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Automotive Solenoid Market - Global Industry Size, Share, Trends, Competition, Opportunity and Forecast, Segmented By Vehicle Type (Passenger Car, Light Commercial Vehicle, Medium and Heavy Commercial Vehicle), By Valve Design (2-Way Solenoid Valve, 3-Way Solenoid Valve, 4-Way Solenoid Valve, 5-Way Solenoid Valves), By Application (Engine Control & Cooling System, Fuel & Emission Control, Body Controls & Interiors, HVAC System, Safety & Security, Others), By Function (Fluid Control, Gas Control, Motion Control), By Propulsion (ICE, BEV, PHEV, FCEV) By Region & Competition, 2021-2031F

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Abstracts

The Global Automotive Solenoid Market is projected to expand from USD 6.96 Billion in 2025 to USD 10.98 Billion by 2031, registering a CAGR of 7.89%. These electromechanical components are essential for converting electrical energy into linear motion, enabling the precise operation of valves and switches in systems like transmissions, door locks, and starter motors. Market growth is fundamentally underpinned by the ongoing recovery in global vehicle manufacturing and the increasing incorporation of automated features that require dependable actuation mechanisms. As reported by the International Organization of Motor Vehicle Manufacturers in 2024, global motor vehicle production hit 92.5 million units, establishing a strong demand foundation for these critical control devices across both passenger and commercial

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sectors.

Nevertheless, the market faces a substantial obstacle in the form of fluctuating prices for essential raw materials, specifically copper and steel. Unpredictable variations in input costs cause instability in manufacturing expenditures and squeeze profit margins for suppliers. These economic pressures complicate long-term production planning and pose a risk to the stability of the supply chain necessary to fulfill global automotive schedules.

Market Driver

The rapid global adoption of electric and hybrid vehicle powertrains serves as the primary catalyst transforming the solenoid market. As the automotive industry moves away from conventional internal combustion engines, demand is shifting toward electromechanical actuators required for battery thermal management, high-voltage contactors, and charging port locking systems. This structural transition is supported by significant market volume; the European Automobile Manufacturers' Association (ACEA) noted in its March 2025 report that global car sales reached 74.6 million units in 2024, offering a vast platform for component integration. Within this context, the electrification sector is growing rapidly, with the International Energy Agency (IEA) reporting in May 2025 that global electric car sales surpassed 17 million units in 2024, capturing over 20 percent of the new car market. This trend necessitates durable solenoids designed for complex cooling loops and high-voltage architectures.

Simultaneously, the enforcement of strict government emission and fuel efficiency regulations is driving manufacturers to implement advanced solenoid technologies for powertrain optimization. To comply with rising environmental standards, OEMs are increasingly deploying precision solenoids in variable valve timing, cylinder deactivation, and dual-clutch transmission systems to lower fuel consumption and emissions in hybrid and combustion vehicles. The commercial importance of these compliance-focused technologies is highlighted by supplier performance; BorgWarner's September 2025 Sustainability Report revealed that 87 percent of its revenue was derived from electric vehicle and emissions-reducing hybrid and combustion products. This demonstrates that despite the shift toward pure electrification, high-efficiency actuation components remain essential for the wide range of vehicles needed to meet global regulatory goals.

Market Challenge

The continued volatility in the prices of key raw materials, especially copper and steel,

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presents a significant hurdle to the expansion of the Global Automotive Solenoid Market. Copper is vital for the electromagnetic windings within these devices, while steel constitutes the structural core of valves and switches. Unforeseen price spikes in these commodities disrupt the cost structures of manufacturers, creating a gap between projected budgets and actual expenses. Since automotive supply contracts typically fix prices for long periods, solenoid manufacturers are often unable to pass these sudden cost hikes on to their clients, compelling them to absorb the financial burden.

This dynamic severely restricts the capital available for market growth. According to the European Association of Automotive Suppliers (CLEPA), in late 2024, roughly 77% of automotive suppliers faced major challenges in passing cost increases on to vehicle manufacturers. The inability to recoup higher input costs squeezes profit margins and reduces the liquidity required for investing in capacity expansion or new production lines. Consequently, even with steady demand from vehicle production, the financial instability resulting from raw material price fluctuations hinders suppliers' ability to maintain growth initiatives.

Market Trends

The increasing utilization of solenoids in Autonomous Emergency Braking and Steering Redundancy is quickly becoming a key vector for market growth, fueled by rigorous safety standards that require immediate actuation. In contrast to conventional hydraulic systems, modern safety architectures demand high-speed, redundant solenoids to independently modulate braking pressure and steering control without driver input. This regulatory drive is necessitating a broad industrial upgrade; the National Highway Traffic Safety Administration (NHTSA) announced in May 2024 a new federal standard requiring automatic emergency braking (AEB) systems on all passenger cars and light trucks by 2029, a measure expected to prevent around 24,000 injuries per year. This mandate effectively forces the universal adoption of precision solenoid valves capable of fail-safe operation, transforming the component from a mechanical accessory into a fundamental safety necessity.

At the same time, the integration of smart solenoids featuring embedded sensors for predictive maintenance is evolving actuation components into intelligent data nodes within vehicle networks. By incorporating position and pressure sensors directly into the solenoid housing, manufacturers can track component health in real-time, allowing for the identification of anomalies before system failure occurs. This fusion of actuation and sensing is gaining substantial market traction; Hitachi Astemo reported in August 2024 that its lineup of intelligent electronic throttle actuators, which adjust intake based on live

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sensor data, has achieved a deployment milestone of over 50 million vehicles across the EMEA region. This significant adoption highlights the industry's shift toward smart electromechanical devices that not only perform actions but also supply the diagnostic telemetry needed to minimize vehicle downtime.

Key Market Players

Robert Bosch GmbH

Continental AG

BorgWarner Inc.

Hitachi Ltd.

Johnson Electric Holdings Ltd.

Mitsubishi Electric Corporation

Denso Corporation

Mahle GmbH

Delphi Technologies plc

ZF Friedrichshafen AG

Report Scope

In this report, the Global Automotive Solenoid Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Automotive Solenoid Market, By Vehicle Type

Passenger Car

Light Commercial Vehicle

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- ICE
- BEV
- PHEV
- FCEV

Automotive Solenoid Market, By Region

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - France
  - United Kingdom
  - Italy
  - Germany
  - Spain
- Asia Pacific
  - China
  - India
  - Japan
  - Australia

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South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Automotive Solenoid Market.

Available Customizations:

Global Automotive Solenoid Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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