

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

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Report description:

The force sensors market is expected to register a CAGR of 4.7% over the forecast period. Force sensors have become critical features in industrial robots by enabling them to be task agnostic and safely operate alongside humans. These sensors have improved the monitoring and management of networked embedded systems. The adoption of automation has transformed the global landscape, as these sensors have become critical to all automated equipment, offering accuracy and precision in all operations.

Key Highlights

Force sensing makes surfaces more intuitive, and the displays enable user experience designers to simplify and improve the control surface layouts on many appliances. It has allowed designers to seamlessly integrate force sensors into new designs by exploring a new generation of appliance user interfaces.

Force sensors are frequently installed to track the force experienced by vehicle parts such as axle beams and dampers to avoid fatigue failure, particularly in heavy automotive vehicles such as construction trucks and mining vehicles, where overloading or unexpected stress levels may result in higher maintenance costs.

Furthermore, the increasing safety regulations and rapidly rising adoption of advanced driver assistance systems (ADAS), which alert drivers based on several parameters, are expected to drive the demand for force sensors over the forecast period.

Moreover, industrial robots are more adaptable, intelligent, and autonomous. The development of force sensor technologies is driving the advancement of robots. Force sensors can detect different forces when applied to the robot's wrist or end-of-arm tooling. The market for force sensors is expanding due to cheap production costs, technical advancements, rising industrial robot demand, the creation of force-measuring medical devices, and expansion and innovation in the industrial sector.

Additionally, the demand from automotive, consumer electronics, and healthcare industries has increased post-pandemic situation as the government released the restriction and increased demand from the consumer for automotive and consumer electronics,

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which will further be expected to add growth for the force sensor market. After the COVID-19 pandemic, the global force sensor market showed steady growth due to its demand for various applications such as electric vehicles, autonomous vehicles, smartphones, and smart healthcare devices. Such applications will boost the market in the near future.

The market's current force sensor product portfolio is relatively standardized in product offerings. Although the market has the potential to cater to a plethora of applications, the offerings of the market players are pretty limited. However, the market is witnessing the introduction of customized force sensor products for specific original equipment manufacturing (OEM) needs. However, the significant restraint in the market is the fluctuating demands of the end-user industry. Need is not fixed in the end-user sector and is a challenge to production schedules. Rejection rates at manufacturing facilities are due to damage or poor sensitivity, reducing overall production capacity. Additionally, rapidly changing requirements in the automotive, medical, and aerospace sectors drive the need for more accurate measurements.

Force Sensors Market Trends

Automotive Sector is Expected to Register a Significant Growth

The rising automotive sales and increasing production of vehicles globally are expected to create opportunities. According to the OICA (Organisation Internationale des Constructeurs Automobiles), the sales of automobiles in China in 2021 reached the highest at 26.08 million units. In 2021, around 80.14 million motor vehicles, including cars, and commercial vehicles, were produced globally.

Furthermore, force sensors are commonly employed in the automotive sector to detect centripetal force during maneuvers to increase driver safety. They are also used in engine management systems (MAP/BAP) and oil pressure monitoring. Because of these advantages, the demand for force sensors in the automobile industry may expand in the coming years.

The automotive industry has many new opportunities for force sensors in the Research and development of infotainment systems. In recent years, the automotive industry has emerged as an excellent source of demand for touchscreen units. Prominent automotive sensor manufacturers like Bosch, Denso, and Infineon Technologies are investing in technologically advanced, safer, and more secure sensor-based products for various automotive applications.

Moreover, the increasing demand for technologically sophisticated functionalities in the automotive sector, where force sensors are used for driver safety, engine management systems, and oil pressure systems, is expected to increase demand for force sensors in the future years. Furthermore, the growing popularity of robotics and advancements in IIoT will propel the market. Additionally, the increasing safety regulations and rapidly rising adoption of advanced driver assistance systems (ADAS), which alert the driver based on several parameters, are expected to drive the demand for force sensors over the forecast period. However, the automotive industry has been impacted by the COVID-19 outbreak, as China is one of the major suppliers of raw materials and finished products. The sector faced a reduction in production, disruption in the supply chain, and price fluctuations. The prominent electronic companies' sales were affected but are expected to grow soon.

Asia-Pacific to Witness the Significant Growth

Growing AI and IoT technologies and high demand from the Asian-Pacific region continue to drive the force sensor market growth. Technological advances and rising automotive standards in developing countries such as India, China, and others are impacting the increasing demand for sensors in the manufacturing sector due to multiple benefits, including maximizing operational efficiency, reliability, and effectiveness.

The region is also one of the most lucrative markets. It is becoming a priority for force sensors due to its prosperous industrial manufacturing industry and high domestic consumption of products that utilize devices with force sensors.?

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The automotive industry has also been increasing in India, playing an increasingly important role in the global automotive market. For instance, according to IBEF, the Indian passenger car market was valued at USD 32.7 billion in 2021, and it is expected to reach USD 54.84 billion after five years. Additionally, India's electric vehicle (EV) market is projected to reach INR 50,000 crores (USD 7.09 billion) by 2025. Moreover, according to NITI Aayog and Rocky Mountain Institute (RMI), India's EV financial industry could reach INR 37 lakh (USD 3.7 million) by 2030. India's EV market is predicted to increase at a CAGR of 36% by 2026. These factors will drive the market for force sensors in developing Asian countries.

Moreover, the Japanese government aims to have all new cars sold in Japan electric or hybrid by 2050. The country plans to offer subsidies to accelerate the private sector development of batteries and motors for electricity-powered cars. Besides, the increasing investments to encourage the deployment of autonomous vehicles are expected to drive the growth prospect for force sensors.

Such optimistic regional developments are expected to boost market growth during the forecast period. It is expected to drive the market for force sensors likely.

Force Sensors Market Competitor Analysis

The force sensors market is moderately fragmented as the market is quite competitive and consists of a few major players, such as Sensata Technologies, Alps Electric Co. Ltd, Synaptics Inc., Interlink Electronics Inc., Pressure Profile Systems Inc., and Uneo Inc.

October 2022 - Sensata Technologies announced its new Brake Pedal Force Sensor for electromechanical brakes (EMBs), enabling safer and better-performing braking systems. Sensata's micro strain gauge Brake Pedal Force sensor supports the future of braking. Implementing this sensor reduces a vehicle's stopping distance compared to existing technologies. It improves braking by accurately and rapidly capturing a driver's braking intent.

October 2022 - Forsentek Co. Limited released advanced load cells, force sensors, and various measuring instruments. These are designed with high-quality components to ensure they function at their best. Clients can also get a multi-axis force sensor designed with advanced functionality. These sensors are designed with a high resistance level to ensure they can withstand high impacts and keep working effectively.

Additional Benefits:

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

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