

Life cycle assessment of a lithium ion battery vehicle pack

The study of the service life of lithium-ion power batteries for electric vehicles (EVs) is a crucial segment in the process of actual vehicle installation and operation. This paper provides a systematic overview review of the research on the service life of lithium-ion power batteries for EVs in recent years.

In order to avoid problem shifting, a life cycle perspective should be applied in the environmental assessment of traction batteries. The aim of this study was to provide a transparent inventory for a lithium-ion nickel-cobalt-manganese traction battery based on primary data and to report its cradle-to-gate impacts.

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.

A cradle-to-grave system is considered to assess the environmental impacts of a Lithium-ion battery (LIB) weighing 290 kg and a pack energy density of 188.3 Wh/kg. The LIB cells were repurposed at their first end-of-life, considering a 50% cell conversion rate (CCR) for 5 ...

The study was carried out as a process-based attributional life cycle assessment. The environmental impacts were analyzed using midpoint indicators. The global warming potential of the 26.6 kilowatt-hour (kWh), 253-kilogram battery pack was found to be 4.6 tonnes of carbon dioxide equivalents.

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