

Steer-by-Wire Market Forecasts to 2034 – Global Analysis By Component (Steering Control Unit (ECU), Steering Actuator, Steering Angle Sensor, Torque Sensor, Feedback Actuator, Electric Motor, Redundant Power Supply System, and Steering Software), Steering Architecture, Vehicle Type, Propulsion, Level of Autonomy, Application, End User, Sales Channel, and By Geography

<https://marketpublishers.com/r/S79AD66A0CDAEN.html>

Date: August 2026

Pages: 0

Price: US\$ 4,150.00 (Single User License)

ID: S79AD66A0CDAEN

Abstracts

According to Statistics MRC, the Global Steer-by-Wire Market is accounted for \$0.27 billion in 2026 and is expected to reach \$0.43 billion by 2034 growing at a CAGR of 6.2% during the forecast period. Steer-by-wire technology represents a transformative shift in vehicle steering, eliminating the mechanical connection between the steering wheel and the road wheels. Instead, electronic signals, actuators, and control algorithms manage vehicle direction, enabling higher precision, design flexibility, and seamless integration with advanced driver assistance systems. The market serves applications including passenger mobility, commercial transportation, autonomous vehicles, military vehicles, and industrial and construction equipment, with end users comprising original equipment manufacturers and the aftermarket. Growing adoption of autonomous and electric vehicles, increasing demand for lightweight and flexible vehicle architectures, and rising focus on software-defined vehicles are key drivers of market expansion across all regions.

Market Dynamics:

Driver:

Rapid development of autonomous and electric vehicles

The rapid advancement of autonomous driving technology and the global shift toward electric vehicles are primary drivers for the steer-by-wire market. Autonomous driving systems require precise electronic steering control to execute complex maneuvers without mechanical limitations. SbW integrates seamlessly with cameras, radar, and LiDAR systems, supporting automated decision-making. Electric vehicle platforms benefit from SbW's reduced mechanical complexity and weight savings, contributing to improved efficiency and range. As automakers accelerate EV production and autonomous driving capabilities expand, demand for SbW systems continues growing, driving sustained market expansion across all vehicle segments and regions.

Restraint:

High costs and safety concerns

The significant costs associated with SbW technology and safety concerns regarding system reliability represent a major restraint for the market. SbW systems require redundant electronic architectures, including dual motors, backup power supplies, and fail-operational software, to ensure system reliability, which adds to development and production costs. The transition from mechanical to fully electronic steering raises consumer and regulatory concerns about system failure risks. High development and validation costs particularly affect adoption in entry-level vehicle segments. These cost and safety challenges may slow SbW penetration, especially in price-sensitive markets and regions with conservative regulatory frameworks.

Opportunity:

Integration with software-defined vehicle architectures

The industry-wide transition to software-defined vehicle architectures presents significant opportunities for SbW market expansion. SbW enables over-the-air updates, vehicle personalization, and enhanced user experiences through software-based steering control. Integration with centralized vehicle computing and electronic control units enables tighter coordination between steering, braking, and ADAS functions. As software-defined vehicles become more common, SbW actuators gain importance as a core motion control interface. The ability to customize steering characteristics through software updates creates new revenue opportunities and competitive differentiation.

This architecture transition captures growing market share, expanding the addressable market.

Threat:

Regulatory and standardization challenges

Evolving regulatory frameworks and lack of standardized testing and validation protocols pose significant threats to SbW market growth. SbW systems must meet stringent safety requirements for reliability, redundancy, and fail-operational performance. Different regions have varying regulatory approaches to approving electronic steering systems, creating compliance complexity for global manufacturers. Standardization of interfaces, communication protocols, and diagnostic systems remains incomplete, complicating integration across vehicle platforms. These regulatory and standardization challenges may slow SbW deployment, particularly for cross-border vehicle programs and smaller manufacturers with limited compliance resources.

Covid-19 Impact:

The COVID-19 pandemic had a mixed impact on the steer-by-wire market. Vehicle production shutdowns and supply chain disruptions temporarily affected SbW system production and development programs. However, the pandemic accelerated automaker focus on next-generation vehicle architectures, including software-defined and autonomous platforms. Major automakers confirmed SbW-equipped model launches, indicating sustained investment despite short-term disruptions. Post-pandemic, vehicle production recovery and continued electrification and automation investment have supported market growth, with SbW adoption gaining momentum across vehicle segments.

The Autonomous Vehicles segment is expected to be the largest during the forecast period

The Autonomous Vehicles segment is expected to account for the largest market share during the forecast period, driven by the fundamental requirement for fully electronic steering control in autonomous driving systems. Autonomous vehicles rely entirely on electronic signals for steering decisions, with no mechanical backup needed, making SbW essential for Level 4 and Level 5 vehicles. The segment benefits from significant investment in autonomous driving technology by automakers and technology companies. SbW integrates seamlessly with sensor fusion systems, enabling precise,

software-controlled maneuvers. As autonomous vehicle testing expands and commercial deployment accelerates, SbW adoption in this segment continues growing, maintaining the largest application share.

The Original Equipment Manufacturers (OEMs) segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the OEMs segment is predicted to witness the highest growth rate, fueled by increasing automaker commitments to SbW integration in production vehicles and the transition from concept to mass production. Major OEMs are preparing to launch SbW-equipped models, with mass production initiatives underway. Automakers are adopting SbW to reduce mechanical complexity, implement new interior layouts, improve safety redundancy, and enable software-based customization. Strategic partnerships between OEMs and tier-1 suppliers are accelerating commercialization. As SbW moves from premium vehicles to broader adoption, OEMs deliver the fastest end-user segment growth.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, supported by strong innovation in autonomous driving, electric vehicles, and advanced safety systems. The United States automotive industry and technology developers are actively integrating SbW solutions into premium passenger vehicles and concept platforms. Advanced testing facilities and a robust semiconductor ecosystem accelerate system development. Strong R&D investment supports deployment across electric platforms, commercial vehicle fleets, and future autonomous vehicle programs. With innovation leadership and early adoption culture, North America maintains its dominant market position throughout the forecast period.

Region with highest CAGR:

Over the forecast period, the Asia-Pacific region is anticipated to exhibit the highest CAGR, driven by large-scale EV production, expanding automotive manufacturing, and rapid adoption of advanced vehicle technologies across countries including China, Japan, South Korea, and India. The region's complete automotive supply chain and government policies promoting EV adoption and autonomous driving support SbW deployment. Rising consumer demand for premium vehicles and advanced safety features accelerates technology adoption. As automotive production and technology investment continue expanding, Asia Pacific delivers the fastest steer-by-wire market

growth globally.

Key players in the market

Some of the key players in Steer-by-Wire Market include Robert Bosch GmbH, ZF Friedrichshafen AG, JTEKT Corporation, Nexteer Automotive Corporation, NSK Ltd., Continental AG, Hyundai Mobis Co., Ltd., Mando Corporation, Hitachi Astemo, Ltd., Aptiv PLC, DENSO Corporation, Schaeffler AG, thyssenkrupp AG, NXP Semiconductors N.V., Infineon Technologies AG, and Renesas Electronics Corporation.

Key Developments:

In May 2026, JTEKT officially designated its flagship steer-by-wire platform as "Syncusteer™" and began pitching the consolidated system to global OEM clients.

In May 2026, Schaeffler presented its steer-by-wire technologies featuring force-feedback actuators and human-machine interface (HMI) input devices at the Schaeffler Automotive Symposium, expanding its chassis and vehicle control suite for software-defined vehicles.

In April 2026, Nexteer Automotive entered series production with its Steer-by-Wire (SbW) architecture, equipping a passenger vehicle for a Chinese new energy vehicle (NEV) manufacturer to bring its first production SbW system to market.

In July 2025, ZF secured a major contract to equip Mercedes-Benz production vehicles with its Steer-by-Wire system starting in 2026, featuring software-controlled steering ratios and its patented Twin Worm torque-feedback unit.

Components Covered:

Steering Control Unit (ECU)

Steering Actuator

Steering Angle Sensor

Torque Sensor

Feedback Actuator

Electric Motor

Redundant Power Supply System

Steering Software

Steering Architectures Covered:

Pure Steer-by-Wire

Hybrid Steer-by-Wire

Vehicle Types Covered:

Passenger Cars

Light Commercial Vehicles

Heavy Commercial Vehicles

Buses and Coaches

Off-Highway Vehicles

Propulsion Types Covered:

Internal Combustion Engine Vehicles

Hybrid Electric Vehicles

Plug-in Hybrid Electric Vehicles

Battery Electric Vehicles

Fuel Cell Electric Vehicles

Levels of Autonomy Covered:

Level 1

Level 2

Level 3

Level 4

Level 5

Applications Covered:

Passenger Mobility

Commercial Transportation

Autonomous Vehicles

Military Vehicles

Industrial and Construction Equipment

End Users Covered:

Original Equipment Manufacturers (OEMs)

Aftermarket

Sales Channels Covered:

Direct OEM Sales

Tier-1 System Suppliers

Authorized Distributors

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of 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 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

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

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