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Lithium-ion Battery Market by Type (NMC, LFP, LCO, LTO, LMO, NCA), Capacity (Below 3,000 mAh, 3,001 mAh–10,000 mAh, 10,001 mAh–60,000 mAh, Above 60,000 mAh), Voltage (Below 12V, 12V–36V, Above 36V), Application and Region - Global Forecast to 2032

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Abstracts

The global lithium-ion battery market size is expected to grow from USD 56.8 billion in 2023 to USD 187.1 billion by 2032, at a CAGR of 14.2% from 2023 to 2032. The growing need for high power and energy density has created a demand for reliable and safe batteries across industries. This stimulates the demand for different lithium-ion batteries made of a combination of lithium and other materials such as nickel, manganese, and cobalt. Lithium-ion batteries are used in automotive, consumer electronics, and industrial applications.

“Lithium Iron Phosphate (LFP) battery segment is projected to grow at significant CAGR during the forecast period”

LFP batteries are used in high-power devices and equipment. The nano-scale phosphate cathode material in LFP batteries offers excellent electrochemical performance and low resistance. LFP batteries have long life cycles, high current ratings, good thermal stability, and enhanced safety due to better tolerance. High charge and discharge rates improve performance and competence, making LFP batteries suitable for use in high-power applications such as hybrid electric vehicles and power tools.

'10,000 mAh to 60,000 mAh capacity segment is projected to grow at an impressive

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CAGR during the forecast period”

Lithium-ion batteries with more than 10,000 mAh capacities are used for applications requiring high power, such as hybrid electric vehicles, material handling equipment, telecommunication systems, hybrid trucks, buses, smart grids, aviation industry, automated guided vehicles, etc. Lithium Iron Phosphate (LFP), Lithium Titanate Oxide (LTO), Lithium Manganese Oxide (LMO), and Lithium Nickel Manganese Cobalt Oxide (NMC) are various types of lithium-ion batteries available in this range; they are available in module, polymer, prismatic, and battery pack formats.

' Low voltage segment is projected to gain a substantial market share during the forecast period”

Lithium-ion batteries with voltage below 12V are lightweight and smaller than batteries above this voltage range. These batteries provide high amounts of energy for short time spans. These batteries are mainly used in consumer electronics such as laptops, desktops, media players, apart from drones, and marine applications.

'Consumer electronics application is expected to hold a significant market share during the forecast period'

Manufacturers of consumer electronic products such as cameras, tablets, laptops, wearable devices, and mobile phones are dealing with rapid technological changes. Smartphones have become an integral part of everyday life owing to the number of functionalities offered by these devices. As these devices become more powerful and feature-rich, they require more energy-dense batteries. Lithium-ion batteries are the best option for meeting this demand, as they can provide the power and performance that these devices need without being too bulky or heavy. Lithium-ion batteries are in high demand for use in electronics because they offer a number of advantages over other types of batteries, including a long lifespan, high energy density, low self-discharge rate, and the ability to withstand high and low temperatures. Hence, the growing popularity of electronic devices such as smartphones, laptops, tablets, and wearables is driving the increasing demand for lithium-ion batteries.

'The market in Europe is expected to grow at a significant CAGR during the forecast period'

The lithium-ion battery market in Europe has been studied for the UK, Germany, France, and the Rest of Europe. The region is home to some of the key battery

manufacturers, such as Saft Groupe SAS (France), Northvolt AB (Sweden), and Varta AG (Germany). Batteries have significant applications as clean, sustainable, and compact power sources in the automotive and consumer electronics sectors. The European region is one of the largest adopters of clean energy vehicles such as hybrid and plug-in hybrid electric vehicles. The consumer electronics market for wearable devices is also witnessing a growth curve in Europe. Hence, the automotive and consumer electronics sectors are expected to drive the lithium-ion battery market in Europe.

Breakdown of the profiles of primary participants:

By Company Type: Tier 1 - 52%, Tier 2 - 17%, and Tier 3 - 31%

By Designation: C-level Executives - 47%, Directors - 31%, and Others - 22%

By Region: North America - 35%, Europe - 21%, Asia Pacific - 37%, and RoW – 7%

Major players profiled in this report are as follows: LG Energy Solution (South Korea), Samsung SDI Co. Ltd. (South Korea), SK Innovation Co., Ltd. (South Korea), Panasonic Holdings Corporation (Japan), BYD Company Limited (China), Hitachi, Ltd. (Japan), and Toshiba Corporation (Japan), and others.

Research Coverage

The lithium-ion battery market has been classified by material, product type, type, capacity, voltage, application, and region. The market by material has been classified into cathode material, anode material, electrolyte material, separator material, current collector materials, and other materials. By product type, the market has been segmented into components of lithium-ion batteries which include cells and battery packs; and portability which is further divided into stationary and portability. By type, the market has been segmented into Lithium Nickel Manganese Cobalt (NMC), Lithium Iron Phosphate (LFP), Lithium Cobalt Oxide (LCO), Lithium Titanate Oxide (LTO), Lithium Manganese Oxide (LMO), and Lithium Nickel Cobalt Aluminum Oxide (NCA). The capacity segment market is divided into below 3,000 mAh, 3,001 – 10,000 mAh, 10,001 – 60,000 mAh, and above 60,000 mAh. The market has been divided into low (below 12V), medium (12V-36V), and high (above 36V) by voltage segment. Furthermore, the application segment includes consumer electronics, automotive, aerospace, marine,

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medical, industrial, power, and telecommunications. The study also forecasts the market size in four key regions—North America, Europe, Asia Pacific, and RoW.

Key Benefits of Buying the Report:

The report provides insights on the following pointers:

> Analysis of key drivers (Growing hybrid electric vehicles adoption globally, Growing adoption of battery-operated material-handling equipment, Rapidly evolving consumer electronics sector, Renewable energy sector growth), restraints (Increasing concerns in handling of used batteries), opportunities (Renewable energy integration in grids globally, Rising R&D activities to develop advance lithium-ion batteries, Cost reduction of lithium-ion batteries), and challenges (Excessive heating of batteries, High manufacturing and installations costs of battery-operated industrial vehicles) influencing the growth of the lithium-ion battery market

Product Development/Innovation: Detailed insights on new products, technologies, research & development activities, funding activities, industry partnerships, and new product launches in the lithium-ion battery market

Market Development: Comprehensive information about lucrative markets – the report analyses the lithium-ion battery market across regions such as North America, Europe, Asia Pacific, Middle East & Africa, and South America.

Market Diversification: Exhaustive information about new products & technologies, untapped geographies, recent developments, and investments in the lithium-ion battery market

Competitive Assessment: In-depth assessment of market position, growth strategies, and product offerings of leading players like LG Energy Solution (South Korea), Samsung SDI Co. Ltd. (South Korea), SK Innovation Co., Ltd. (South Korea), Panasonic Holdings Corporation (Japan), among others in the lithium-ion battery market

Strategies: The report also helps stakeholders understand the pulse of the lithium-ion battery market and provides information on key market drivers, restraints, challenges, and opportunities.

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Details on Business Overview, Products/Solutions/Services Offered, Recent Developments, MnM view (Key strengths/Right to win, Strategic choices made, Weakness/competitive threats) might not be captured in case of unlisted companies.

15 ADJACENT AND RELATED MARKETS

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16 APPENDIX

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