

Impact of Short Current Pulse at Various State of Charge and State of Health Levels on Internal Resistance for Accurate LIB Temperature Estimation

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Abstract. This paper investigates the influence of temperature, state of charge (SOC), and state of health (SOH) on lithium-ion battery (LIB) internal resistance (Z_R), an essential parameter for accurate temperature estimation. The study demonstrates that temperature variations significantly affect Z_R , therefore careful consideration in estimation models is needed. SOC impacts resistance, particularly at extreme ends, while declining SOH increases resistance. These findings highlight the importance of accounting for these factors in sensorless temperature estimation to enhance the reliability and safety of LIB operation.