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Speed Control of Brushless DC Motor Using PI Controller in MATLAB Simulink

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Abstract : Nowadays, there are more and more variable speed drive systems in small-scale and large-scale applications such as the electric vehicle industry, household appliances, medical equipment, and other industrial fields led to the development of BLDC (Brushless DC) motors. BLDC drive has many advantages, such as higher efficiency, better speed torque characteristics, high power density, and low maintenance cost compared to other conventional motors. Most BLDC motors use a proportional-integral (PI) controller and a pulse width modulation (PWM) scheme for speed control. This article describes the simulation model of BLDC motor drive control with the help of MATLAB - SIMULINK simulation software. The built simulation model includes a BLDC motor dynamic block, Hall sensor signal generation block, inverter converter block, and PI controller.

Keywords : brushless DC motor, BLDC, six-step inverter, PI speed
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