SIEMENS
Ingenuity for life

Simcenter Motorsolve

Electric motor design software

Features include

- Automatically calculates list of all balanced windings
- Auto-size: Get an initial value for several parameters related to the size of the machine based on torque per unit volume or rated current density
- DXF Import of the rotor, stator, and armature geometry
- VHDL-AMS and Simulink© export capabilities
- Create multiple design alternates in the same model to do quick and easy performance comparisons
- Pre-defined library of linear, nonlinear and anisotropic materials
- Several winding diagrams available (Phase Back-EM. Winding factors, Görges diagram, Animated Airgap MMF, etc)
- Dedicated electrical machine environment which allows a designer to explore the solution space
- Fully coupled drive-electromagnetic-mechanical-thermal simulations
- Explore the parameter space for a solution and automatically produce a report on the results.
- Shorten time to market of a new design as well as lowering the overall costs of the design
- Take notes, document design changes and export results into your spreadsheet

Simcenter Motorsolve is the complete design and analysis software for permanent magnet, induction, synchronous, electronically and brush-commutated machines.

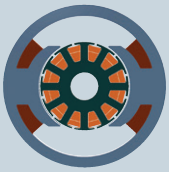
Motor and generator designers can use this template-based software for quick and easy virtual prototyping.

Simcenter Motorsolve™ simulates machine performance using equivalent circuit and our unique automated finite element analysis engine. Typical FEA user controls such as mesh refinements are not required as Simcenter Motorsolve performs these operations for the user.

All support machine types and modules:

Brushed and wound field DC machines

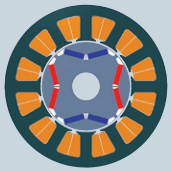
- Brushes
- PMDC
- Series
- Shunt
- Universal
- More



DCM module

Brushless DC and PMAC machines

- Sync. reluctance
- IPM
- Surface
- Bread-loaf
- Spoke
- Inset
- More



BLDC module

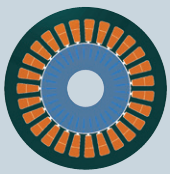
Switched reluctance machines

Templates for both interior and exterior types.

SRM module

Induction machines

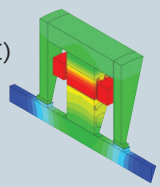
- Interior and exterior rotors
- All standard bar shapes
- All standard wound configurations



IM module

Thermal

- Non-vented (TENV)
- Forced Cooling (TEFC)
- Contact cooling
- Spray cooling
- Duct cooling + Water Jackets



Thermal analysis

Automated FEA engine

Simcenter Motorsolve includes several analysis methods, suitable for different phases of the design process. Outputs quantities, waveforms, fields and charts can be based on different analysis methods, allowing users to choose the computation time based on their required degree of accuracy.

Only FEA simulations accurately predict:

- Performance when there is saturation
- Hysteresis, eddy current and winding loss
- Deep bar effects
- Coupled Electromagnetic and Thermal effects

Performance parameters, waveforms and field plots are available with just one click.

Available experiments

Output waveforms and charts

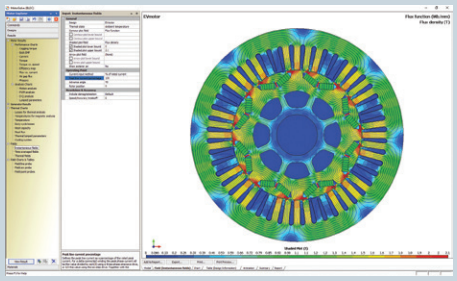
- Current
- Back-EMF
- Torque
- Flux Linkage
- Duty Cycle losses
- Heat flux
- Heat capacity
- Phasor Diagrams
- And many more

Machine performance

- Torque
- Efficiency
- Air Gap Flux
- Cogging Torque
- Efficiency Maps
- And many more

Field plots

- Demagnetization prediction
- Losses
- Flux density
- Current density
- Thermal
- Surface force density
- And many more



Simcenter Motorsolve Thermal

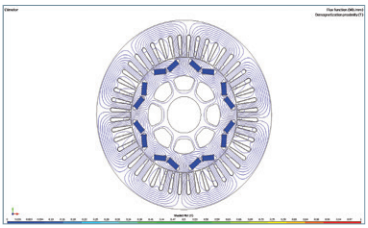
Simcenter Motorsolve Thermal is a 3D FEA-based thermal analysis tool for calculating the steady-state temperatures using the losses from BLDC or IM's electromagnetic analysis and perform the electromagnetic analyses at these steady-state temperatures.

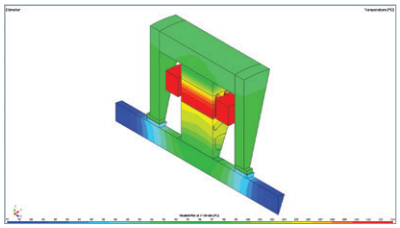
Export

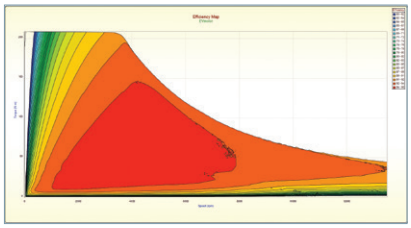
- Simcenter Amesim
- Simcenter Flomaster
- Simcenter MAGNET
- SystemVision
- VHDL-AMS
- Opal-RT
- Simulink
- DXF

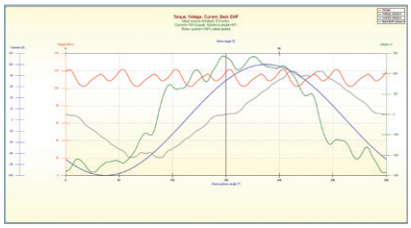
If you would like to learn more about Simcenter Motorsolve, visit our website for the latest product information and application examples.

Contact us to request a web demonstration or a trial copy of Simcenter Motorsolve today.

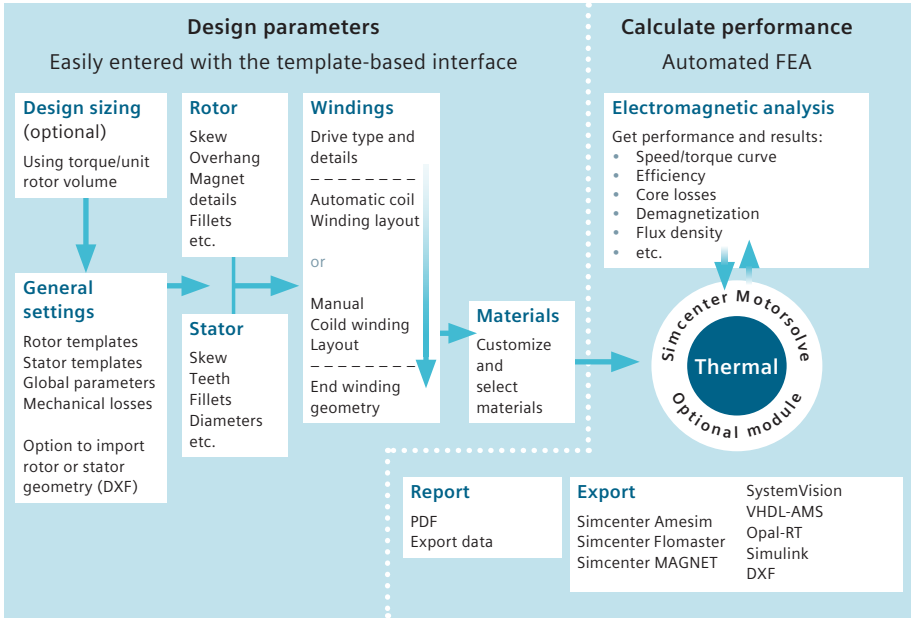








Workflow tailored to a motor designer's needs



Siemens PLM Software
www.siemens.com/plm

Americas +1 314 264 8499
Europe +44 (0) 1276 413200
Asia-Pacific +852 2230 3333

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