Battery patent technology research report

Are battery recycling technologies based on a global patent analysis?
Conclusions This study conducted a comprehensive global patent analysis on battery recycling technologies,focusing on secondary batteries across Korea,China,and the United States. The findings reveal significant differences in patent activities and technological focuses among these countries.

Why is battery patenting a global trend?
We find that global battery patenting activity grew significantly in the 2000-2019 period. This stylized fact means that the comparative advantages of secondary approaches (rechargeable, redeployable, reusable batteries) have been continuously on the rise driven by innovation, making a direct contribution to socio-technical circularity.

Which technologies grew in relevance to battery patenting?
We find that several battery-related technologies and applications, such as energy storage systems, battery management systems, wireless power transmission, electric vehicle charging, and uncrewed aerial vehicles (i.e., drones), grew in relevance both in absolute terms and relative to general battery patenting activity.

How many patents are there for battery recycling?
For reference,the proportion of individual patents for battery recycling in South Korea,China,and the United States was not significant. In South Korea,there were 16 out of a total of 65patents (24.6%),in China,there were 748 out of 3496 patents (21.3%),and in the United States,there were 247 out of 548 patents (45.0%).

Are national battery patent applications considered in IEA & EPO?
Given the IPF constraint deployed for this study and the IEA and EPO report ,these solely nationally filed applications are not consideredin either one. In fact,in the current study's dataset,IPFs make up only 19.4% of all battery patent families.

How fast does patenting a battery grow?
Between 2005 and 2018,patenting activity in batteries and other electricity storage technologies grew at an average annual rate of 14%worldwide,four times faster than the average of all technology fields,according to a joint study published today by the European Patent Office (EPO) and the International Energy Agency (IEA).

However, there are limited reports to explore the battery assembly of cell, module and pack, as well as to compare them by considering the technology life cycle and distribution among global enterprises based on patent analysis. Saw et al. investigated the integration issues of the EV battery pack from different aspects, namely battery assembly, ...

Imagine driving an electric vehicle that not only travels 700 miles on a single charge but fully recharges in just

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10 minutes-- Toyota is on the brink of turning this vision into reality with its groundbreaking solid-state battery technology.. With over 1,300 patents in this space and a plan to begin mass production in coming years, Toyota is positioning itself to ...

Solid-state batteries (SSBs) hold the potential to revolutionize energy storage systems by offering enhanced safety, higher energy density, and longer life cycles compared ...

This joint study by the International Energy Agency and European Patent Office underlines the key role that battery innovation is playing in the transition to clean energy technologies. It provides global data and ...

The report, Innovation in batteries and electricity storage - a global analysis based on patent data, shows that batteries account for nearly 90% of all patenting activity in the area of electricity storage, and that the rise in ...

SCOPE OF THE REPORT oPatents without an earliest publication date in 2017 or a grant date in 2017 or an expiration/revocation date in 2017. oPatents related to:-Devices comprising a battery without battery detailed description.-Battery recycling.-Raw materials mining / production (i.e. Lithium, Cobalt, Nickel etc.).-Manufacturing equipment.-Testing equipment. Included in the ...

Using carefully elaborated strategies to identify publications relating to batteries, this study provides data to discuss the critical balance to strike between investments in ...

Within the battery domain, lithium-sulfur technologies were identified as emerging on the academic side, whereas multi-power systems where emerging within industry research. Several papers use patent data for the study ...

Technology development. The IEA/EPO report indicates that in 2018 the number of patent applications relating to lithium-ion technology accounted for 45% of all patent activity relating to battery cells. The majority of current lithium-ion battery research aims to improve the present batteries on the market. While numerous alternate battery ...

Research reports Instruct Counsel ... Battery technology: patent filings and future development areas ... There are various aspects of battery technology which can be patented. For example, while ...

Four battery technologies (redox-flow, solid-state, sodium-ion, and lithium-sulfur batteries) display increased patenting dynamics from 2000-2009 to 2010-2019, a pattern that ...

This study provides a comprehensive analysis of global patent trends in battery recycling, focusing on secondary batteries and related technologies across Korea, China, and ...

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secondary batteries and related technologies across Korea, China, and the United States. The methodology involved collecting data from various patent databases, followed by quantitative analysis to identify technology trends and guide future ...

oThe report also provides an extensive Excel database containing >40,900 patent families of the main patent assignees and related to the key battery technologies. - Patent assignees included in the Excel file: LGChem, Samsung, Toyota, Panasonic/Sanyo, GS Yuasa, Shenzhen Optimum Battery, Toshiba, Nissan, Hitachi,

Alternative Chemistries . Research and development focusing on alternatives to lithium-ion technology is also progressing. For example, sodium and aluminium chemistries provide two potential alternatives to traditional lithium-based battery chemistries. 10 One reason for the interest in alternative battery chemistries is based on supply chain issues relating to ...

Sodium-ion Batteries 2023-2033 provides a comprehensive overview of the sodium-ion battery market, players, and technology trends. Battery benchmarking, material and cost analysis, key player patents, and 10 year forecasts are provided for Na-ion battery demand by volume (GWh) and value (US$).

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