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Automotive Thermal System Market –Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Vehicle Type (Passenger Cars, Commercial Vehicles), By Propulsion (ICE, BEV), By Application Type (HVAC, Powertrain Cooling, Fluid Transport, Others), By Region & Competition, 2021-2031F

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Abstracts

The Global Automotive Thermal System Market is projected to expand from USD 40.84 Billion in 2025 to USD 50.14 Billion by 2031, registering a compound annual growth rate of 3.48%. This industry encompasses technologies essential for regulating temperatures in engines, drivetrains, and cabins, including HVAC units and battery thermal management systems. A key catalyst for this growth is the rapid shift toward vehicle electrification, which requires sophisticated thermal solutions to optimize battery performance, along with strict emission standards necessitating better fuel economy. Evidence of this shift is found in data from the China Association of Automobile Manufacturers, which reported that new energy vehicle sales reached 12.87 million units in 2024, reflecting an annual increase of 35.5 percent.

Despite these positive indicators, the sector encounters significant hurdles related to the substantial costs and technical intricacies of advanced thermal management architectures. Modern electric vehicles demand complex assemblies featuring heat pumps and multiple coolant loops, which considerably raise manufacturing expenditures and add layers of difficulty to supply chain logistics. These increased costs pose a risk to mass adoption in emerging markets where price sensitivity is high, potentially acting as a brake on the overall development of the automotive thermal system landscape.

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Market Driver

The swift uptake of electric and hybrid vehicles serves as the primary force driving the Global Automotive Thermal System Market. In contrast to internal combustion engines, electric powertrains require intricate thermal management structures for battery packs, inverters, and motors to guarantee safety and optimize driving range. This structural transformation generates significant demand for specialized hardware, including battery chillers, electronic expansion valves, and coolant loops. According to the International Energy Agency's "Global EV Outlook 2025" released in May 2025, global electric car sales increased by 35 percent year-on-year during the first quarter, highlighting the industry's growing dependence on advanced thermal regulation to facilitate the widespread rollout of electrified platforms.

Concurrently, the market is influenced by an emphasis on battery thermal management efficiency to mitigate consumer anxieties regarding driving range and charging times. As manufacturers deploy high-voltage systems to enable faster charging, the thermal stress on battery units intensifies, requiring high-performance liquid cooling and heat pump technologies to ensure stability. Hanon Systems reported in its "Third Quarter 2025 Financial Results" in October 2025 that electrified-vehicle sales comprised 28 percent of its total revenue, illustrating the strategic shift of major suppliers towards electrification components. Furthermore, Valeo announced an order intake of 11.8 billion euros for the first half of 2025, a 30 percent rise bolstered by robust demand for thermal and electrification systems.

Market Challenge

The substantial expenses and technical sophistication required for advanced thermal management architectures create a significant obstacle to the growth of the Global Automotive Thermal System Market. As the industry moves toward electrification, the necessity for complex systems incorporating heat pumps, numerous coolant loops, and exacting temperature control devices drastically raises the bill of materials. This intricacy not only inflates production costs but also introduces logistical challenges within the supply chain, hindering automakers from quickly realizing economies of scale. Consequently, these higher manufacturing costs are frequently transferred to buyers, maintaining high retail prices for electric vehicles and suppressing demand in price-sensitive areas.

This financial strain leads to a deceleration in vehicle adoption rates, which subsequently restricts the quantity of thermal systems needed by original equipment

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manufacturers. The effect of these market forces is visible in recent industry data; the German Association of the Automotive Industry (VDA) reported an 18 percent decline in new electric vehicle registrations in Germany in 2024 compared to the prior year. Such a contraction in a major automotive hub demonstrates how cost-related impediments and volatile demand can directly obstruct the broader progress of the thermal system sector.

Market Trends

The emergence of Integrated Thermal Management Modules (ITMM) is transforming the market by combining complicated coolant circuits into single manifolds, which decreases weight and assembly expenses while improving energy management. Because electric vehicles need precise temperature control for the cabin, battery, and power electronics, manufacturers are shifting from decentralized parts to these centralized systems that dynamically distribute thermal energy. This trend is gaining considerable momentum among leading tier-1 suppliers transitioning to modular designs; for instance, MAHLE announced in an April 2025 press release titled "MAHLE holds its ground in a difficult market environment" that it had secured a historic order for thermal management modules valued at 1.2 billion euros. Such substantial contracts signal a clear industry move toward integrated solutions that optimize supply chains and vehicle efficiency.

Simultaneously, the adoption of 800V electrical architectures to minimize heat generation is stimulating demand for high-performance thermal components designed to handle the intense heat associated with ultra-fast charging. Higher voltage platforms facilitate rapid energy recharging but place significant thermal stress on battery cells and power electronics, requiring the use of robust liquid cooling loops and advanced silicon carbide (SiC) inverters. This shift toward high-voltage systems is directly impacting financial results and product adoption for specialized manufacturers. BorgWarner's "Third Quarter 2025 Results" from October 2025 reported net sales of 3,591 million dollars, a roughly 4.1 percent increase attributed largely to growth in light vehicle eProduct sales, underscoring the vital role of advanced thermal and electrical technologies in the mass commercialization of next-generation 800V platforms.

Key Market Players

Robert Bosch GmbH

Dana Limited

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MAHLE GmbH

Gentherm Inc.

Hanon Systems

Denso Corporation

BorgWarner Inc.

Valeo

MODINE MANUFACTURING COMPANY

Schaeffler Technologies AG & Co. KG

Report Scope

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

Automotive Thermal System Market, By Vehicle Type

Passenger Cars

Commercial Vehicles

Automotive Thermal System Market, By Propulsion

ICE

BEV

Automotive Thermal System Market, By Application Type

HVAC

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Powertrain Cooling

Fluid Transport

Others

Automotive Thermal System Market, By Region

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia Pacific

China

India

Japan

Australia

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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 Thermal System Market.

Available Customizations:

Global Automotive Thermal 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).

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