

Railway Traction Battery Market Size, Share & Trends Analysis Report By Train Type (Suburban, Tramways), By Capacity (Below 300 kWh, 800-1,500 kWh), By Region (North America, Europe, Asia Pacific, Latin America, MEA), And Segment Forecasts, 2026 - 2033

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Abstracts

Railway Traction Battery Market Summary

The global railway traction battery market size was estimated at USD 280.3 million in 2025 and is projected to reach USD 444.5 million by 2033, growing at a CAGR of 6.0% from 2026 to 2033. Rapid electrification of rail networks and advancements in lithium-ion battery technology are driving market growth.

The market study specifically focuses on lithium-ion battery technology. Rapid electrification of rail networks is emerging as a major market driver. Governments worldwide are increasingly investing in railway electrification projects to reduce reliance on diesel locomotives and support sustainable transportation systems. In addition, the rising adoption of battery-electric and hybrid trains, along with the expansion of metro, light rail, and high-speed rail infrastructure across emerging economies, is accelerating demand for advanced railway traction batteries. Furthermore, the growing focus on reducing greenhouse gas emissions from the transportation sector is encouraging railway operators to adopt cleaner, energy-efficient rail technologies.

Railway operators are increasingly shifting away from conventional diesel locomotives to reduce greenhouse gas emissions and improve energy efficiency. Battery-electric trains are gaining popularity for operation on partially electrified and non-electrified routes, where full catenary electrification is economically challenging. Hybrid train systems integrating lithium-ion traction batteries and regenerative braking technologies

are also improving operational flexibility and lowering fuel consumption. Several countries across Europe and the Asia Pacific are investing heavily in battery-powered rolling stock to support sustainable transportation goals. This trend is expected to accelerate further as governments strengthen decarbonization initiatives in the transportation sector, thereby driving market growth.

Regulatory requirements are playing a crucial role in shaping the railway traction battery industry, as governments and transportation authorities worldwide implement stricter emission standards and sustainability policies for the rail sector. Regulations supporting net-zero emissions and sustainable mobility are accelerating the adoption of battery-electric and hybrid trains. In addition, railway traction batteries must comply with strict international safety and operational standards related to vibration resistance, thermal stability, and fire safety. For instance, IEC 62928 is an international standard that defines the design, operational, and safety requirements for lithium-ion batteries used in railway vehicles. The standard specifically applies to battery energy storage systems (ESS) utilized for traction power in rail applications, including hybrid and battery-electric trains.

The market is increasingly witnessing strategic collaborations between railway operators, rolling stock manufacturers, and battery suppliers to strengthen technological capabilities and secure long-term supply chains. Companies are entering partnerships to develop advanced traction battery systems, battery-electric locomotives, and integrated rail energy storage solutions. Major suppliers such as Hitachi Rail, ABB, Toshiba, and HOPPECKE are expanding their railway battery portfolios and investing in smart battery management technologies. For example, in May 2025, HOPPECKE partnered with TKIL Industries to jointly develop and manufacture advanced railway battery systems for metros, locomotives, and regional trains in India, highlighting the growing trend toward regional manufacturing and long-term rail electrification partnerships.

Urbanization and the expansion of metro and high-speed rail infrastructure across emerging economies are further contributing to market growth. Countries in the Asia Pacific, particularly India and China, are rapidly expanding urban transit systems to address increasing passenger traffic and urban congestion. Electrified metro rail projects require efficient traction battery systems for backup power, energy recovery, and operational stability. The integration of renewable energy into railway systems, including solar-powered stations and energy-efficient rail operations, is also increasing the importance of advanced battery storage technologies.

Global Railway Traction Battery Market Report Segmentation

This report forecasts revenue growth at global, regional, and country levels and provides an analysis of the latest industry trends in each of the sub-segments from 2021 to 2033. For this study, Grand View Research has segmented the global railway traction battery market report based on train type, capacity, and region:

Train Type Outlook (Revenue, USD Million, Volume Units 2021 - 2033)

Regional Trains

Suburban Trains

Locomotives

Tramways

Others

Capacity Outlook (Revenue, USD Million, 2021 - 2033)

Below 300 kWh

300-800 kWh

800-1,500 kWh

Above 1,500 kWh

Regional Outlook (Revenue, USD Million, Volume Units, 2021 - 2033)

North America

U.S.

Canada

Mexico

Europe

Germany

UK

France

Asia Pacific

China

Japan

India

South Korea

Australia

Latin America

Brazil

Middle East and Africa (MEA)

KSA

UAE

South Africa

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Contents

CHAPTER 1. METHODOLOGY AND SCOPE

- 1.1. Market Segmentation and Scope
- 1.2. Research Methodology
 - 1.2.1. Information Procurement
- 1.3. Information or Data Analysis
- 1.4. Methodology
- 1.5. Research Scope and Assumptions
- 1.6. Market Formulation & Validation
- 1.7. Country Based Segment Share Calculation
- 1.8. List of Data Sources

CHAPTER 2. EXECUTIVE SUMMARY

- 2.1. Market Outlook
- 2.2. Segment Outlook
- 2.3. Competitive Insights

CHAPTER 3. RAILWAY TRACTION BATTERY MARKET VARIABLES, TRENDS, & SCOPE

- 3.1. Market Lineage Outlook
- 3.2. Market Dynamics
 - 3.2.1. Market Driver Analysis
 - 3.2.2. Market Restraint Analysis
 - 3.2.3. Industry Challenge
- 3.3. Railway Traction Battery Market Analysis Tools
 - 3.3.1. Industry Analysis - Porter's
 - 3.3.1.1. Bargaining power of the suppliers
 - 3.3.1.2. Bargaining power of the buyers
 - 3.3.1.3. Threats of substitution
 - 3.3.1.4. Threats from new entrants
 - 3.3.1.5. Competitive rivalry
 - 3.3.2. PESTEL Analysis
 - 3.3.2.1. Political Landscape
 - 3.3.2.2. Economic and Social Landscape
 - 3.3.2.3. Technological Landscape

3.3.2.4. Legal Landscape

3.3.2.5. Environmental Landscape

CHAPTER 4. RAILWAY TRACTION BATTERY MARKET: TRAIN TYPE ESTIMATES & TREND ANALYSIS

4.1. Segment Dashboard

4.2. Railway Traction Battery Market: Train Type Movement Analysis, 2025 & 2033 (USD Million, Units)

4.3. Regional Trains

4.3.1. Regional Trains Market Revenue Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

4.4. Suburban Trains

4.4.1. Suburban Trains Market Revenue Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

4.5. Locomotives

4.5.1. Locomotives Market Revenue Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

4.6. Tramways

4.6.1. Tramways Market Revenue Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

4.7. Others

4.7.1. Others Market Revenue Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

CHAPTER 5. RAILWAY TRACTION BATTERY MARKET: CAPACITY ESTIMATES & TREND ANALYSIS

5.1. Segment Dashboard

5.2. Railway Traction Battery Market: Capacity Movement Analysis, 2025 & 2033 (USD Million)

5.3. Below 300 kWh

5.3.1. Below 300 kWh Market Revenue Estimates and Forecasts, 2021 - 2033 (USD Million)

5.4. 300-800 kWh

5.4.1. 300-800 kWh Market Revenue Estimates and Forecasts, 2021 - 2033 (USD Million)

5.5. 800-1,500 kWh

5.5.1. 800-1,500 kWh Market Revenue Estimates and Forecasts, 2021 - 2033 (USD Million)

Million)

5.6. Above 1,500 kWh

5.6.1. Above 1,500 kWh Market Revenue Estimates and Forecasts, 2021 - 2033 (USD Million)

CHAPTER 6. RAILWAY TRACTION BATTERY MARKET: REGIONAL ESTIMATES & TREND ANALYSIS

6.1. Railway Traction Battery Market Share, By Region, 2025 & 2033, USD Million, Units

6.2. North America

6.2.1. North America Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.2.2. U.S.

6.2.2.1. U.S. Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.2.3. Canada

6.2.3.1. Canada Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.2.4. Mexico

6.2.4.1. Mexico Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.3. Europe

6.3.1. Europe Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.3.2. UK

6.3.2.1. UK Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.3.3. Germany

6.3.3.1. Germany Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.3.4. France

6.3.4.1. France Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.4. Asia Pacific

6.4.1. Asia Pacific Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.4.2. China

6.4.2.1. China Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033

(USD Million, Units)

6.4.3. Japan

6.4.3.1. Japan Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.4.4. India

6.4.4.1. India Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.4.5. South Korea

6.4.5.1. South Korea Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.4.6. Australia

6.4.6.1. Australia Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.5. Latin America

6.5.1. Latin America Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.5.2. Brazil

6.5.2.1. Brazil Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.6. Middle East and Africa

6.6.1. Middle East and Africa Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.6.2. UAE

6.6.2.1. UAE Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.6.3. KSA

6.6.3.1. KSA Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

6.6.4. South Africa

6.6.4.1. South Africa Railway Traction Battery Market Estimates and Forecasts, 2021 - 2033 (USD Million, Units)

CHAPTER 7. COMPETITIVE LANDSCAPE

7.1. Company Categorization

7.2. Company Market Positioning

7.3. Company Heat Map Analysis

7.4. Company Profiles/Listing

7.4.1. Saft Groupe S.A.

- 7.4.1.1. Participant's Overview
- 7.4.1.2. Financial Performance
- 7.4.1.3. Train Type Benchmarking
- 7.4.1.4. Strategic Initiatives
- 7.4.2. Exide Industries Limited
 - 7.4.2.1. Participant's Overview
 - 7.4.2.2. Financial Performance
 - 7.4.2.3. Train Type Benchmarking
 - 7.4.2.4. Strategic Initiatives
- 7.4.3. Hitachi Ltd.
 - 7.4.3.1. Participant's Overview
 - 7.4.3.2. Financial Performance
 - 7.4.3.3. Train Type Benchmarking
 - 7.4.3.4. Strategic Initiatives
- 7.4.4. Toshiba Corporation
 - 7.4.4.1. Participant's Overview
 - 7.4.4.2. Financial Performance
 - 7.4.4.3. Train Type Benchmarking
 - 7.4.4.4. Strategic Initiatives
- 7.4.5. Medha Servo Drives Pvt Ltd (MSDPL)
 - 7.4.5.1. Participant's Overview
 - 7.4.5.2. Financial Performance
 - 7.4.5.3. Train Type Benchmarking
 - 7.4.5.4. Strategic Initiatives
- 7.4.6. Ritar International Group
 - 7.4.6.1. Participant's Overview
 - 7.4.6.2. Financial Performance
 - 7.4.6.3. Train Type Benchmarking
 - 7.4.6.4. Strategic Initiatives
- 7.4.7. HOPPECKE Batterien GmbH & Co. KG
 - 7.4.7.1. Participant's Overview
 - 7.4.7.2. Financial Performance
 - 7.4.7.3. Train Type Benchmarking
 - 7.4.7.4. Strategic Initiatives
- 7.4.8. ALSTOM SA
 - 7.4.8.1. Participant's Overview
 - 7.4.8.2. Financial Performance
 - 7.4.8.3. Train Type Benchmarking
 - 7.4.8.4. Strategic Initiatives

7.4.9. ABB Ltd.

7.4.9.1. Participant's Overview

7.4.9.2. Financial Performance

7.4.9.3. Train Type Benchmarking

7.4.9.4. Strategic Initiatives

7.4.10. Leclanch? SA

7.4.10.1. Participant's Overview

7.4.10.2. Financial Performance

7.4.10.3. Train Type Benchmarking

7.4.10.4. Strategic Initiatives

List Of Tables

LIST OF TABLES

Table 1 Global railway traction battery market size estimates & forecasts 2021 - 2033 (USD Million, Units)

Table 2 Global railway traction battery market, by region 2021 - 2033 (USD Million, Units)

Table 3 Global railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 4 Global railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 5 Regional trains railway traction battery market, by region 2021 - 2033 (USD Million, Units)

Table 6 Suburban trains railway traction battery market, by region 2021 - 2033 (USD Million, Units)

Table 7 Locomotives railway traction battery market, by region 2021 - 2033 (USD Million, Units)

Table 8 Tramways railway traction battery market, by region 2021 - 2033 (USD Million, Units)

Table 9 Others railway traction battery market, by region 2021 - 2033 (USD Million)

Table 10 Below 300 kWh railway traction battery market, by region 2021 - 2033 (USD Million)

Table 11 300-800 kWh railway traction battery market, by region 2021 - 2033 (USD Million)

Table 12 800-1,500 kWh railway traction battery market, by region 2021 - 2033 (USD Million)

Table 13 Above 1,500 kWh railway traction battery market, by region 2021 - 2033 (USD Million)

Table 14 North America railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 15 North America railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 16 U.S. railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 17 U.S. railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 18 Canada railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 19 Canada railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 20 Mexico railway traction battery market, by train type 2021 - 2033 (USD Million,

Units)

Table 21 Mexico railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 22 Europe railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 23 Europe railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 24 UK railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 25 UK railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 26 Germany railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 27 Germany railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 28 France railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 29 France railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 30 Asia Pacific railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 31 Asia Pacific railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 32 China railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 33 China railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 34 India railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 35 India railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 36 Japan railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 37 Japan railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 38 South Korea railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 39 South Korea railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 40 Australia railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 41 Australia railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 42 Latin America railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 43 Latin America railway traction battery market, by capacity 2021 - 2033 (USD

Million)

Table 44 Brazil railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 45 Brazil railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 46 MEA railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 47 MEA railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 48 UAE railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 49 UAE railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 50 KSA railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 51 KSA railway traction battery market, by capacity 2021 - 2033 (USD Million)

Table 52 South Africa railway traction battery market, by train type 2021 - 2033 (USD Million, Units)

Table 53 South Africa railway traction battery market, by capacity 2021 - 2033 (USD Million)

List Of Figures

LIST OF FIGURES

- Fig. 1 Railway traction battery market segmentation
- Fig. 2 Market research process
- Fig. 3 Information procurement
- Fig. 4 Primary research pattern
- Fig. 5 Market research approaches
- Fig. 6 Value chain-based sizing & forecasting
- Fig. 7 Parent market analysis
- Fig. 8 Market formulation & validation
- Fig. 9 Railway traction battery market snapshot
- Fig. 10 Railway traction battery market segment snapshot
- Fig. 11 Railway traction battery market competitive landscape snapshot
- Fig. 12 Market research process
- Fig. 13 Market driver relevance analysis (Current & future impact)
- Fig. 14 Market restraint relevance analysis (Current & future impact)
- Fig. 15 Railway traction battery market: Train Type outlook key takeaways (USD Million, Units)
- Fig. 16 Railway traction battery market: Train Type movement analysis 2025 & 2033 (USD Million, Units)
- Fig. 17 Regional trains market revenue estimates and forecasts, 2021 - 2033 (USD Million, Units)
- Fig. 18 Suburban trains market revenue estimates and forecasts, 2021 - 2033 (USD Million, Units)
- Fig. 19 Locomotives market revenue estimates and forecasts, 2021 - 2033 (USD Million, Units)
- Fig. 20 Tramways market revenue estimates and forecasts, 2021 - 2033 (USD Million, Units)
- Fig. 21 Others market revenue estimates and forecasts, 2021 - 2033 (USD Million, Units)
- Fig. 22 Railway traction battery market: Capacity outlook key takeaways (USD Million)
- Fig. 23 Railway traction battery market: Capacity movement analysis (USD Million), 2025 & 2033
- Fig. 24 Below 300 kWh market revenue estimates and forecasts, 2021 - 2033 (USD Million)
- Fig. 25 300-800 kWh market revenue estimates and forecasts, 2021 - 2033 (USD Million)

Fig. 26 800-1,500 kWh market revenue estimates and forecasts, 2021 - 2033 (USD Million)

Fig. 27 Above 1,500 kWh market revenue estimates and forecasts, 2021 - 2033 (USD Million)

Fig. 28 Regional marketplace: Key takeaways

Fig. 29 Railway traction battery market: Regional outlook, 2025 & 2033 (USD Million, Units)

Fig. 30 North America railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 31 U.S. railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 32 Canada railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 33 Mexico railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 34 Europe railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 35 UK railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 36 Germany railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 37 France railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 38 Asia Pacific railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 39 China railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 40 Japan railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 41 India railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 42 Australia railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 43 South Korea railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 44 Latin America railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 45 Brazil railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 46 MEA railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 47 KSA railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 48 UAE railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 49 South Africa railway traction battery market estimates and forecasts, 2021 - 2033 (USD Million, Units)

Fig. 50 Strategy framework

Fig. 51 Company Categorization

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