

Battery technologies andorra city

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Between 2005 and 2018, the number of battery-related patents grew faster than other types of patents, by an average of 14%, year after year.

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The EPO administers patents across most European countries, both in and out of the EU. In concert with the International Energy Agency (IEA), it looked at innovation in batteries for consumer electronics, electric vehicles, and utility-scale energy storage.

A spokesperson for the EPO told us: "Although 91% of stationary energy storage is achieved by pumped hydropower nowadays, we expect a significant growth in innovation in stationary battery technologies.

"Given that the requirements for stationary storage are set to become more diverse and more demanding as the share of variable renewable electricity rises, we expect innovation in batteries will need to rise further, in parallel with innovations in non-battery stationary electricity storage, especially for longer duration storage."

Innovations in any one of these can benefit all markets. As an example, patenting activity in the manufacturing and engineering of battery cells has grown to three times its size in the past decade. In 2018, half of all battery-related IPFs concerned manufacturing and engineering.

The EPO/IEA report points to downward price trends as proof of synergy between different applications. It continues: "For example, the Tesla Roadster, the first highway legal serial production all-electric car to use lithium-ion battery cells, was launched in 2008.

"In the following 10 years, improvements to battery packs catering for the wide range of all-electric cars and plug-in hybrid cars on the market have had positive spill-over effects on stationary applications, many of which can reuse modified vehicle batteries once they have reached the end of their useful lives within vehicles."

The overwhelming majority of battery patents have come from electric vehicle battery technology. Patents concerning batteries for electric vehicles overtook those for consumer electronics in 2011. Since then, growth has generally accelerated. Batteries for "stationary applications", those designed for utility and domestic use, have risen much more slowly.

Lithium-ion batteries in consumer electronics have become 90% cheaper since 1995 and electric vehicles have

seen a similar fall since 2010. However, stationary batteries saw a smaller fall, of two-thirds, in the last decade.

An EPO spokesperson tells us: "So far, the boom in batteries has been driven by lithium-ion [cells], which can indeed generate spill-overs for stationary applications (see for example Tesla powerwalls). However, Li-ion is not the only, and possibly not the best, technology option for stationary storage.

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