveillance system incorporates subsea infrastructure monitoring, marine planning through weather forecasts and real-time monitoring, and 3D situational awareness.
January 2022 - Netreo announced that both the Netreo full-stack IT infrastructure monitoring and Retrace by Netreo full lifecycle APM solutions earned Veracode Verified Standard recognition proving that code development processes meet AppSec best practices and further boost the security posture of the Netreo and Retrace by Netreo solutions.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

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