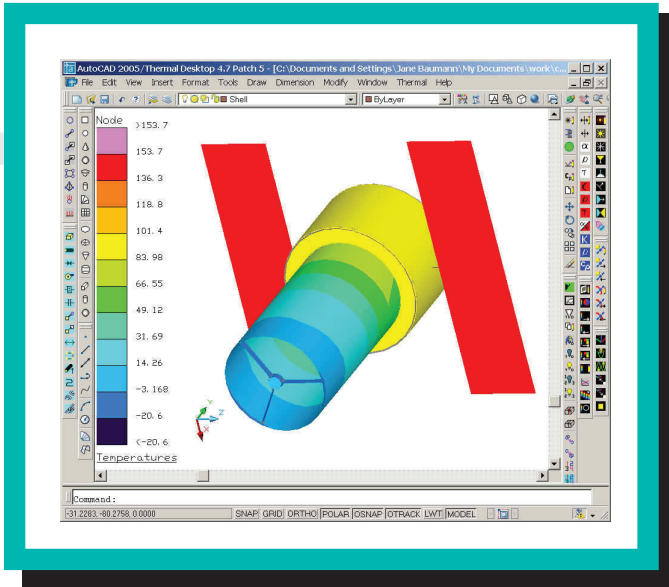
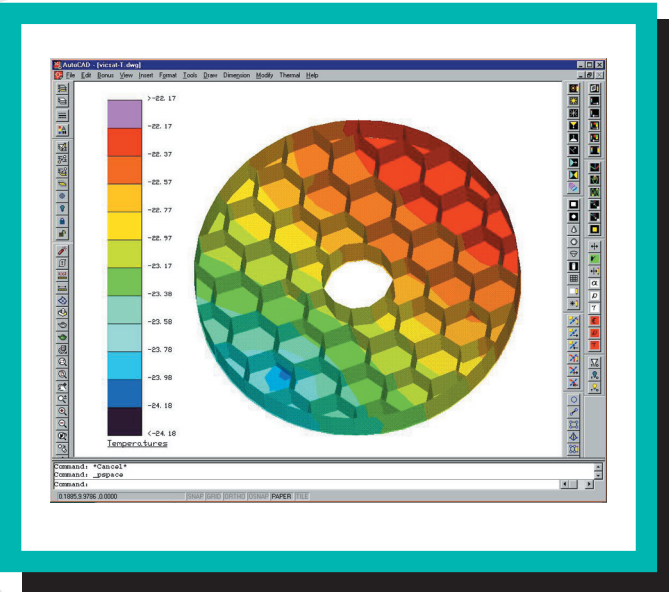




# C&R TECHNOLOGIES®



Spacecraft with articulating geometry post-processed for temperature results



Imported finite element model with temperature results

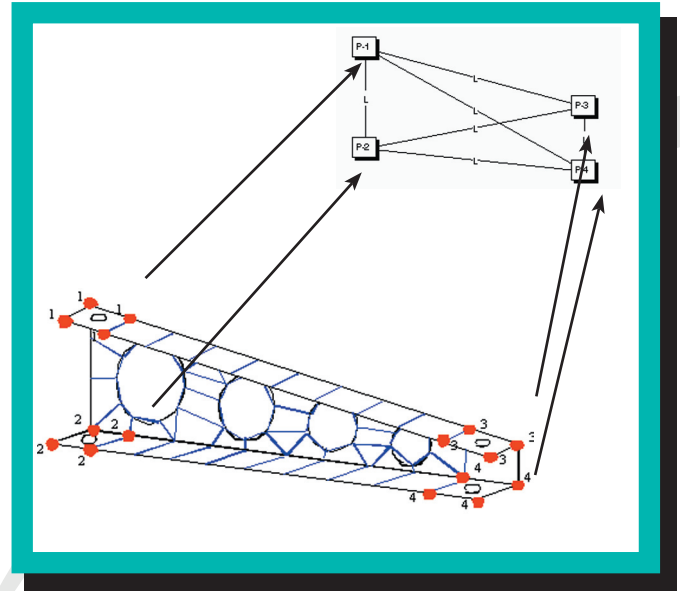
Thermal Desktop® enables concurrent engineering for thermal analysts by providing full access to CAD-based geometry as well as data exchange to and from structural codes without compromising traditional thermal modeling practices.

## FEATURES

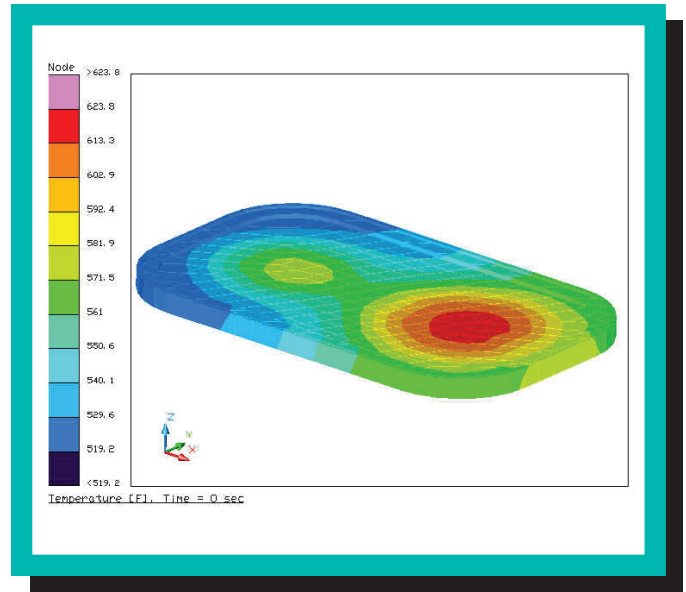
- Accurate conduction/capacitance generation, surface insulation, and contact conductance calculations.
- Fast thermal surface-to-surface and environmental thermal radiation analysis using the optional RadCAD® module.
- Fluid flow and convection analysis using the optional FloCAD® module.
- Integrates CAD, FEM, FD, thermal radiation and flow into a single environment.
- Imports many file formats including TRASYS, Nevada™, TSS, STEP-TAS, IDEAS/FEA™, IDEAS/TMG™, NASTRAN™, FEMAP™, IGES, STEP, ANSYS™.
- External Interfaces: temperature mapping to structural FEM models • Excel-Based launcher • Advanced Programmer's Interface (API) for custom interface to any COM based application.
- Fast and easy "snap-on" methods simplify thermal model building using imported CAD or FEM models as scaffolding as an alternative to using the imported models directly.
- Stretch and reshape surfaces directly on the screen in addition to traditional form-based inputs.
- Model checking tools facilitate model verification.
- Enables impressive presentations using animation, X-Y plotting and extensive pre- and post-processing tools.
- Automated application of user defined interface conductances along surface edges and/or faces.
- Automatic and easy to use insulation feature, including MLI and ablative materials.
- Manipulate models easily with the extensive model browser feature.



- Handles temperature and pressure-dependent material properties.
- Supports anisotropic material properties.
- Powerful incorporation of variable model geometry and rotating parts.
- Easy-to-use tool bars for quick access.
- Provides arbitrary nodes and conductors for abstract networks.
- Performs rapid model changes and what-if scenarios using material property aliases.
- Apply heaters, loads, or fluxes to nodes, elements, and conic surfaces.
- Supports advection on FD solids and pipes.
- Automatic through-thickness conduction extends the usefulness of simple surfaces.
- Provides graphical construction of procedural thermal entities such as thermoelectric coolers, Peltier devices, heaters, and thermostats.
- Extensive CAD functions make model building fast and effective:
  - Boolean, revolved, extruded surfaces
  - superimposable drawing layers
  - multiple port views with store/recall
  - snap-on model building
  - drag and drop model editing
  - user-defined light sources
  - wireframe, hidden, rendered views.
- Built-in FE mesher allows meshing of CAD geometry.
- Import of heat fluxes from CFD mesh.
- Convenient user comment fields provide model documentation.
- User-defined symbols and expressions add spreadsheet-like parametric modeling.
- Case Set Manager: provides multi-case data management
  - directly launches SINDA/FLUINT
  - post-processing
  - provides access to SINDA/FLUINT logic blocks.
- Dynamic SINDA/FLUINT link for parametrics, optimization, and statistical design.



Superelements: Complex regions simplified into designated SINDA nodes



Temperature postprocessing of finite element solid models

**C&R TECHNOLOGIES®**

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