

Can patent data be used to analyze the development of battery technology?

Hence, patent data is widely applied to analyze the development of battery technology [16]. For instance, the European Patent Office cooperating with the International Energy Agency provided key insights into technological innovation in batteries and electricity storage based on patent analysis [6].

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.

Are lithium-ion batteries patentable?

To be very clear: This especially means that the lithium-ion battery category does not contain any patent families tagged as solid-state battery inventions. The fourth step's purpose was to add patent data related to redox-flow and nickel-hydrogen batteries to the dataset.

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 all patents related to solid-state batteries tagged?

Please note that due to the considerable overlap of the concept of solid-state batteries with other technologies, especially lithium-ion batteries, all patent families that were classified as patents related to solid-state batteries were untagged in any other category in which they acquired tags through the process described here.

Where do battery patents come from?

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. Overall, a considerable increase in annual battery patenting activity is observed from 2000-2009 to 2010-2019.

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The trends follow those seen for redox flow and solid-state battery technology, with a steady growth in the number of patent families filed in this class. Top filers include: [15]

A pouch folding device for a secondary battery according to an embodiment of the present invention folds a pouch including a main body in which an electrode assembly is received and ...

The research work comprises basic Research and Development on storage concepts, design, construction, and long term monitoring and evaluation of (so far) eight large ...

We focus on the case of lithium-ion battery (LIB) technology from 1970 to 2018. We use a dataset of 101,620 patent families to identify and analyze the LIB industry's core ...

China's power battery patent application annual trend From the perspective of annual application quantity, China's research about power battery technology has experienced ...

Key Patents behind Oppo Foldable Phone Technology. CN112449523A - This patent describes Oppo's hinge mechanism, which prevents screen damage during repeated ...

We ask how to extract the frontier research topics from patents, which countries are driving innovation in CR, and what policies are contributing to the current situation. ... As ...

Research on the impact of Tesla's technology patent opening on China's new energy vehicle industry Shuo He 1, *, +, Ruizhe Zhang 2, +, Junjian Zhao 3, +

Samsung could be developing a battery specially adapted to foldable smartphones, to save space and optimise performance. The idea is that it too could be ...

2012-11-26 Priority to US13/685,051 priority Critical patent/US9136510B2/en ... and methods for sealing and folding battery assemblies. In one or more embodiments, a battery pouch may be ...

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