AspenSinter Excel Template

**Organization**

The AspenSinter Excel template is organized into several sheets. Additional sheets can be added if needed.

* Interface
  + Contains the input and output for a simulation
* Layout
  + Contains the location of cells for input and output for a simulation
  + Layout can be done automatically
  + Layout can be manually edited
* Calculations
  + The calculation sheet is initially blank and can be used for additional calculations
* Series
  + Used to run a series of simulations
* modeFront
  + Some modeFRONTIER compatibility options

**AspenSinter**

The Aspen sinter excel template requires AspenSinter to be installed for communication with simulation software. For more information on installing and using AspenSinter, see the AspenSinter documentation.

To test AspenSinter, enter a sinter configuration file name into $C$2 in the Interface sheet. The config file should be stored in the same directory and the Excel file. Press the Open Simulation button on the Interface sheet. The simulation software should open, but will not be in a visible interactive mode. The easiest way to ensure that the simulation program is running is to use the task manager.

The simulation can be closed with the Close Simulation button. Closing the excel spreadsheet also closes the simulation if the close on exit option in cell L8 on the Interface sheet is true.

**Layout**

If the layout page is blank, clicking the “Draw Interface Sheet” button will automatically layout the input and output defined in the sinter configuration file and arrange them on the interface sheet. Inputs are initially formatted green and outputs are blue. The location of each input and output is defined on the layout sheet. The formatting of the cells can be done manually if needed.

If the layout must be edited, delete all of the rows on the Interface sheet before redrawing. If you need to redo the layout also delete the rows on the layout sheet.

If you want to edit the layout manually, you can delete the rows of the interface sheet and edit the layout sheet. When finished editing click the “Draw Interface Sheet” button.

**Input**

Input cells are initially formatted to be green. Any input cell can be changed to any value desired. Comments in the cell labels contain a description of each variable. If available, the default, max and min are included in the comment. The default inputs can be loaded using the “Load Defaults” button.

**Running a Single Simulation**

To run a simulation, push the run button. Input will automatically be taken from the spreadsheet, and when the simulation is finished the output will be put on the sheet. While a simulation is running you cannot edit the sheet. Unfortunately, at this time, there is no way to stop a running simulation from the spreadsheet. The run status will be shown in cell $C$7 and the elapsed time will be shown in $C$6 of the interface sheet. The status codes are given in Table 1. The run id in cell $C$3 is used for naming any extra output files from a simulation. The run id is automatically incremented after each run. The run id can be reset manually.

**Table 1:** Status Codes

|  |  |
| --- | --- |
| **Status Code** | **Meaning** |
| 0 | Simulation finished with no problems |
| 1 | Error, the results probably don’t mean anything |
| 2 | Warning, results are probably okay |

There are a few options for running simulations. The options are in cells $L$3 through $L$6. If the “run defaults first” option is set to 1, a simulation is run with the defaults before running the requested simulation. This is sometimes useful in providing a good starting point for simulations.

The “restart every” option can be set to 1 to close and reopen the simulation software before every run. This option helps to ensure a good starting point for simulations. It also avoids bugs such as memory leaks in simulation software, that eventually can cause a simulation to crash or provide bad results.

The “restart mod” option provides a method to restart the simulation after so many runs. If the remainder of the run id divided by the restart mod value is 0, the simulation is restarted before the run. If restart mod is set to zero, the option is inactive.

The restart on fail option allows a simulation to be restarted when a simulation fails. This helps in two ways. If a bug in the simulation software caused the failure, it may work the second time after the program is restarted. If the simulation failed because the starting point obtained from the results of a previous simulation was bad, the simulation is rerun with a better starting point.

**Running a Series**

The series sheet provides a way to run a series of several simulations. This can be useful for sensitivity studies. To do a series run, fill out the descriptions of all the input and output to be used in column C on the Series sheet. The outputs don’t necessarily need to be direct outputs from the simulation; they could also be calculated in Excel. Enter the Cell references in column D. In column E, enter either “input” for input cells or “output” for output cells.

In row 3 enter an integer run id for every run to be completed. The series of runs will continue until a column with an empty run ID is encountered. Values for each input cell for each run must be entered. Excel’s copy and autofill methods can be very useful in fill out input cells.

Once the inputs and run ids are filled in press the run series button, press the Run Series button and the output variables will be filled out as simulations are completed.

**modeFRONTIER**

This section describes some extra features designed to that help with modeFRONTIER compatibility. ModeFRONTIER reopens spreadsheets each time it executes an excel node; this cause the Excel template to lose its connection to the simulation.

There is some code that can be conditionally added to the VBA macros to ensure the workbook can maintain contact with the simulation despite being closed and reopened. To enable this code, open the visual basic editor (alt+F11). Edit the first line of the sim\_basic module to say:

#Const MODEFRONT\_COMPAT = True

Ensure the simulation doesn’t close when the worksheet closes. Change the close on exit option in cell L8 on the Interface to false. Go to the modeFront sheet. Set the backup index to an integer 0 or greater and less than 11. This index allows several excel simulation sheets to run at the same time without conflict, so it should be set to something different in each workbook. Set the directory where the dummy sheet is stored.

A dummy worksheet is supplied with the Excel template. The dummy workbook can be stored anywhere. Before running mode frontier, ensure that the dummy.xlsm workbook is running in Excel. The Excel AspenSinter template can find the Excel process running the dummy workbook and use it to backup VBA variables so they are not lost when the book is reopened.

**Trouble Shooting**

If the there is an error in the VBA code, a simulation may be left open with no way to properly close it. To close the simulation software, use the Task Manager by pressing ctrl+alt+del.

If the sheet does not seem to be working, ensure the AspenSinter library reference is properly included. To do this, open the VBA editor by pressing alt+F11. Then go to the Tools menu and select References. Make sure the AspenSinter reference is checked and points to the correct location of the AspenSinter type library file.