Battery industry has a high proportion of patented technologies

Where do battery patents come from?
The majority of battery patents are found to originate in Asiawhile high battery patent intensities are revealed in the performance of several Asian and European countries. Overall,a considerable increase in annual battery patenting activity is observed from 2000-2009 to 2010-2019.

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.

Which country has the most patents in battery manufacturing?
China's large number of patents in battery manufacturing processes contrasts with the USA's focus on electrochemical cell construction and storage systems,while Korea shows significant activity in waste battery technology.

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.

Are battery patents growing?
Overall,a considerable increasein annual battery patenting activity is observed from 2000-2009 to 2010-2019. Second,we also found that four battery technologies - redox-flow,solid-state,sodium-ion,and lithium-sulfur batteries - have displayed vibrant growth in recent years.

How many battery patents are there in the world?
Over 90,000battery inventions from the period 2000-2019 analyzed. Patent data explored from technometric and textmetric perspectives. Global battery patenting activity growth mostly originating in Asia. Three country clusters emerge with different circularity potentials. Battery advances so far suggest incomplete circular transition.

Proportion of R& D personnel for new energy vehicle patents 2.4. The Direction of Technology Research and Development Is Mainly Concentrated in the Field of Power Batteries In general, the power ...

The majority of battery patents are found to originate in Asia while high battery patent intensities are revealed in the performance of several Asian and European countries. ...

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The technology update of ESS in transportation applications includes various types of battery technologies used in EV, EV battery EMS development, EV charging control ...

opportunities for emerging battery technologies. Future battery technologies could also be suited to satellite and other space and high altitude applications. o The UK has a strong research ...

Innovations targeting improvements in lithium-ion batteries focused on alternative metals have boosted patent applications. Promising trends in the battery sector"s future are evident in patent filings, as revealed by the ...

Retriev Technologies " patents US 8616,475, US 8882,007 (Smith and Swoffer, 2014, 2013) describe multi-stage "crushing spent lithium ion batteries under an ...

Addressing the identified challenges--such as maintaining consistent innovation in Korea, increasing patent influence and reducing disparity among companies in China, and ...

This article has been amended to clarify Tesla"s cylindrical 4680 battery cells have been developed to supply energy up to five times that of the batteries currently used in ...

Patent analytics in EV battery technology reveals key innovations, market leaders, and trends, guiding stakeholders in R& D and strategic decisions. It also highlights ...

Batteries have the potential to contribute significantly to a greener and more sustainable future, and so are a critical sector in the drive to net zero. What do the latest patent statistics reveal about innovation in the ...

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

The rapid growth of the electric vehicle (EV) market has fueled intense research and development efforts to improve battery technologies, which are key to enhancing EV ...

that the lithium-ion battery technology is clearly leading the battery research and industry in terms of funding as well as patents. However, there is a range of emerging ...

October 1, 2020: A study released in September by the International Energy Agency and European Patent Office shows that patenting activity in batteries and other electricity storage ...

Batteries, fuel cells, or electrolyzers and supercapacitors have been extensively studied and analyzed [1][2][3][4][5][6][7][8]. New catalyst synthesis approaches for achieving ...

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1 · The global pursuit of efficient, safe, and high-energy-density batteries has led to significant interest in solid-state battery (SSB) technologies. SSBs promise numerous ...

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