Power optimisation of electric coaster

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Abstract

Sustainability is the capacity to endure and ensure that the advanced technology for electric vehicles (EVs) remain diverse and productive over time. The power optimisation of the battery pack has been maintained by enhancing the lifespan of the battery with keeping the battery temperature 35-40 degrees C and cell's state-of-charge (SOC) balance with the variation 2-5%. A ZigBee wireless battery management system (WBMS) has been developed from this study to control the evaporative cooling battery thermal management system for the optimum range of battery temperature both in charging/adverse discharging. The WBMS allows the vehicle to utilise the maximum energy available from the battery for a given drive cycle whilst maintaining pack SOC balance within the range of optimal functionality. The WBMS multistage charge balancing system offering more effective and efficient responses to several numbers of series connected battery cells. The balancing results for two cells and 16 cells are improved by 15.12% and 25.3% respectively.

Keywords

Author Keywords: electric vehicle sustainability; WBMS; wireless battery management system; battery thermal management; cells charge balancing management
KeyWords Plus: LITHIUM-ION CELLS; BATTERY MANAGEMENT; SYSTEMS; DESIGN

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