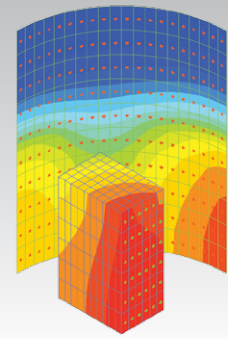


# Sinda™

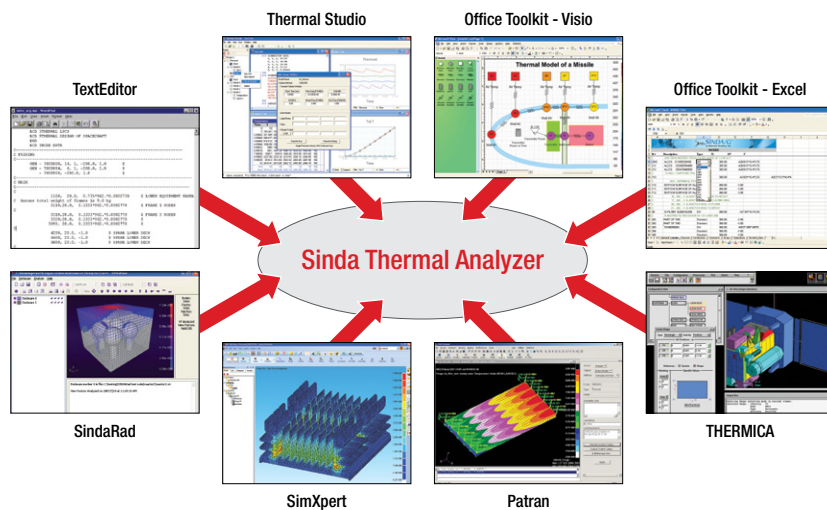
## Advanced Thermal Simulation



### Overview

Sinda is a world class advanced thermal analyzer with a proven track record in the aerospace and high tech arenas. Sinda technology is well suited to solve large thermal problems that may include various material and boundary condition nonlinearities. Iterative schemes make Sinda more efficient in time and memory requirements than traditional finite element solvers. With industry proven efficient solver technology, users can simulate complex thermal models that may include conduction, convection, advection and radiation along with thermal contacts.

Sinda goes beyond other generic thermal solvers; it is a thermal programming language allowing you to continuously add customized capabilities to your thermal model. Any degree of logic from simple convection equations to entire subroutines can be added to your Sinda model. In addition, parameters, loads, and materials can be changed “on the fly” from various user interfaces.



### Capabilities

- Use an intuitive RC network approach to build thermal models
- Set up advanced thermal problems involving nonlinear materials, radiation, and other complex boundary conditions
- Integrate with a variety of pre-post processors and radiation codes to utilize existing models, reduce learning time, and increase total project cohesion
- Provide unique programming logic to analyze any number of “what-if” situations
- Easily set up parametric analysis such as sensitivity, optimization, and test correlation to increase understanding of thermal consequences to design changes
- Use a proven tool in the aerospace and high tech industries with a quarter century track record
- Select from 25 steady state and transient solvers to converge almost any solution quickly and accurately
- 64-bit version that not only has more precision with computations, but improved memory usage and can run much larger models
- Includes Thermal Studio; a Windows based GUI for creating and running models and reviewing the results in tabular reports of x-y plots
- Integrate into Patran, THERMICA, Visio or Excel

### Materials, Loads, and Advanced Features

#### Materials

- Constant, time, or temperature dependent material properties

#### Loads

- Over 30 micro functions to define complex loads without adding programming logic
- Temperature loads that are time or cyclic dependent
- Heat loads can be time dependent, cyclic, temperature dependent, or thermostatic
- Convection including over 40 built-in correlations for modeling internal, external, and natural convection
- Radiation with time/temperature dependent properties

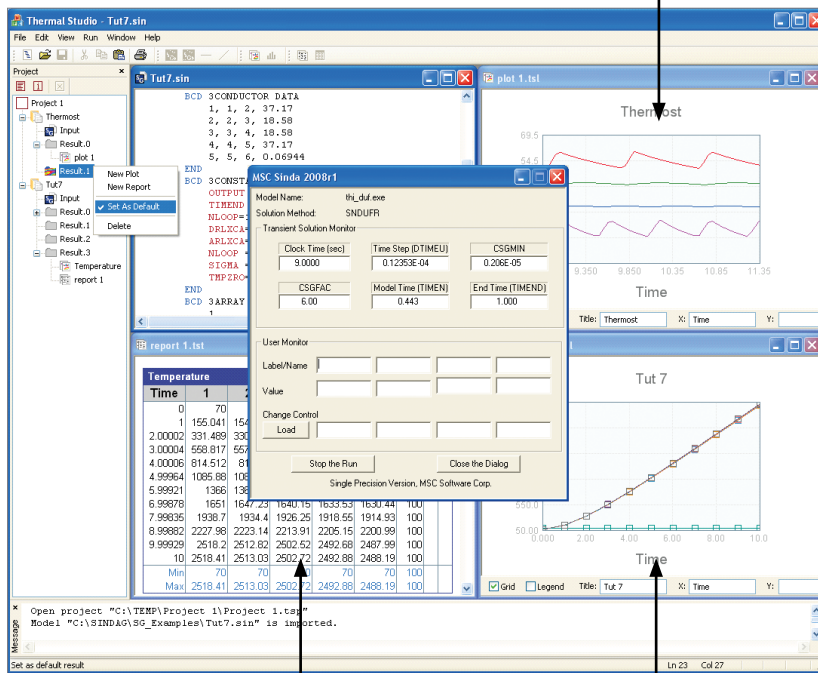
**Advanced Features**

- Thermostat heater/cooler models for on/off, proportional and PID controllers
- Ability to add Thermal Electric Devices (TED's)
- Phase change modeling of thermal storage and anit-icing simulation
- Ablation conductors for simplified modeling of ablative materials
- Numerous mathematical routines for interpolation, extrapolation and manipulation of tabular data
- Database containing thermal model data, heat flows and temperature data for interactive viewing after model runs
- Database for model and results data is based on an open source model, thus allowing easy access from public domain viewers and programming of API's in many languages

High performance plotting module plots 1000s of points quickly

Manages Sinda Models

Overwrite a result or save multiple results from a model



Dynamic reports automatically update when the model is rerun

Dynamic plots automatically update when the model is rerun

Thermal Studio Windows GUI for Sinda

**System Requirements**

- Windows 7 or XP either 32 or 64 bit
- 4 GB RAM minimum and 500 MB disk space

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