THERMAL MANAGEMENT OF LITHIUM ION BATTERIES FOR ELECTRIC VEHICLES

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ABSTRACT

Energy plays a significant role in the advancement of a nation both socially and financially. Utilization of energy from renewable source is the main research focus in order to reduce dependency on conventional fuels. Keeping in view the fact, battery hybrid vehicles are rapidly replacing conventional vehicles. Lithium ion battery is an integral part of battery electric vehicles due to their high energy and power density. Their efficiency is affected due to rise in temperature of battery pack. An effort is made to maintain battery within permissible temperature limits. In current study efficient thermal management (graphene coated nickel foam paraffin composite) are examined experimentally for highly powered Li-ion batteries. Experimental model carries six Panasonic 18650B 3400 mAh lithium ion energy cells which were connected in series. Four other thermal management modes were compared, and their results were evaluated. By utilizing graphene coated nickel foam paraffin composite, 34% reduction in temperature of battery pack is achieved. While 1% decreases in temperature of battery enhances the life of battery for two months. So, graphene coated nickel foam paraffin composite is feasible option for thermal management of lithium ion battery pack.

Keywords: Thermal Management; Hybrid Electric Vehicle; Passive Cooling; Graphene Composite