عنوان مقاله:

Effect of the Phase Change Material Thickness in the hybrid cooling of Li-Ion Batteries, used in green vehicle

محل انتشار:

اولین همایش بین المللی قوای محرکه نوین (با محوریت خودروهای برقی) (سال: 1397)

تعداد صفحات اصل مقاله: 18

نویسندگان:

Gholam Reza Molaeimanesh - *Automotive engineering school, Iran University of Science and Technology; Tehran, Iran Assistant Professor*

Mohammad Ali Bamdezh - *M.Sc. Student*

خلاصه مقاله:

Today, human beings are using fossil fuels at high speed, the result of excessive use of fossil fuels is such a result as global warming, acidic rain, air pollution and etc. As it is clear, fossil fuels are non-renewable energy in addition, the resources of fossil fuels are coming to an end. For the mentioned reasons man has to move towards the use of clean and renewable fuels. One of the clean and renewable energy sources is batteries. Among the batteries, lithium ion batteries have a lighter future due to their high power and energy density compared to other batteries. Today, the lithium-ion batteries are used as a power source for a green car in the road transport industry. Li-ion batteries are sensitive to temperature variations and if they work outside of their temperature range, their life and performance will be affected. Therefore, thermal management of lithium-ion batteries is inevitable. There are different kind of battery thermal management systems (TMSs), such as active TMS, passive TMS and hybrid TMS. Inactive TMSs cold air is blown to the batteries or cold water circulate around them to remove heat from batteries and in the passive TMSs usually phase change materials (PCMs) are used. PCMs can absorb batteries heat without consuming any energy. In this paper the effect of different thickness of phase change material in a hybrid TMS for 18650 Li-ion batteries is studied. It was concluded that the increase of the PCM thickness cannot necessarily improve the batteries cooling in .the hybrid TMS

کلمات کلیدی:

air pollution; green vehicle; renewable energy; phase change material; hybrid cooling