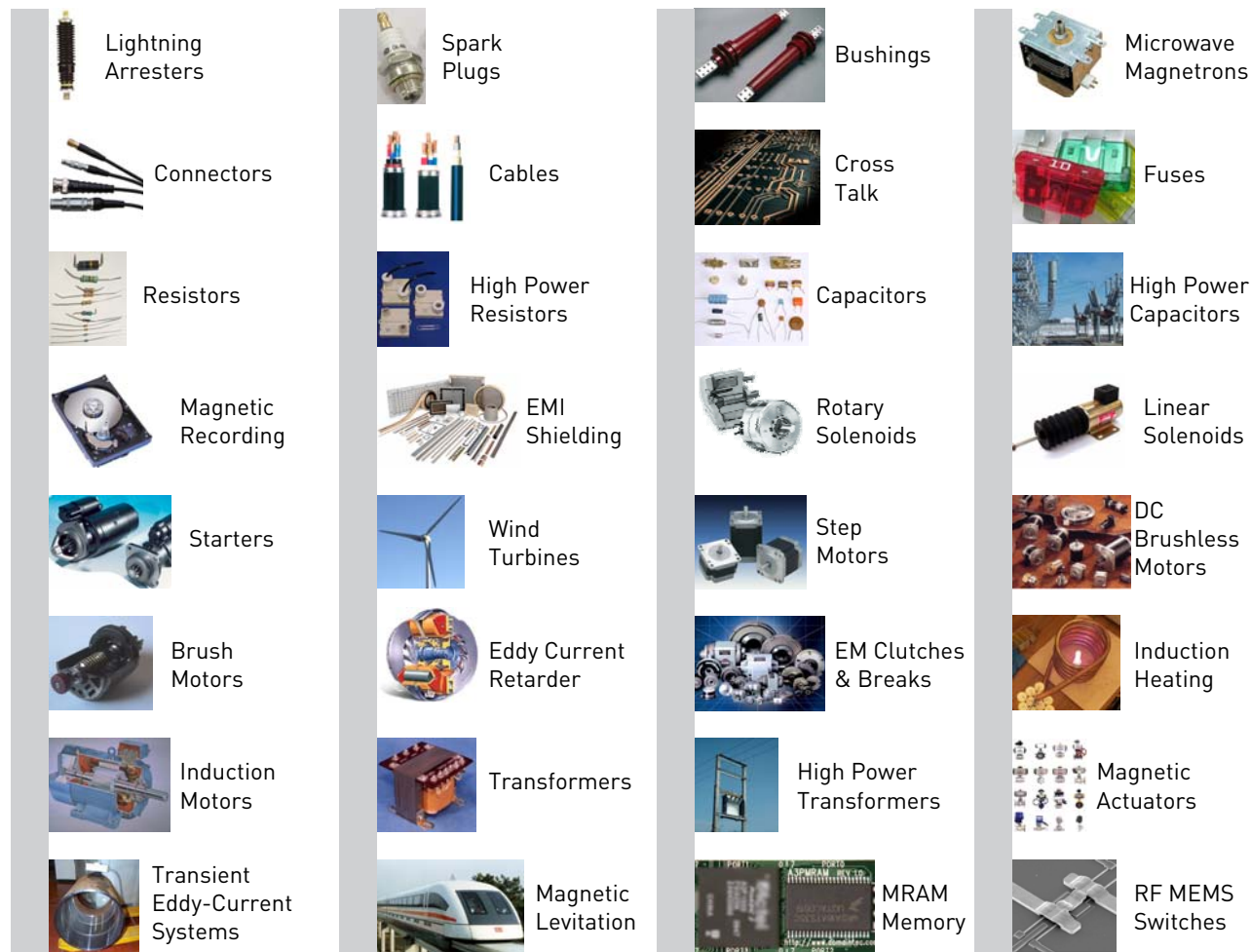


Join the growing community of satisfied EMS users who have used EMS to perfect their products



www.emworks.com

System requirements

- SolidWorks 2007 or higher
- Microsoft® Windows XP Professional (32-bit and 64-bit) or Vista®
- Intel® Pentium®, Intel Xeon™, Intel EM64T, AMD Athlon™, or AMD Opteron™ - based processor
- 1 GB RAM or greater
- Pointing device
- CD-ROM drive



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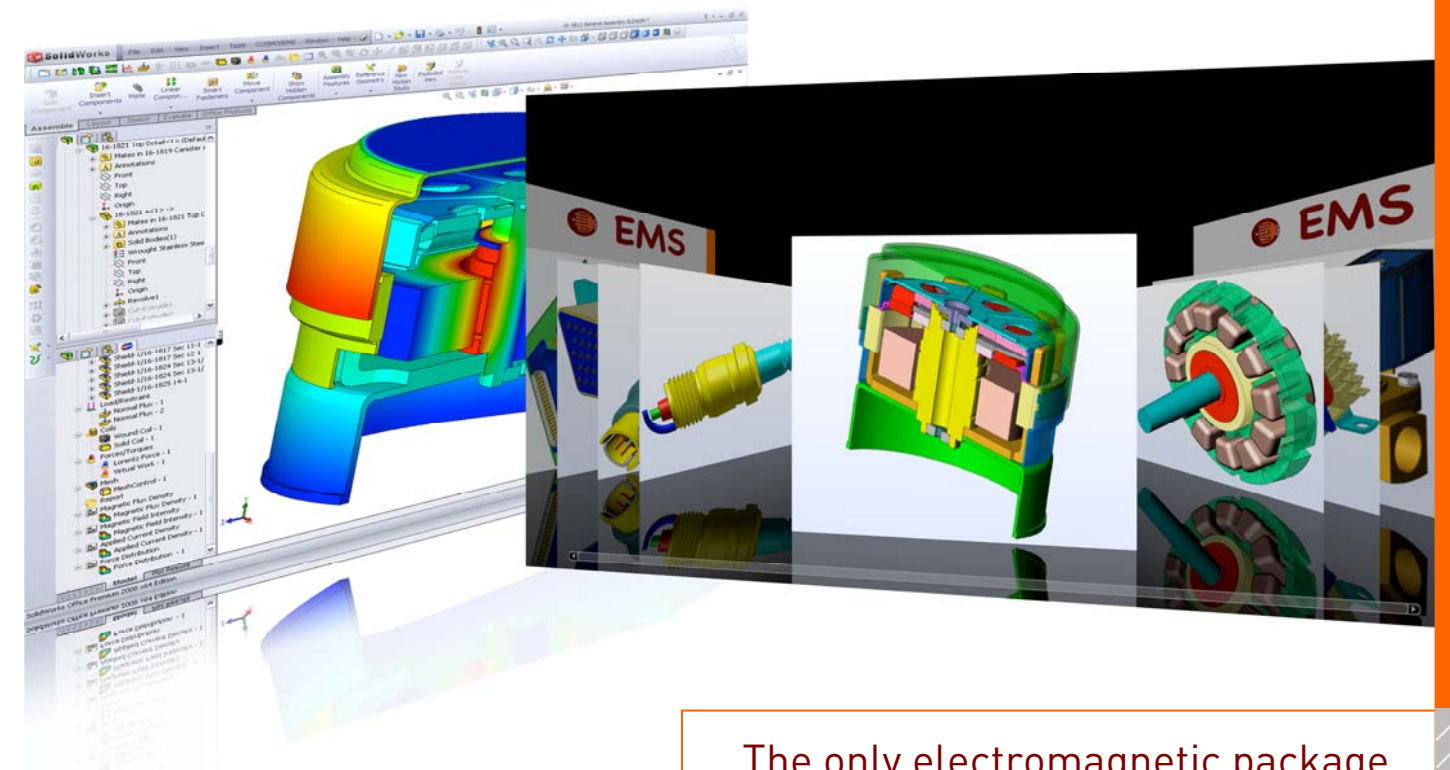


EMS

Electromagnetic Design Made Simple



3D Electromagnetic field simulation for electromechanical, electrical and electronic applications



The only electromagnetic package fully embedded inside SolidWorks®

Accurate Powerful Easy-to-use

The ultimate workbench to test your design ideas!



The original electromagnetic simulation package

ELECTROSTATICS

Does your design require careful attention to **dielectric breakdown** or **electronic discharge** issues? Are **corona** effects of interest/concern to you? Are you worried about **sparking** and **grounding**? Do you work on linear or circular **particle acceleration**? Is the success of your MEMS design hinging on the proper **electrostatic actuation**? What about proper **shielding** of circuits and **cross-talk** among transmission lines?

CONDUCTION

Will your system require protection against **overvoltage** conditions? Do you need to sense/measure **current flow** in your device? Do you have the right **resistance** value at the proper location? What is the impact of the **conductivity** on your power budget? Will **power dissipation** require you to review your thermal management plans? Are you working with **biological** tissues and need to accurately model their electric behaviour?

MAGNETOSTATICS

Are you concerned about **magnetic saturation**? Do you need to minimize the **cogging torque**? Do you want to optimize torque and minimize **driving current**? Are you worried about **brush wear**? How much force and torque can you get from your **solenoids** without **overheating** their **windings**? Is it possible for you to **lower weight** and **cost** by trimming excess material from **ferromagnetic cores**?

developed exclusively for SolidWorks® users

AC MAGNETICS

Does your design require you to reduce **Eddy current** losses for better **efficiency**? Do you need to minimize **skin effects** in solid **coils**? Is your **AC motor** design limited by **ripples, vibration** and **noise**? Is minimizing **flux leakage** and leakage **inductance** in your **transformer** of importance to you? How to **optimize coil design** to build better **metal detectors** and **non-destructive testing** equipment?

TRANSIENT

How will your design respond to a **power failure** or a **switch-off**? Will it withstand a **pulsed power surge**? How do your **nonlinear materials** behave under transient conditions? What is the impact of **coupled Eddy currents** and **saturation** on your design? Are you working with **magnetic heads, pulsed power transformers** or **electromagnetic launchers**?

Coupled Thermal

What **heat generation** will power dissipation cause? How much **temperature** rise will this lead to? Is a **heat sink** needed? Is **active cooling** required? Where are the **heat spots** in the design? What is the **temperature distribution** throughout the model? Do you have fire **safety** and **security** concerns? Will your design meet **UL** norms? What design changes are required for better **thermal management**?

MANY QUESTIONS

1 ANSWER: THE EMS PACKAGE

Versatile ■ Powerful ■ Affordable

Specify your materials and excitations and let EMS do the rest.

Materials

- Built-in extensive library
- Linear
- Nonlinear
- User-definable

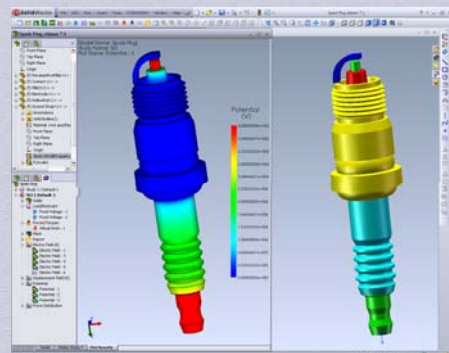
Excitations

- Voltages
- Currents
- Charges
- Charge distributions
- Polarization
- Coils
- Magnets
- Pulses

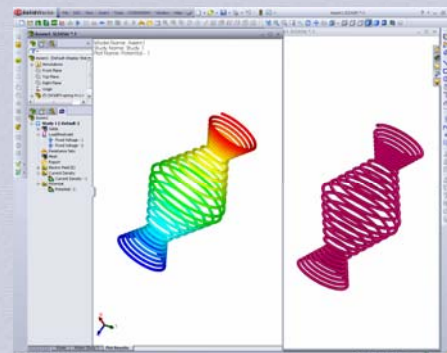
Use EMS's visualization tools to help you gain insight into your design and to validate your work.

Results: data & visualization

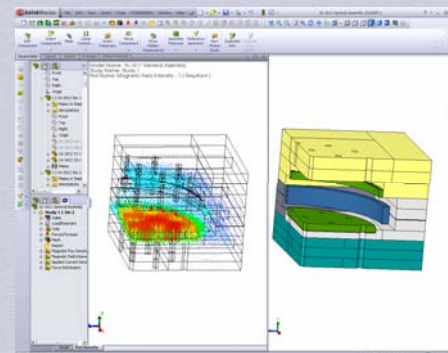
- Voltage distribution
- Electric field
- Magnetic field
- Current distribution
- Flux density
- Power loss
- Resistance
- Stored energy
- Capacitance(self/matrix)
- Inductance (self/matrix)
- Flux linkage
- Eddy current
- Force
- Torque
- Heat/Temperature distributions
- Custom reports



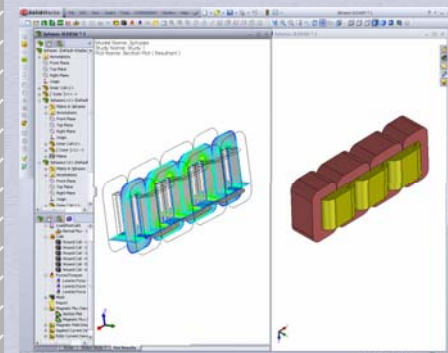
Electrostatic analysis of a spark plug.



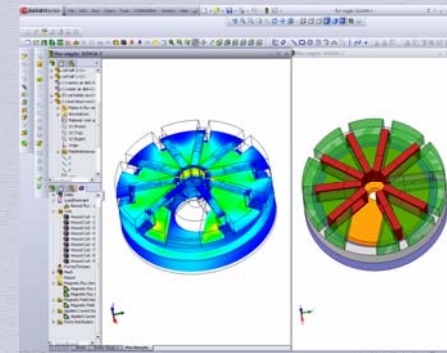
Current flow in a coned coil using conduction analysis.



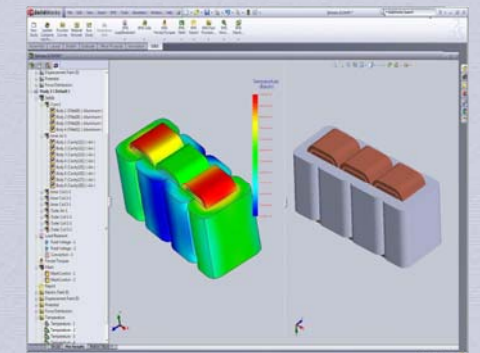
Magnetostatic analysis of a canister motor.



Eddy currents in a transformer using AC Magnetic analysis.



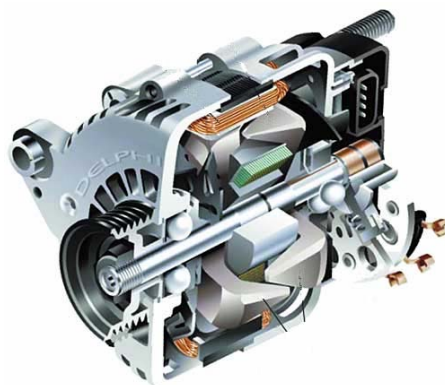
Transient analysis of a wiggler motor.



Coupled AC Magnetic - Thermal analysis of a 3-phase transformer.

SOLIDWORKS

INTEGRATION



EMS allows you to leverage the full power of SolidWorks to bring your design experience to a whole new level.

Because it is fully embedded inside SolidWorks, EMS allows you to enhance your productivity and your design experience. In this powerful design environment you will be able to:

- Construct complex 3D models in record time.
- Import designs in a wide range of popular CAD formats.
- Exploit advanced visualization and rendering technologies that bring unprecedented realism to your models.
- Generate engineering drawings and CAM-ready files quickly and automatically.
- Shorten product design time and lower design cost.

KEY FEATURES

Design Tables

Parameterization

Multiconfigurations

- Quickly and efficiently compare alternative designs and choose the optimal one for final production.
- Drag and drop to create and clone analysis studies.
- Easily model air parts and gaps using features like molds and cavities.
- Easily apply metallization in printed circuit boards using split surfaces.
- Share your EMS models with mechanical, thermal and fluid flow analysis packages inside SolidWorks for multi-physics applications.

With EMS and SolidWorks, electromagnetic design has never been this easy!