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X-by-Wire Systems Market Report by Type (Throttle-by-Wire System, Brake-by-Wire System, Steer-by-Wire System, Park-by-Wire System, Shift-by-Wire System), Vehicle Type (Passenger Cars, Commercial Vehicles), and Region 2024-2032

https://marketpublishers.com/r/X922251E6FC4EN.html
Date: July 2024
Pages: 145
Price: US$ 3,899.00 (Single User License)
ID: X922251E6FC4EN

Abstracts

The global X-by-wire systems market size reached US$ 21.7 Billion in 2023. Looking forward, IMARC Group expects the market to reach US$ 36.8 Billion by 2032, exhibiting a growth rate (CAGR) of 5.92% during 2024-2032. The increasing demand for advanced automotive safety features, the growing need for weight reduction and fuel efficiency, the rising autonomous vehicle development, stringent government regulations on vehicle safety and emissions, and significant advancements in electronic control technology are some of the major factors propelling the growth of the market.

X-by-Wire Systems Market Analysis:
Major Market Drivers: The increasing demand for advanced safety features in vehicles, the development and adoption of autonomous and electric vehicles, and the need for improved fuel efficiency through weight reduction are some of the major drivers of the market across the globe. Technological advancement in electronic control systems enhances reliability and performance, further propelling the growth of the market.
Key Market Trends: The increasing integration of advanced driver assistance systems (ADAS) and autonomous driving technologies which rely heavily on X-by-wire systems for enhanced control and precision represents key trends in the market. There is also an increasing shift towards electric and hybrid vehicles where Xbox wire systems are essential for efficiency and performance.
Geographical Trends: Asia Pacific accounts for the largest region in the X-by-wire systems market growth. The rapid growth in the automotive industry, strict safety and emission regulations, rising consumer preference for advanced vehicle safety features

and technologies, and increasing demand for electric and autonomous vehicles are driving the growth of the market across the region.
Competitive Landscape: Some of the major market players in the X-by-wire systems industry include AB SKF, Continental AG, Curtiss-Wright Corporation, Infineon Technologies AG, JTEKT Corporation, ME Mobil Elektronik GmbH, Nexteer Automotive, Orscheln Products L.L.C, Parker Hannifin Corporation, Robert Bosch GmbH, Tata Motors Limited, Volkswagen AG and ZF Friedrichshafen AG, among many others.
Challenges and Opportunities: The market faces challenges including high development and implementation costs, concerns over system reliability and cybersecurity, and the need for extensive testing and validation to meet stringent safety standards. However, the market also faces several opportunities such as the growing demand for autonomous and electric vehicles which heavily rely on X-by-wire technology for enhanced control and efficiency.

X-by-Wire Systems Market Trends:
Rising Use of Advanced Vehicle Safety Features

The increasing demand for vehicle safety among consumers and regulators is leading to the adoption of X-by-wire systems that offer precise control and enhance overall vehicle safety. According to a report published by the Ministry of Road Transport & Highways, Government of India (GoI) a total of 4,51,312 accidents have been reported by States and Union Territories (UTs) during the calendar year 2022, which claimed 1,68,491 lives and caused injuries to 4,43,366 persons. This marks an increase of 11.9% in accidents, 9.4% in fatalities, and 15.3% in injuries as compared to the previous year. For instance, the crash involvement rate for vehicles with blind spot monitoring was 14% lower than the same models without the equipment, according to a study by the Insurance Institute for Highways. safety. The same study suggested that if every vehicle sold in the United States in 2015 was equipped with blind spot monitoring, 50,000 crashes, and 16,000 crash injuries might have been prevented says David Braunstein, president of Together for Safer Roads, a coalition of companies dedicated to better road safety. This is fueling the X-by-wire systems market statistics significantly.

Increasing Autonomous and Electric Vehicles

The rise in autonomous and electric vehicle development necessitates the use of X-by-wire systems for improved control, integration, on efficiency with advanced driver assistance systems (ADAS). For instance, in July 2023, Volkswagen Group of America, Inc (VWGoA) started its forced autonomous vehicle test program in Austin the beginning in July 2023. The company will kick off its program with a batch of 10 all-

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electric IDs. Bus vehicles are outfitted with an autonomous driving (AD) technology platform developed by the global Volkswagen Group in partnership with technology company Mobileye. Similarly, in June 2023, Toyota Motor Corporation (Toyota) held a technical briefing session, “Toyota Technical Workshop,” under the theme “Let's Change the Future of Cars” and announced a variety of new technologies that will support its transformation into a mobility company. This is further influencing the X-by-wire systems market revenue across the globe.

Growing Strict Government Regulations

Governments across the world are enforcing stringent safety and emission regulations, pushing automotive manufacturers to adopt innovative technologies such as X-by-wire systems to comply with these standards. According to an article published in the Economic Times in September 2023, ICRA said there have been multiple regulatory interventions in the recent past, with the industry adopting strict emission standards in a relatively short period, as well as driver safety and comfort standards such as advanced braking systems (ABS), speed limiting devices (SLD) and blowers in cabins, to reduce vehicular emissions and improved road safety and driver comfort. For instance, in September 2023, in a significant milestone for road safety in India, the Bharat New Car Assessment Program (Bharat NCAP) was launched by the Indian government. This is expected to boost the X-by-wire systems market forecast over the coming years.

X-by-Wire Systems Market Segmentation:
IMARC Group provides an analysis of the key trends in each segment of the market, along with forecasts at the global, regional, and country levels for 2024-2032. Our report has categorized the market based on type and vehicle type.

Breakup by Type:

Throttle-by-Wire System
Brake-by-Wire System
Steer-by-Wire System
Park-by-Wire System
Shift-by-Wire System

Throttle-by-wire system accounts for the majority of the market share

The report has provided a detailed breakup and analysis of the market based on the type. This includes a throttle-by-wire system, brake-by-wire system, steer-by-wire

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system, park-by-wire system, and shift-by-wire system. According to the report, the throttle-by-wire system represented the largest segment.

The demand for throttle-by-wire systems in the X-by-wire systems market is driven by the need for improved fuel efficiency and emissions control, as these systems enable precise engine management. The widespread adoption of electric and hybrid vehicles, which rely on electronic throttle control, also boosts demand. According to data from the India Briefing, projections indicate that the Indian EV market, valued at US $2 billion in 2023 could surge to US $7.09 billion by 2025. Industry estimates also forecast the domestic EV market to achieve 10 million annual sales by 2030.

Breakup by Vehicle Type:

Passenger Cars
Commercial Vehicles

Passenger cars holds the largest share of the industry

A detailed breakup and analysis of the market based on the vehicle type have also been provided in the report. This includes passenger cars and commercial vehicles. According to the report, passenger cars accounted for the largest market share.

The demand for passenger cars in the market is driven by the widespread adoption of advanced safety features and driver assistance systems, enhancing vehicle control and safety. In line with this, the rising shift towards electric and autonomous vehicles, which rely heavily on X-by-wire technologies, is further propelling this demand. Strict government regulations on vehicle safety and emission standards, along with consumer preferences for technologically advanced and efficient vehicles, are significant factors driving the adoption of X-by-wire systems in passenger cars.

Breakup by Region:

North America
United States
Canada
Asia-Pacific
China
Japan
India

South Korea
Australia
Indonesia
Others
Europe
Germany
France
United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

Asia Pacific leads the market, accounting for the largest X-by-wire systems market share

The report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, Asia Pacific represents the largest regional market for X-by-wire systems.

The Increasing consumer awareness and preference for vehicle safety and comfort features push the adoption of the X-by-wire system. The rapid expansion of the automotive industry in countries including India, China, and Japan fuels the demand for advanced vehicle technologies. The strong emphasis on electric and autonomous vehicle development aligns with the need for X-by-wire technology in the region. According to the IBEF, India could be a leader in shared mobility by 2030, providing opportunities for electric and autonomous vehicles. By 2030 the Indian government has committed that 30% of the new vehicle sales in India would be electric. According to the data released by the China Association of Automobile Manufacturers (CAAM), China's automobile industries set a record, with both production and sales exceeding 30 million units for the first time. With exports making up 4.91 million units, up 58% from the

previous year, China is poised to become the world's top automobile exporter.

Competitive Landscape:
The market research report has also provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the major market players in the X-by-wire systems industry include AB SKF, Continental AG, Curtiss-Wright Corporation, Infineon Technologies AG, JTEKT Corporation, ME Mobil Elektronik GmbH, Nexteer Automotive, Orscheln Products L.L.C, Parker Hannifin Corporation, Robert Bosch GmbH, Tata Motors Limited, Volkswagen AG and ZF Friedrichshafen AG.

(Please note that this is only a partial list of the key players, and the complete list is provided in the report.)

The competitive landscape of the X-by-wire systems market includes Bosch, Continental AG, ZF Friedrichshafen AG, Nexter Automotive, and DENSO Corporation. These players are focusing on innovations, extensive research and development (R&D), and strategic partnerships to enhance their product offerings. For instance, in February 2024, ZF’s commercial vehicle solutions television is leveraging global growth opportunities brought by increasing trends toward decarbonizing commercial vehicles. The division will open a plant in Orgadam, India (Tamil Nadu Province), where electric components will also be produced for the Indian and Asian markets.

X-by-Wire Systems Market News:
In April 2024, Curtiss Wright Corporation announced that it had completed the acquisition of WSC, Inc. for approximately $34 million in cash. WSC is a leading provider of state-of-the-art simulation technology that supports the design, commissioning, and reliable operation of commercial nuclear power generation and process plants worldwide with an installed base of over 225 plant simulators.
In November 2022, Disruptive technologies are driving the mobility transformation: to accelerate green and smart mobility, Infineon Technologies AG, the market leader in automotive and power semiconductors, is collaborating with RE Automotive Ltd. The automotive technology company developed the REE modular Electric Vehicle platform which serves as a foundation for a wide variety of electric vehicle types from robotaxis and commercial vans to electric passenger shuttles.
In September 2022, Curtiss Wright Corporation announced that they had signed a preferred strategic supplier agreement to advance the design and deployment of X-energy’s Xe- 100 advanced Small Modular Reactor (SMR).

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Key Questions Answered in This Report:
How has the global X-by-wire systems market performed so far, and how will it perform in the coming years?
What are the drivers, restraints, and opportunities in the global X-by-wire systems market?
What is the impact of each driver, restraint, and opportunity on the global X-by-wire systems market?
What are the key regional markets?
Which countries represent the most attractive X-by-wire systems market?
What is the breakup of the market based on the type?
Which is the most attractive type in the X-by-wire systems market?
What is the breakup of the market based on the vehicle type?
Which is the most attractive vehicle type in the X-by-wire systems market?
What is the competitive structure of the market?
Who are the key players/companies in the global X-by-wire systems market?

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