MEMS-Based IMU - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 120 pages | Mordor Intelligence

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Report description:

The MEMS-Based IMU Market size is estimated at USD 1.21 billion in 2025, and is expected to reach USD 2.07 billion by 2030, at a CAGR of 11.31% during the forecast period (2025-2030).

The market's growth is primarily fueled by the increase in the number of applications, technological advancements, and the increasing demand in emerging countries globally. The MEMS technology played a significant role in expanding the application base for inertial measurement systems by scaling down these devices' size and power consumption without compromising on their performance metrics, thereby driving the market's growth.

Key Highlights
- The market studied is growing, as MEMS inertial sensors used in the unit offer highly robust, reliable, fast, and temperature-stable characteristics. They can detect even the most minor changes in position and acceleration. Furthermore, the growing development of IoT devices is driving the market's growth.
- The internal components of MEMS IMU need to be protected from harsh environments, such as heat, moisture, and corrosive chemicals. However, the high sensitivity to fabrication and environmental variations makes the packaging of IMU sensors, such as micromachined gyroscopes, a challenging task and increases the packaging cost, thereby hampering the market's growth. The market is facing heavy headwinds due to the outbreak of COVID-19 worldwide. Lockdowns enforced by the spread of COVID-19 worldwide affected the manufacturing of devices, dragged consumer demand across end-user industries, and influenced the prices. However, with the resurgence, the market demand will likely rise to the trend line.
- As global defense agencies become more dependent on precision weapons, the signal chain's performance, quality, and design are even more mission-critical. MEMS gyroscope strengthens the industry with three essential aspects of signal chain design.
- For instance, in December 2021, Honeywell announced the development of the next generation of MEMS-based inertial sensor

technology with financing from the US Defense Advanced Research Projects Agency (DARPA), which will be used in both commercial and defense navigation applications. Honeywell lab studies recently revealed that the new sensors are more than an order of magnitude more precise than Honeywell's HG1930 inertial measurement unit (IMU), a tactical-grade device with more than 150,000 units in operation.
- Furthermore, the beginning of the COVID-19 pandemic has severely hit the market for MEMS-based IMU owing to the shutdown of several manufacturing industries. However, automakers globally have faced increased pressure to shut down their factories due to the COVID-19 pandemic. After the federal, state, and local governments started recommending people stay in their homes as much as possible. This has caused supply chain disruptions across various industries. For instance, Ford and General Motors suspended production at their respective manufacturing facilities in North America amid the coronavirus outbreak. Honda North America and BMW also closed their plants throughout the U.S. and Europe owing to an expected decline in car demand related to the global coronavirus outbreak.

MEMS Inertial Measurement Unit (IMU) Market Trends

Automotive Sector is to Hold Significant Market Share

- The latest generation of Advanced Driver Assistance Systems (ADAS) and autonomous vehicles require an exact inertial measurement unit to accurately predict the motion of a vehicle to determine its precise position in real-time, thereby driving the growth of the MEMS-based inertial measurement unit market. Also, with the evolution towards autonomous driving, the demand for the market is expected to increase multiple-fold for safety-based applications and create opportunities in the market.
- The increase in the number of production plants for passenger and commercial vehicles due to the high demand for these vehicles and the presence of rapidly expanding economies are likely to boost the market's growth.
- For instance, in July 2022, The BMW Group launched a new project that will see cars manoeuvre around production without requiring a driver. The Automated Driving In-Plant project is being realized in collaboration with two startups - Seoul Robotics from South Korea and Embotech from Switzerland. It will enhance the efficiency of new-vehicle logistics in plants and distribution centers.
- Moreover, during the end of the first wave of the pandemic, Analog Devices, Inc. announced its high-precision inertial measurement unit (IMU) was selected by CHC Navigation to enable its next-generation, real-time kinematic (RTK) rover receiver, which can achieve high-precision and high-efficiency positioning and measurement at any position through the combination of satellite and inertial positioning.
- Further, in May 2022, STMicroelectronics announced MEMs-based inertial measurement unit (IMU) ASM330LHHX to enable smart driving and support the automotive industry's quest for higher levels of automation with its machine-learning (ML) core.

North America Accounts for the Largest Market Share

- The automotive sector is the emerging market for high-end IMUs, following advancements in applications, such as stability control, safety measures, and crash detection systems. As the premium automakers may approach L5 autonomous driving in the next few years, the market may provide a massive opportunity for IMU-powered MEMS sensors related to acceleration, LiDAR, and motion detection systems.
- During the second pandemic wave, Innoviz Technologies Ltd, a developer of solid-state LiDAR sensors, raised around USD 170 million to back BMW's LiDAR-equipped cars, which will be rolled out by the beginning of 2022.
- According to the International Energy Agency (IEA), in 2021, the United States made a strong comeback in the electric car market, with sales more than doubling to more than half a million units. The entire car market in the United States improved as

well, but electric vehicles increased their market share to 4.5%. Tesla continues to dominate the electric car market in the United States. Overall, the automotive sector in the country has been growing, contributing to the market studied, especially in the automotive industry, in the region.
- In April 2021, Avita Health System became the first critical access hospital in the United States to implant the CardioMEMS-based IMU system for treating heart failure patients. The device enables doctors to monitor cardiac pressure remotely and provide real-time treatments. The first device offered by the company was implanted at Galion Hospital in Ohio.
- Further, in April 2021, Inertial Labs launched the IMU-NAV-100, a new tactical-grade MEMS IMU in Inertial Labs' portfolio. The new sensor is a fully integrated inertial solution that measures linear accelerations, angular rates, and pitch/roll with high accuracy, utilizing state-of-the-art three-axis MEMS accelerometers and gyroscopes.

MEMS Inertial Measurement Unit (IMU) Industry Overview

The MEMS-based Inertial Measurement Unit Market is fragmented. Overall, the competitive rivalry among existing competitors is high. Moving forward, acquisitions and partnerships of large companies are focused on innovation. Some of the key players in the market are Honeywell International Inc., Analog Devices Inc., Bosch Sensortec GmbH, and STMicroelectronics International N.V.

- January 2022 - TDK Corporation announced the availability of the InvenSense ICM-45xxx SmartMotion ultra-high-performance (UHP) family of 6-axis MEMS motion sensors. This introduces the on-chip self-calibration, the industry's lowest power consumption, and the world's first BalancedGyro (BG) technology.
- April 2021 - Honeywell launched a new series of MEMS-based miniature inertial measurement units that are ruggedized to offer best-in-class accuracy and durability to survive high-shock environments. Roughly the size of a water bottle cap, the new HG1125 and HG1126 inertial measurement units (IMUs) are low-cost and serve both commercial and military applications.

Additional Benefits:

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

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