# RadTherm® 10.0
## Thermal Analysis Software

## Principal Features

### Complete Thermal Analysis

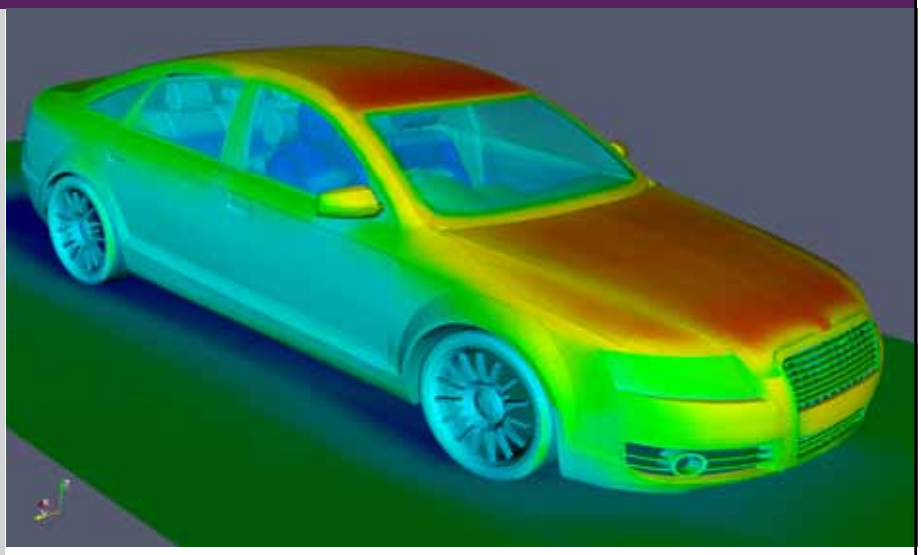
Multi-mode Heat Transfer: Radiation, Conduction, Convection
Volume & Shell Mesh Solid Parts
Planar, Cylindrical and Spherical Multi-layer Parts
Integrated 1D Fluid Networks
Co-simulation with 1D Tools
Export to FEA for Stress Analysis
CFD Data Exchange
Natural Environments with Solar & Sky
Rapid Analysis, Unlimited Model Resolution

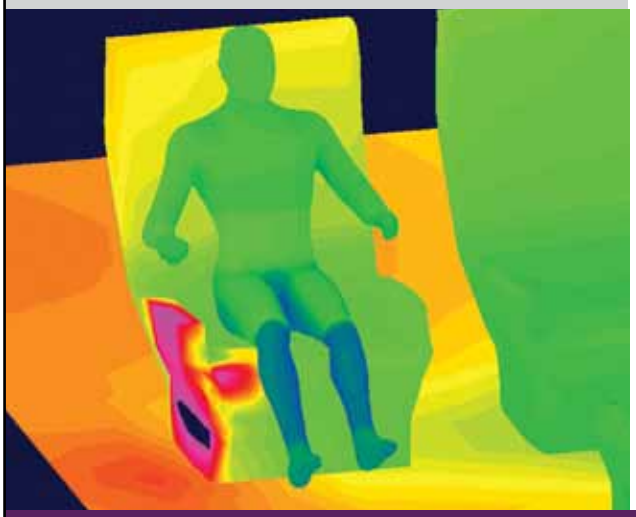
### Benefits

Faster Product Development
Reduced Reliance on Testing
Improved Product Quality
Advanced Energy Management

### Common Applications

Brakes, Clutches & Gearboxes
Climate Control & HVAC Systems
Electronics & Enclosures
Heat Shield Optimization
High Performance Materials
Passive Cooling/Heating
Solar & Environmental
Underhood & Underbody Thermal Management





## System-Level Thermal Analysis

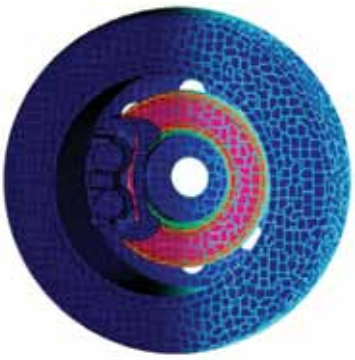
RadTherm is a professional thermal modeling tool intended for comprehensive heat management design and analysis. RadTherm is equipped with everything but your geometry: tab-driven pre-processing and boundary condition set-up, an optimized thermal solver, and post processor/results viewer. With minimal effort you can analyze 3D 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.

### Benchmark Speed & Accuracy

RadTherm's highly-optimized algorithms handle even the most complex thermal questions. Written entirely in modular 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.

### Realistic Natural Environments

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



ThermoAnalytics®

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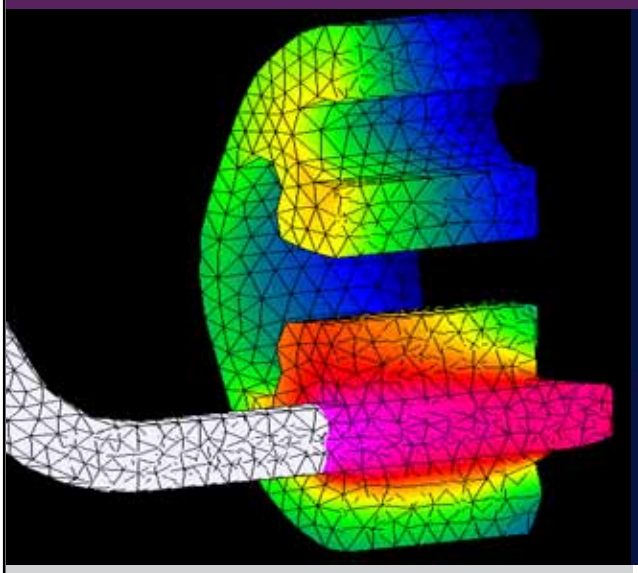

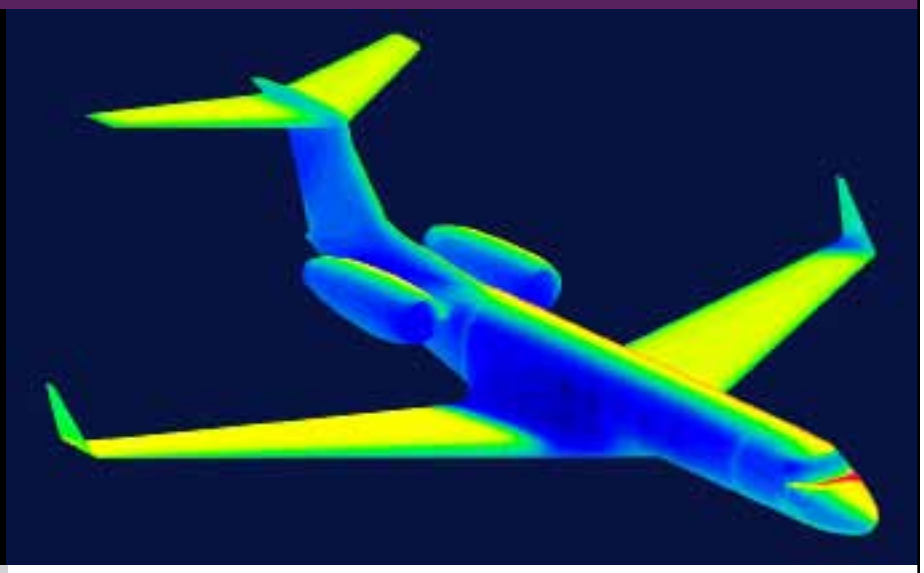

## Version 10.0 Features

**Transient Solid Conduction**
Support for solid and shell 3D conduction
Solid solution coupled with full conjugate heat transfer analysis
Internal imposed heat rates
Clipping plane display of internal temperatures

**Human Thermal Simulation**
Integration of biothermally accurate humans
Supports multiple humans
Steady state and transient thermal response
Multi-layer clothing database
Berkeley comfort and sensation output

**Complex Multi-layer Parts**
Planar, cylindrical and spherical with up to 25 layers
Mixed solid, air, transparent, or vacuum layers
Multi-layer conduction rules and thermal links

**1D Co-Simulation**
AMESim 1D coupled with 3D model
Cooling system, HVAC, ECS systems, etc.

**Boundary Condition Mapping**
Thermographic boundary condition
Automatic text file BC mapping to elements

**Transient Time Step Control**
Variable time steps
Variable write frequency for results

## Total Thermal Solutions

**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 thermal performance and energy efficiency.

**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 mesh 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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