Peukert's Generalized Equation Taking into Account the Temperature for Nickel-Cadmium Batteries

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In this paper, batteries' temperature influence was analyzed on parameters of Peukert's generalized equation $C = C_m / (1 + (i/i_0)^n)$. It was proved by experiments that all the parameters (C_m , i_0 and n) of Peukert's generalized equation depend heavily on battery temperature. So when assessing battery released capacity, it is absolutely necessary to consider battery temperature. Empiric equations have been proposed describing parameter changes (C_m , i_0 and n) depending on temperature. These equations are correct at any battery temperature values widely used in practice. Thus, experimentally it was proved that the proposed Peukert's generalized equation is correct at any discharge currents and at any battery temperatures, unlike the classical Peukert's equation.

Keywords: Peukert's equation, battery, nickel–cadmium, lithium-ion, temperature

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