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能源和环境工程

基于径向基函数网络的MH/Ni电池建模及容量预测

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摘要

关键词 放电容量 径向基函数 MH/Ni电池 人工神经网络

分类号

MODELING AND PREDICTION OF CAPACITY OF MH/Ni BATTERIES BASED ON RADIAL BASIS FUNCTION NEURAL NETWORK

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Abstract

Prediction of discharge capacity was the key task for battery management system in electric vehicles. The basic mechanism of radial basis function (RBF) neural network was briefly analyzed, and the structure of the network was optimized by improved algorithm. The influence of temperature and current on discharge capacity of MH/Ni batteries was discussed. A neural network model of MH/Ni batteries was set up based on RBF neural network. Discharge capacity of batteries under different conditions was estimated with the application of the model. The results showed that the model was of high accuracy and was more efficient in respect of training process than BP network. The simulation tests revealed that the modeling method based on RBF network was feasible.The artificial neural network technique avoids complicated analytic process of mathematic modeling. It provides a new effective and accurate method of prediction of discharge capacity for battery management system.

Key words discharge capacity radial basis function MH/Ni batteries artificial neural network

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