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Battery Recycling Market Assessment, By Process [Smelting, Leaching, Physical], By Material [Metals, Plastic, Others], By Battery Type [Lithium-Ion Batteries, Lead Acid Batteries, Nickel Batteries, Others], By Source [Automotive Batteries, Consumer Electronics Appliance Batteries, Others], By Region, Opportunities and Forecast, 2017-2031F

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Abstracts

Battery recycling market is projected to witness a CAGR of 11.11% during the forecast period 2024-2031, growing from USD 28.2 billion in 2023 to USD 65.5 billion in 2031. Battery recycling offers several benefits, which include reducing energy consumption and manufacturing costs, conserving natural resources, and minimizing environmental impact. The market is expected to grow significantly over the upcoming years, primarily driven by the growing demand for battery recycling in various industries such as transportation, consumer electronics, etc. Other factors proliferating the market growth include technological progress, research, and innovation project grants from governments, along with rising demand for recyclable electronic products with longer lifespans.

All the market players are currently focusing on establishing battery recycling units in various parts across the world to meet the customers' demands adequately and increase their revenue growth. This, in turn, will boost their prominence in this highly competitive market.

In Feb 2023, Ecobat, the world's leading battery recycling company, constructed its third lithium-ion battery recycling facility, and the first in North America. The new factory in Casa Grande, Arizona, would initially generate 10,000 tonnes of recovered material per

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year, with plans to expand the capacity even further to meet the ever-growing demand for lithium-ion battery recycling over the upcoming years.

Utilization of Reused Lithium-Ion Batteries in EVs

The rise in usage of reused Li-ion batteries in EVs proliferates market growth significantly. This frequent implementation of recycled lithium-ion batteries in EVs can reduce costs as well as address the pivotal concerns about battery disposals.

In December 2023, Lohum Cleantech, a sustainable energy transition materials producer, partnered with the UAE Ministry of Energy & Infrastructure and BEEAH to establish the UAE's first-ever EV battery recycling plant. The 80,000 sq ft facility, aligned with the UAE's Net Zero by 2050 Strategic Initiative and Circular Economy Policy, would recycle 3,000 tons of lithium-ion batteries annually, repurposing 15MWh battery capacity into energy storage systems. The joint venture would involve the creation of an 80,000 square feet facility dedicated to refurbishing and recycling lithium batteries, thereby contributing to the UAE's sustainability goals and circular economy policies.

Recycling of Lead Acid Batteries is Expediting the Market Growth

The lead acid battery recycling process is largely amplifying the market growth. This is due to the ever-increasing demand for higher energy efficiency in consumer electronics and its diverse range of applications in small-scale power storage like UPS systems, lighting & ignition power sources for automobiles, and large, grid-scale power systems.

In November 2023, Battery Council International stated that the United States recycles more than 160 million lead batteries annually, thereby preventing them from ending up in landfills and ensuring domestic reuse of materials. With a 99% recycling rate, lead batteries have demonstrated their potential for infinite recycling without performance degradation. Moreover, these batteries can be repeatedly recycled without any loss in performance, contributing to a more sustainable and circular economy.

The Consumer Electronics Appliance Industry is Positively Leading the Market

The consumer electronics appliances industry is leading to ample opportunities in the battery recycling market due to the increasing demand for electronic devices and the need for sustainable waste management. As electronic devices become more advanced and prevalent, the demand for their batteries also rises, resulting in a growing need for

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efficient and environmentally friendly battery recycling solutions.

In October 2023, American Battery Technology Co. (ABTC), a Nevada-based integrated critical battery materials firm, announced the operational launch of its lithium-ion battery recycling plant in McCarran, Nevada's Tahoe-Reno Industrial Centre. ABTC's integrated battery recycling system adopted advanced remanufacturing and targeted chemical extraction technology, which differs from traditional battery recycling technologies that employ high-temperature furnaces or shredding and grinding equipment.

Asia-Pacific Emerges as Dominant Force in Market Growth

Asia-Pacific comprehensively led the market growth in all aspects and is expected to continue its dominance over the years to come. The rise in demand for EVs and the continuous surge in the number of energy storage projects are some of the crucial factors augmenting the market growth in this region.

For example, in June 2023, Green Eco-Manufacture (GEM), a major Chinese cobalt refiner and lithium cathode precursor maker, announced the construction of a manufacturing facility in Yibin, southwest China's Sichuan province, to recycle decommissioned power and energy storage batteries as well as used battery components. The complex will have a capacity of 100,000 t/yr for decommissioned power batteries and scrap, 50,000 t/yr for used lithium iron phosphate (LFP) material, and 3GWh/yr for used energy storage battery packs, with a total expenditure of whooping USD 239 million. Moreover, GEM’s subsidiary, Wuhan Power Battery Renewable Technology, will build the project in collaboration with local chemical manufacturer Yibin Tianyuan Group.

Government Initiatives to Augment the Market Growth

Government initiatives play a crucial role in the market, as they help ensure a sustainable future while addressing environmental challenges associated with battery waste. Moreover, these policies provide funding or tax incentives to support battery recycling facilities, making it more economically viable for businesses to invest in recycling infrastructure. These initiatives foster a circular economy and reduce the adverse environmental effects of battery waste. By embracing battery recycling, governments can drive substantial change, thereby protecting the environment, preserving resources, and paving the way for a greener and more sustainable future.

For example, in August 2022, recognizing the importance of battery recycling, the Indian

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government imposed critical rules and regulations to prioritize battery recycling and guarantee responsible handling of battery waste. On this basis, the proposed Battery Waste Management Rules, introduced in 2023, aimed to create a legislative framework for the safe disposal and recycling of all sorts of batteries. These projects highlight India's dedication to resource conservation and the establishment of a circular battery ecosystem that is highly sustainable.

Key Players Landscape and Outlook

Businesses are making significant investments in battery recycling procedures, which is fueling the expansion of the sector extensively. The market is also quite competitive, with major companies fighting for market dominance and spending capital on joint ventures, R&D projects, and partnerships to expand their product lines and obtain an advantage over rivals. The market for battery recycling appears to have a bright future, with significant growth anticipated in the upcoming years due to improvements in lead acid battery recycling processes.

In December 2023, to address environmental concerns related to safe disposal of EV batteries, Mahindra Last Mile Mobility Limited (MLMML), a subsidiary of Mahindra & Mahindra, joined hands with Attero, one of the global leaders in lithium-ion battery recycling and e-waste management. The aim of this collaboration is to advance sustainability and guarantee the appropriate recycling and repurposing of lithium-ion batteries.

In October 2023, American Battery Technology Company (ABTC) commercialized its technologies for primary battery minerals manufacturing and secondary minerals battery recycling. The company advanced operations and implemented its internally developed lithium-ion battery recycling technologies at its commercial-scale facility located in Nevada, which has been designated as a regional 'innovation and technology hub' by the Biden Administration. ABTC's commercial lithium-ion battery recycling facility has the capacity to process over 20,000 metric tonnes per year of battery feedstock materials when fully ramped. The company announced several strategic partnerships for the sourcing of feed material and the offtake of recycled products with companies such as BASF, Nanotech, and FedEx.

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