North America Inertial Systems Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 122 pages | Mordor Intelligence

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Report description:

The North American inertial system market was valued at USD 7.98 billion in 2021, and it is expected to reach USD 11.5 billion by 2027, recording a CAGR of 5.9% over the forecast period 2022-2027.

Key Highlights
Inertial system equipment includes gyroscopes, accelerometers, inertial measurement units, inertial navigation systems, and multi-axis sensors. It segments the market by area of application with an in-depth analysis of every segment in each area. Aerospace, land-based, marine, and sub-sea applications are explained with a comprehensive market analysis of each segment.
The United States has one of the highest numbers of submarines and warships. It has around 68 submarines and more than 490 ships with the US Navy. It is also home to big shipping yards which make ships. Inertial systems are a key to these ships and submarines. So with the growing production of submarines and warships for the defense sector and ships for increasing trade, the inertial sensors market is estimated to grow in the period to come.
The advancement of the global lifestyle has resulted in the need for equipment with greater ease of use. This is enabled by the use of motion-sensing technology, which uses inertial sensors extensively. This is a key driving factor to this market and will play an important role in defining the market for the next few years.
North America Inertial navigation market is now mature. However, the advanced technology and demand for low-cost micro electro mechanical systems (MEMS) are giving a thrust to the growth in the market. The Fiber Optic Gyro (FOG), Ring Laser Gyro (RLG), and MEMS are the major technologies adopted in this region for technological advancements in aviation, military, and marine applications.
Commercial operations have been temporarily halted due to the pandemic crisis. Due to the disturbance in the process, system components are in short supply, and demand for unmanned vehicles for commercial operations such as oil tank testing, pipeline inspection, windmill inspection, and field mapping is down. Furthermore, during the lockdown, vital industrial units around the

world are shut down. This has an impact on the development of inertial navigation system components, which has a direct impact on the market's growth.

North America Inertial Systems Market Trends

Increasing Demand in Accuracy to Drive the Market

A high level of accuracy and reliability are the prime features of a navigational system. 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 make use of 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 kinds of navigation systems, inertial systems can retain their performance even under difficult 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 robotics 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, in today's battle scenario, accurate position parameters, such as altitude and orientation of tactical grade equipment, are important.
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 are also able to 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. Multi-axis systems like IMUs and AHRS are being used for determining the altitude, position, acceleration, and velocity of moving objects. Inertial systems are deemed to be ideal for providing high accuracy in navigational systems by using a combination of accelerometers, gyroscopes, and magnetometers.

Availability of Advanced IMUs to Favor Market Growth

The use of IMUs in military operations, particularly in unmanned aerial vehicles (UAVs), has spurred companies in this field to develop advanced solutions for this technology. As a result, next-generation IMUs are widely available on the market today. EMCORE's Systron Donner Inertial, for example, makes solid-state micro-electromechanical systems (MEMS) IMUs for drones that can function in the most extreme climates.
SBG Systems, established in France, creates and sells MEMS-driven inertial sensors for unmanned vehicles. The Ellipse 2 Micro Series is the company's smallest and lightest IMU, designed to give precise location data for unmanned systems. Such breakthroughs in inertial sensor technologies are broadening the scope and speeding up the growth of the IMU market.
Previously, the use of IMU sensors in the car sector was limited to navigation systems. The current use of automotive IMU sensors in a variety of other automotive applications, on the other hand, has necessitated the need for more robust sensors with high performance and small size. As a result, suppliers are attempting to meet the industry's ever-changing demands.
The demand for systems like ADAS and airbags is a major driver of the worldwide automotive IMU sensors market's growth. ADAS systems are placed in cars to decrease human errors that might cause accidents while driving. ADAS is especially useful for long

rides when weariness is the leading cause of accidents.
The developed countries, such as the United States and Canada, are expected to be the biggest ADAS markets. Furthermore, airbags are included in automobiles to protect the occupants' safety in the event of an accident. These airbags are controlled by an airbag control unit, which receives data from a variety of sensors, including automotive IMU sensors.

North America Inertial Systems Market Competitor Analysis

The North American inertial systems market is moderately fragmented due to the presence of various inertial systems solution providers. However, vendors are consistently focusing on product development to enhance their visibility and presence. The companies are also undergoing strategic partnerships and acquisitions to gain market traction and increase their market share.

January 2021 - Honeywell won new money from the US Defense Advanced Research Projects Agency (DARPA) to develop the next generation of inertial sensor technology, which will be used in commercial and defense navigation applications in the future. Honeywell lab studies recently revealed that the new sensors are more precise than Honeywell's HG1930 inertial measurement unit (IMU), a tactical-grade device with more than 150,000 units in operation.
October 2021 - The US Navy has received the 500th WSN-7 ring laser gyroscope inertial navigation system (INS) from Northrop Grumman Corporation. Northrop Grumman continues to support the United States and NATO surface and submarine naval assets around the world, with installations across the US Navy Fleet.

Additional Benefits:

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

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