



Setting Solution Data

Use *Solution Data* to control generation of thermal model solution data in universal file format for subsequent recovery and post-processing or to export the thermal model in TRASYS, NEVADA, SINDA or Esatan format.

A wide variety of information is available for recovery, including thermal, flow and radiation results data. After a solve has been performed, use *Get Results* to import the selected data.

If you have already solved a model and wish to recover additional data for post-processing, simply select the desired output on *Results Options* and pick *Get Results* to import the data as usual. The solver will realize that some data are missing and will extract them from the solution files. This does not rewrite the message files, it appends to them.

Generation of output is controlled by the *Results Printout Interval* defined on *Transient Analysis Parameters*. Steady-state simulation generally produces only a single set of data, while transient models produce data at several time points.

TMG element results correspond to an average of the values calculated at the control volume calculation points of each element. Nodal values are computed by mapping.

Select the *Model Translation Options* to translate the thermal model to a different solver (see *Setting Model Translation Options*).

[Locate the icon.](#)

Thermal Results

Temperature

Temperature is the default output. Node Temperatures are interpolated from the temperatures of the surrounding calculation points. Element Temperatures are the temperatures at each element CG.

Conductive Flux

Vector data showing conductive heat flux. Magnitude is the heat flowing through the element boundary (for example the face of a solid element) divided by the area of the boundary itself. In SI units this would be W/m².

Temperature Gradient

Vector data equal to the temperature gradient in the element.

Total Load/Flux

Two sets of scalar data representing combined loads and combined fluxes respectively representing the overall heat load/flux on each element from all sources, including thermal boundary conditions and orbital fluxes.

Residuals

Scalar data equal to the element heat imbalance. This is useful for steady-state solution only.

Joule Data

Use *Joule Data* results to generate scalar data for voltages and power densities. Voltage results are generated in the file `voltages.unv` and selected as `VOLTAGE DATA FROM TMG` in post processing. Electrical power dissipation results are generated in the file `POWERDISS.unv` and selected as `POWER DENSITY DATA FROM TMG` in post processing.

Phase Change Quality

Scalar data equal to the proportion of each element that is in its higher temperature phase. This can be useful when studying the melting or solidification of objects or materials under analysis.

Connectivity Model

A graphical display of the finite difference thermal model. To display a connectivity model, you should create a copy of your thermal model, make it active, then import the universal file `tmgconn.unv`. Spring elements are defined to represent the conductances; they are color-coded to aid identification:

Color	Conductance Type
cyan	conductive
green	radiative
dark olive	series and interface
golden orange	free and forced convective / fluid / hydraulic
golden orange	thermal couplings of type absolute, conductive, join, length prop., user defined, constant coef., variable coef. and resistance

Radiation Results

View Factor Sums

Scalar data equal to the sum of the view factors for a radiating element. **Note:** TMG generates this data only when it builds radiative conductances (GRAYB Module).

Radiative Flux

Scalar data equal to the solar, albedo, and planet fluxes absorbed by elements.

Solar, Earth View Factors

Scalar data equal to the total element view factors to the sun and the planet.

Duct Flow Results

Velocity

Scalar data equal to the flow velocity.

Reynold's Number

Scalar data equal to the duct Reynold's Number (i.e. based on the hydraulic diameter).

Pressure

Scalar data equal to the total pressure in the duct.

Convection Coefficient

Scalar data equal to the convective heat transfer coefficient. This data is only available for those elements which convect to fluid elements.

Minimum and Maximum Temperatures and Occurrence Times

For transient runs the solver always generates data on the minimum and maximum temperatures, and their time of occurrence.

When you load all results, the following data sets are loaded for post processing:

- Time of Minimum Temperature: Scalar data for each element in a transient analysis equal to the analysis time when that element reaches its minimum temperature.
- Minimum Temperature: Scalar data equal to the minimum temperature for each element in a transient analysis.
- Time of Maximum Temperature: Scalar data for each element in a transient analysis equal to the analysis time when that element reaches its maximum temperature.
- Maximum Temperature: Scalar data equal to the maximum temperature for each element in a transient analysis.

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