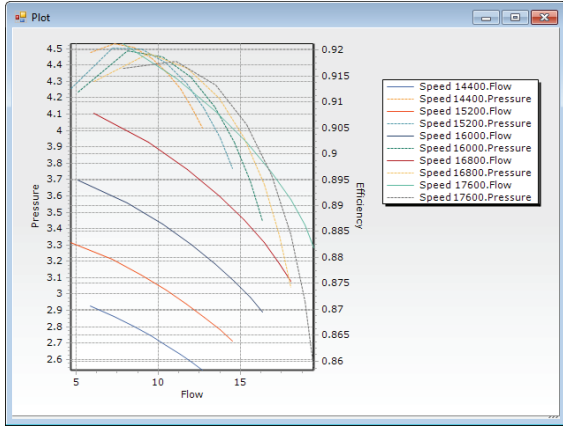
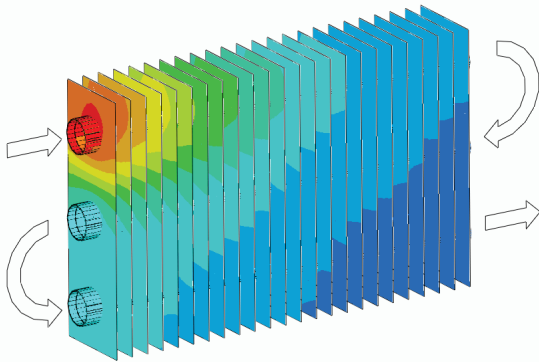




C&R TECHNOLOGIES®



System-level analysis of power generation cycles, heat pumps and refrigeration loops, etc. can be made using performance map-based turbomachines.



Fully integrated thermal and fluid solution using CAD-based methods in C&R's Thermal Desktop® and FloCAD®

For years, SINDA/FLUINT has provided users with the most proven thermal/fluid design and analysis software in the aerospace industry. SINDA/FLUINT is a comprehensive, generalized tool for simulating complex thermal/fluid systems such as those found in the electronics, automotive, petrochemical, and aerospace industries. The program has proven itself repeatedly for several decades. Having been instrumental in the design of the International Space Station, it was awarded the prestigious NASA Space Act Award.

SINDA/FLUINT saves time and money by making the design process faster and easier, letting you gain a better understanding of your complex system. You control what is important and how to get the answer to your design performance questions using the most efficient approach. Furthermore, the code is completely extensible. You choose the features you want, decide what levels of accuracy and approximation are appropriate, and what outputs are needed. You can even add your own customizations as needed to handle your unique design task or to automate repetitive tasks.

FEATURES

- Generalized thermal and fluid network (finite difference, finite element, lumped parameter) analysis.
- Steady-states, transients, parametrics, user-defined solutions sequences.
- Complete spreadsheet capabilities for easy parametric analysis and sensitivity studies.
- High-level modules for:
 - multivariable constrained optimization (design synthesis)
 - automatic calibration to test
 - goal seeking (finding inputs given outputs)
 - seeking worst-case scenarios
 - reliability assessments, treating uncertainties statistically.
- Thermal radiation, conduction, convection and advection, diffusion.

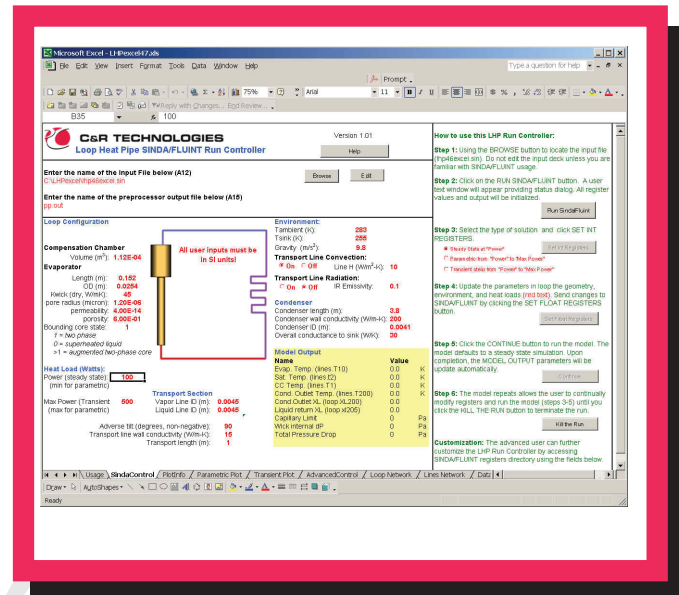
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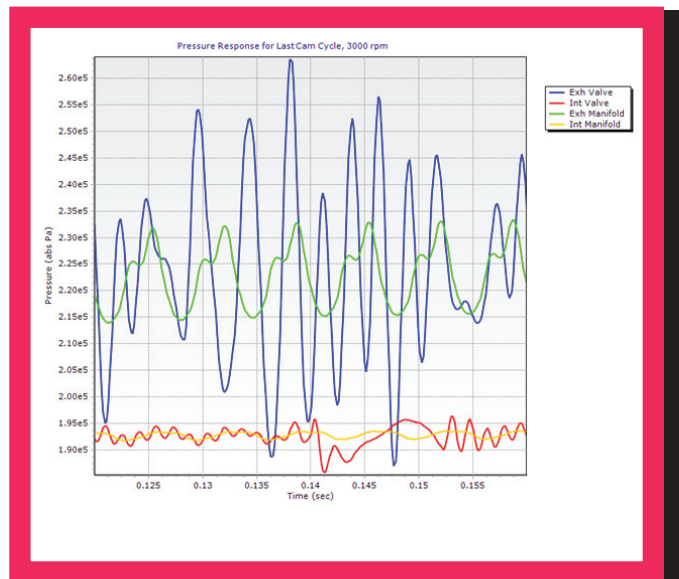
- Component design to full system-level performance simulations.
- Submodels for improved organization and ease of model merging.
- Time- and temperature-varying properties.
- Single and two-phase flow, including evaporation and condensation, pure fluids and mixtures.
- Homogeneous or slip two-phase flow with automatic flow regime determination.
- Built-in library of fluid properties, or user-defined libraries.
- Common fluid system components such as pumps and valves.
- Chemically reacting flows (finite rate and/or equilibrium)
- Built-in modeling of
 - material recession
 - phase change
 - thermoelectric coolers
 - heatpipes.
- Available
 - nonequilibrium two-phase control volumes
 - gas/liquid dissolution
 - high-speed compressible flows
 - choking detection and modeling
 - waterhammer and acoustic wave tracking.
- Time- and direction-varying body forces, including natural convection.
- Multiple User Interfaces: graphical
 - sketch pad
 - Excel™-based Launcher
 - Advanced Programmer's Interface (API) for custom interface to any COM-based application.

APPLICATIONS

- Electronics packaging
- Automobile and aircraft engine cooling, air conditioning, fuel, lubrication and hydraulic systems
- Spacecraft and launch vehicle thermal control, propulsion, and environmental control
- Power generation systems
- Oil and gas pipeline and distribution systems
- Process design and control
- Furnaces and kilns



Launch Control with Microsoft Excel™



Plotting in C&R's EZ-XY PLOTTER®

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