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Battery Thermal Management System Market by Propulsion (BEV, PHEV, FCEV), Offering (BTMS With Battery, BTMS Without Battery), Technology (Active, Passive, Hybrid), Battery Type, Battery Capacity, Vehicle Type and Region - Forecast to 2030

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Abstracts

The global BTMS market size is projected to grow from USD 3.7 billion in 2024 to USD 8.5 billion by 2030, at a CAGR of 14.7%. The BTMS market is witnessing robust growth driven by increasing demand for electric vehicles and issues related to battery safety may drive the market for BTMS systems. Electric vehicles require advanced sensors and cooling systems in harmony to ensure safe and efficient operation, which is expected to increase the demand for BTMS systems in these vehicles. Growing innovation related to BTMS components like thermal sensors, battery packs, cooling, and other are also expected to drive the BTMS market.

The Lithium ion battery segment is expected to see notable growth opportunities during the forecast period

Lithium-ion batteries employed in EVs exhibit optimal performance within a narrow temperature threshold. Hence, the regulation of this battery pack's temperature emerges as a critical factor for ensuring prolonged battery and cell lifespan. BTMS assumes responsibility for proficient temperature regulation with sensors. With their prices reducing, the demand for these batteries is estimated to rise, which will directly impact the BTMS market and surge further over the forecast period. CATL (China), a major battery manufacturer, has planned to expand its production capacity outside China. It has planned a manufacturing site at Erfurt in Germany that will have a capacity of 14 GWh in 2022 and 60 GWh by 2026. Also, in January 2024, XING Mobility (China) introduced immersion cooling technology for electric vehicle batteries. All these factors

are expected to drive the demand for lithium-ion batteries.

Passenger vehicles segment to show the biggest growth in the BTMS market during the forecast period

The passenger vehicles segment, encompassing a diverse range of vehicles from sedans to SUVs, holds immense potential for the adoption of EVs. As the largest segment in the automotive industry, it serves as a pivotal arena for technological advancements like solid-state batteries and BTMS. Particularly in emerging economies across the Asia Pacific region, where market growth is buoyed by factors such as rising GDP, population, lifestyle improvements, and infrastructure development, the integration of advanced battery technologies becomes crucial. OEMs such as Audi employ a coolant volume of 5.8 gallons, circulated through a 40-meter tube, in conjunction with a standard heat pump in its fully electric model, the e-tron. This system comprises four circuits designed to cool the electric motors, encompassing their rotors, the power electronics, and the charger. Furthermore, the system guarantees that the battery remains within its optimal efficiency range of 25°C to 35°C across diverse scenarios, spanning from cold starts in winter conditions to rapid highway driving during hot summer periods.

China is expected to show substantial growth in the Asia Pacific region for BTMS market

China stands at the forefront of the global EV revolution, boasting the largest market for new energy vehicles (NEVs) in the Asia Pacific region and beyond. As the world's largest automotive market, China's policies and initiatives significantly shape the trajectory of the EV sector, including advancements in battery technology and thermal management systems. The increasing demand for EVs in China has amplified the importance of effective BTMS. As EV adoption accelerates, there is a growing emphasis on developing advanced thermal management solutions that can meet the evolving market needs. Chinese companies, in collaboration with domestic and international partners, are at the forefront of developing innovative BTMS. Advanced cooling and heating technologies, coupled with intelligent thermal management algorithms, are being deployed to enhance the efficiency and reliability of EV batteries in diverse operating conditions. For instance, in June 2023, CATL started the production of Qilin battery packs, which are integrated with advanced BTMS technology.

In-depth interviews were conducted with CXOs, marketing directors, other innovation and technology managers, and executives from various key organizations operating in

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the BTMS market. The break-up of the primaries is as follows:

By Company Type: OEMs – 24%, Tier 1 –67% and Tier 2 & 3 – 9%,

By Designation: CXO – 33%, Managers – 52%, and Executives – 15%

By Region: North America – 26%, Europe – 30%, Asia Pacific – 35%, and ROW¬¬-9%

The BTMS market comprises major manufacturers such as Robert Bosch (Germany), Gentherm (US), Continental AG (Germany), Denso (Japan), BorgWarner Inc. (US), Webasto Group (Germany).

Research Coverage:

The study covers the BTMS market across various segments. It aims at estimating the market size and future growth potential of this market across different segments such as Battery type, Battery capacity, Vehilcle type, Propulsion Type, Technology type, By offering and Region. The study also includes an in-depth competitive analysis of key market players, their company profiles, key observations related to product and business offerings, recent developments, and acquisitions.

This research report categorizes BTMS market by Battery Type (Lithium -ion and Solid State batteries), Vehicle Type (Passenger Vehicles and Commercial vehicle), By Technology (Active technology, Passive technology, and Hybrid Technology), Propulsion type (Battery electric vehicles, Fuel cell electric vehicles, and Plug-in hybrid electric vehicles), By Offering (BTMS with Battery and BTMS without Battery), ByBattery Capacity (500 KWH) and Region (Asia Pacific, Europe, and North America and rest of the world).

The report's scope covers detailed information regarding the major factors, such as drivers, restraints, challenges, and opportunities, influencing the growth of the BTMS market. A detailed analysis of the key industry players provides insights into their business overview, solutions, and services; key strategies; contracts, partnerships, agreements, new product & service launches, mergers and acquisitions, and recent developments associated with the BTMS market. Competitive analysis of SMEs/startups in the BTMS market ecosystem is covered in this report.

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Reasons to buy this report:

The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall BTMS market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and to plan suitable go-to-market strategies. The report also helps stakeholders understand the market pulse and provides information on key market drivers, restraints, challenges, and opportunities.

The report provides insights on the following pointers:

Analysis of key drivers (Rising adoption of Electric Vehicles, Innovation in EV battery system, and Stringent regulatory and safety standards), restraints (Complexities associated design components and Inadequate infrastructure for EV charging in emerging market), opportunities (Growing potential of modular design, Increasing R&D investment for advance battery thermal solution, implementation of BTMS for optimal battery performance, and innovation within e-compressor by key OEMS), and challenges (Safety concerns associated with battery reliability and irregular operation of BTMS in extreme conditions) influencing the growth of the BTMS market.

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the BTMS market.

Market Development: Comprehensive information about lucrative markets – the report analyses the BTMS market across varied regions.

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

Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players like Robert Bosch (Germany), Gentherm (US), Continental AG (Germany), Denso (Japan), BorgWarner Inc. (US), Webasto Group (Germany) among others in the BTMS market.

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Strategies: The report also helps stakeholders understand the pulse of the BTMS market and provides them information on key market drivers, restraints, challenges, and opportunities

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