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Trial Support  
Material

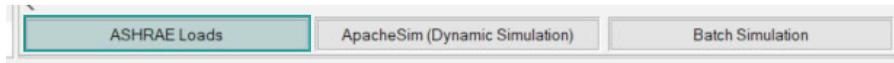
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**ApacheSim: ASHRAE  
and CIBSE Loads**

# Apache Loads: ASHRAE Heat Balance Method

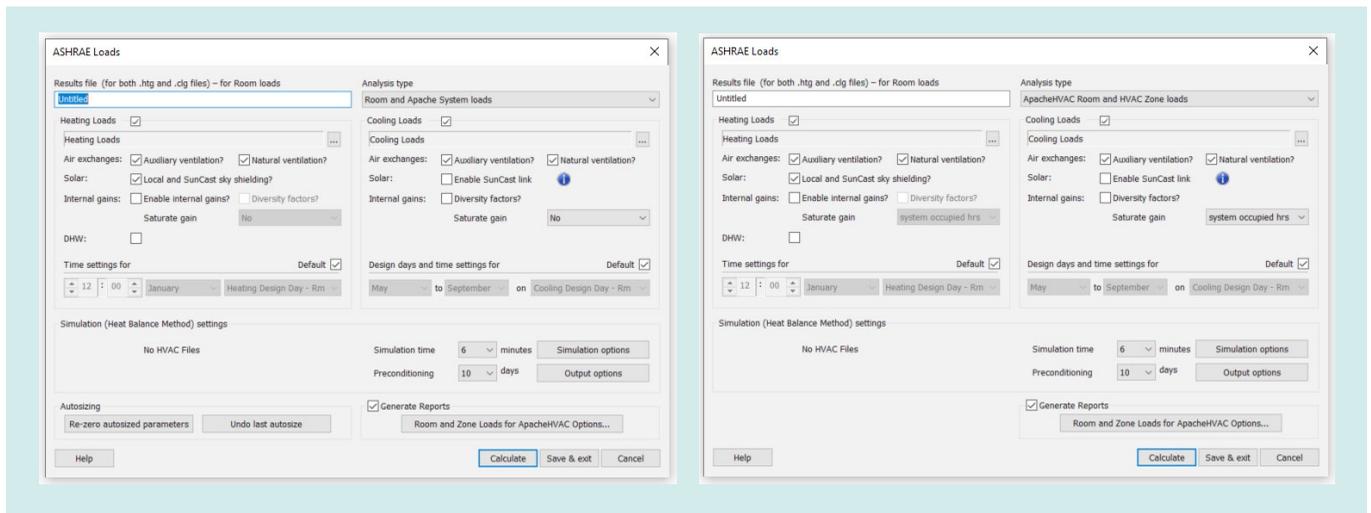
Apache Loads is used to run the ASHRAE heat balance load calculations according to the ASHRAE Heat Balance Method, as described in the ASHRAE Handbook of Fundamentals.

You will need to have selected the ASHRAE Loads methodology from the **Settings** dropdown menu.



At the bottom of your screen, click on the button for **ASHRAE Loads** to start.

This will open the simulation dialogue box.



You can choose one of 3 analysis types which will change the dialogue options:

- **Room and Apache System Loads** to perform an analysis of room heating and cooling loads and the associated loads on Apache Systems. In this context, auto-sized parameters are the room parameters located in the Space Data / Apache Systems dialog that are sized during ApacheLoads or ApacheCalc calculations. Re-zero sets the values back to zero before a new calculation.
- **Apache HVAC Room and HVAC Zone loads** to calculate the room based loads and if utilising the ApacheHVAC methodology with a HVAC Zone grouping scheme the loads on each HVAC Zone
- **Apache HVAC System loads and sizing** to analyse loads on a specified ApacheHVAC system. Then select the ApacheHVAC system

The time and date can be chosen for both heating and cooling load calculations. Ensure that the time chosen matches a heated/cooled period in the modelled building.

This implements ASHRAE Heat Balance Method procedures for the calculation of room heating and cooling requirements and the sizing of heating and cooling equipment.

Find out more at <https://help.iesve.com/ve2019/apacheloads.htm#>

Results are presented in Vista as tables or graphs of room or zone heat loss, broken down by heat loss mechanism. Losses can be expressed on a floor area or room volume basis. Room temperatures are also displayed.

The data may be exported to other applications such as spreadsheets and word processors.

At the user's option, the effects of ventilation air exchanges and external solar shading, as calculated by SunCast, may be incorporated in the cooling loads calculations.

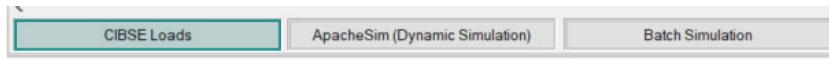
Vista presents the Cooling Loads results in tabular or graphical form in a variety of formats. Gains are broken down by heat transfer mechanism and by type (sensible or latent). Results may be displayed by room, by zone or totalled over the building and peak loads are identified. Various measures of room temperature are displayed, together with room relative humidity. Data may be exported to other applications.

We will look at viewing results in **Vista** separately.

# CIBSE Loads: Calculated Thermal Simulation

CIBSE Loads is used to run the calculations for Heating and Cooling Loads as per the procedures in CIBSE Guide A.

You will need to have selected the CIBSE Loads methodology from the **Settings** dropdown menu.



At the bottom of your screen, click on the button for **CIBSE Loads** to start.

This will open the simulation dialogue box.

Choose the links you want to use in the calculations, and select your own time and day settings if desired.

Auto-sized parameters are the parameters located in the Space Data / Apache Systems dialog that are sized during CIBSE Loads calculations. Re-zero sets the values back to zero before a new calculation.

Heating Loads implements CIBSE procedures for the calculation of room heating requirements and the sizing of heating plant.

Steady-state room heat losses are calculated in the absence of casual and solar heat gains. The calculation optionally includes conduction heat gains from adjacent rooms and the effects of mechanical and natural ventilation air exchanges

Cooling Loads calculates room cooling loads and free-floating temperatures using the CIBSE admittance procedure.

The calculation is carried out for one design day in each of a user-selected range of months, using weather data provided in APlocate. The calculation takes into account the timing and nature of each gain, applying the appropriate radiant fraction to all sources of heating and cooling. Inter-room dynamic conduction and ventilation heat transfer is accounted for. Glazing solar transmission properties are treated using an analysis based on the Fresnel equations. At the user's option, the effects of ventilation air exchanges and external solar shading, as calculated by SunCast, may be incorporated.

Click on **Calculate** to start the CIBSE Loads calculation.

Once the calculation is complete, you can view the results in Vista Pro, IES's results viewer, as reports, tables or graphs of room or zone heat loss, broken down by heat losses and gains.

The data may be exported to other applications such as spreadsheets and word processors.

Results from Heating and Cooling Loads also appear in Space Data and Apache Systems, where they can be used for equipment and air flow sizing.

Find out more at <https://help.iesve.com/ve2019/apachecalc.htm#>