

Electric vehicle with sliding mode control super-twisting control strategy

ABSTRACT

The braking system is the crucial part in vehicle system. The main purpose of braking system is to slow down or stop the moving vehicle. The regenerative braking system (RBS) designed to recapture more energy during braking. The electric vehicle dynamic model was design using Matlab/Simulink. Sliding mode controller with super-twisting (SMCST) was designed to avoid overcharging and improved the batteries' SOC. Conventional sliding mode control (SMC) shows convergence within the desire level of accuracy, in which chattering is the main issue related to destructive phenomenon. SMCST intentionally to eliminate chattering with high accuracy. The results from the simulation show that the super-twisting control strategy offers higher regeneration efficiency.

Keyword: Electric vehicle; Regenerative braking system (RBS); Sliding mode control