

Quantum Magnets Market Forecasts to 2032 – Global Analysis By Product Type (Optically Pumped Magnetometers, SQUID Magnetometers, NV-Center Magnetometers and Other Product Types), Application (Geophysical Surveys, Medical Imaging, Space Exploration, Military and Defense and Other Applications), End User and By Geography

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Abstracts

According to Statistics MRC, the Global Quantum Magnets Market is accounted for \$819.2 million in 2025 and is expected to reach \$2301.3 million by 2032 growing at a CAGR of 15.9% during the forecast period. Quantum magnets refer to materials exhibiting magnetic properties governed by quantum mechanical effects, such as spin frustration and entanglement. Unlike classical magnets, their behavior arises from quantum fluctuations, leading to exotic phases like spin liquids and topological orders. These materials are investigated for potential applications in quantum computing, spintronics, and advanced magnetic sensors. Their unique magnetic states enable manipulation of information at the atomic level with minimal energy loss.

According to the Physical Review B journal study published in March 2021, the quantum magnet $\text{BaCuTe}_2\text{O}_7$ exhibits specific structural and magnetic properties where antiferromagnetic interactions occur with a Curie-Weiss temperature of -78 K, while long-range magnetic order manifests at the much lower temperature of 1.8 K.

Market Dynamics:

Driver:

Rising interest in quantum computing and sensing

The burgeoning interest in quantum computing and sensing is a primary driver for the quantum magnets market. These advanced technologies fundamentally rely on precise magnetic field control and measurement, which quantum magnets provide. The significant investments from both public and private sectors into quantum information science are accelerating R&D activities. This heightened focus is directly translating into increased demand for high-performance components like superconducting quantum interference devices (SQUIDs). Moreover, the pursuit of quantum supremacy is pushing the boundaries of material science, necessitating the development and integration of sophisticated quantum magnetic sensors and systems, thereby fueling market expansion.

Restraint:

Extreme cooling and isolation requirements

A significant impediment to the widespread commercialization of quantum magnets is their stringent operational dependency on cryogenic temperatures and exceptional isolation from ambient environmental noise. Maintaining these conditions necessitates complex and expensive infrastructure, such as liquid helium cooling systems and advanced shielding. This substantially increases the total cost of ownership and introduces operational complexities, making the technology less accessible. Additionally, these requirements limit the practicality for field-deployable applications and can deter potential end-users in cost-sensitive industries from adopting quantum magnetic solutions, thereby restraining overall market penetration and growth potential.

Opportunity:

Quantum sensors for medical imaging and geology

In healthcare, quantum magnetometers enable revolutionary diagnostic tools like ultra-low-field MRI and magnetoencephalography (MEG), offering enhanced imaging capabilities without the bulky infrastructure of traditional systems. For geological applications, these sensors provide unprecedented resolution in magnetic anomaly detection for mineral exploration and oil & gas reservoir mapping. The ability to deliver superior performance in these high-value sectors creates new revenue streams and drives application-specific innovation, significantly expanding the addressable market for quantum magnet providers.

Threat:

Competition from superconducting and topological materials

The quantum magnets market faces a potent threat from the rapid advancement of alternative qubit technologies, particularly those based on superconducting circuits and topological materials. Superconducting qubits are currently a leading modality in quantum computing, vying for R&D funding and commercial adoption. Furthermore, the theoretical promise of topological qubits, which may offer inherent error resistance, poses a long-term competitive challenge. If these alternative platforms achieve technological maturity and scalability more rapidly, they could potentially supplant the need for certain quantum magnetic systems, thereby eroding market share and impacting the growth trajectory of dedicated quantum magnet solutions.

Covid-19 Impact:

The COVID-19 pandemic initially disrupted the quantum magnets market, causing supply chain delays and temporarily halting laboratory-based R&D activities due to global lockdowns and social distancing mandates. This led to project postponements and a short-term contraction in demand. However, the crisis also underscored the critical importance of advanced technological research, leading to a resilient recovery. Government stimulus packages and a renewed focus on strategic technologies like quantum computing helped the market rebound swiftly. The pandemic ultimately accelerated digital transformation, indirectly benefiting long-term investment in quantum technologies and associated components.

The SQUID magnetometers segment is expected to be the largest during the forecast period

The SQUID magnetometers segment is expected to account for the largest market share during the forecast period owing to its unparalleled sensitivity and established application base. SQUIDs represent the most mature technology within the quantum magnet space, with a proven track record in both research and commercial settings. Their ability to detect infinitesimal magnetic fields makes them indispensable in sectors like biomedical imaging for MEG systems, fundamental physics research, and nondestructive testing. The continuous technological refinements and their status as the gold standard for ultra-low-field magnetic sensing ensure their sustained dominance and significant revenue contribution to the overall market.

The healthcare segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the healthcare segment is predicted to witness the highest growth rate, driven by the accelerating adoption of quantum-based biomedical sensing technologies for advanced diagnostic procedures. Applications such as magnetoencephalography (MEG) and ultra-low-field MRI are gaining traction as they offer patient-friendly, high-resolution imaging alternatives. Furthermore, substantial investments in medical research aimed at early disease detection and neurological disorder mapping are propelling demand. The segment's expansion is also fueled by the ongoing miniaturization of quantum sensors, which makes their integration into clinical environments more feasible and cost-effective.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share. This dominance is attributed to the presence of a robust quantum technology ecosystem, including leading research institutions, key industry players, and substantial government funding initiatives from entities like the National Quantum Initiative in the U.S. and similar strategies in Canada. The high concentration of end-user industries, particularly in healthcare and defense, coupled with early and aggressive adoption of quantum computing and sensing technologies, creates a concentrated demand for quantum magnets, cementing North America's position as the revenue leader in this market.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR. This accelerated growth is fueled by massive public and private investments in quantum technology research and development from China, Japan, and Australia. The region's strong manufacturing base for electronics and semiconductors provides a synergistic advantage for producing quantum magnet components. Additionally, growing applications in industrial automation, healthcare modernization, and natural resource exploration are driving adoption. The rapidly expanding technology sector and supportive government policies are creating a highly conducive environment for market expansion, leading to superior growth rates.

Key players in the market

Some of the key players in Quantum Magnets Market include IBM, Google, Microsoft, Amazon Web Services, Rigetti Computing, D-Wave Quantum Inc., Quantinuum, Intel, IonQ, PsiQuantum, Oxford Instruments, and TDK.

Key Developments:

In April 2025, Google Quantum AI introduced a novel hybrid approach to quantum simulation, enabling scientific discoveries in quantum magnetism. This platform combines digital and analog quantum computing techniques to simulate magnetic systems, opening new possibilities for beyond-classical applications.

In February 2025, Microsoft announced the development of Chip Majorana 1, a significant advancement in topological qubits. This achievement is part of the DARPA Underexplored Systems for Utility-Scale Quantum Computing (US2QC) program, aiming to create scalable and fault-tolerant quantum computers.

In April 2023, AWS, in collaboration with Element Six, explored the use of color centers in diamonds for quantum communication. This research focuses on utilizing diamond materials to enhance quantum networking nodes, contributing to advancements in quantum communication technologies.

Product Types Covered:

Optically Pumped Magnetometers

SQUID Magnetometers

NV-Center Magnetometers

Other Product Types

Applications Covered:

Geophysical Surveys

Medical Imaging

Space Exploration

Military and Defense

Other Applications

End Users Covered:

Research Institutions

Healthcare

Aerospace and Defense

Other End Users

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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