



Three dimensional modeling of heat pipes and flow channels



Route flow passages past thermal surfaces to model air-cooled electronics

FloCAD® is an optional module of C&R's CADbased Thermal Desktop®. Thermal Desktop® handles conduction and capacitance in surfaces and solids, features arbitrary (nongeometric) nodes, and supports FEM models including innovative automatic network simplification techniques, and mapping to structural FEM codes.

FEATURES

- Generates flow networks and calculates convective heat transfer factors for C&R's SINDA/FLUINT.
- Postprocesses temperatures, pressures, and flow rates for fast interpretation and impressive presentations.
- Faster model building and faster calculations than CFD means more alternatives investigated, sizing and sensitivities performed, and models calibrated to tests.
- Access to 2D/3D thermal modeling unlike nongeometric fluid network modeling (FNM).
- Automatic connection and apportionment of convection links (FLUINT ties) to thermal surfaces.
- Full access to FLUINT fluid network modeling capabilities, with abbreviated inputs for common components:

 fans and pumps
 flow passages and ducts
 filters and loss elements.
- Arbitrary fluids including dry air, moist air (psychrometrics), water, water glycol, ammonia, and PAO. Accepts user-defined fluids as well.
- Single and two-phase flow, including evaporation and condensation, pure fluids and mixtures.

-lot Engineering ... Cool Software®



- Quick and easy generation of "Pipe" component automatically creates associated thermal and fluid networks for piping systems.
- Modeling of constant conductance heat pipes, gas loaded and variable conductance heat pipes, and loop heat pipes.
- User-selectable natural convection routines.
- Enables concurrent engineering by providing full access to CAD-based geometry and CAD model building methods without compromising good modeling practices.
- Imports many file formats including TRASYS, Nevada™, TSS, STEP-TAS, IDEAS/FEA™, IDEAS/TMG™, NASTRAN™, FEMAP™, IGES, STEP, ANSYS™, TASPCB™.
- Uses CAD geometry directly, or accepts snap-on thermal surfaces, i.e., cones and spheres, avoiding thousands of tiny facets.
- Offers true curved geometric surfaces.
- User-defined symbols and expressions add spreadsheet-like parametric modeling.
- K-factor resistance utility for common fittings.
- Helper utilities for calculating flow lengths and flow areas.
- Extensive CAD functions make model building fast and effective:

 Boolean, revolved, extruded surfaces
 layer management.
- Snap-on entity building drag and drop model editing • user-defined light sources.
- Multiple port views with store/recall.
- Exploits inexpensive PC platforms.
- Also available: RadCAD® for radiation analysis.







Quickly model the effects of two-phase cooling for electronics

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