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Asia Pacific Immersion Cooling for EV Batteries Market Report (2021-2031) by Scope, Segmentation, Dynamics, and Competitive Analysis

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Abstracts

The Asia Pacific immersion cooling market for electric vehicle (EV) batteries is projected to grow significantly, reaching approximately USD 77.63 million by 2031, up from just USD 472,430 in 2023. This growth represents a remarkable compound annual growth rate (CAGR) of 93.8% from 2026 to 2031.

Executive Summary and Market Analysis

The immersion cooling market for EV batteries in the Asia Pacific region is divided into several key markets, including Australia, China, India, Japan, South Korea, and other parts of the region. A primary driver of this market is the increasing adoption of electric vehicles, spurred by rising environmental concerns and a shift towards sustainable transportation options. Governments across the region are implementing various policies to promote EV adoption. For instance, the Association of Southeast Asian Nations (ASEAN) has introduced favorable policies to encourage the uptake of electric vehicles. According to the International Renewable Energy Agency (IRENA), it is anticipated that by 2025, around 20% of vehicles in Southeast Asia will be electric, which includes approximately 59,000 two-wheelers and three-wheelers, along with 8,900 cars.

Countries like India, South Korea, Taiwan, and Vietnam are actively working to attract automotive manufacturers to relocate their production facilities, capitalizing on lower labor costs. These nations are offering incentives such as tax rebates and subsidies to entice companies to establish manufacturing plants. For example, in 2021, the Indian government allocated USD 450 million for the electrification of public transport, which included the adoption of 7,090 electric buses. Similarly, in April 2021, Indonesia

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announced its goal for electric vehicles to constitute 20% of all domestically manufactured cars by 2025, equating to 400,000 electric cars. In March 2023, BYD, a leading Chinese EV manufacturer, began constructing a new facility in Thailand, aiming to produce 150,000 passenger cars annually starting in 2024. These initiatives are expected to significantly boost EV sales in the region, consequently increasing the demand for immersion cooling systems, which enhance battery performance and safety by preventing thermal runaway.

Market Segmentation Analysis

The immersion cooling market for EV batteries is categorized based on type, cooling fluid, and vehicle type.

By Type: The market is divided into single-phase and double-phase immersion cooling systems. As of 2023, single-phase immersion cooling holds a larger market share.

By Cooling Fluid: The market is segmented into mineral oil, synthetic oil, fluorocarbon-based fluids, and others. Synthetic oil dominated the market in 2023.

By Vehicle Type: The market is classified into passenger vehicles, light commercial vehicles, and heavy commercial vehicles, with passenger vehicles accounting for the largest share in 2023.

Market Outlook

The global demand for reliable electric vehicles is on the rise, driven by various initiatives from governments and companies aimed at promoting fossil fuel-free transportation. To meet this demand, battery technology must advance, necessitating more effective cooling solutions. Immersion cooling, where batteries are submerged in dielectric fluid, offers a more efficient cooling method compared to traditional water-glycol systems. This technique allows for rapid cooling as the fluid directly surrounds the battery cells. In the event of a battery fire, immersion cooling can quickly contain heat, preventing thermal runaway and protecting adjacent cells. Additionally, this method mitigates battery degradation by cooling cells swiftly, thus reducing the risk of thermal runaway through effective heat dissipation.

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Immersion cooling also addresses leak protection, preventing electrical shorts even in the case of fluid leaks. It supports high-speed charging and can extend battery pack life by approximately 8% compared to water-glycol systems. Furthermore, it effectively controls both peak and average temperatures, reducing peak battery temperatures by 5% compared to water-based systems and promoting uniform temperature distribution throughout the battery pack.

Market players are actively promoting the benefits of immersion cooling through whitepapers and research. For instance, in May 2023, Netscribes, Inc. published a whitepaper titled "Immersion Cooling for Electric Vehicle Battery Systems: Enhancing Performance and Safety," which outlines the advantages of immersion cooling, including improved thermal management, enhanced safety, and the potential for faster charging. These benefits are expected to drive the growth of the immersion cooling market for EV batteries in the coming years.

Country Insights

The Asia Pacific immersion cooling market is comprised of several key countries, including China, Japan, South Korea, India, and Australia, with China holding the largest market share in 2023. China is a global leader in EV manufacturing, boasting a robust production base and having deployed over 400,000 electric buses. Shenzhen, a major industrial city in China, has fully electrified its bus fleet, and BYD assembles an electric car every 90 seconds in its main plant. In February 2022, Volkswagen announced plans to produce 1,000 EVs annually in China starting in 2023. The increasing sales of new energy vehicles in China, which reached 1.29 million units in September 2024, further underscores the growing demand for efficient thermal management systems to enhance EV battery safety and performance.

Company Profiles

Key players in the immersion cooling for EV batteries market include Shell Plc, GS Caltex Corporation, Engineered Fluids Inc., Cargill, Incorporated, Rimac Technology Ltd, The Lubrizol Corp, XING Mobility Inc., EXOES SAS, Mahle GmbH, and Ricardo Plc. These companies are pursuing various strategies such as expansion, product innovation, and mergers and acquisitions to enhance their market presence and offer innovative solutions to consumers.

Reason to buy

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Save and reduce time carrying out entry-level research by identifying the growth, size, leading players, and segments in the Asia Pacific Immersion Cooling for EV Batteries Market.

Highlights key business priorities in order to assist companies to realign their business strategies.

The key findings and recommendations highlight crucial progressive industry trends in the Asia Pacific Immersion Cooling for EV Batteries Market, thereby allowing players across the value chain to develop effective long-term strategies.

Develop/modify business expansion plans by using substantial growth offering developed and emerging markets.

Scrutinize in-depth Asia Pacific market trends and outlook coupled with the factors driving the Asia Pacific Immersion Cooling for EV Batteries Market, as well as those hindering it.

Enhance the decision-making process by understanding the strategies that underpin commercial interest with respect to client products, segmentation, pricing, and distribution.

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