

Thesis Title	The Design and Implementation of a Third Order Plant Controller by Using PIDA for speed control Separatly Excited DC Motor
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Year	1999
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ABSTRACT

The conventional approach for the third order plant results a slow transient response and high overshoot. In addition, the system may return to be instability due to load variation or disturbance. This thesis proposes the design technique, implementation and application of the Proportional, Integral, Derivative and Acceleration (PIDA) controller to overcome this problem. The position controlling of the separately excited DC motor is considered to be a case study in thesis. The controller was implemented by using DSP processor TMS320C31 incorporated with the designed interfacing circuit to operate in a real time mode. The whole system parameters can be changed in the designed controller giving a flexibility for practitioners to adjust the appropriate parameters for their system. The experimental results reveal that the speed reference and position of the controlled motor can reach the setup value within 2 second both with and without load. These results approximate to those obtained form the simulation with Matlab program. The speed controlling of the three phase AC induction motor is also simulated with the designed controller which yields the satisfying results.