

Quantum Sensors Market by Product Type (Atomic Clocks, Magnetic Sensors, PAR Quantum Sensors, Gravimeters & Accelerometers), Application (Aerospace & Defense, Oil & Gas, Agriculture, Automotive, Mining, Healthcare) and Region - Global Forecast to 2027

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Abstracts

The global quantum sensors market size is estimated to grow from USD 260 million in 2022 to USD 565 million by 2027, at a CAGR of 16.8%. Quantum sensors measure physical quantities with the help of quantum technology or quantum states. They are based on the principle of superposition of atoms, providing extreme sensitivity. Quantum sensors are being used in some of the most crucial applications, such as space navigation and gravity measurements.

'Gravimeters & Accelerometers to hold significant share of quantum sensors market in 2027'

The gravimeters detect the amount of force exerted by the earth on the surface, i.e., gravity. Even though gravity is the same in all places, there are some minuscule differences in the gravitation force, which are caused due to the different densities of rock, underground materials, and the earth's core. The gravimeters can detect these minute gravity changes on the earth's surface. The conventional gravity meter contains mass, which is held over a spring—changes in the gravitational force are detected by changes in the position of the mass. However, the spring is subjected to stretch if the ground vibrates, which must be recalibrated from time to time. The traditional gravity meters are sensitive, but the quantum gravimeters have an advantage over them. As if the ground vibrates, the whole system moves as one, as there is no involvement of

spring. The quantum gravimeters measure gravity much faster than the traditional ones. The traditional gravimeters are huge in dimensions, heavy, and are to be left out of place for a longer time for the measurements.

“Agriculture & Environment applications to fuel the demand of quantum sensors”

Quantum sensors have an excellent opportunity in the agricultural sector. The quantum sensors are used to measure the photosynthetically active radiation (PAR), which is beneficial to crop yield. The PAR is a crucial variable and indicator in determining plant growth and production. The long-time data of PAR are used to evaluate plant photosynthesis in the agriculture industry. Farmers, agriculturists, researchers, marine biologists, and others can use these PAR quantum sensors to monitor and increase crop growth. The quantum PAR sensors can be used in open spaces and canopies, and also some of them are available to be used for underwater monitoring. For instance, Apogee Instruments, Inc. provides PAR quantum sensors specifically to be used in agricultural and underwater Photosynthetic Photon Flux Density (PPFD) measurements, which help grow plants and corals. The PAR sensors in environmental and agriculture applications play a crucial role and have been used for a long time. In the coming years, quantum PAR sensors are expected to be in high demand for this application.

“The market in Europe is expected to grow at an impressive CAGR during the forecast period”

The countries in the region are majorly involved in investment activities for the research and development of quantum technologies. Also, the European Union launched Quantum Flagship in October 2018, which is a research and innovation initiative from the European Commission. The flagship will be active for 10 years and will fund quantum technologies in the coming years. Hence, as the research advances, the regional quantum sensors market is expected to grow significantly.

Breakdown of the profiles of primary participants:

By Company Type: Tier 1 - 35%, Tier 2 - 25%, and Tier 3 - 40%

By Designation: C-level Executives - 40%, Directors - 45%, and Others - 15%

By Region: North America - 46%, Europe – 21%, Asia Pacific - 25%, and RoW - 8%

Major players profiled in this report are as follows: Campbell Scientific, Inc. (US), ID Quantique SA (Switzerland), LI-COR, Inc. (US), M Squared Ltd. (UK), and Muquans SAS (France) and others.

Research Coverage

In this report, the quantum sensors market has been segmented based on platform, product type, application, and region. The quantum sensors market based on platform has been segmented into neutral atoms, trapped ions, nuclear magnetic resonance (NMR), optomechanics, photons, defects in diamonds, superconductors. Based on product type, the market has been segmented into atomic clocks, magnetic sensors, photosynthetically active radiation (PAR) quantum sensors, gravimeters and accelerometers. Based on application, quantum sensors market has been segmented into aerospace & defense, oil & gas, agriculture & environment, construction & mining, automotive & transportation, healthcare and others. The study also forecasts the size of the market in four main regions—North America, Europe, Asia Pacific, and RoW.

Key Benefits of Buying the Report:

The report would help market leaders/new entrants in this market in the following ways:

This report segments of the quantum sensors market comprehensively and provides the closest approximation of the overall market size and subsegments that include platform, product type, application, and region.

The report would help stakeholders understand the pulse of the market and provide them with information on key drivers, restraints, challenges, and opportunities pertaining to the quantum sensors market.

This report would help stakeholders understand their competitors better and gain more insights to enhance their position in the business.

The competitive landscape section includes the competitor ecosystem, as well as growth strategies such as product launches and acquisitions carried out by major market players.

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