

SPEED Software

The SPEED programs for electric motor design are simple to use, fast and efficient. They are intended for:

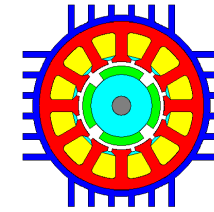
- Sizing & preliminary design
- Studying the performance and quickly assessing the effect of parameter changes.

The programs include several common features:

- Extremely fast detailed performance calculations including speed/torque, efficiency, currents, etc.
- Transient and steady-state thermal models
- PC-FEA finite-element program closely integrated
- Extensive training programs; on-site training
- Custom versions (including geometry & calculations)
- Detailed loss calculations in windings, iron, power devices, retaining cans, magnets, windage etc.
- Efficient user interfaces
- Graphical outline and template editors
- Sophisticated winding editors
- Materials databases for steels, magnets, brushes
- Design sheets with hundreds of output parameters
- Floating editors and design sheets
- Parametric calculator
- Optional units and unit converter
- Detailed online manuals with extensive theory
- Extensive scripting and other automation aids
- Extensive finite-element links via GDF
- Backward compatibility over at least 10 years
- Extensive import/export capability
- Detailed wire specification options
- User wire tables option
- SPUD user's desktop program

Motor design with SPEED software is interactive and fast. However, SPEED software does not do the engineer's job. It has no *judgement* and it is not automatic. It is a specialised calculating tool to assist design engineers.

SPEED software is backed by over a decade of experience within the SPEED Lab at the University of Glasgow. Several hundreds of new motor designs have been developed with SPEED software, many of them at the leading edge of electric motor development and application.



Motor Design Ltd.

Distributors for the SPEED electric
motor design software



For more information please contact:

Motor Design Ltd.

Lloyds Bank Chambers
4 Scotland Street, Ellesmere
Shropshire, SY12 0EG
UK

Phone: +44 (0)1691 623305
Email: info@motor-design.com
www.motor-design.com

SPEED Software is produced by

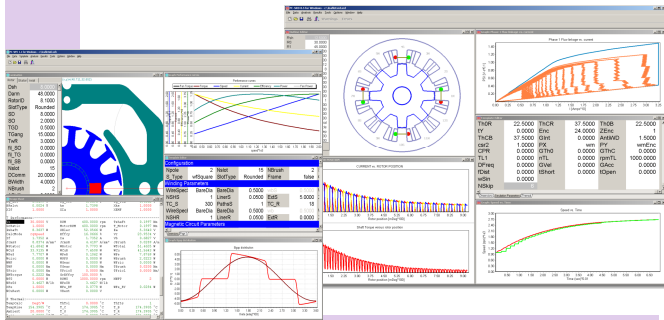


UNIVERSITY
of
GLASGOW

PC-SRD

Switched reluctance motors and drives

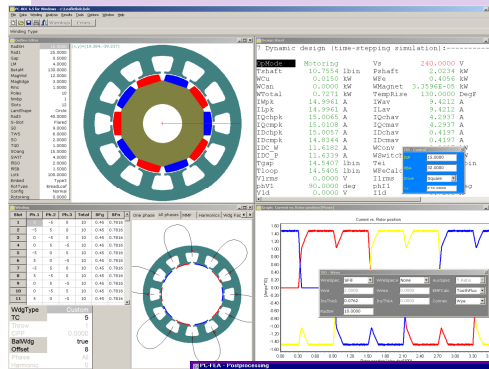
- 5 basic standard templates to get started
- Interior/Exterior-rotor
- Several special configurations including DC windings, short flux-path configurations
- Several drive/control models including current regulation, voltage PWM, firing angle control
- Single load-point computation
- Multi-stroke simulation
- Auto-search utility
- Transient thermal model
- Generator capability
- Automatic magnetization curve calculation
- External magnetization curve option
- Extensive output waveforms
- Energy-conversion loop; current, torque, flux-densities
- Built-in Unimesh finite-element GoFER complete with solver and post processor



PC-BDC

Brushless PM motors and drives

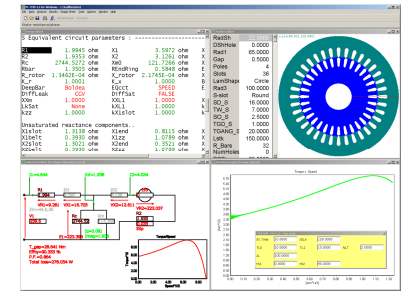
- Over 40 standard templates
Interior/Exterior-rotor
Surface/Interior magnet
Wound-field motors
Line-start motors (1/2/3-phase)
- Winding editor with harmonic analysis and slot-fill factors and Goerges diagram
- Several drive/control models including
Sinewave
Squarewave
Unipolar and bifilar
AC volts (direct on line)
Rectifier operation
- Phasor diagram for AC motors
- Generating modes
- Transient and steady-state thermal models
- Several alternative electromagnetic field calculation options
- Detailed inductance analysis
- Extensive output waveforms
Current, EMF, torque, flux-densities, forces
- Harmonic analysis of waveforms
- Current harmonic injection



PC-IMD

Induction motors

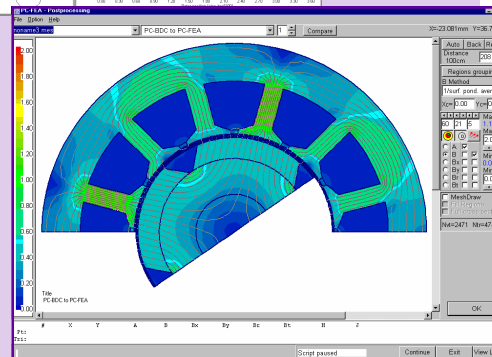
- Polyphase and single-phase motors
- Open, closed, and custom rotor slots
- 14 basic standard templates to get started
- Double-cage rotors
- Detailed equivalent-circuit parameters
- Detailed loss breakdown
- Multiple winding connection options
- Tapped-winding capacitor motors
- Advanced methods for single-phase motors
Cross-field method
Symmetrical component method
Forward/backward rotating field method
- Winding editor with harmonic analysis and slot-fill factors and Goerges diagram
- Detailed inductance analysis
- Advanced method for computing saturation of magnetizing reactance
- Deep-bar effect
- Phasor diagram
- Transient and steady-state thermal models
- Line-start transients
- Point-on-wave switching for soft-starters
- Eigenvalue analysis for stability on V/Hz drives
- Circle diagram



PC-WFC

Wound-field AC and DC motors

- Several standard templates to get started
- Wound-field motors & PM-field motors
- Extensive geometric detail covers a wide range of design possibilities
- Winding editor includes:
Skew, Multiple bars/slot,
Simplex, duplex, triplex windings
- Advanced method for computing saturation and air-gap flux distribution including armature reaction and skew effects
- Detailed inductance analysis with saturation
- Detailed equivalent-circuit parameters
- Advanced brush-shift model
- Shunt, series, and separately excited connections



PC-FEA

Tightly integrated Finite Element Engine

- Geometry input directly from the SPEED motor design software giving instant access to more than 200 basic motor configurations including switched reluctance, PM brushless, commutator motors and induction motors.
- Automatic mesh generation with concentration nodes under user's control
- Ultra-fast magnetostatic solver optimised for electrical machine problems
- Graphical and numerical magnetic field distribution
- Push-button" calculation of motor parameters and performance
- Results can be returned to the design software to improve accuracy.