

Thermal Solutions

Sauna™ V5.55 Release Notes

Sauna V5.55 is a cleanup pass

Sauna V5.55 is a "cleanup" release. There are no new major features. The most significant change is a complete revision of the user manual (now 500+ pages). Also, some very deep software testing was performed and a few bugs were identified and fixed. This release should be installed by all users. Installation only takes a couple of minutes, so please do it now.

Exercise update

The previous V5.5X release notes included a set of comprehensive exercises. All of this material has now been incorporated in the user manual.

Here is a list of the all-new manual exercises:

- *Intermediate Exercise 4: Bars vs. Planar Plates*
- *Intermediate Exercise 5: Tubes And Round Cans*
- *Supplemental Exercise 4: Liquid Cooled Cold Plates*

If you have used a previous Sauna V5.5 release

There is nothing for you to do, other than installing the V5.55 release. With the new installation, the updated user manual will also be installed.

If you are new to Sauna V5.5, but have used Sauna before

Please look through "Sauna V5.5 New Features List", starting on the next page. After installation, work through *Intermediate Exercise 4: Bars vs. Planar Plates*, which takes around one hour. If appropriate for your application, work through *Intermediate Exercise 5: Tubes And Round Cans* and *Supplemental Exercise 4: Liquid Cooled Cold Plates*.

If you are completely new to Sauna

After installation (see user manual for detailed procedure), you should work through all of the introductory exercises.

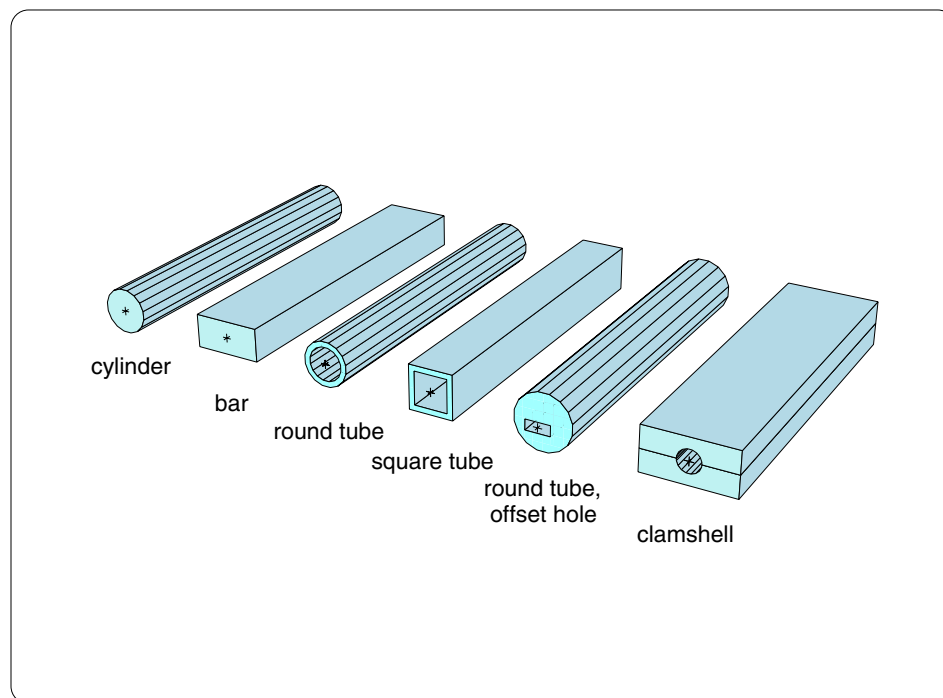
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Sauna V5.5 New Features List

Sauna V5.5 provides important new features

- Cylinder, bar and tube assemblies
- Round can enclosures with internal convection and radiation
- Incorporate flow networks (air, water, antifreeze, etc.) in tube assemblies

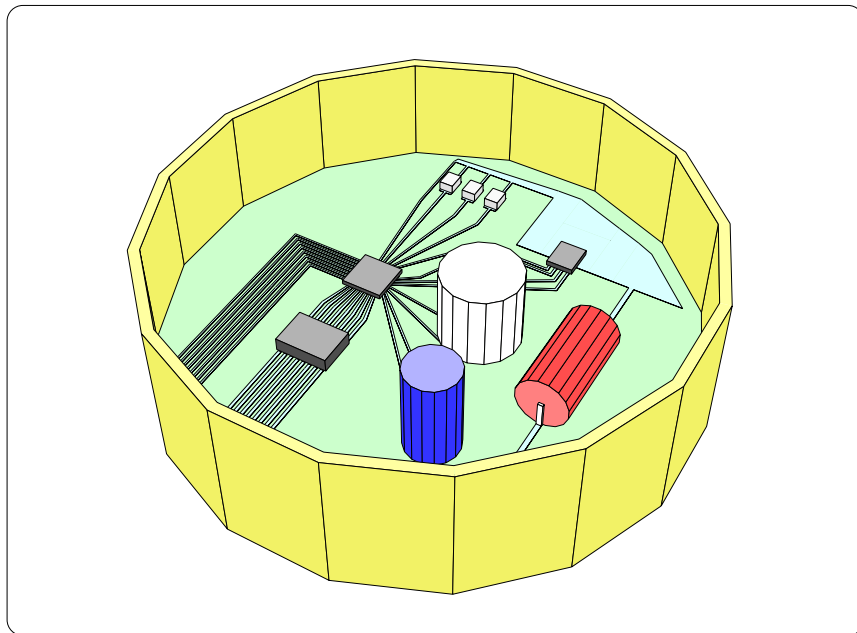


Bar and tube assemblies

Cylinder, bar and tube assemblies

- Very easy to create
- Variety of shapes supported (see picture)
- Use bars and tubes for
 - cylindrical components (capacitors, resistors, coils)
 - liquid cooling applications
 - heat loss through wires

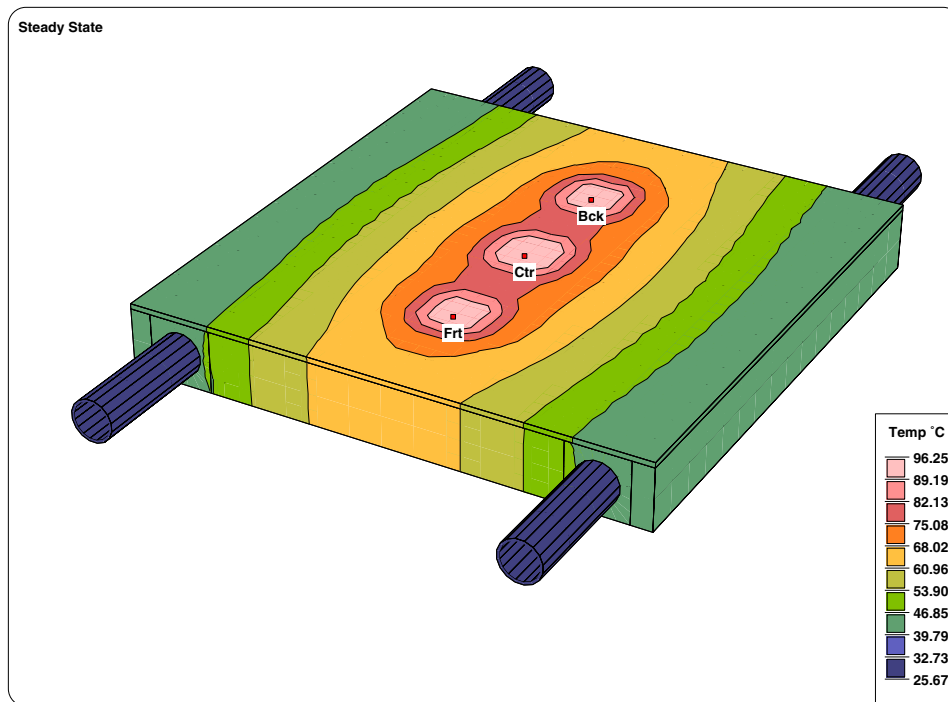
- Multiple node and resistor planes supported
 - no need to stack assemblies
 - user can adjust plane count with axial remesh
 - easy to isolate a specific plane for applying heat loads
- Can have different cooling modes for front face, back face, sides and hole (if applicable)
- Contours shown on all surfaces
- Axial slice for subdividing in axial direction
- Sauna still supports planar assemblies
 - can still model with "classic Sauna"
 - planar assemblies and bar/tube can coexist in the same model



Can enclosure with components

Round can enclosures

- Easy to create, largely the same as creating a rectangular box
- "Board in can" and "Plate in can" commands provided, just as for rectangular box
- Convection and gray radiation networks are easy to create



Cold plate model incorporates water flow networks

Integrate flow networks inside tube assemblies

- Easy to create, just choose tube assembly and specify flow
- Fluid types: air, water, 50/50 antifreeze, special
- Convection and temperature rise calculated automatically
- Clamshell configurations supported
- Use for cold plates, battery cooling and many other applications

New options for circuit board pads

- Additional pad shapes: triangular, five-sided polygon, six-sided polygon, circular (sliced and unsliced)
- “Entire board” option for quickly creating ground and power planes

Even more new features

- New assembly and node shapes: triangular, five-sided polygon, six-sided polygon
- Filled hole command
 - similar to creating hole, except that hole is filled with a new assembly with the same material
 - very useful for creating a section with higher mesh density inside a larger assembly (no slicing required)
 - if necessary, can change the material, useful for modeling wires, heat sink with copper insert, etc.
- Create rectangular assembly by defining 2 points
- Create rectangular hole by defining 2 points
- Improved creation and editing of line labels

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