# All iron-chromium energy storage batteries

Alkaline all-iron flow batteries possess intrinsic safety and low cost, demonstrating great potential for large-scale and long-duration energy storage. However, their commercial application is hindered by the issue of capacity decay resulting from the decomposition of iron complexes and ligand crossovers.

In this work, combining the merits of both all-vanadium and iron-chromium RFB systems, a vanadium-chromium RFB (V/Cr RFB) is designed and fabricated. ... A comparative study of all-vanadium and iron-chromium redox flow batteries for large-scale energy storage. J. Power Sources, 300 (2015), pp. 438-443.

According to American Clean Power, formerly the US Energy Storage Association, the iron-chromium flow battery is a redox flow battery that stores energy by employing the Fe2+ - Fe3+ and Cr2+ - Cr3+ redox couples. The active chemical species are fully dissolved in the aqueous electrolyte at all times.

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Huo et al. demonstrate a vanadium-chromium redox flow battery that combines the merits of all-vanadium and iron-chromium redox flow batteries. The developed system with high theoretical voltage and cost effectiveness demonstrates its potential as a promising candidate for large-scale energy storage applications in the future.

Download figure: Standard image High-resolution image Other economic studies have shown that the cost of RFB systems are too high relative to their low energy storage densities, particularly due to the high capital cost of electroactive materials as the systems approach the MWh-scale. 8-10 This has led to the exploration of new RFB chemistries with ...

Iron-chromium flow battery (ICFB) is the one of the most promising flow batteries due to its low cost. However, the serious capacity loss of ICFBs limit its further development. ... A comparative study of all-vanadium and iron-chromium redox flow batteries for large-scale energy storage. J Power Sources, 300 (2015), pp. 438-443.

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