+357 96 030922
info@marketpublishers.com

Automotive Battery Thermal Management System Market ? Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Vehicle Type (Passenger Cars and Commercial Vehicles), By Technology (Active Vs Passive), By Battery Type (Conventional Batteries and Solid-State Batteries), By Battery Capacity (500 kWh), By Propulsion (BEV, HEV, PHEV, & FCV), By Region & Competition, 2021-2031F

https://marketpublishers.com/r/A82B24B2AB03EN.html
Date: January 2026
Pages: 185
Price: US$ 4,500.00 (Single User License)
ID: A82B24B2AB03EN

Abstracts

The Global Automotive Battery Thermal Management System Market is projected to experience significant expansion, growing from a valuation of USD 4.55 Billion in 2025 to USD 12.25 Billion by 2031, representing a Compound Annual Growth Rate (CAGR) of 17.95%. These systems function as essential assemblies engineered to regulate the temperature of electric vehicle battery packs, thereby guaranteeing optimal safety and operational performance. This market trajectory is primarily supported by the escalating global production of electric vehicles and the necessity for precise thermal control to handle the heat generated by high-energy-density batteries during rapid charging sessions. Highlighting this demand, the International Energy Agency reported that in 2024, global battery demand for electric vehicles and storage applications surged to nearly one terawatt-hour.

Despite this robust growth outlook, the sector faces considerable obstacles related to the high costs of development and the intricacies involved in integrating active thermal regulation technologies. These financial and technical barriers make it difficult to incorporate advanced thermal management units into budget-friendly vehicle models and may hinder widespread market penetration in price-sensitive geographic regions.

+357 96 030922
info@marketpublishers.com

Consequently, the complexity of deploying these sophisticated systems remains a limiting factor for broader adoption across all vehicle segments.

Market Driver

The surging global adoption of electric and hybrid vehicles serves as the principal catalyst for the Battery Thermal Management System industry. As automotive manufacturers transition toward electrification strategies, the requirement for effective thermal regulation rises substantially to ensure the durability and longevity of battery packs. This market expansion is directly quantified by the volume of new energy vehicles entering the global fleet, which necessitates scalable supply chains for thermal components. According to the 'Global EV Outlook 2024' released by the International Energy Agency in April 2024, electric car sales amassed nearly 14 million units in 2023, creating a direct surge in demand for thermal management parts. To accommodate this production scale, OEMs are investing heavily in component manufacturing capabilities, as evidenced by Toyota Motor North America's 2024 announcement of a $1.3 billion investment at its Kentucky plant to bolster battery electric vehicle assembly.

Simultaneously, the expansion of fast-charging infrastructure compels the integration of advanced liquid and immersion cooling technologies. Because rapid charging sessions produce excessive heat loads that passive cooling methods cannot effectively dissipate, active thermal management is essential to prevent overheating during periods of peak power transfer. The deployment of charging stations incentivizes the installation of systems designed to manage high C-rates. As reported by the China Electric Vehicle Charging Infrastructure Promotion Alliance in their September 2024 'National Electric Vehicle Charging Infrastructure Operation Situation' report, China's cumulative charging infrastructure reached 11.43 million units. This density of infrastructure highlights the vital need for vehicle-side thermal solutions that can support high-throughput energy transfer without compromising cell integrity.

Market Challenge

The substantial development expenses and integration complexities associated with active thermal regulation technologies represent a major constraint for the market. Manufacturers encounter significant financial challenges when engineering these systems, which demand precise calibration to operate effectively within the confined space of a vehicle chassis. This inherent complexity forces automakers to restrict advanced thermal management units to premium vehicle models, thereby hindering the entry of these essential components into the mass-market segment. Consequently,

+357 96 030922
info@marketpublishers.com

adoption remains limited within lower-priced vehicle categories, which suppresses overall market volume in regions where affordability is a primary consumer consideration.

This economic hurdle sustains a price differential that discourages broader consumer adoption of electric vehicles fitted with optimal thermal systems. According to 2024 data from the International Energy Agency, the average cost of electric cars in Europe and the United States remained 10 percent to 50 percent higher than their internal combustion engine counterparts. This enduring price disparity indicates that the inclusion of costly thermal management hardware remains commercially impractical for economy models, directly restricting the potential addressable market for these advanced systems.

Market Trends

The engineering of thermal management solutions tailored for 800V high-voltage architectures is emerging as a definitive trend as automakers emphasize ultra-fast charging capabilities and enhanced powertrain efficiency. Transitioning from standard 400V systems to 800V platforms drastically intensifies thermal flux within busbars and power electronics, requiring the development of advanced cooling loops capable of rapid heat dissipation without risking electrical insulation. This structural evolution compels manufacturers to allocate significant resources toward building robust next-generation electric vehicle platforms that can manage these increased voltage loads. For instance, in its '2024 CEO Investor Day' presentation in August 2024, Hyundai Motor Company pledged a strategic investment of KRW 120.5 trillion over the coming decade to boost its electrification capabilities, including the expedited development of next-generation modular architectures required to support high-voltage thermal demands.

Concurrently, the market is witnessing the widespread adoption of integrated heat pump systems that consolidate the battery, powertrain, and cabin thermal circuits into a single centralized control module. In contrast to traditional configurations that use separate heating and cooling loops, these unified systems capture waste heat from the electric motor and battery to warm the vehicle's interior, thereby diminishing reliance on energy-consuming resistive heaters and preserving driving range in cold weather. This shift toward holistic thermal regulation is generating substantial commercial demand for multi-functional thermal components capable of managing complex fluid flows with accuracy. Highlighting this trend, Mahle announced in an April 2024 press release titled 'MAHLE successful with major orders for thermal management modules' that it had secured

+357 96 030922
info@marketpublishers.com

contracts valued at nearly ?1.5 billion for these integrated thermal units, designed to simultaneously regulate temperatures across the power electronics, vehicle cabin, and battery.

Key Market Players

Robert Bosch GmbH

Valeo SA

Mahle GmbH

Hanon Systems

Denso Corporation

LG Chem Ltd

Samsung SDI Co. Ltd

Gentherm Incorporated

BorgWarner Inc

Dana Incorporated

Report Scope

In this report, the Global Automotive Battery Thermal Management System Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Automotive Battery Thermal Management System Market, By Vehicle Type

Passenger Cars and Commercial Vehicles

Automotive Battery Thermal Management System Market, By Technology

+357 96 030922
info@marketpublishers.com

Active Vs Passive

Automotive Battery Thermal Management System Market, By Battery Type

Conventional Batteries and Solid-State Batteries

Automotive Battery Thermal Management System Market, By Battery Capacity

500 kWh

Automotive Battery Thermal Management System Market, By Propulsion

BEV

HEV

PHEV

& FCV

Automotive Battery Thermal Management System Market, By Region

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

+357 96 030922
info@marketpublishers.com

Spain

Asia Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Automotive Battery Thermal Management System Market.

Available Customizations:

+357 96 030922
info@marketpublishers.com

Global Automotive Battery Thermal Management System Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

6. NORTH AMERICA AUTOMOTIVE BATTERY THERMAL MANAGEMENT SYSTEM MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

7. EUROPE AUTOMOTIVE BATTERY THERMAL MANAGEMENT SYSTEM MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

8. ASIA PACIFIC AUTOMOTIVE BATTERY THERMAL MANAGEMENT SYSTEM MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

9. MIDDLE EAST & AFRICA AUTOMOTIVE BATTERY THERMAL MANAGEMENT SYSTEM MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

10. SOUTH AMERICA AUTOMOTIVE BATTERY THERMAL MANAGEMENT SYSTEM MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Automotive Battery Thermal Management System Market ? Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Vehicle Type (Passenger Cars and Commercial Vehicles), By Technology (Active Vs Passive), By Battery Type (Conventional Batteries and Solid-State Batteries), By Battery Capacity (<100 kWh, 100-200 kWh, 200-500 kWh and >500 kWh), By Propulsion (BEV, HEV, PHEV, & FCV), By Region & Competition, 2021-2031F

Product link: https://marketpublishers.com/r/A82B24B2AB03EN.html

Price: US$ 4,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/A82B24B2AB03EN.html