RMXPRT™

RMxprt™ software speeds the design and optimization process of rotating electric machines. The easy to use machine specific template-driven interface allows users to create model, assign materials, running strategies and drive circuit to calculate machine performance, make initial sizing decisions, and perform hundreds of "what if" analyses in a matter of seconds. RMxprt can then automatically set-up a complete Maxwell® 3-D or 2-D project including geometry, motion and mechanical set-up, material properties, core loss, winding and source setup including the drive circuit for rigorous electromagnetic analysis to refine parameters calculated by RMxprt and enhance accuracy.

NEW CAPABILITIES

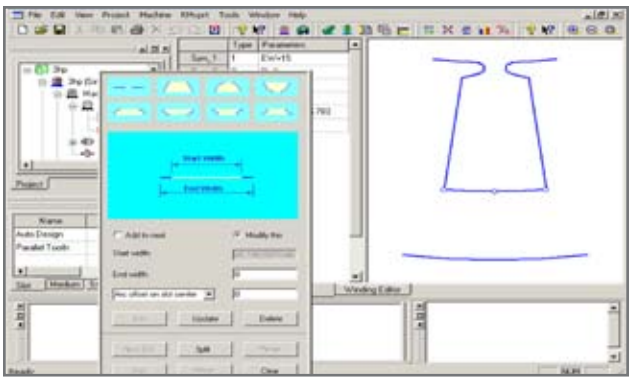
New Slot Editor
- Extension of current 6 standard slot types to arbitrary-shape slots
- Arbitrary combination of 8 basic slot elements
- Symmetric or asymmetric slots

New Machine Type
Wound Rotor Induction Machine
- Universal Operating Modes:
  - Motors
  - Generators (wind-power generators)
- Double-Fed Induction Generators (DFIG):
  - Variable frequency excitations
  - Maximum power point tracking (MPPT)

KEY BENEFITS

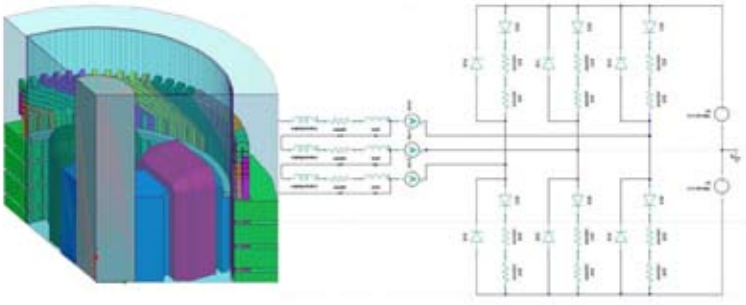
Fast design
RMxprt offers numerous machine-specific, template-based interfaces for induction, synchronous, and electronically and brush-commutated machines that allow users to easily enter design parameters and to evaluate design tradeoffs early in the design process.

Performance metrics
Critical performance data, such as torque versus speed, power loss, flux in the air gap, power factor and efficiency can be quickly calculated.



RMxprt's new slot editor allows users to create custom shaped slots.

Model pre-processor for Electromagnetic analysis
In addition to providing classical motor performance calculations, RMxprt can automatically generate a complete transfer of the 3-D or 2-D geometry, motion and mechanical set-up, material properties, core loss, winding and source setup including the drive circuit directly to Maxwell for detailed finite element analysis calculations. Users avoid the need to import or create geometry and the duplication of effort in problem set-up.



Wire library
RMxprt includes a comprehensive database of ANSI and IEC wires.

High-fidelity system models
RMxprt creates high-fidelity, nonlinear equivalent circuits models accounting for machines' physical dimensions, winding characteristics and nonlinear material properties. Engineers can use the resulting equivalent model to explore electronic control topologies, loads, and interactions with drive-system and multi-domain components in Simplorer®.

Convenient design sheet output
Design sheets list all the relevant input parameters and calculated parameters and graphically display waveforms including current, voltage, torque and back EMF as well as a detailed winding layout. RMxprt also can output Excel-format design sheets based on the user-defined template.

Powerful scripting
RMxprt can be integrated with third party development programs through scripting languages such as VB script, Tcl/TK, JavaScript®, Perl, Excel and MATLAB®. This allows users to customize the design flow and leverage internally developed programs and historical data.

DESIGN TEMPLATES

Machine Types

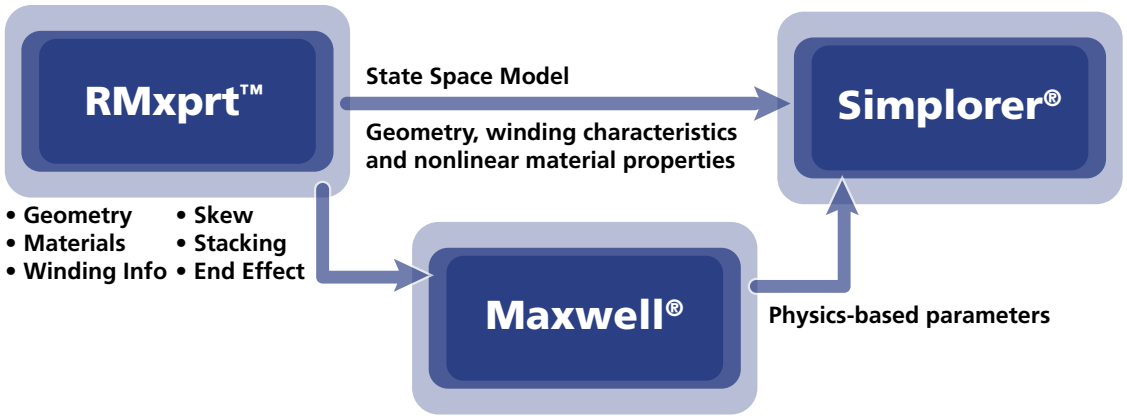
- Induction machines
- Single-phase motors
- Three-phase motors
- Wound-rotor motors and generators
- Synchronous machines
- Line-start PM motors
- Salient-pole motors and generators
- Non-salient pole motors and generators
- Brush commutated machines
- DC motors and generators
- Permanent magnet DC motors
- Universal motors
- Electronically commutated machines
- Brushless DC motors
- Adjustable-speed PM motors and generators
- Switched reluctance motors
- Claw-pole generators

KEY FEATURES

- Machine-specific template editor
  - Rotor
  - Stator
  - Slots
  - Running strategies
  - Drive circuits
- Auto-design feature
  - Slot size
  - Coil turns and wire diameter
  - Starting capacitance
  - Winding arrangement
- Performance curves
  - Torque
  - Power
  - Efficiency
- Output waveforms
  - Current
  - Cogging torque
  - Flux in the air gap
- Graphical winding editor
- Cross section Editor
- Customizable design sheet
- Cost evaluation
- Integrated parametrics and optimization
- Nonlinear Equivalent circuit model export to Simplorer®
- Automated 2D/3D project set-up for Maxwell®

DESIGN FLOW

RMxprt is the ideal starting point for a comprehensive electric machine design flow. RMxprt with Maxwell and Simplorer provides an efficient and accurate methodology to design and optimize an electric machine and related electric drive and control system.



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