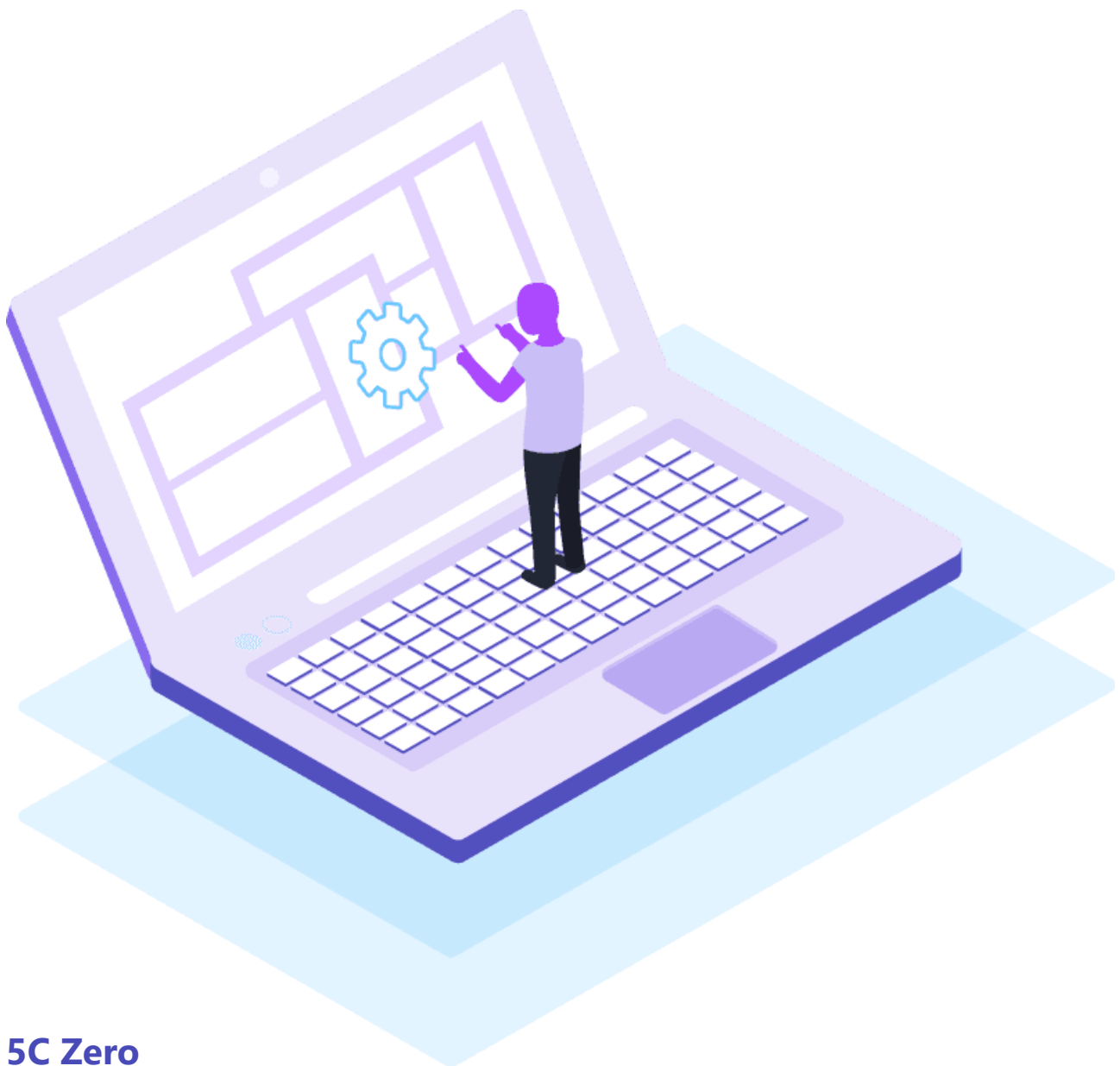




User guide for Progressive Results Comparison VE Python tool



5C Zero

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1. Introduction

1.1 Purpose of the script

The Progressive Results Comparison VE Python tool is designed to compare and analyse results from up to five Apache simulation files (Iterations). This script reads outputs from Apache simulation files to analyse and compare results to reflect the journey from Baseline to final model iterations, with a focus on energy consumption and performance metrics.

The script produces several types of visual outputs to aid in the comparison of simulation results. These outputs are essential for visualising energy consumption, temperature variations, and other relevant metrics across different iterations.

The extracted data is stored in an MS Excel worksheet in the same folder as the APS file, facilitating further analysis, reporting, and collaboration.

1.2 Scope of this guide

This user guide covers the installation, configuration, and usage of the VE Python tool. It aims to assist sustainability leaders and their teams in efficiently utilising the tool for streamlined sense checks and quality assurance of dynamic simulation models.



2. Getting Started

2.1 Installing the script

Please [follow the instructions](#) to install the tool by clicking on the link.

2.2 Apache simulation settings

This VE Python tool is designed to extract results from **Apace System** dynamic simulation files with hourly output. Apache HVAC is not yet supported. Ensure that **Simulation Time Step** is set to 30 minutes and **Reporting interval** is set to 60 minutes. Verify that all necessary model links are checked before running the simulation. Refer to Figure 1 for ideal Apache Simulation settings to run the VE Python tool.

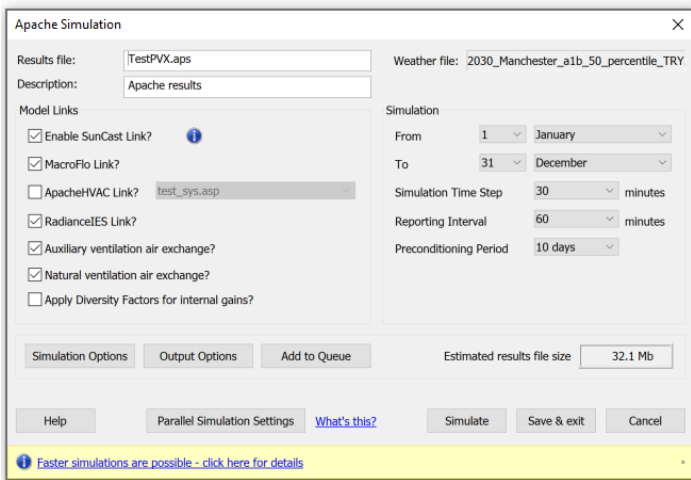


Figure 1. Ideal Apache simulation settings

2.3 Running the VE Python tool

This VE Python tool can analyse up to a **maximum of five APS files**. In some cases, you may need to navigate to the **vista** folder of your project file.

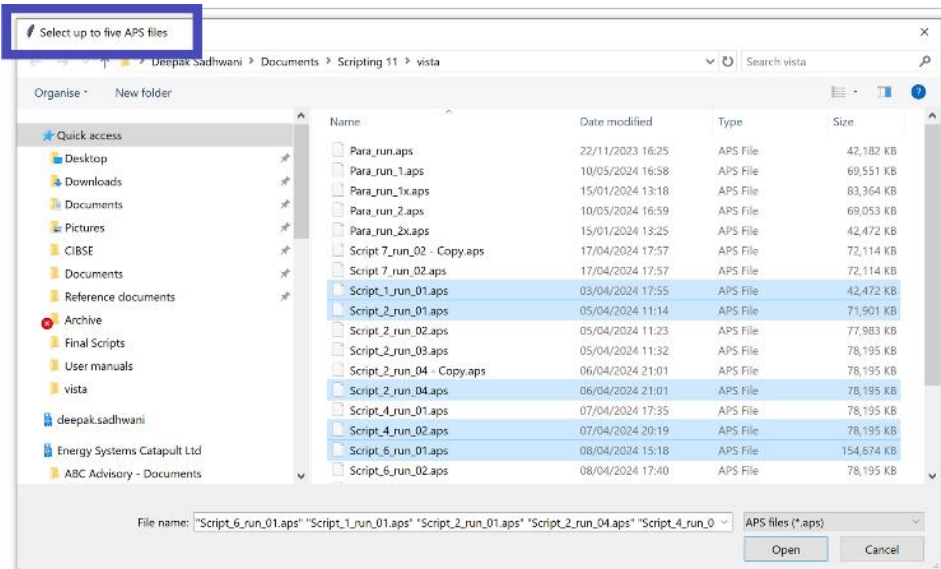


Figure 2. Select an APS file



3. Output

The tool performs a detailed analysis of results from all APS files. It creates individual MS Excel worksheets for each selection, referred to as Iterations. The tool extracts comparative metrics such as:

- Maximum temperature
- End Use Intensity
- Gas consumption
- Electricity consumption
- Boilers and chiller consumption and peak loads

Similarly, the tool extracts energy end uses for each Iteration and generates a monthly end use breakdown graph. It visualises space heating, space cooling, auxiliary, DHW, equipment, lighting, PV, and Wind electricity.

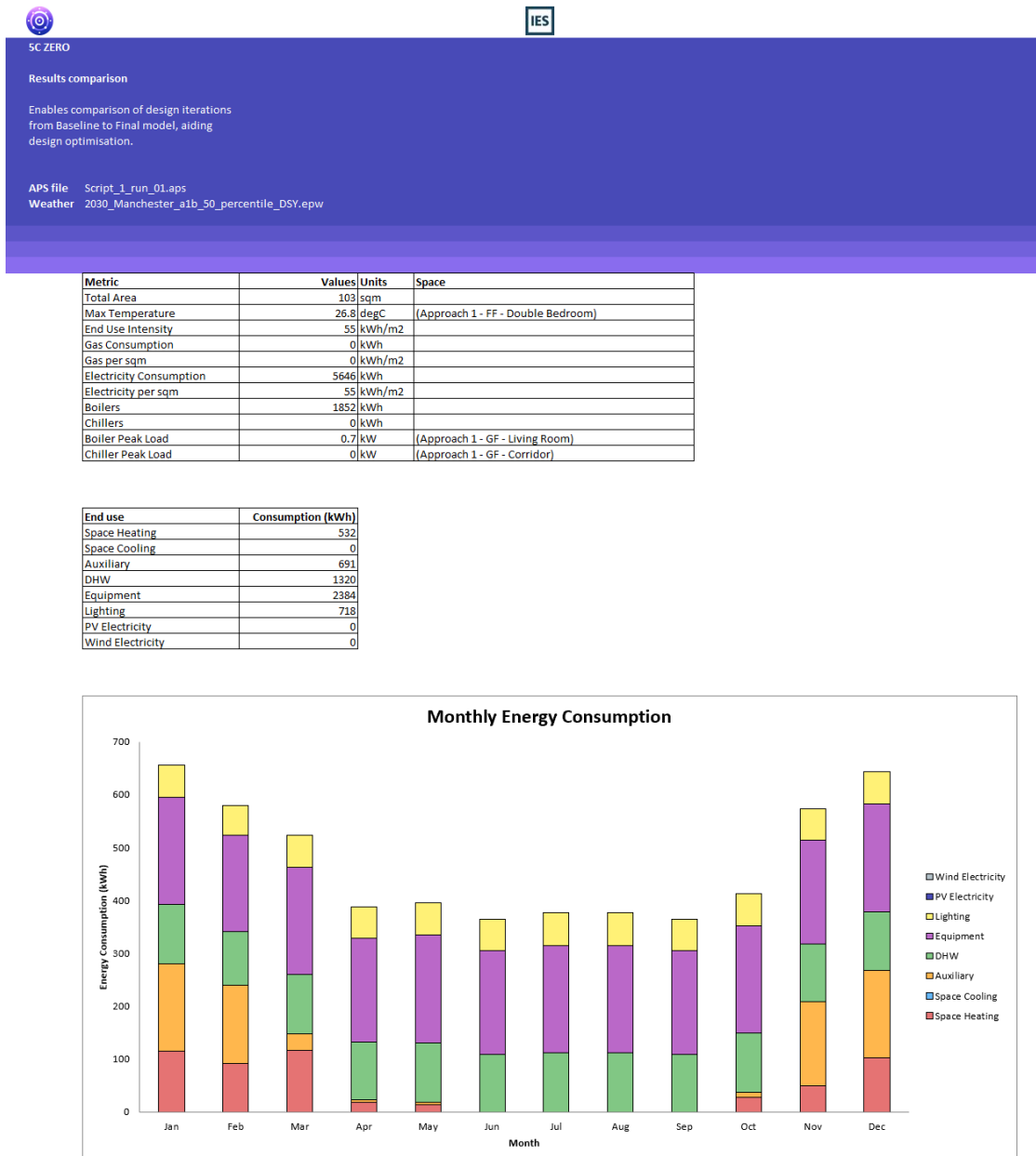




Figure 3. Example of Iteration worksheet



Once all iterations worksheets are generated, the tool compares all the above metrics for each iteration and visualises them in individual comparative graphs in a new worksheet.

Results comparison

Enables comparison of design iterations from Baseline to Final model, aiding design optimisation.

Metric	Iteration 1	Iteration 2	Iteration 3	Iteration 4	Iteration 5	Units
Max Temperature	26.8	26.8	25.8	38.8	38.8	degC
End Use Intensity	55	55	55	49	98	kWh/m2
Gas Consumption	0	0	0	0	0	kWh
Gas per sqm	0	0	0	0	0	kWh/m2
Electricity Consumption	5646	5646	5709	5069	10138	kWh
Electricity per sqm	55	55	55	49	98	kWh/m2
Boilers	1852	1852	1914	1326	2652	kWh
Chillers	0	0	0	0	0	kWh
Boiler Peak Load	0.7	0.7	0.9	3.3	6.6	kW
Chiller Peak Load	0	0	0	0	0	kW

End Use	Iteration 1	Iteration 2	Iteration 3	Iteration 4	Iteration 5	Units
Space Heating	532	532	594	5	11	kWh
Space Cooling	0	0	0	0	0	kWh
Auxiliary	691	691	692	641	1281	kWh
DHW	1320	1320	1320	1320	2641	kWh
Equipment	2384	2384	2384	2384	4769	kWh
Lighting	718	718	718	718	1436	kWh
PV Electricity	0	0	-5042	-9648	-19296	kWh
Wind Electricity	0	0	0	0	0	kWh

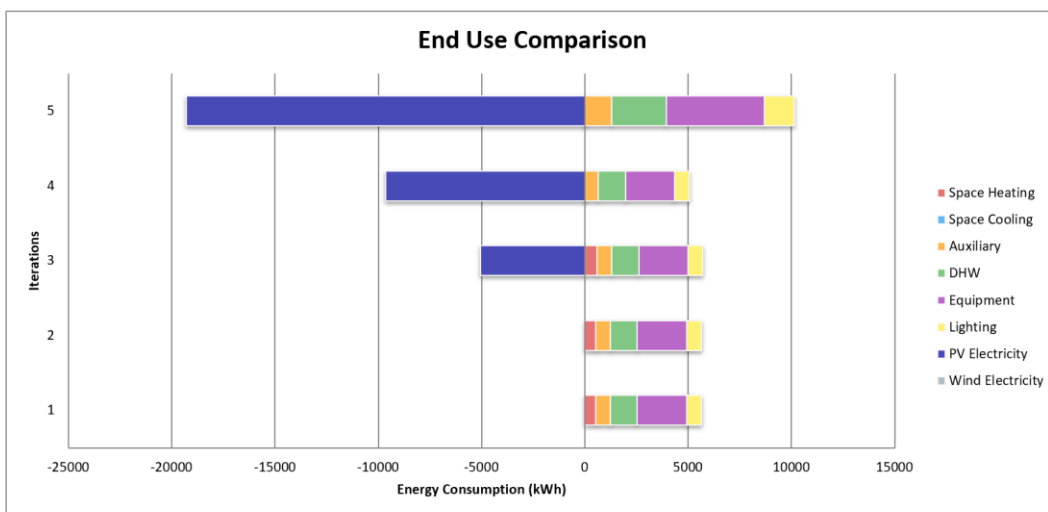
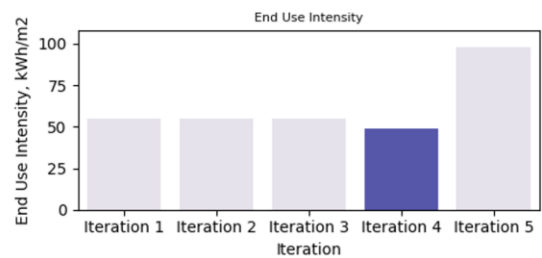
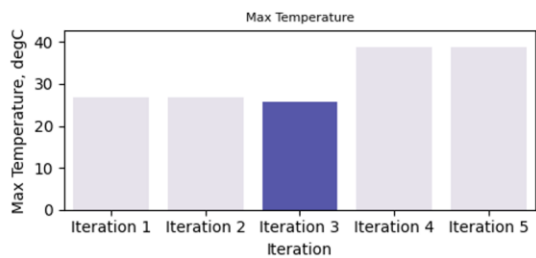


Figure 4. Example of Comparison worksheet



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