Lithium battery life cycle analysis

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Therefore, this paper provides a perspective of Life Cycle Assessment (LCA) in order to determine and overcome the environmental impacts with a focus on LIB production process, also the details regarding differences in previous LCA results and their consensus conclusion about environmental sustainability of LIBs.

Contribution of lithium-ion battery (LIB) and vanadium redox flow battery (VRB) components to the overall life cycle environmental impacts, along with life cycle phases of the LIB-based renewable energy storage systems (LRES) and VRB-based renewable energy storage system (VRES) resulting in significant impacts.

This review offers a comprehensive study of Environmental Life Cycle Assessment (E-LCA), Life Cycle Costing (LCC), Social Life Cycle Assessment (S-LCA), and Life Cycle Sustainability Assessment (LCSA) methodologies in the context of lithium-based batteries.

Nonetheless, life cycle assessment (LCA) is a powerful tool to inform the development of better-performing batteries with reduced environmental burden. This review explores common practices in lithium-ion battery LCAs and makes recommendations for how future studies can be more interpretable, representative, and impactful.

Abstract. This paper analyzes and compares the life cycle environmental impacts of two major types of Li-ion batteries using process-based and integrated hybrid life-cycle assessment (LCA) approaches. The life cycle inventories (LCIs) of Li-ion battery contain component production, battery assembly, use phase, disposal and recycling and other ...

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