

Motor-CAD v12

Machine Types

- BPM
- BPMOR
- SYNCREL
- IM
- Single Phase IM
- SYNC
- SRM
- PMDC
- Claw Pole

Analysis Options

- Performance tests
- Efficiency maps
- Steady state and duty cycle thermal analysis
- Winding validation
- Loss calculation
- Harmonic analysis
- Sensitivity analysis
- Force calculation

Features

- Automatic winding generation
- Comprehensive material database
- Combined electromagnetic and thermal model
- Custom geometries
- Cooling systems
- Custom drive cycles
- Eccentricity
- Demagnetization
- ActiveX scriptable from MATLAB®, Microsoft Excel® etc.
- Links to ANSYS® tools
- Flexible results export for reports
- ANSYS export

Integrated Electromagnetic & Thermal Analysis Software for Electric Motor Design

Motor-CAD enables motor designers to evaluate motor topologies and concepts across the full operating range and produce designs that are optimised for performance, efficiency, size and cost. The software's four integrated modules—EMag, Therm, Lab and Mech—enable multi-physics calculations to be performed quickly and iteratively, so users can get from concept to final design in less time.



EMag - Combined 2D FEA and analytical algorithms for fast calculation of electromagnetic performance.



Therm - Heat transfer and flow network circuits automatically set up to provide steady-state and transient thermal predictions.

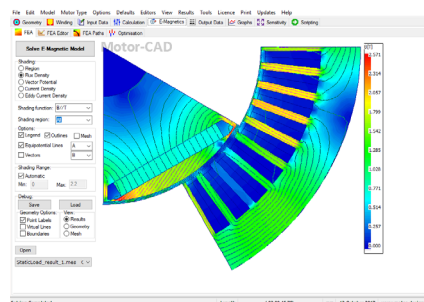


Lab - Efficiency mapping and drive cycle analysis within minutes or seconds.

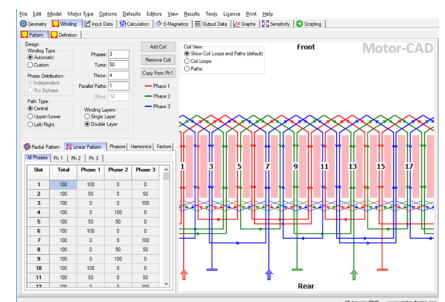


Mech - 2D FEA based solution in Motor-CAD to analyse stress and displacement in rotors during operation.

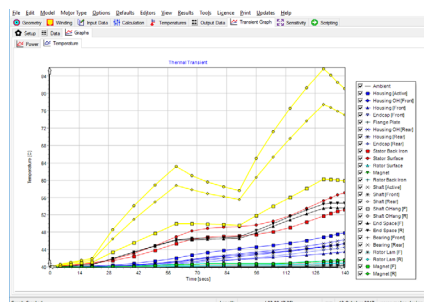
Accurate electromagnetic and thermal calculations can be performed in minutes, allowing users to respond to changing specifications, innovate and explore the whole design space. The results are presented in an easy to understand form for analysis and can be exported for integration into larger workflows using our advanced links to other software.



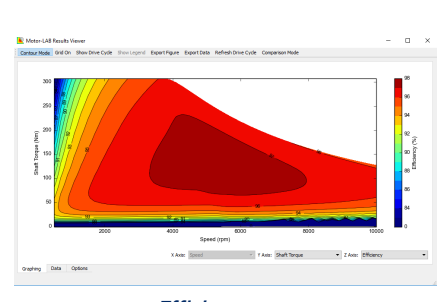
Flux Density shading



Flexible winding editor



Transient thermal analysis



Efficiency map

Latest Features

The development of Motor-CAD is driven by demand for a fast, powerful & accurate electric motor design tool that evolves to keep up with the needs of its users. New features and enhancements in Motor-CAD v12 include:

Improved BPM & SYNC Generator Calculation – calculate generator performance with AC passive load and rectified loads.

New PMDC EMag module for modelling of brushed DC machines.

New IM1PH EMag module for modelling of single phase induction machines.

New mechanical module with rotor stress analysis – 2D FEA based solution in Motor-CAD to analyse stress and displacement in rotors during operation.

New linear winding pattern view with easier to understand winding connections showing front and rear end-windings – useful for understanding more complex winding patterns like hairpin.

More materials added to materials database including magnet data for Arnold and Electron magnets, Carpenter alloys, Victrex and Lord materials and New England Wire Litz Wire.

New feature to generate electromagnetic saturation data (flux linkages and inductances). Useful for system level modelling in other analysis and modelling tools, such as MATLAB.

New functionality added to model New England Type 8 Litz wires.

New automatic report generation – automatically create custom reports in Microsoft Word format, with user options to add screenshots and tables of values.

New machine templates providing example models for different applications, power and machine types.

Improved Heat Exchanger Model with added coupling to water jacket cooling systems.

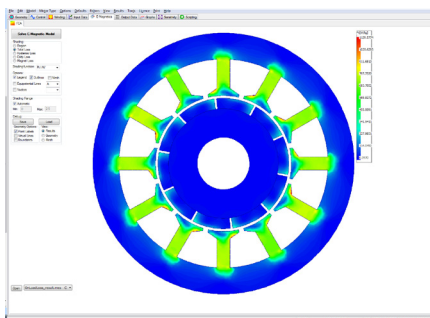
New slot water jacket cooling options allowing definition of more complex cooling systems.

Improved Lab thermal coupling – new iteration between operating point and steady state thermal solution.

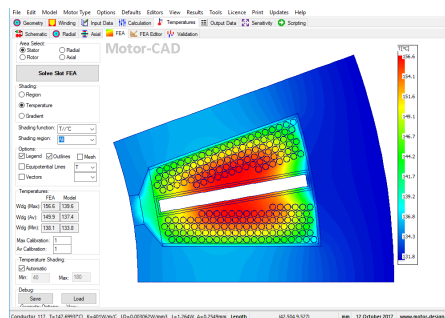
Improved Lab AC loss map giving more accurate loss modelling across whole machine operating range.

DXF Split (Rotor/Stator) – users can now use a custom rotor or stator via DXF import with a parameterised Motor-CAD geometry for the other parts of the machine.

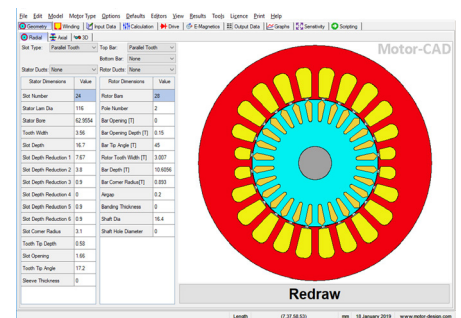
Find out more... To speak to one of our motor design specialists or to evaluate Motor-CAD for free, email us at info@motor-design.com



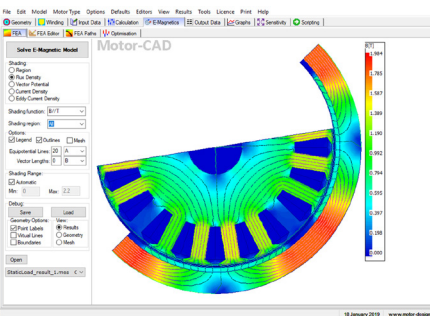
Loss calculation



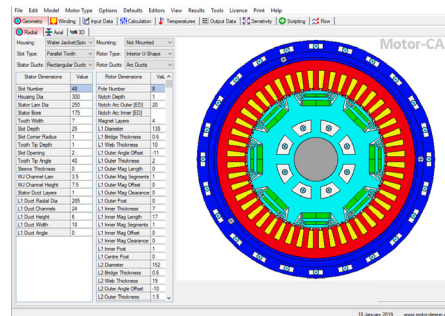
Slot temperature distribution



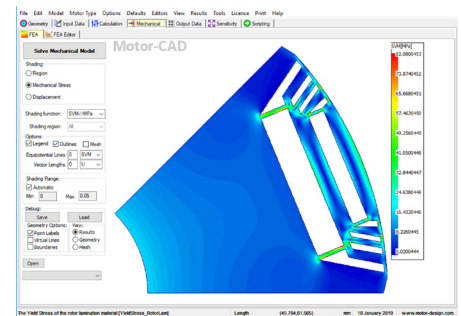
Single phase induction machine



PMDC machine



Detailed machine templates



Mechanical stress analysis

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