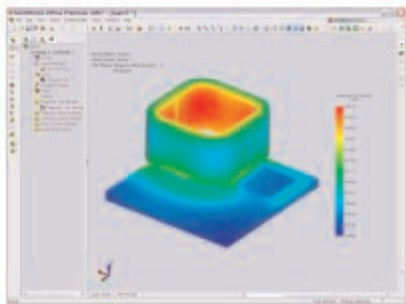


COSMOSEMS

TRUE-TO-LIFE ELECTROMAGNETIC DESIGN SOFTWARE

COSMOSEMS is an easy to use, low frequency 3D-field simulator that allows electronic product designers to simulate the effects of electromagnetic currents and fields on their SolidWorks models.



COSMOSEMS enables SolidWorks users to study the strength of magnetic flux around a coil without ever leaving the SolidWorks interface.

COSMOSEMS is designed to help you gain physical insight into the performance of your electromagnetic, electromechanical, and MEMS design through the computation of important parameters such as force, torque, magnetic flux density, magnetic field, electric field, electric flux, current flow, eddy current, inductance, capacitance, resistances, flux linkage, and power loss. COSMOSEMS is fully integrated in SolidWorks and has five analysis types.

Electrostatic

Electrostatic analysis computes the electric potential and fields produced by DC voltage sources, charges, charge densities, and permanently polarized materials. It computes design parameters such as the electric field, electric flux, force, torque, and capacitance. Applications include:

- Bushing
- Strip-lines
- Insulators
- Capacitors
- MEMS

Electric Conduction

Electric Conduction analysis computes the current flow in conductors produced by DC voltage sources. It automatically computes the electric field, current flow, resistance, and power loss. Applications include:

- Cables
- Resistors
- Shunts
- Fuses

Magnetostatic

Magnetostatic linear and nonlinear analysis calculates the magnetic fields produced by permanent magnets and DC current or voltage sources. The magnetic flux, magnetic field, force, torque, inductance, flux linkage, and stored energy are computed. Applications include:

- DC machines
- Actuators
- Permanent magnets
- Motors
- MEMS
- Generators
- Magnetic levitation devices

AC Magnetic

AC Magnetic analysis calculates the effects of AC currents or voltages in electromagnetic devices, including eddy currents, skin effects, and proximity effects. The output includes quantities such as the magnetic flux, magnetic field, eddy currents, force, torque, power loss, inductance, and stored energy. Applications include:

- Transformers
- Bus bars
- Induction heating
- Eddy-current braking systems
- Nondestructive evaluation

Transient Magnetic

Transient Magnetic linear and nonlinear analysis calculates magnetic fields due to current or voltage sources with arbitrary time dependence. For each time step, the eddy current, power loss, magnetic flux, magnetic field, force, torque, inductance, and stored energy are readily computed. Applications include:

- Rotating machines
- Magnetic recording
- Linear actuators
- Speakers
- Linear motors
- Non-destructive evaluation

ANALYSIS TYPES

- Electrostatic
- Electric Conduction
- Magnetostatic
- AC Magnetic
- Transient Magnetic

SUPPORTED LANGUAGES

- English

SYSTEM REQUIREMENTS

- SolidWorks 2007 or higher
- Microsoft Windows XP Professional
- Intel Pentium or Athlon class processor
- 512 MB RAM or greater
- Pointing device
- CD-ROM drive
- Internet Explorer version 6.0 or later recommended

Electrostatic**Material Properties:**

- Isotropic and anisotropic

Excitations:

- Permanent polarization
- Electric charge density
- Total charge
- DC voltage

Results:

- Voltage
- Electric field
- Electric flux
- Capacitance
- Force
- Torque

Electric Conduction**Material Properties:**

- Isotropic

Excitations:

- DC voltage

Results:

- Voltage
- Electric field
- Current density
- Resistance
- Power dissipation

Magnetostatic**Material Properties:**

- Linear and nonlinear
- Isotropic and anisotropic

Excitations:

- Permanent magnets
- DC current
- DC voltage

Results:

- Magnetic flux density
- Magnetic field
- Coil current density
- Stored Energy
- Force
- Torque
- Inductance
- Flux linkage

AC Magnetic**Material Properties:**

- Isotropic and anisotropic

Excitations:

- AC current
- AC voltage

Results:

- Magnetic flux density
- Magnetic field
- Stored Energy
- Coil current density
- Eddy current
- Force
- Torque
- Inductance
- Power loss
- Flux linkage

Transient Magnetic**Material Properties:**

- Linear and nonlinear
- Isotropic and anisotropic

Excitations:

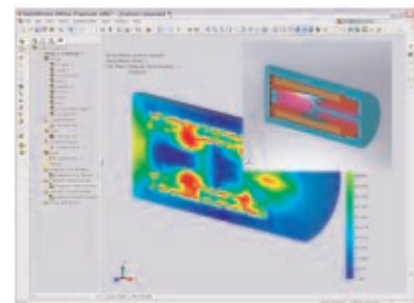
- Transient current
- Transient voltage

Results:

For every time step, the following quantities

are computed

- Magnetic flux density
- Magnetic field
- Coil current density
- Stored Energy
- Eddy current
- Force
- Torque
- Inductance
- Power loss
- Flux linkage



In the past, electromagnetic simulation programs were complex to use. COSMOSSEMS makes it easy to simulate magnetic fields.

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