

Battery cooling and quick-charge control optimization for long-distance trip in Kei-EV

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In recent years, the development of high-capacity EV battery has been promoted in order to realize long trip in EV, however, in order to maintain the vehicle concept of an affordable Kei-EV car, the new battery cooling system and the suitable quick charge control are equipped without increasing the capacity. These thermal management designs have enabled long trip.

The conventional battery cooling system cooled a bottom of the battery, it was a problem that battery height expanded. Because the cell module height can be minimized by locating the battery cooling unit on the opposite of high voltage terminal and piling up the heat sink which is thinned down to form a heat transfer path(Fig1), it is possible to common platform of Kei-ICE and Kei-EV.

I perform the battery temperature simulation that assumed a high-speed run and the repetition of the quick charge with some MAX charge power(Fig2). I decide the charge power that charged energy becomes maximum at three times in the biggest charge power (Fig3)

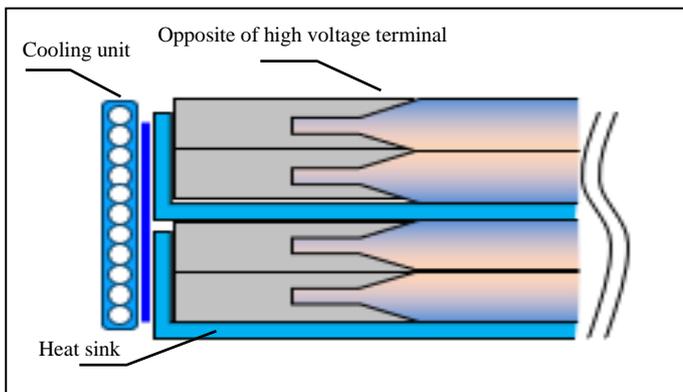


Fig.1 Battery cooling structure

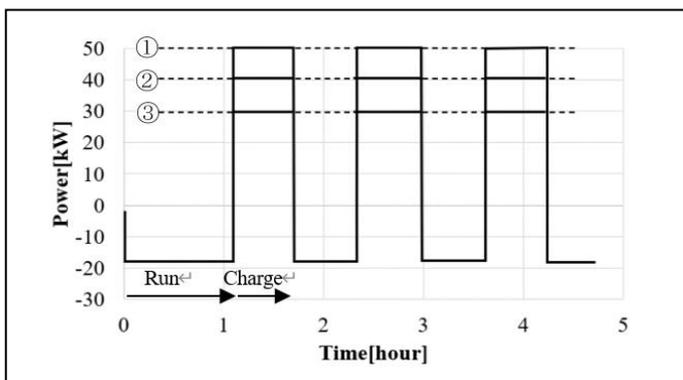


Fig.2 Pattern of the battery temperature simulation

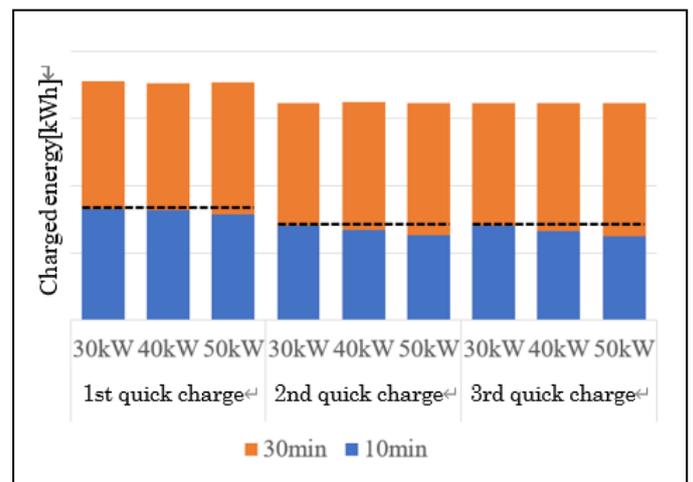


Fig.3 Comparison of charged energy