A Simple Method of Estimating the Temperature Rise of the Traction Lithium-ion Battery

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The thermal design of the lithium-ion battery is important to achieve its longer lifetime and better electric performance. We developed a simple thermal network model of the traction lithium-ion battery for the AC-fed and battery-powered EMU (electric multiple unit train) to grasp holistic thermal characteristics quickly and easily. This thermal model helps us to estimate the average temperature of the battery modules inside the respective battery cases. In this paper, we described how to construct the thermal model, accuracy of the estimated temperature by comparing it with the measured temperature in summer and winter running tests, and an example of the effective use of the thermal model.