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

Market Report | 2023-01-23 | 120 pages | Mordor Intelligence

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Report description:

The gyroscopes market is expected to register a CAGR of 5.12% over the forecast period. Gyroscope technology witnessed a huge amount of innovation in the last decade, with the introduction of MEMS-based gyroscopes. The accuracy and efficiency of the gyroscopes also improved as multi-axis gyroscopes are more accurate due to digital integration.

Key Highlights
The increasing demand for the satisfactory performance of Inertial Navigation Systems (INS) influenced technological innovations in gyroscopes. The aviation industry, the key consumer of INS systems, played a major role in the market growth and is expected to be a key driver for the global market.
The rapidly growing adoption of drones and unmanned aerial vehicles (UAVs) in the defense and commercial sector has been identified as a major driver in the market. Besides, technological innovations, as a result of the increasing investments in the market, are ensuing in higher performance and lower costs. This is expanding the market for gyroscope systems in several industries, thus, driving the market's growth.
However, the increasing manufacturing complexity and costs involved in the industry hamper the market's growth.
The market is witnessing various developments from national and international players as they look to have a competitive edge. For instance, in September 2022. South Korea's defense technology development agency developed an atomic spin gyroscope that can be used for navigation devices in weapon systems. The Agency for Defense Development (ADD) worked on the development of cost-effective gyroscopes that can miniaturize and reduce the power consumption of weapons-grade navigation devices.
Researchers are doing various innovations to develop the smallest gyroscope sensors for navigation. For instance, in November 2021, French research lab CEA-Leti, in collaboration with Politecnico di Milano in Italy developed a MEMS gyroscope sensor with a footprint of 1.3 sq mm using nano-resistive sensing. The gyroscope is compatible with standard MEMS foundries for high-volume markets, such as the automotive industry.
The emergence of the COVID-19 pandemic decelerated the market's growth. However, due to uplifting lockdowns, the market is slowly gaining traction. Apart from China, the spread of COVID-19 in the Asian continent restrained the growth rate as major

semiconductor manufacturing countries, such as South Korea were also affected significantly. With the slowdown in the global economy, the demand for electronics products was influenced in 2021 but started to recover in 2022. According to Semiconductor Industry Association and World Semiconductor Trade Statistics, semiconductor sales globally increased from USD 43.97 billion in May 2021 to USD 50.58 billion in May 2022.

Gyroscopes Market Trends

Aerospace and Defense is Expected to Hold a Significant Share

Gyroscopes are critical rotation sensing elements that are used in navigation systems, specifically for inertial navigation systems (INS), attention and heading reference systems (AHRS), or inertial measurement units (IMUs) for manned and unmanned aircraft, spacecraft, marine and surface vehicles.
The ring laser gyro (RLG) helps in rotation measurement. Because of its affordable high-performance inertial sensor with electronics, power supply, and sense element, it is an easy-to-use compact unit for the aerospace and defense industry.
A gyrometer is an inertial sensor that measures angular rotations. Its vibratory technologies hold exceptional reliability and compactness, which is mainly used to stabilize aiming lines on remotely controlled gun turrets and images and also for avionics integrated into the artificial horizons of military or civilian aircraft.
In Canada, the demand for gyroplane aircraft is increasing due to the effective application of gyroscopes. According to a report in the Canadian Civil Aircraft Registry, the Instrument Flight Rules (IFR) gyroscopes are being adopted in the aerospace industry because of their effective applications.
Across various countries, aerospace and defense sectors are expected to significantly contribute to market growth as defense spending is increasing. For instance, in June 2022, the Indian Defense Ministry signed a contract with Bharat Dynamic Limited to supply ASTRA MK-I Beyond Visual Range Air to Air missile and associated equipment for the Indian Air Force and Indian Navy at the cost of INR 2,971 crore (~USD 359.28 million). The missile uses mid-course inertial guidance driven by a fiber optic gyroscope with terminal guidance through active radar homing.

Asia-Pacific is Expected to Witness a Significant Growth Rate

Asia-Pacific was the only region to register a capacity growth in the oil and gas industry in recent years, which is expected to offer lucrative opportunities for this market due to its use for measuring the orientation and rotation of objects in this industry.
As per BP statistics, the region produced around 7.34 million barrels of oil per day in 2021. China was the largest producer with around four million of oil production per day, followed by India and Indonesia.
For instance, in China, for the oil and gas industry, a certain kind of gyroscope has been designed for the borehole drilling field, which can overcome technical difficulties like monitoring the operating temperature up to 100 degrees centigrade. Mostly, inertial devices are more adaptable and better applied in the drilling field.
Moreover, Japan is well known as the manufacturing hub for the automobile industry, and the new development plan for driverless vehicles is giving rise to the adoption of gyroscopes. Further, in March 2022, the Government of Japan passed a bill to allow Level 4 autonomous vehicles as an obvious next step after a Honda Legend with Level 3 tech was certified for use on public roads last year by the Japanese Ministry of Land, Infrastructure, Transport, and Tourism.
Furthermore, the increased enforcement of regulations from countries such as China, Japan, and South Korea, has encouraged companies to invest in different gyroscopes. Thus, end-user companies are willing to invest in the measurement of orientation in several device monitoring systems for their safety.

Gyroscopes Market Competitor Analysis

The gyroscope market is fragmented. The rapid rise of unmanned vehicles and technological advancements provides lucrative opportunities in the gyroscopes market. Overall, the competitive rivalry among the existing competitors is high. Moving forward, the innovation strategy of companies is boosting the demand of the market. Some of the key developments in the area are:

August 2022 - EMCORE Corporation announced the acquisition of the Fiber Optic Gyroscope and Inertial Navigation Systems business of KVH Industries Inc. The all-cash transaction totaled approximately USD 55 million, including all outstanding assets and liabilities, intellectual property, and an Illinois-based production facility.

May 2022 - STMicroelectronics developed an ASM330LHHX inertial measurement unit (IMU) to enable smart driving and to support the automotive industry in its quest for higher levels of automation with its machine-learning (ML) core. The automotive-qualified ASM330LHHX houses a 3-axis accelerometer and 3-axis gyroscope in a 2.5mm x 3mm x 0.83mm outline. The 6-axis module provides movement and attitude sensing for vehicle positioning and digital stabilization functions.

Additional Benefits:

The market estimate (ME) sheet in Excel format
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