INTEGRATED
ENGINEERING SOFTWARE

www.integratedsoft.com

OERSTED

2D/RS Electromagnetic Eddy Current Design Software

For many systems, it is important for multiple solvers to be combined. INTEGRATED develops comprehensive solutions for scientists modeling prototypes that require multiphysics analysis.

"I truly enjoy using **OERSTED**. Its combination of speed, accuracy and extraordinary user-friendliness make my work much more productive. I would like to thank the **INTEGRATED** team for an excellent numerical code."

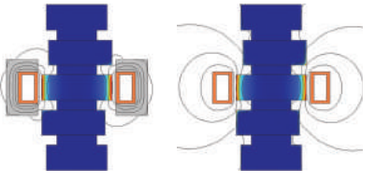
— Dr. Valery Rudnev, FASM
Director, Science & Technology
Inductoheat Group

Optimizing a company's design is key to staying on top in today's competitive market. **OERSTED**, a 2D/RS electromagnetic eddy current field solver from **INTEGRATED** Engineering Software, delivers the power and performance needed to accomplish this goal, including transients solving.

Using our innovative Boundary Element Method (BEM) and Finite Element (FEM) solvers, **OERSTED** distinguishes itself in magnetic design problems that require large open field analysis, exact modeling of boundaries and in applications where dealing with small skin depths are critical.

Design engineers depend on **OERSTED** for the design and analysis of electrical/electronic equipment and components such as:

- MRI
- non-destructive testing systems
- bus bars, charging fixtures
- induction heating coils
- magnetic recording heads
- magnetic shielding
- coils and transformers
- induction motors



One of the major challenges in the induction hardening of steel camshafts relates to the avoidance of undesirable heating in adjacent areas that have previously been hardened (temper back effect).

This model shows an evaluation of power density and magnetic field distributions using a single-turn inductor without (left) and with (right) magnetic flux concentrator. Image courtesy of Inductoheat Inc.

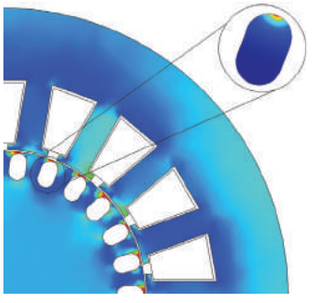
Choose your design environment

INTEGRATED as a part of your software ecosystem

Whether your favorite design environment is Excel, MATLAB® or VisualStudio, our Application Programming Interface (API) allows you to seamlessly develop your own specialized analysis tools or develop tools for others.

Users or developers can call our electromagnetic, thermal or particle trajectory functions to create customized applications with relative ease. These customized software programs may also call other APIs to combine their power.

Customize your application and bring your design to an even higher level of sophistication.



Field magnitude plot in the rotor and stator of an induction motor; current density induced in one rotor bar (inset)

Hybrid Simulation Tools for Electromagnetic and Particle Trajectory Design Analysis

SOFTWARE THAT LIVES UP
TO THE POWER OF YOUR IDEAS

MATLAB Enabled
MathWorks Partner

OERSTED
key capabilities

- **Electromagnetic eddy current, 2D and rotationally symmetric field solver** for a diverse range of applications
- **Transient and phasor eddy current analysis as well as static analysis modes**
- **BEM** and **FEM** solvers available in the same package, to provide maximum versatility
- **Design optimization by powerful parametric solvers**
- **API** interface for customized script controlled applications
- **Full parallel processing included** – no extra charge
- Industry standard **CAD import/export utilities**
- **Easy to use**
- Excellent graphic presentation
- Comprehensive **technical support services** from the best in the industry

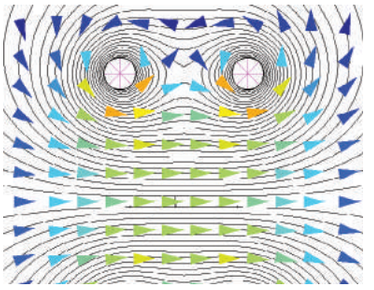
PUT OUR SOFTWARE TO THE TEST

Send us your model, whatever the level of complexity. **We will show you how to get results from your exact design** – no packaged demos.

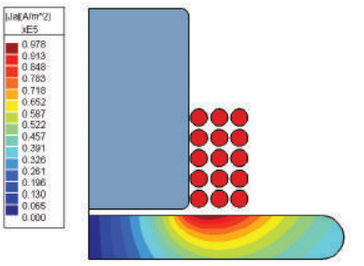
Contact us for an evaluation and start improving productivity today. A live demo is also available.

Visualize, Analyze, Optimize

OERSTED provides outstanding visualization features for detailed analysis of magnetic systems. Automated model creation using built-in **API** and **Parametric Utilities** combined with Self-Adaptive **BEM** and **FEM** solvers enable rapid optimization of designs.



Rotational Symmetric model of Helmholtz coils showing vector potential contours and B field arrow plots



Rotational Symmetric model of an eddy current sensor showing current density contours induced in target

OERSTED comes complete and ready to use. No need to purchase additional modules or options; **OERSTED** is a fully functional CAE tool. A partial list of standard features includes:

- Intuitive and structured interface maximizes productivity for experts or beginners
- Ability to model voltage excitation and back EMF effects of coils and windings
- Calculation of true AC resistance due to skin and proximity effects
- Transient, phasor and static analysis modes
- Simulation of lossy magnetic materials
- Variety of refine wave forms available, such as sinusodial sources with the DC offset and various square wave and triangular pulses
- Periodic and symmetry features minimize modeling and solution time
- Solution of current induced in conductors and skin effect current impressed in conductors
- Force, torque, flux linkage, induced voltage, power and impedance parameters
- Display forms for plotting scalar and vector field quantities include: graphs, contour plots, arrow plots, profile plots and vector loci plots
- Data exportable to formatted files for integration with spreadsheets and other software packages
- Batch function allows unattended solution of multiple files
- Powerful parametric feature allows definition of variable parameters to be stepped through allowing the analysis of multiple "what-if" scenarios and facilitating design optimization
- A wide array of post-processing options for design evaluation and optimization
- Self-adaptative meshing or optional user refinement
- Large library of permanent magnet and ferromagnetic materials; additional materials can be easily added

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