



MOTOR DESIGN LTD

DESIGN OF BRUSHLESS PERMANENT MAGNET MACHINES

Training course for Engineers involved in the design and manufacture of electric motors and generators

Goal: To enhance the knowledge and skills of engineers in the design and analysis of brushless PM machines

Date: tba

Location: Motor Design Training Rooms, Ellesmere, Shropshire, UK

Cost: £850 (40% discount for students and additional attendees from same company)

Language: English

To book Call +44 (0) 1691 623305 or Email: info@motor-design.com

DAY 1

Analysis Techniques for Calculation of BPM Machine Performance

Types of BPM Machine

- squarewave/sinewave drives
- surface PM and IPM
- phase number
- winding types
- etc.

Performance Calculation Theory (Analytical)

- airgap flux density
- back emf
- inductance
- currents
- torque

Performance Calculation Theory (Analytical) – Continued...

- demagnetisation
- losses
- temperature rise
- fault analysis
- etc.

Performance Calculation Theory (Numerical)

- back emf
- average electromagnetic torque
- torque ripple (cogging, reluctance)
- core & magnet losses
- etc.

DAY 2

Software for Analysis of BPM Machines

SPEED PC-BDC for design of BPM machines

- the SPEED software interface
- the SPEED software analysis method
- sine and squarewave machines
- surface PM and IPM machines
- integrated FEA and algorithm calibration
- design examples

Motor-CAD for thermal analysis

- cooling types used in BPM motor design
- basic calculation theory
- Motor-CAD links to SPEED
- design examples

FLUX for detailed FEA electromagnetic analysis

- cogging
- back EMF calculation
- torque calculation
- loss calculation
- FLUX links to SPEED – BPM Overlay
- design examples

PORTUNUS for drive modelling

- BPM model parameters
- drive system modelling
- electromagnetic and thermal models
- design examples

DAY 3

Practical Examples of Designing BPM Machines

- On this training day we demonstrate the design process using a typical application specification and design a motor to meet the requirements
- We will use several software packages in the design example
- The attendees will have the opportunity to use the different software packages themselves and to contribute suggestions of further design examples for modelling on the day