

KELVIN / CELSIUS

2D/RS & 3D Thermal
Design Analysis 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.

“**K**ELVIN has become an important tool in the education of our students: INTEGRATED’s programs are easy to learn and easy to use. The parametric calculations are a key feature in the software.”

— Dr. Josef Hodapp
FACHHOCHSCHULE AACHEN

Explore the full possibilities of time-saving, cost-effective product design optimization with **INTEGRATED** Engineering Software’s thermal analysis tools. **KELVIN** (2D/RS) and **CELSIUS** (3D) are the thermal solution tools in our combined physics set. Get the complete electromagnetic-thermal solution of your device by combining the electromagnetic power loss input and the thermal analysis.

Design engineers depend on **KELVIN** and **CELSIUS** for coupled thermal/electromagnetic applications including:

- electronic packaging
- appliances
- automotive components
- aerospace components
- electric power components
- busbars
- cooling fins
- heat sinks

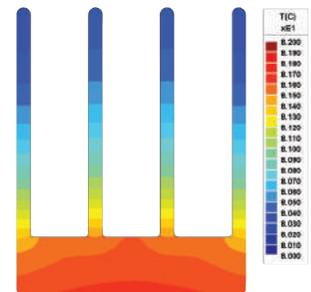
Choose your design environment

INTEGRATED as a part of your software ecosystem

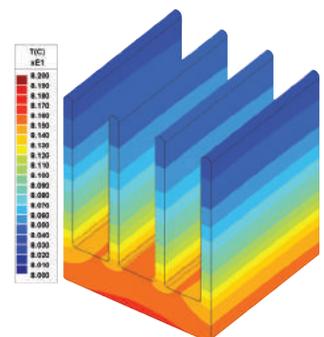
Whether your favorite design environment is Excel, MATLAB® or VisualStudio, our Application Programming Interface (API) allows you to seamlessly develop your own specialized analysis tools or develop tools for others.

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.



KELVIN: Heat sink temperature contour plot



CELSIUS: Heat sink 3D temperature contour plot

Hybrid Simulation Tools for Electromagnetic and Particle Trajectory Design Analysis

SOFTWARE THAT LIVES UP
TO THE POWER OF YOUR IDEAS



KELVIN / CELSIUS key capabilities

- 2D/RS & 3D transient and static thermal field solvers for a diverse range of applications
- Design optimization by powerful parametric solvers
- API interface for customized script controlled applications
- Full parallel processing included – no extra charge
- Transparent multiphysics coupling
- Easy to use
- Industry standard CAD import/export utilities offering time saving convenience for model creation
- Excellent graphic presentation
- Comprehensive technical support services from the best in the industry

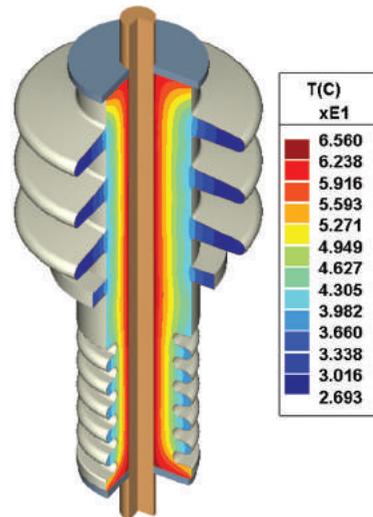
PUT OUR SOFTWARE TO THE TEST

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

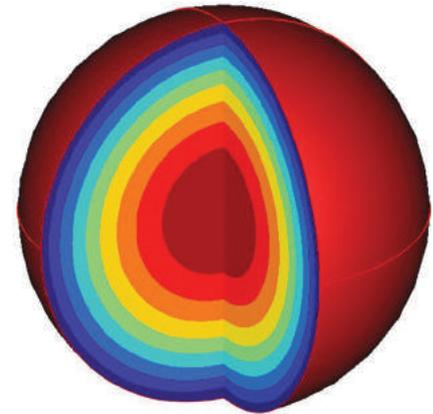
Contact us for an evaluation and start improving productivity today. A live demo is also available.

Visualize, Analyze, Optimize

Both **KELVIN** and **CELSIUS** provide outstanding visualization features for detailed analysis of thermal systems. Automated model creation using built-in **API** and **Parametric Utilities** combined with **Self-Adaptive** solvers enable rapid optimization of designs.



3D model of high voltage bushing showing temperature contours



Temperature contours inside a copper sphere with uniform volume heat

KELVIN and **CELSIUS** come complete and ready to use. No need to purchase additional modules or options; **KELVIN** and **CELSIUS** are fully functional CAE tools. A partial list of standard features include:

- Temperature, temperature gradient and heat flux values can be displayed using contour plots, surface representations and graphs
- Boundary conditions such as temperature, heat flux, temperature gradient, convective and radiative are easily assigned
- Heat sources can be assigned in the form of volume heat and surface heat
- Materials table stores thermal conductivity, specific heat and mass density
- Batch function allows for 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 adaptive meshing or optional user refinement
- CAD healing utilities for automatic correction of drafting errors
- Large materials library – additional materials can be easily added

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