

DEVELOPMENT OF NEW THERMAL MANAGEMENT SYSTEMS FOR POLYMER LITHIUM-ION BATTERIES USED IN HYBRID AND ELECTRIC VEHICLES

Status:	Filled
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Project Description:

Electric vehicles are emerging as a viable form of green technology for the transportation sector. However, these vehicles are still hampered by a number of design challenges. One such challenge is the thermal management of the high power battery packs. The most common battery packs being employed for electric vehicles are the polymerlithium battery pack. These batteries are sensitive to their thermal operating conditions. The batteries should be maintained at an optimal temperature, requiring warming on start-up and cooling during charge and discharge. The chemical reaction in the cell is also temperature dependant, so for the best pack performance the battery pack should be as close to isothermal as possible. This thermal design challenge is the basis for the capstone project. The team (2 or 3 students) will be working with the research group at Dr. Bahrami's lab, Laboratory for Alternative Energy Conversion (LAEC), to design and test various novel battery thermal battery management systems (BTMS) to maintain the lithium polymer battery pack within an ideal temperature range. The project is benefited by a close collaboration with an industrial partner, FVT.

Estimated Project Timelines

Project begins -January 2011

Evaluation of the various design criteria- January

Development of design concepts-January-February

Performance modelling/estimation for the various design concepts –February-April

Component selection system design – April-July

System assembly and testing – July-Project completion