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Battery Passport & Second-Life Energy Storage Market Forecasts to 2034 – Global Analysis By Product (Battery Passport Platforms, Second-Life Battery Packs, Battery Diagnostics Systems, Battery Lifecycle Management Software, Energy Storage Control Systems, Other Products), By Battery Type, By Component, By Technology, By Application and By Geography

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Abstracts

According to Stratistics MRC, the Global Battery Passport & Second-Life Energy Storage Market is accounted for $7.5 billion in 2026 and is expected to reach $48.5 billion by 2034 growing at a CAGR of 26% during the forecast period. Battery Passport & Second-Life Energy Storage refers to technologies and systems that track battery lifecycle data and enable reuse of batteries after their initial application. A battery passport stores information about origin, composition, performance history, and environmental impact, improving traceability and regulatory compliance. After primary use commonly in electric vehicles batteries can be repurposed for second-life applications such as stationary energy storage. These solutions extend battery lifespan, reduce waste, and improve resource efficiency. They support circular economy models while enabling renewable energy storage and better management of critical materials such as lithium, cobalt, and nickel.

Market Dynamics:

Driver:

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Growing demand for battery lifecycle tracking

Battery passports provide digital records that track the origin, composition, performance, and recycling status of batteries. This transparency helps manufacturers, regulators, and consumers monitor battery sustainability and compliance. With the rapid growth of electric vehicles and energy storage systems, managing battery lifecycles has become increasingly important. Battery passports also support recycling and reuse initiatives by providing essential technical data. As battery production increases globally, the demand for lifecycle tracking solutions continues to expand.

Restraint:

Lack of standardized battery data frameworks

Different battery manufacturers use varying data formats and tracking systems. This makes it difficult to create unified battery passport platforms across the supply chain. Without common standards, sharing battery information between manufacturers, recyclers, and energy operators becomes challenging. The absence of harmonized regulatory guidelines also slows implementation in some regions. These issues can delay large-scale adoption of battery passport solutions.

Opportunity:

Expansion of second-life battery applications

Used electric vehicle batteries often retain a large portion of their original capacity. These batteries can be repurposed for stationary energy storage applications. Second-life batteries are increasingly used in renewable energy storage, grid stabilization, and backup power systems. Battery passport systems help track battery health and suitability for reuse. As renewable energy installations increase globally, the demand for second-life energy storage solutions is expected to grow.

Threat:

Safety risks in reused batteries

Second-life batteries may experience degradation or performance variability over time. Improper handling or inadequate monitoring could lead to overheating, short circuits, or other safety hazards. Ensuring reliable performance and safety standards for reused

batteries is a key challenge. Manufacturers and regulators must implement strict testing and monitoring procedures. If safety concerns are not properly addressed, adoption of second-life battery systems may slow.

Covid-19 Impact:

The COVID-19 pandemic had a moderate impact on the Battery Passport and Second-Life Energy Storage market. During the early stages of the pandemic, disruptions in supply chains affected battery production and recycling operations. Electric vehicle manufacturing also experienced temporary slowdowns. However, the pandemic accelerated investments in renewable energy and sustainable technologies. Governments introduced green recovery programs that supported battery innovation and circular economy initiatives.

The lithium-ion batteries segment is expected to be the largest during the forecast period

The lithium-ion batteries segment is expected to account for the largest market share during the forecast period as lithium-ion technology dominates the electric vehicle and energy storage industries. These batteries offer high energy density, long cycle life, and strong performance characteristics. Most battery passport initiatives are currently focused on lithium-ion batteries used in electric vehicles. Tracking the lifecycle of these batteries is critical for recycling and second-life applications. As global EV adoption continues to increase, lithium-ion batteries will remain the primary focus of battery passport systems.

The renewable energy integration segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the renewable energy integration segment is predicted to witness the highest growth rate due to increasing demand for energy storage solutions. Renewable energy sources such as solar and wind require efficient storage systems to manage intermittent power generation. Second-life batteries provide a cost-effective option for stationary energy storage. These batteries can store excess renewable energy and supply electricity during peak demand periods. Battery passport systems help ensure safe and efficient deployment of reused batteries. As renewable energy installations expand globally, this segment is expected to grow rapidly.

Region with largest share:

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During the forecast period, the Asia Pacific region is expected to hold the largest market share owing to the strong presence of battery manufacturers and electric vehicle producers. Countries such as China, Japan, and South Korea are global leaders in lithium-ion battery production. The region has also seen rapid growth in electric vehicle adoption and energy storage projects. Governments are investing heavily in battery technology development and recycling infrastructure. Additionally, the large manufacturing ecosystem supports the implementation of battery lifecycle tracking solutions.

Region with highest CAGR:

Over the forecast period, the Europe region is anticipated to exhibit the highest CAGR driven by strong regulatory initiatives promoting battery sustainability and circular economy practices. The European Union has introduced policies requiring battery passports and responsible battery recycling. These regulations encourage manufacturers to implement transparent battery lifecycle tracking systems. Europe is also investing heavily in renewable energy infrastructure and energy storage projects. The growing electric vehicle market further supports the need for battery reuse and recycling solutions. These developments are expected to drive rapid market growth in the region.

Key players in the market

Some of the key players in Battery Passport & Second-Life Energy Storage Market include Tesla Inc., LG Energy Solution, Panasonic Holdings Corporation, CATL, Samsung SDI, BYD Company Ltd., Northvolt AB, Contemporary Amperex Technology, Umicore, Circunomics GmbH, Redwood Materials, Bosch GmbH, Siemens Energy, ABB Ltd. and Honeywell International Inc.

Key Developments:

In February 2026, Tesla agreed with LG Energy Solution to produce lithium iron phosphate (LFP) batteries for its Megapack products at LG's 50 GWh plant in Michigan . This strategic move diversifies Tesla's supply chain for stationary storage and strengthens compliance with U.S. Inflation Reduction Act requirements.

In June 2025, LG Energy Solution established Green Metals Battery Innovations, LLC, a joint venture with Toyota Tsusho in North Carolina . The facility will process 13,500 tons

of battery scrap annually (equivalent to over 40,000 automotive batteries) to extract black mass for a closed-loop battery system.

Products Covered:

- Battery Passport Platforms
- Second-Life Battery Packs
- Battery Diagnostics Systems
- Battery Lifecycle Management Software
- Energy Storage Control Systems
- Other Products

Battery Types Covered:

- Lithium-Ion Batteries
- Lithium Iron Phosphate Batteries
- Nickel Manganese Cobalt Batteries
- Solid-State Batteries
- Other Battery Types

Components Covered:

- Battery Management Systems
- Energy Storage Modules
- Monitoring & Analytics Software

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Other Components

Technologies Covered:

Battery Health Diagnostics

Blockchain Traceability

AI-Based Battery Analytics

IoT Monitoring Systems

Other Technologies

Applications Covered:

Grid Energy Storage

Renewable Energy Integration

Electric Vehicle Charging Infrastructure

Commercial Energy Storage

Residential Energy Storage

Other Applications

Regions Covered:

North America

United States

Canada

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- 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

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- 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)

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Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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