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Autonomous Train Market by Level of Automation (GOAI, GOA2, GOA3, GOA4), Technology (CBTC, ERTMS, ATC, PTC), Application, Component, Train Type (Metro, Light Rail, Bullet Train/HSR), Track Length, GOA 4 Systems and Region - Global Forecast to 2030

https://marketpublishers.com/r/A6F58654588EN.html
Date: March 2024
Pages: 256
Price: US$ 4,950.00 (Single User License)
ID: A6F58654588EN

Abstracts

The global autonomous train market is estimated at USD 13.6 billion in 2024 and is projected to grow at a CAGR of 5.7% from 2024 to 2030, to reach USD 18.9 billion by 2030. Growing urbanization and increasing demand for efficient public transportation systems drive the adoption of autonomous trains as a solution for mass transit in urban areas. These trains also offer improved passenger comfort. Developed regions, including Europe and North America, are upgrading the security of their railroads by installing new and sophisticated systems in place of outdated ones and retrofitting existing trains. For instance, in 2021 Alstom SA was given a contract by the Baden-Wuerttemberg State Institute for Rail Vehicles (SFBW) in 2021 to retrofit 118 regional trains with the European Train Control System (ETCS) Automatic Train Operation (ATO) digital signaling technology. The investment required for this project is USD 154 million. Autonomous trains are made safer by technologies like Positive Train Control (PTC), Communication/Computer-based Train Control (CBTC), Automated Train Control (ATC), and the European Railway Traffic Management System (ERTMS) which had boost autonomous train a safer mode of transportation. For instance, In March 2023, Parallel Systems (US) developed a distinctive train control system that is interoperable with the current PTC (positive train control) systems, which are meant to prevent overspeed derailments and train-to-train collisions. Government investment in upgrading and expanding railway infrastructure, like sensors and communication networks, which are essential for autonomous train operations drive the autonomous

train market as a safe, and efficient mode of transportation.

“Passenger train segment is estimated to lead the market during the forecast period.”

The passenger train segment is estimated to account for the largest market size of autonomous train market by application. A passenger train consist of unpowered passenger coaches or carriages that are driven by one or more locomotives. Passenger trains include multiple variants of trains used in urban transit as well as trains for intercity commutes. Trains used in urban transit include metros, monorails, and trams. Metro rail, also known as Mass Rapid Transport System (MRTS), is powered by electricity and requires one-fifth of energy per commutator km compared to road-based transport systems. A tram is an urban public transport that uses rolling stock such as tramways. It operates at a higher capacity and on an exclusive right-of-way. Intercity trains are the ones with limited stops to provide fast, long-distance travel. These trains connect cities and link major population hubs in the fastest time possible.

Autonomous passenger train offers various benefits including better safety, more operational effectiveness, enhanced passenger experience, and a dependable, efficient form of transportation with shorter journey times and fewer delays. Additionally, a smooth and comfortable travel is ensured by the integration of a railroad management system, which makes possible a number of features including predictive maintenance, improved scheduling, and real-time train condition monitoring. With the growing demand for efficient and sustainable transportation train industry is expected to witness the further growth in the autonomous passenger train market.

“Middle East and Africa to be the fastest growing region in the autonomous train market globally.”

The Middle East and Africa region possesses high growth opportunities for railway transportation. Dubai has the most progressive public transportation system in the world, as it comprises the world’s longest and most fully automated metro, along with smart cards and Net Operating Income (NOI) cards for all public transport, such as metros, buses, and marine transport.

Rapid urbanization has caused the population to migrate to cities and towns. These trends have led to a rise in problems of traffic congestion and high traffic volumes. In January 2024, the Roads and Transport Authority (RTA) signed two memorandum of understanding (MoU) with international companies during the Dubai International Project Management Forum (DIPMF), which includes a solar-powered rail bus system

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and a lightweight, driverless, smart train that resembles a "platoon of pods."

Population growth in the Middle East has urged the governments of the countries in the region to develop all sectors of the economy, especially transportation. Government regulations and investments in rail technology are driving the autonomous train market in the Middle East & Africa. In January 2022, Hitachi Ltd. awarded a contract from Saudi Arabia to design and develop and maintain the metro line in Riyadh, Saudi Arabia. The deal is valued at USD 82.29 million, and the rail infrastructure includes four elevated lines that stretch for 11.5 km and pass through 14 stations. Thus, Government investment from Middle East and Africa, and strategic partnership is expected to drive the autonomous train market.

In-depth interviews were conducted with CEOs, marketing directors, other innovation and technology directors, and executives from various key organizations operating in this market.

By Company Type: OEMs - 57%, Tier I - 29%, and Tier II - 14%

By Designation: CXOs - 54%, Directors - 32%, and Others - 14%

By Region: North America - 14%, Europe - 12%, Asia Pacific - 57%, Rest of the World- 10% and Middle East- 7%

Alstom SA (France), Siemens AG (Germany), Hitachi Ltd (Japan), Westinghouse Air Brake Technologies Corporation (Wabtec) (US), and Thales Group (France) are the leading players operating in the autonomous train market.

Research Coverage:

The market study covers the autonomous train market across segments. It aims at estimating the market size and future growth potential of this market across different segments such as by Level of Automation, Train Type, Technology, Application, Component, GoA 4 Systems and Region.

The study also includes an in-depth competitive analysis of the key players in the market, along with their company profiles, key observations related to product and business offerings, recent developments, and key market strategies.

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Key Benefits of Buying the Report:

The report will help market leaders/new entrants in this market with information on the closest approximations of revenue and volume numbers for the overall autonomous train market and its subsegments.

Analysis of key drivers (Increased operational safety benefits, Increased budget allocations along with upcoming rail projects, Low energy consumption and operational costs of autonomous trains), restraints (Lack of technology infrastructure and interoperability in emerging economies, High initial investment, Slow growth rate and inadequate infrastructure spending in emerging economies), challenges (Inability of DTO systems to carry out required protection functions during emergency situations and lack of human intervention), and opportunities (Transforming mining logistics with autonomous trains), influencing the growth of autonomous train market.

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, investments, and new product & service launches in the autonomous train market. This report will help stakeholders understand the competitive landscape and gain more insights to better position their businesses and plan suitable go-to-market strategies.

Market Development: Comprehensive information about lucrative markets - the report analysis the autonomous train market across varied regions.

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

Competitive Assessment: In-depth assessment of market ranking, growth strategies, and product offerings of leading players like Alstom SA (France), Siemens AG (Germany), Hitachi Ltd. (Japan), Westinghouse Air Brake Technologies Corporation (Wabtec) (US), and Thales Group (France).

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11 AUTONOMOUS TRAIN MARKET, BY COMPONENT

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*Details on Business Overview, Products Offered, Recent Developments, MnM View, Right to win, Strategic choices made, Weaknesses and competitive threats might not be captured in case of unlisted companies.

15 APPENDIX

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