

### **Improvement of Control Method for Fixed Energy Storage System**

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Some types of fixed energy storage systems have been applicable to DC electrified railways. However, these systems have a limited capacity in general. If the charge status of the storage media is inappropriate, the charge/discharge process can no longer be continued depending on the driving status: powering or regenerating of electric rolling stock. We therefore have developed a new control method, by which sufficient and constant power supply to meet the energy need of electric rolling stock is ensured, while the storage media is kept in the middle state of charge in preparation for the next phase of powering or regenerating. A prototype storage system applying the developed control method and electric double layer capacitors (EDLCs) as storage media was built. Tests were performed using a railway test line, electric rolling stock, and the system. It was confirmed that the developed energy storage system could charge or discharge according to powering/regenerating of complicated load.