Motor Control Design and Prototyping with Simulink and Simscape

OEM: MathWorks • Duration: 2 Days (16 hrs) • Code: MW-MOTOR-CONTROL-WITH-SIMULINK-AND-SIMSC

COURSE MODULES & TOPICS

Day 1 of 2

Electric Machine Operating Principles

- Overview of electric motors
- Electric machine operating principles
- Clarke and Park transform
- Motor control development workflow

Three-Phase Brushless Motors

- Three-phase brushless motor
- Tabulated motor model data
- Three-phase inverter
- Pulse-width modulation implementation
- Open-loop voltage control

Field-Oriented Control

- Field-oriented control (FOC)
- Current control implementation
- Controller tuning

Variable-Speed Drives

- Maximum-torque-per-ampere
- Field weakening
- Torque speed characteristics
- Speed control

Day 2 of 2

Sensors and Peripherals

- General purpose IO drivers
- PWM drivers
- Quadrature encoders

- ADC drivers

Host-Target Communications

- Two-model approach
- Serial communication interface
- Host model setup

Controller Execution

- ADC and PWM interrupts
- Deployment harness
- Rate transitions

Parameter Estimation

- Parameter estimation
- Plant validation