

RadThermIR[®] 9.0

Thermal/IR Analysis Software

*"RadThermIR has consistently predicted accurate radiance for targets ranging from desert plateaus to the north Atlantic."
—Senior Research Engineer*



Principal Features

Complete Thermal and IR Analysis

Radiation, conduction, and convection
Ground Vehicles
Naval vessels
Aircraft

Infrared Analysis

Sky and terrain reflection
BRDF rendering
Spectral paint surfaces
Faceted backgrounds

Multiband Prediction

Apparent temperature
Radiosity

Accurate Backgrounds

Terrain, foliage, multiple surface types
Sea, soil, sky
Buried objects

Benefits

Faster Product Development
Model building and solutions
Easily interfaced to sensor models

Sea Model

Weather, sky, solar

Advanced IR Analysis

RadThermIR is an advanced thermal and infrared program from ThermoAnalytics. RadThermIR will let the infrared analyst or specialist perform complete thermal modeling and infrared analysis within an integrated easy-to-use interface.

RadThermIR's highly-optimized algorithms handle even the most complex IR questions. Written entirely in C++, RadThermIR maintains speed and cross-platform compatibility across Windows, Linux, HP, SGI, and Sun computers. A state-of-the-art voxel-based ray tracer is used to compute view factors, solar projected (apparent) areas, radiosity, and apparent temperature. This ray tracer provides the fastest thermal and infrared solver on the market.

Natural environments are supported through weather data files and solar loading based on global position. RadThermIR can also use atmospheric data from MODTRAN. Multi-bounce solar radiation is automatically calculated including greenhouse effects from solar radiation transmitted through glass. Faceted terrains provide full background interactions, including reflections and shadowing.



RadThermIR® 9.0

Thermal Analysis Software



Version 9.0 Features

Aircraft

Altitude-specific weather
MODTRAN path attenuation
Custom atmospheric profiles

Aerothermal Heating

Conduction, specific heat, emissivity

Face to Face Conduction

Simulates part to part contact
Reduces meshing time
Support for contact resistance

Temperature Dependent Properties

Conduction, specific heat, emissivity

Complex Multilayer Parts

Planar mesh objects with up to 20 layers
Solid, air, or vacuum layers
Mixed solid/air layers

Model Summary Table

Model settings presented in spreadsheet
Easy viewing of all settings

Parallel Processing

Shared memory licensing
2 CPU Speedup Average 1.8
4 CPU Speedup Average 3.3
Automated distribution of CPUs
User specifies number of CPUs in GUI

Total Thermal and IR Solutions

Data – The Infrared Signature post-processor displays physical temperatures, in-band radiances, and apparent temperatures for every element or facet. Running the BRDF solver allows the user to predict target and background specular radiance images into a pixelized format.

Improve Your Design – Import your surface mesh geometry and change designs with ease. Manipulate the geometry within RadThermIR to improve heat management and understand IR behavior relative to a time-varying environment or operating conditions.

Utilize Faceted First Principle Backgrounds –

To predict accurate target/background contrast levels, RadThermIR fully supports faceted backgrounds. Create or import a faceted terrain. Apply one or multiple background types to your geometry. Calculate accurate temperature solutions.

Integrate with CFD – Seamless integration with CFD results (including FLUENT and STAR-CD) allows increased accuracy for convection.

Custom Engineering – Let ThermoAnalytics' world-class engineering team build the unique software features or user routines to model your system.

