

Hardware in the Loop Market by Offering (Hardware, Software and Consulting and System Design, System Integration, Maintenance and Support)), Type (Open Loop, Closed Loop), Vertical and Region - Global Forecast to 2030

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Abstracts

The hardware in the loop market is estimated to be valued at USD 1,001.7 million in 2024 and is projected to reach USD 1,784.4 million by 2030, growing at a CAGR of 10.1% from 2025 to 2030.

The hardware-in-the-loop (HIL) industry is growing due to several factors, such as the increasing complexity of embedded systems, the growing adoption of electric and autonomous vehicles, and the need for faster and cheaper ways to validate products. Furthermore, advances in real-time simulation and digital twin, as well as increasing regulatory pressure to meet safety and compliance, are also driving the market growth. The initial investment for the setup is high, and there is also a need for specialized personnel. Issues with integration into legacy business systems are also a major restraint and may limit widespread adoption among smaller organizations or in emerging markets.

“Software offering segment to register highest growth during forecast period”

The software segment is expected to grow at the highest CAGR in the hardware-in-the-loop (HIL) market during the forecast period due to its increasing role in enabling flexibility, scalability, and intelligence in real-time simulation systems. As embedded systems become more complex, particularly in electric vehicles, autonomous driving, aerospace systems, and renewable energy, there is a rising demand for advanced simulation, automation, and control software that can accurately model real-world

conditions and system behavior. Software ecosystems also enable the integration of digital twins, algorithms, and the use of machine learning-based automation for testing efforts, improving testing efficiency and reducing time-to-market significantly.

“Open Loop: The largest type in hardware in the loop market”

The open loop segment is projected to account for the largest share of hardware-in-the-loop (HIL) market during the forecast period. These systems are commonly used in both early-stage development and cost-conscious scenarios. Open-loop HIL systems have a simpler and less expensive setup than closed-loop systems, which creates significant appeal within applications where response time does not require immediate feedback.

“Asia Pacific to be fastest-growing market during forecast period”

It is anticipated that the hardware-in-the-loop (HIL) market in the Asia Pacific region will achieve the highest CAGR during the forecast period due to rapid industrial growth, rising investments in electric vehicles (EVs), and strong government support for automation and innovation. Countries such as China, India, Japan, and South Korea are all investing significantly in advanced technologies in the automotive, aerospace, and energy domains that are all supported by real-time simulation and testing capabilities of HIL systems.

The study contains insights from various industry experts, ranging from component suppliers to Tier 1 companies and OEMs. The break-up of the primaries is as follows:

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

By Designation: C-level Executives – 35%, Directors – 28%, and Others – 37%

By Region: Europe – 45%, North America – 30%, APAC – 20%, RoW – 5%

dSPACE GmbH (Germany), Emerson Electric Co. (US), Vector Informatik GmbH (Germany), Elektrobit (Germany), OPAL-RT Technologies (Canada), Speedgoat GmbH (Switzerland), Robert Bosch GmbH (Germany), IPG Automotive GmbH (Germany), Acutronic Holding AG (Switzerland), and Konrad GmbH (Germany) are among the many players in the hardware in the loop market.

Research Coverage:

The report segments the hardware in the loop market and forecasts its size, by value, based on offering, type, vertical, and region. The report also provides a comprehensive review of market drivers, restraints, opportunities, and challenges in the hardware in the loop market. The report also covers qualitative aspects in addition to the quantitative aspects of these markets.

Reason to buy this Report

The report will help the leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall market and the sub-segments. This report will help stakeholders gain more insights to better position their businesses and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the hardware in the loop market and provides them with information on key market drivers, restraints, challenges, and opportunities.

The report provides insights on the following pointers:

Analysis of key drivers (Technological advancement in electric and autonomous vehicles), restraints (High cost of ownership and technical complexity in implementation), opportunities (Adoption in new application area such as power electronics and industrial robotics), and challenges (Complexity in creating real time simulation) influencing the growth of the hardware in the loop market.

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the hardware in the loop market

Market Development: Comprehensive information about lucrative markets – the report analyses the hardware in the loop market across varied regions

Market Diversification: Exhaustive information about new products & services, untapped geographies, recent developments, and investments in the hardware in the loop market

Competitive Assessment: In-depth assessment of market shares, growth strategies, and offerings of leading players, such as dSPACE GmbH (Germany), Emerson Electric Co. (US), Vector Informatik GmbH (Germany), Elektrobit

(Germany), and OPAL-RT Technologies (Canada), in the hardware in the loop market.

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