Inertial Systems in Land-based Applications - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 110 pages | Mordor Intelligence

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Report description:

The Inertial Systems Market in Land-based Applications Industry is expected to register a CAGR of 10.68% during the forecast period.

The emergence of Micro Electro Mechanical Systems (MEMS) technology resulted in the miniaturization of mechanical and electro-mechanical elements in the field of sensors and semiconductors through the use of micro-fabrication and micro-machining techniques. Hence, MEMS has become an indisputable part of future navigation systems and is expected to propel the inertial systems market's growth.

Additionally, high-end inertial systems are comprised of IMU with high-performance sensors (gyroscopes, magnetometers, accelerometers), which provide high accuracy information about the surrounding environment through relative movement. Hence, the need for higher accuracy in navigation systems is increasing, thus, increasing the demand for advanced inertial systems.

Moreover, these inertial systems are increasingly used in deep-water drilling units for advanced operations. Sonardyne International came up with a new DP-INS (inertial navigation system) that combined the complementary characteristics of its long and ultra-short baseline (LUSBL) positioning technology with high-integrity inertial measurements from its Lodestar AHRS/INS platform. Further, a gyroscope is a kind of inertial sensor used to detect the altitude angle and angular rate. Characteristics such as small size, low power consumption, lightweight, low cost, and the possibility of batch fabrication drive their adoption over conventional gyroscopes.

Further, due to the COVID-19 pandemic, China has stopped all major production activities, including its semiconductor industry. This is expected to significantly influence the global industrial inertial systems market supply chain in 2020, and the market is

expected to pick up afterward. Disruption in China may significantly impact companies worldwide and up and down the electronics value chain, directly impacting the sensor market.

Land-based Applications Inertial Systems Market Trends

Increasing Demand for Accuracy to Drive the Market

A high level of accuracy and reliability is a navigational system's prime feature. Inertial navigational systems have a distinct advantage over other forms of navigation systems in terms of their lack of dependence on external aids to determine the rotation and acceleration of a moving object. These systems use a combination of gyroscopes, accelerometers, and magnetometers to determine the vector variables of a vehicle or a moving object.

Navigational systems are inherently suited for use in integrated navigation, control, and guidance of vehicles in challenging environs. Unlike GPS and other navigation systems, inertial systems can retain their performance even under challenging conditions. Inertial measurement units (IMU) are well suited for navigational systems to calculate several metrics. These systems remain unaffected by radiation and jamming problems. Strapdown inertial systems find more usage in inertial navigation systems than gimbaled systems, as they are strapped to the moving object and offer better reliability and performance. Moreover, they provide cost-effectiveness as they are incorporated with MEMS techniques.

As advanced technologies such as AI and Machine Learning become more widely adopted, advanced robotic cars that can be controlled remotely via sensor technology are becoming more common. Unmanned Underwater Vehicles, Unmanned Aerial Vehicles, and Unmanned Ground Vehicles are all being updated owing to this new technology. As a result, accurate position parameters, such as altitude and orientation of tactical grade equipment, are important in today's battle scenario.

Inertial navigation systems are now being made available for commercial use in private aircraft, UAVs, military, and defense units. They form an integral part of the navigational control systems and can interact with other navigational systems due to incremental advancements in the processing ability of the systems. Several forms of inertial systems like magnetometers are widely used for determining the orientation and presence of a magnetic field in conjunction with other forms of inertial systems.

North America to Hold the Largest Market Share

The presence of prominent vendors offering MEMS in the region is likely to emerge as a source for innovation, and it is estimated to hold a significant market share. North America is one of the largest markets for offshore oil and gas communication globally. New-found shale resources in the US and an increasing number of oil and gas projects in Canada are expected to drive the demand for communication equipment in the region.

The US Department of the Interior (DoI) plans to allow offshore exploratory drilling in about 90% of the Outer Continental Shelf (OCS) acreage. The region's oil and gas sector is expected to create new opportunities under the National Outer Continental Shelf Oil and Gas Leasing Program (National OCS Program) for 2019-2024.

Moreover, the rising number of unmanned aerial vehicles and rising defense spending are the key reasons for the high adoption of these systems in the US. Besides, under the US Defense Advanced Research Projects Agency (DARPA) program, to provide the US Navy with advanced tools to expand the reach and effectiveness of its underwater sensors, the US defense sector has invested in the development of small unmanned underwater vehicles (UUV) to help US submarines detect and engage adversary submarines. Hence, government initiatives and spending on R&D are expected to further stimulate the growth of the market in the region.

Land-based Applications Inertial Systems Industry Overview

The competitive landscape of the inertial systems market in land-based applications is fragmented moderately due to the presence of various inertial systems solution providers. However, vendors are consistently focusing on product development to enhance their visibility and global presence. Companies are also undergoing strategic partnerships and acquisitions to gain traction and increase their market share.

In October 2021, the US Navy received the 500th WSN-7 ring laser gyroscope inertial navigation system (INS) from Northrop Grumman Corporation. Northrop Grumman continues to support the US and NATO surface and submarine naval assets worldwide, with installations across the US Navy Fleet.

In April 2021, Inertial Labs announced the release of INS-DH-OEM, IMU-NAV-100, and INS-U, the next generation of GPS-assisted systems. These INS are intended for use with UAVs, helicopters, and LiDAR surveys from the air. MEMS accelerometers and MEMS gyroscopes are among them.

Additional Benefits:

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

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