

Emerging Energy Storage Solutions for Transportation Electrification – A Review

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Abstract

Energy storages have caught the attention of transportation community for the past several years. Recent developments in hybrid and plug-in electric vehicles together with novel concepts in transportation such as electric highways are the reasons for raising the role of energy storages in transportation to such a significant level. Performance demands for energy storage solutions vary significantly from one transportation application to the other, making it difficult for the scientific community to converge to a single energy storage solution that caters all. This paper reviews the key performance demands of the major transportation applications. It also investigates the characteristics of emerging energy storage solutions and assess their suitability for those reviewed transportation applications.

Keywords: batteries, capacitors, chemistry, energy management, energy storage, flywheels

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