



# RadTherm<sup>®</sup>

## Thermal Analysis Software

### Principal Features

#### Complete Thermal Analysis

Multi-mode Heat Transfer:

Radiation, Conduction, Convection

Volume & Shell Mesh Solid Parts

Planar, Cylindrical & Spherical Multi-layer Parts

Integrated 1D Fluid Streams & Networks

Import CFD Results or Coupled Simulation

Co-simulation with 1D Tools

Export to FEA for Stress Analysis

Natural Environments with Solar & Sky

#### 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

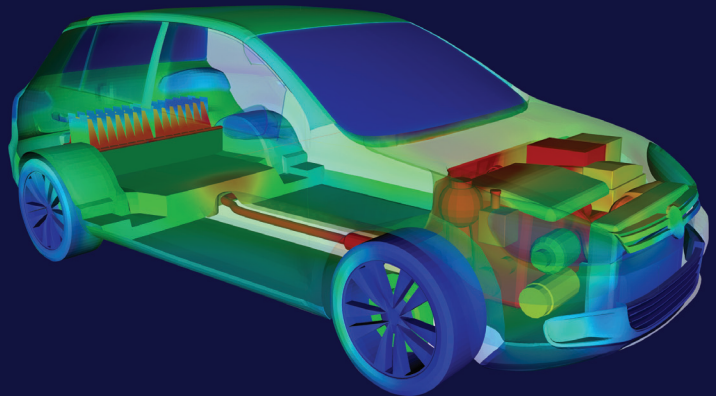
Heat Shield Optimization

High Performance Materials

Passive Cooling/Heating

Solar & Environmental Chambers

Underhood & Underbody Thermal Management



### System-Level Thermal Analysis

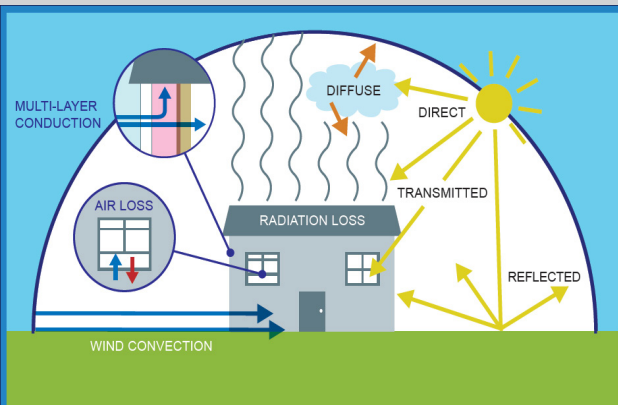
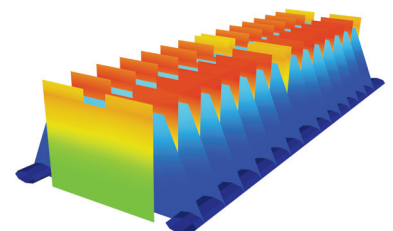
RadTherm is a professional thermal modeling tool intended for comprehensive heat management design and analysis. RadTherm is equipped with everything but your geometry: tab-driven pre-processing and boundary condition set-up, an optimized thermal solver, and post processor/results viewer. With minimal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

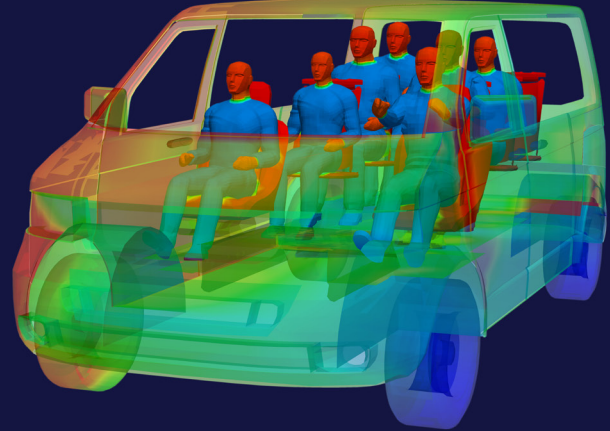
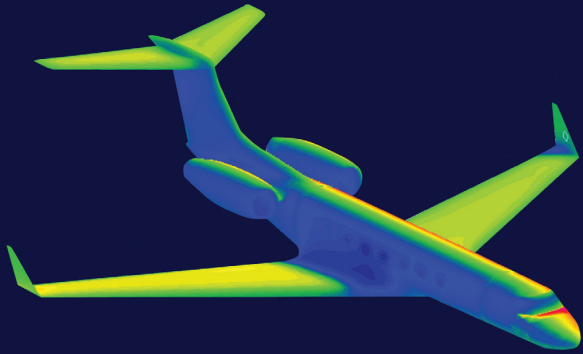
RadTherm's highly-optimized algorithms handle even the most complex thermal questions. Written entirely in modular C++, RadTherm maintains speed and file compatibility across platforms. A state-of-the-art voxel-based ray tracer is used to compute radiation view factors and solar projected (apparent) 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<sup>®</sup>



## New RadTherm Features

### Transient Solid Conduction

- Support for 3D solid and shell conduction
- Temperature dependent properties
- Internal imposed heat rates
- Clipping plane display of internal temperatures

### Summary Table

- Edit boundary conditions and properties directly in the spreadsheet like Summary Table
- Interactive with main graphics window
- Quick filter to search through rows and columns
- Import and export boundary conditions

### Thermal Link Wizard

- Determine candidate thermal links instantly
- Graphically visualize and isolate thermal links

### Human Thermal Module

- Validated human physiological models
- Supports complete range of body types
- Steady state and transient thermal response
- Multi-nodal clothing layers
- Berkeley sensation and comfort output

### Battery Thermal Module

- Perform coupled thermal-electrical analysis
- Transient charging and discharging cycles
- Analysis of individual cells, battery packs, and vehicle systems

### Abaqus Export

- Export thermal results and geometry for FEA
- Support for shell and volume elements

## 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.

