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# APPLICATION OF RADIAL BASIS FUNCTION NEURAL NETWORK, TO ESTIMATE THE STATE OF HEALTH FOR LFP BATTERY

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## *ABSTRACT*

*This paper proposes a method that is based on the radial basis function (RBF) neural network, to estimate the state of health (SOH), for the LiFePO4 (LFP) batteries in discharging condition. The proposed method contains three hardware's, namely the battery voltage detection interface, discharge current detection interface, battery impedance measure interface. With a micro-processor integrated, the proposed SOH estimator is able to digital control which can improve the estimator reliability. The software of the proposed SOH estimator is the RBF neural network. The architectures of proposed RBF neural network, used in this paper contain three layers, an input layer, a hidden layer and an output layer. In order to demonstrate the accuracy of the proposed estimation method, the method has been tested using LFP batteries under several kinds discharging conditions. The accuracy of the proposed SOH estimation method is evaluated using two indices, namely the maximum absolute percentage error (MaxAPE) and the mean absolute percentage error (MAPE). The test results show that, the proposed RBF neural network based estimation method is accurate and effective.*

***KEYWORDS**: State of Health, LFP Batteries, RBF Neural Network, Micro-Processor*

## *Article History*

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