

RadTherm[®] 7.1

Thermal Analysis Software

RadTherm is a professional thermal modeling tool intended for comprehensive heat management design and analysis. RadTherm is equipped with everything but your surface mesh: pre-processing for conductivity and mesh normals, boundary condition set-up, an optimized thermal solver, and post processor / results viewer. With minimal effort you can analyze conduction, multibounce radiation, and convection (steady-state or transient). All functions are integrated into one carefully designed graphical user interface allowing users to analyze designs very quickly and accurately.

RadTherm's highly-optimized algorithms handle even the most complex thermal questions. Written entirely in portable C++, RadTherm maintains speed and file compatibility across platforms. A state-of-the-art voxel-based ray tracer is used to compute radiation view factors and solar projected (apparent) areas. This ray tracer provides the fastest radiation exchange solver on the market.

Natural environments are supported through weather data inputs and solar loading based on global position. Multi-bounce solar effects through glass captures greenhouse effects while facted terrains provide accurate reflections and shadowing.

Principal Features

Complete Thermal Analysis

- Multi-bounce Radiation
- Conduction
- Convection
- 1-D Advection
- Natural Environments

High Speed Analysis with Unlimited Model Resolution

Engineer-Designed Graphical User Interface
Data Exchange with CFD

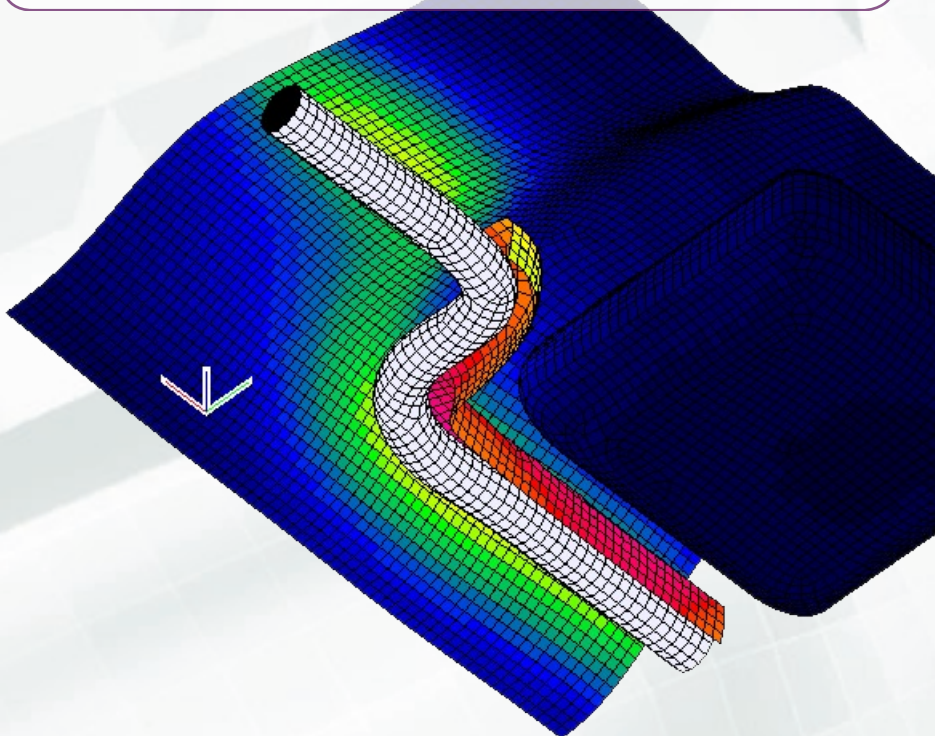
Benefits

Faster Product Development
Reduced Reliance on Testing
Increased Productivity

"With RadTherm on my PC I have thermal results in an hour *with and without a heat shield.*"
-Senior Automotive Engineer

Common Applications

- Architecture
- Underhood / Underbody
- Electronics and Enclosures
- Climate Control
- Heat Shield Analysis
- HVAC Design
- Passive Cooling / Heating
- Brakes & Clutches
- Lighting



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Version 7.1 Features

Preprocessing

Local coordinate system for fast model setup

CFD Results Import Wizard simplifies convection import with automatic mesh mapping

Model Parameter Display Colors Geometry by convection coef. or fluid temperature values

Model Setup

Fluid Connections Window displays connections to surfaces and advection links

Component Model files import as assemblies with BC's intact

User Routines extend the power of RadTherm to vary BC's mathematically, while hook functions give node-level control

Analysis

Thermal Links Connect any surface element to any other without geometry or view factor recalculation

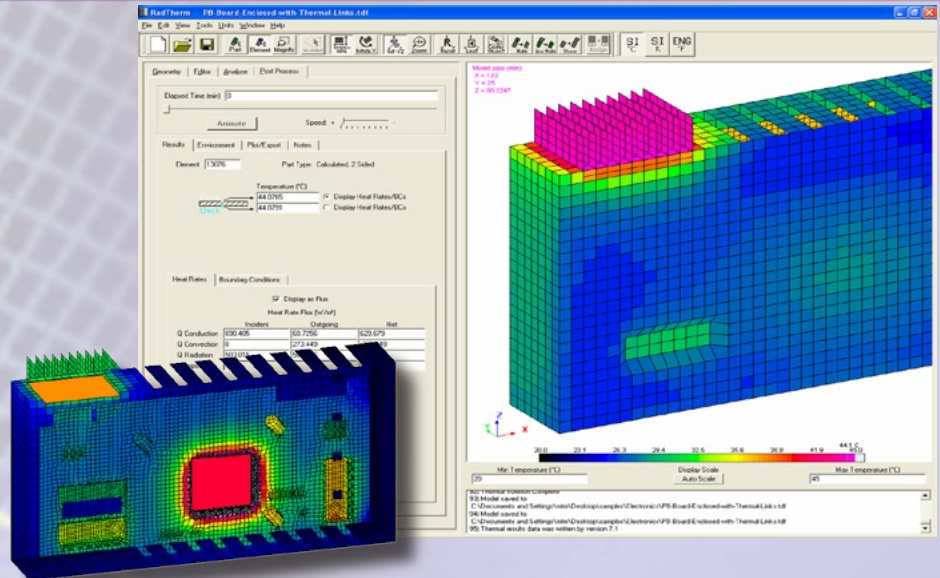
Print Max Temp Change to File option gives user feedback on which nodes converge slowly

Convergence Meter now displays logarithmic plots of tolerance and tolerance slope

Post-Processing

Graphics View Control Window allows accurate, repeatable setting of geometry graphics

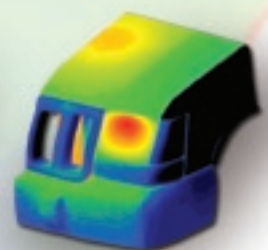
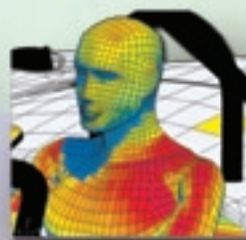
Color Scale can be displayed with an arbitrary number of temperature color bands



Deliver Solutions - to comprehensive heat management problems: RadTherm predicts the full temperature distribution of your product or system. From these results you can modify your design and test the thermal response to the change. For example, active and passive cooling can be tested for cost-benefit analysis.

Deliver Speed - RadTherm is the industry benchmark for speed, accuracy, and flexibility. Faster setup and thermal analysis save you time and money. This translates into better customer focus and quicker time to market for products.

Deliver Flexibility - Import your surface geometry and change designs with ease. Manipulate the geometry within RadTherm to improve your heat management. Test material changes, layering or surface conditions to improve your design at the earliest development stage. Prove your product's thermal performance before investing in prototype construction.



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