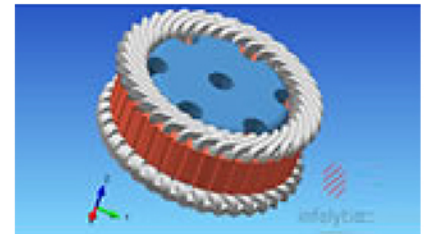




MagNet uses the finite element technique for an accurate and quick solution of Maxwell's equations. Each module is tailored to simulate different types of electromagnetic fields and is available separately for both 2D & 3D designs.

Transient or Time-varying electromagnetic fields

- ✓ Non-linear analysis
- ✓ Second-order time stepping
- ✓ Resume Feature: pause at a particular time step for inspection
- ✓ Core losses, proximity effects and eddy currents
- ✓ Motion
 - Supports rotational, linear and general (multiple degrees of freedom) motion
 - Velocity & load driven motion problems
 - Computes induced currents due to motion
 - Supports multiple moving components



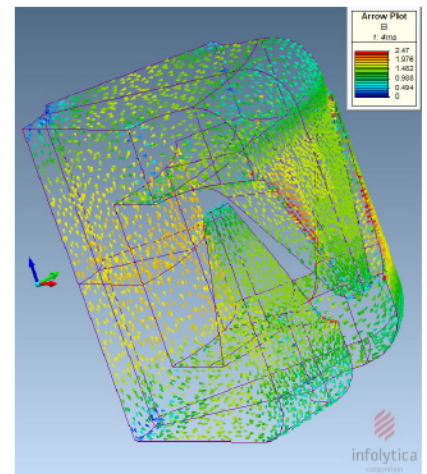
Claw-pole alternator in an automobile electrical system

AC or Time Harmonic electromagnetic fields

- ✓ Analysis based on a single frequency in the complex domain
- ✓ Eddy currents, displacement currents, skin effects & proximity effects

Magnetostatic fields

- ✓ Non-linear analysis
- ✓ Specified currents may flow through any type of conducting material, including magnetic materials



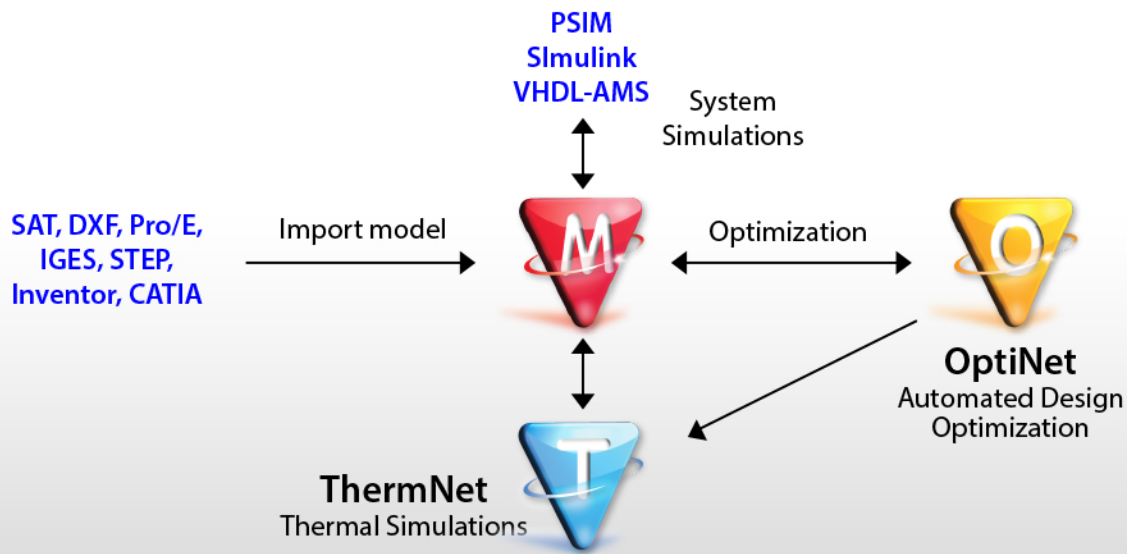
Magnetic field in a claw-pole alternator

We also support

- Multithreading for true multicore support
- Symmetry for reducing solution domain
- Parametric Modeling for for ranging, tolerance or "What If?" analysis
- Coupling with ThermNet 2D/3D
- Optimization with OptiNet
- Circuit Coupling
- Scripting

Common Applications

- Electric Motors/Generators
- Transformers
- Actuators
- Sensors/NDT
- Induction Heating
- Loudspeakers
- Magnetic Levitation
- MRI/medical



New in version 7

- ✓ Simulate the magnetization process for permanent magnets
- ✓ Freeze the permanent magnet magnetization for use in other simulations
- ✓ Simulate Permanent Magnet demagnetization
- ✓ Modeling nonlinear surface impedance
- ✓ Improved visualization, graphing and post-processing
- ✓ Support for Windows 8

Useful Features

- ✓ Multithreaded solvers for faster results
- ✓ Combined 2D/3D design environment
- ✓ Support for linear, rotational or arbitrary motion
- ✓ Two or more moving components
- ✓ Highly accurate loss calculations
- ✓ Native import from Pro/E, Solidworks & others

ThermNet 2D/3D

ThermNet 2D/3D simulates the steady-state and transient temperature distribution of specified heat sources. Couple with MagNet for accurate magnetic-thermal analysis

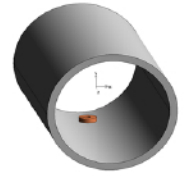
- ✓ Heating effects due to eddy current and hysteresis losses

OptiNet

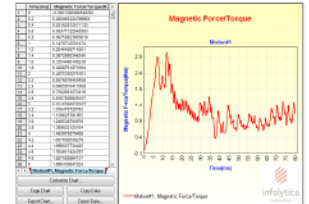
Automated design optimization option to MagNet & MagNet-ThermNet coupled together. OptiNet can find optimal values for different design variables within a specified design space.

Optional Modules

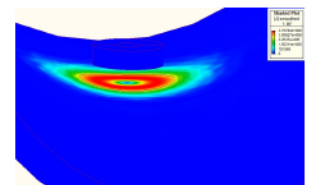
- ✓ System Model Generator: create accurate response surface models (RSM) in VHDL-AMS or Simulink for multi-domain system simulations
- ✓ Trajectory Evaluator: simulating the trajectory of a particle over time
- ✓ MagNet Plug-in for Simulink© and MagNet Plug-in for PSIM : Co-simulations of the dynamic control system and the electromagnetic device



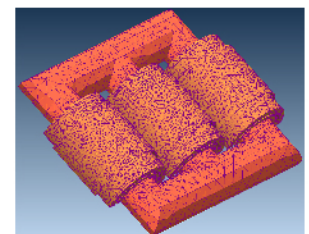
Inconel pipe - pancake coil induces eddy currents in the pipe wall



Easy to use graphing, reporting and post-processing utilities



Inconel pipe - eddy current density on the inner surface



Meshing a 3-phase Transformer

