



Unmet Load Hours

Sample python package/script

Brief overview of Python unmet load hours analysis sample script

Contents

Overview	2
What does this script do?	2
Running the script	3
Results Output	4

Overview

What does this script do?

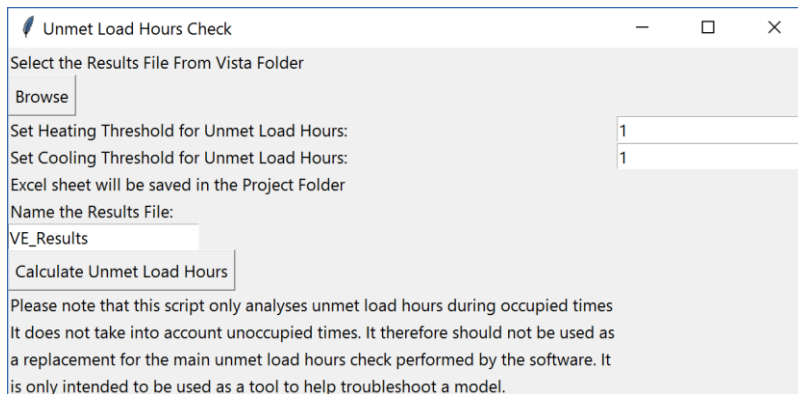
Unmet load hours are any hours of operation when the HVAC system serving a room cannot maintain the setpoint temperature in that room. Typically unmet load hours have a tolerance (or threshold) of 1°C applied to account for minor variations in the room temperature. If unmet load hours for multiple spaces coincide (occur in the same hour), they are counted as only one unmet load hour for the building.

This Python script analyses the unmet load hours for a PRM project at a number of different temperature thresholds and prints the results of the analysis to an excel sheet. It outputs the results for each room individually allowing the user to very quickly identify the problem rooms and when the problem is occurring.

Please note that this script only analyses unmet load hours during occupied times. It does not take into account unoccupied times. It therefore should not be used as a replacement for the main unmet load hours check performed by the software. It is only intended to be used as a tool to help troubleshoot a model.

Running the script

The script can be started from the VE Python Scripts navigator, or from the integrated editor by running `unmet_load_hours_test.py` from the installation `Scripts\tools` folder.



Unmet Load Hours Check

Select the Results File From Vista Folder

Browse

Set Heating Threshold for Unmet Load Hours: 1

Set Cooling Threshold for Unmet Load Hours: 1

Excel sheet will be saved in the Project Folder

Name the Results File:

VE_Results

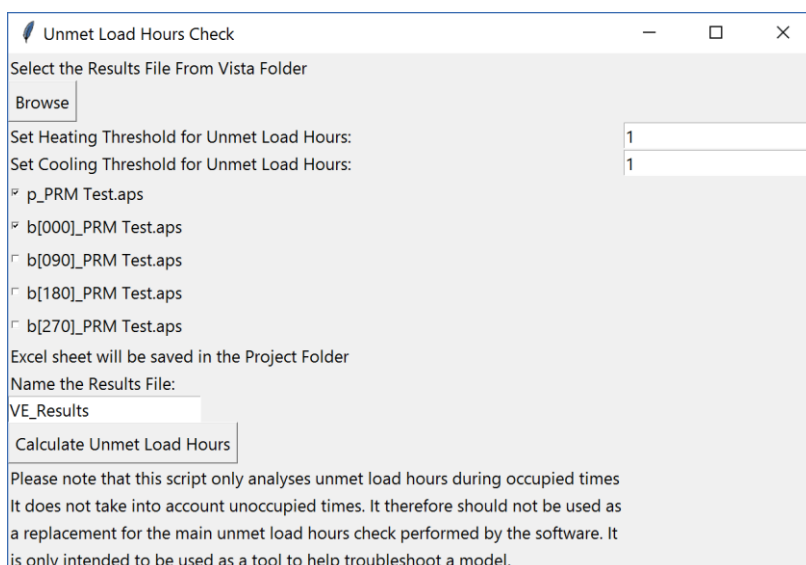
Calculate Unmet Load Hours

Please note that this script only analyses unmet load hours during occupied times
It does not take into account unoccupied times. It therefore should not be used as
a replacement for the main unmet load hours check performed by the software. It
is only intended to be used as a tool to help troubleshoot a model.

Click the Browse button and select a results file for a PRM project. You may select the proposed results file or any of the baseline files. The script can only be run on a PRM project. The results files that is selected must therefore have the prefix of a PRM project. These are as follows:

- 'p_'
- 'b[000]_'
- 'b[090]_'
- 'b[180]_'
- 'b[270]_'

Once the results file has been selected, all of the results files that correspond to the name of the file selected, will appear in the user interface as a series of check boxes.



Unmet Load Hours Check

Select the Results File From Vista Folder

Browse

Set Heating Threshold for Unmet Load Hours: 1

Set Cooling Threshold for Unmet Load Hours: 1

☒ p_PRM Test.aps

☒ b[000]_PRM Test.aps

☒ b[090]_PRM Test.aps

☒ b[180]_PRM Test.aps

☒ b[270]_PRM Test.aps

Excel sheet will be saved in the Project Folder

Name the Results File:

VE_Results

Calculate Unmet Load Hours

Please note that this script only analyses unmet load hours during occupied times
It does not take into account unoccupied times. It therefore should not be used as
a replacement for the main unmet load hours check performed by the software. It
is only intended to be used as a tool to help troubleshoot a model.

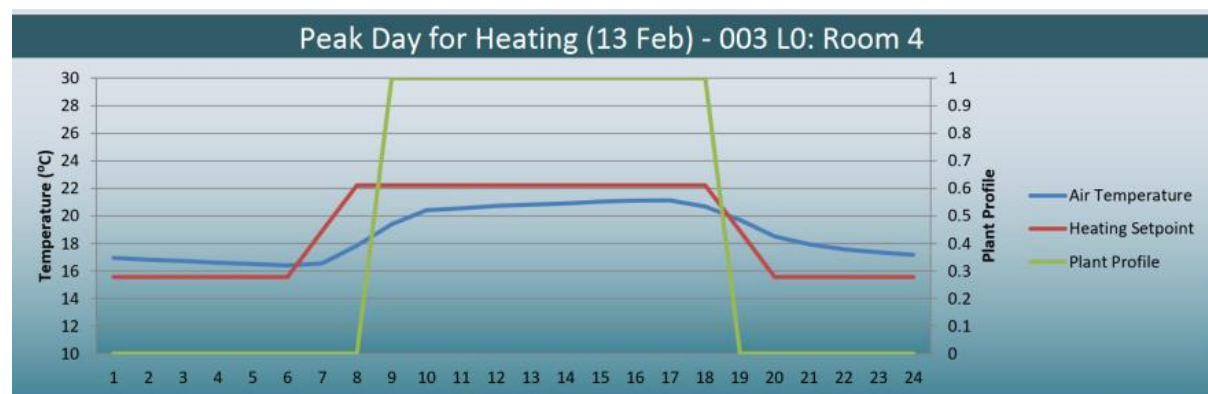
Use the check boxes to select which results files you wish to include in the unmet load hours analysis. Finally, set the threshold temperature for the heating and cooling unmet load hour check and give a name for the results file. Click 'Calculate Unmet Load Hours' to perform the calculation.

Results Output

The excel sheet that is created contains a tab for each results file that the user chose to include in the analysis. Heating and cooling unmet load hours are displayed for each room in the building at the threshold specified by the user in the main dialogue and at thresholds 1°C and 2°C higher.

Room Name	Min Temp Date	Min Temp During Operating Hours (°C)	Heating Setpoint During Operating Hours (°C)	Threshold 1.0 °C	Threshold 2.0 °C	Threshold 3.0 °C
000 L0: Room 1	17 Feb	20.5	22.2	70.0	0.0	0.0
001 L0: Room 2	08 Mar	21.0	22.2	19.0	0.0	0.0
002 L0: Room 3	17 Feb	20.9	22.2	38.0	0.0	0.0
003 L0: Room 4	13 Feb	19.4	22.0	485	42.0	0.0
004 L1: Room 1	17 Feb	21.1	22.2	11.0	0.0	0.0
005 L1: Room 2	02 Nov	21.0	22.2	24.0	0.0	0.0
006 L1: Room 3	23 Feb	21.1	22.2	3.0	0.0	0.0
007 L1: Room 4	06 Jan	20.4	22.2	184.0	0.0	0.0
008 L2: Room 1	19 Jan	21.1	22.2	9.0	0.0	0.0
009 L2: Room 2	29 Nov	21.1	22.2	13.0	0.0	0.0
010 L2: Room 3	19 Jan	21.0	22.2	5.0	0.0	0.0
011 L2: Room 4	10 Feb	20.5	22.2	91.0	0.0	0.0
012 L3: Room 1	09 Feb	21.1	22.2	8.0	0.0	0.0
013 L3: Room 2	12 Jan	21.0	22.2	12.0	0.0	0.0

Any rooms that are above 300 unmet load hours per year are highlighted in red. If you click on the room name that is highlighted in red, it brings you to a graph that shows the room air temperature, heating setpoint profile and plant profile for the peak day of the year. This allows the user to very quickly identify which rooms are the worst performing in terms of unmet load hours.



This script will not fix the unmet load hours issues in a model, it will simply help the user to identify the problem rooms. Guidance on addressing the cause of unmet load hours can be found [here](#)