



IESVE

Trial Support
Material

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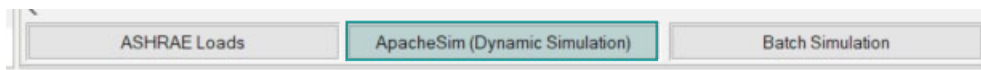
ApacheSim: Dynamic
Thermal Simulation

Dynamic Thermal Simulation

ApacheSim is the application you use to run dynamic thermal simulations of your model.

Before running the simulation, ensure you have completed the necessary information in other applications which you would like to link to your simulation:

- Run SunCast shading calculations (good to check manually, but this will run automatically when you tick the option to link it)
- Input data in Apache:
 - Location data in AP Locate
 - Operational profiles in AP Pro
 - Construction data in AP cdb
 - Systems data in AP Sys
 - Building Templates completed in BTM / Tab BTM
 - Check using the Query tool, Tab Space Data and/or the Input Data Visualisation tool
- Create window types and assign them in MacroFlo
- HVAC data in ApacheHVAC
- Run Radiance to generate input data for any daylight dimming lights



At the bottom of your screen, click on the button for **ApacheSim (Dynamic Simulation)** to start.

This will open the simulation dialogue box.

Ensure that you give the results file a unique name every time you run a simulation, so that you do not over-ride previous results and are able to compare the impact of improvements.

Use the check boxes in the model links section to create links to the other IESVE Applications as desired.

Any infiltration air exchanges are included unconditionally, but auxiliary and natural ventilation air exchanges may be switched on or off at simulation time.

In the simulation box, choose the dates for which you wish to run the simulation.

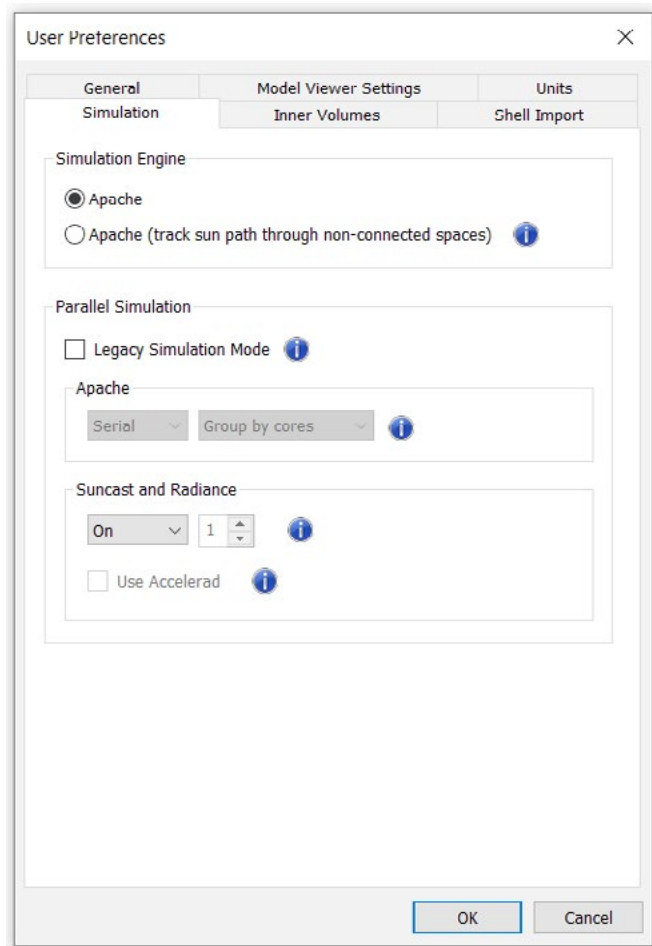
The simulation time step can be set at anything from 1 to 30 minutes. Smaller time steps may be necessary to capture the detail of control operation in simulations involving ApacheHVAC. The reporting interval must be equal to or greater than this. The bigger the interval, the smaller the results file. You can see the estimated results file size at the bottom of the window. A reporting interval of 1 hour is satisfactory for most simulations.

The preconditioning period is necessary to ensure that the building enters the simulation period in a realistic thermal state. Preconditioning is necessary because of heat storage in the building fabric. For lightweight buildings a preconditioning period of 10 days is sufficient. For heavyweight buildings as much as 30 days or more may be needed.

The appropriate period of preconditioning may be established by increasing the number of preconditioning days until the effect of further increments produces a negligible change in the first day's simulation results.

You can also adjust the **Simulation Options** to specify modelling techniques used in the simulation and the **Output Options** to be available for viewing later.

You have the **Add to Queue** option for if you would like to queue files for a batch simulation



Under **Parallel Simulation Settings**, you will find that the simulation tab has an option for Apache (track sun path through non-connected spaces) which facilitates studies like translucent shading with enhanced solar algorithms.

Click on **Simulate** to start the simulation.

Once the simulation is complete, you can view the results in **Vista Pro**, IES's results viewer.

Find out more at https://help.iesve.com/ve2019/apache_dynamic_simulation.htm#