

# New Energy New Battery Iron Liquid Battery

Can iron-based aqueous flow batteries be used for grid energy storage?

A new iron-based aqueous flow battery shows promise for grid energy storage applications. A commonplace chemical used in water treatment facilities has been repurposed for large-scale energy storage in a new battery design by researchers at the Department of Energy's Pacific Northwest National Laboratory.

What is an iron-based flow battery?

Iron-based flow batteries designed for large-scale energy storage have been around since the 1980s, and some are now commercially available. What makes this battery different is that it stores energy in a unique liquid chemical formula that combines charged iron with a neutral-pH phosphate-based liquid electrolyte, or energy carrier.

How does a redox flow battery work?

The aqueous iron (Fe) redox flow battery here captures energy in the form of electrons (e-) from renewable energy sources and stores it by changing the charge of iron in the flowing liquid electrolyte. When the stored energy is needed, the iron can release the charge to supply energy (electrons) to the electric grid.

How stable is an iron-based battery?

The researchers report in Nature Communications that their lab-scale, iron-based battery exhibited remarkable cycling stability over one thousand consecutive charging cycles, while maintaining 98.7 percent of its maximum capacity.

What is a flow battery?

The larger the electrolyte supply tank, the more energy the flow battery can store. Flow batteries can serve as backup generators for the electric grid. Flow batteries are one of the key pillars of a decarbonization strategy to store energy from renewable energy resources.

How does a flow battery store energy?

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In the first dual-electrode-free battery, metals self-assemble in liquid crystal formation as electrodes when needed. This could increase energy density over existing zinc-manganese batteries up to six times and durability almost four times. ... New aqueous battery without electrodes may be the kind of energy storage the modern electric grid needs.

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We analyzed 50 liquid metal & metal air battery startups. Pellion Technologies, Ambri, NantEnergy, Phinergy, and E-stone are our 5 picks to watch out for. ... (Opens in new window) Click to share on LinkedIn (Opens in new window) ...

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