

ELABORATION OF A TRAINING SYSTEM AND ALGORITHM TO IMPROVE BATTERIES PERFORMANCE

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In the process of battery operation, an important factor is the identity of the individual elements characteristics, on which the lifetime of the entire battery depends. In charge-discharge cycles, an element with worse characteristics leads to a deviation of the charge parameters of the entire battery, as a rule it does not receive a full charge. Most well known battery training systems control a limited list of parameters, such as charge current, initial and final voltage, and electrolyte temperature. Automatic control of the density of the electrolyte and the moment of gas evolution is quite difficult to perform; they are performed manually by the operator or are excluded for non-served batteries.

The elaborated system allows to perform individual training for each element (cell) of the battery with the ability to monitor and remote control. The individual setting of the charge-discharge parameters of each battery element (cell) provides a minimum deviation in characteristics, which extends the battery life up to 50% additionally. This system permits to train rechargeable batteries with up to 50 cells and more connected in series, which allows it to be used for autonomous electric transport: electric forklift, electric bus, trolley with autonomous travel, wheelchair with electric drive, etc. Monitoring the density of the electrolyte and the moment of gas evolution in the system allows to obtain more accurate characteristics data, on the basis of which an updated training mode of the battery cells is set. The hardware of the system allows you to provide the whole set of battery training algorithms: a fixed charge current, a multistage change in the charge current, reverse charge current, etc. with simultaneous monitoring of the regime.

Keywords: *battery, charge current, discharge current, electrolysis, discharge-charge cycle, battery capacity.*

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