

Researches and Developments for Energy Saving of Rolling Stock

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Railway is an environmentally friendly transportation system in view of energy saving. It is owing to low rolling resistance and its mass transport capability. Also many and long term researches and developments have realized less energy consumption. In this paper, the author describe, as examples, on board lithium ion battery, fuel cell vehicle, superconducting transformer, permanent magnet traction motor, direct drive traction motor, hybrid system vehicle etc.