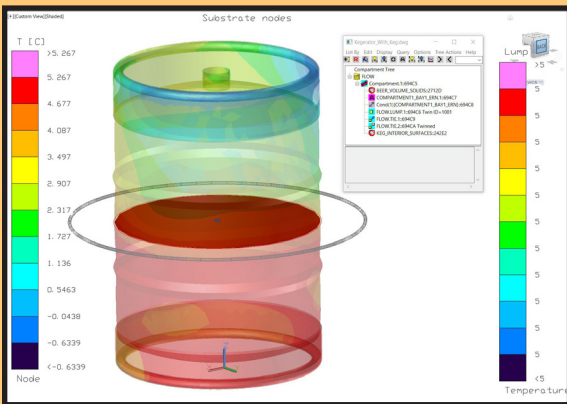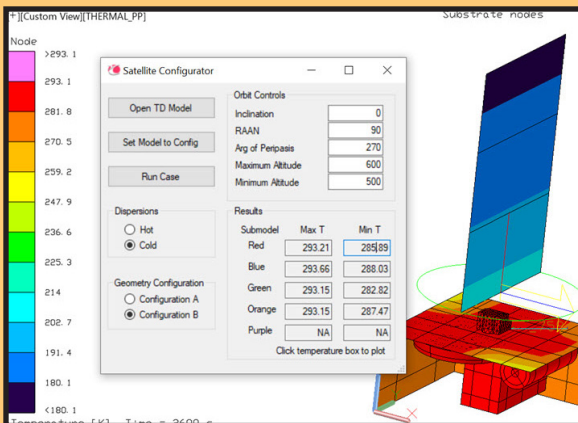# C&R TECHNOLOGIES®

OpenTD: An API for Thermal Desktop

AN APPLICATION PROGRAMMING INTERFACE FOR THERMAL DESKTOP AUTOMATION

Automate generation of complex models or components, such as FloCAD Compartments

Create a custom interface to create and run a Thermal Desktop model.

Thermal Desktop® has always had extensive features for end-user customization, and we love to see the innovative ways our users have taken advantage of that customization. The next step in that evolution is **OpenTD**, the Application Programming Interface (API) for Thermal Desktop. OpenTD gives you control over Thermal Desktop so you can automate many tasks that can become repetitive or tedious.

Using your own programming, OpenTD will allow you make your own interface, automate model creation, query existing models, update existing models, create custom post processing tools, and much more.

OpenTD is optimized for use with C#, but it is available for any language that loads .NET assemblies. You can use Matlab, Python, Excel VTSO, or others.

OpenTD is not a separate product, and there is no additional cost to use it. You will only need Thermal Desktop and a compiler of your choice.

We cannot make a comprehensive list of things you could accomplish when combining your own programming with OpenTD because there are too many possibilities, but here are some ideas to get your imagination started.

WORKING WITH THERMAL DESKTOP

- Translate other thermal model formats to Thermal Desktop
- Create a thermal model from a configuration text file
- Create a simple interface for positioning articulated parts
- Run cases overnight and receive email when complete
- Create orbits with data from external sources and add them directly to case sets
- Generate screenshots of a frequently-updated model for inclusion in a report
- Create simple-geometry curved finite elements

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WORKING WITH RESULTS

 • Use weighted average, max/min, or create your own formula for post processing data

 • Create temperature envelope plots and tables for components from multiple case sets

 • Locate the highest heat flow through a model over several cases

 • Identify components that violate allowable limits in any case and plot the results

 • Make your own comprehensive plotting tools

 • Update the geometry of one model based on the results of a different model

 • Create color contour plots at peak temperature times for each component

 • Tune a simplified model so it provides the same key results as a detailed model

LINKING WITH SINDA AND OTHER SOFTWARE

OpenTD includes **OpenTD.CoSolver**, which allows users to link a SINDA/FLUINT solution with other software.

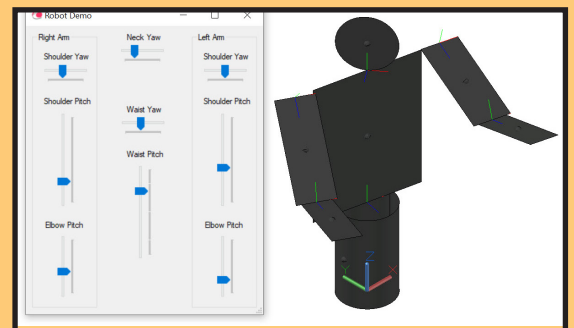 • ANSYS CFD co-simulation

 • TAITherm® Human Thermal Modeler

 • Veritrek®

 • End-user in-house tools

CUSTOM SOLUTIONS

Contact CRTech for more information about our customizable interface to SINDA/FLUINT and Thermal Desktop, including an extensive set of samples and tutorials.
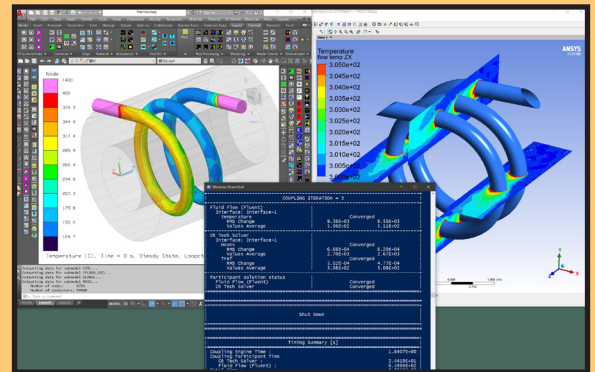
Co-simulation with ANSYS CFD

Positioning Parts Using OpenTD

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