Adding an E-Stack unit to an IES model

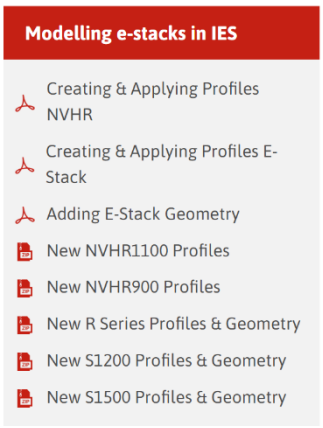
This document will provide a comprehensive step-by-step guide to adding our e-stack passive ventilation units to an existing IES VE model. Should you have any further questions please contact Joe Clawley or Matthew Waterson at joe.clawley@breathingbuildings.com / matthew.waterson@breathingbuildings.com, or call the office at 01223 450 060.

Contents

Download and unzip the e-stack geometry file

www.breathingbuildings.com/products/modelling-e-stacks-in-ies-or-tas

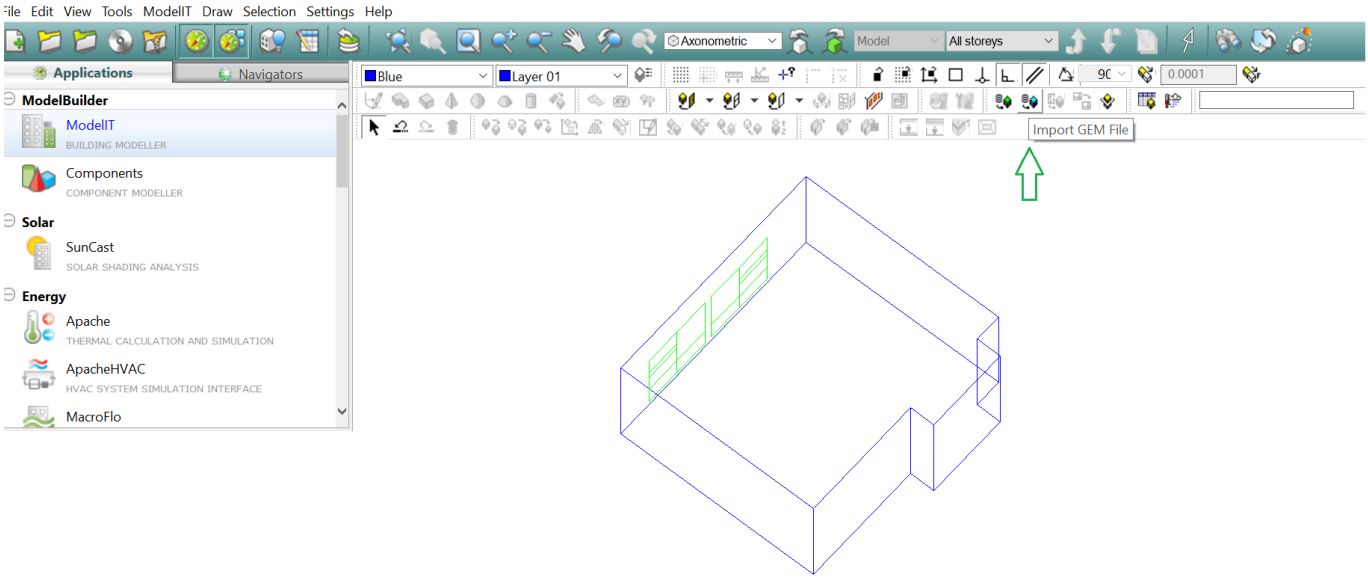
Follow the above link to our dedicated help page, and download the relevant E-stack Unit Profiles and Geometry:



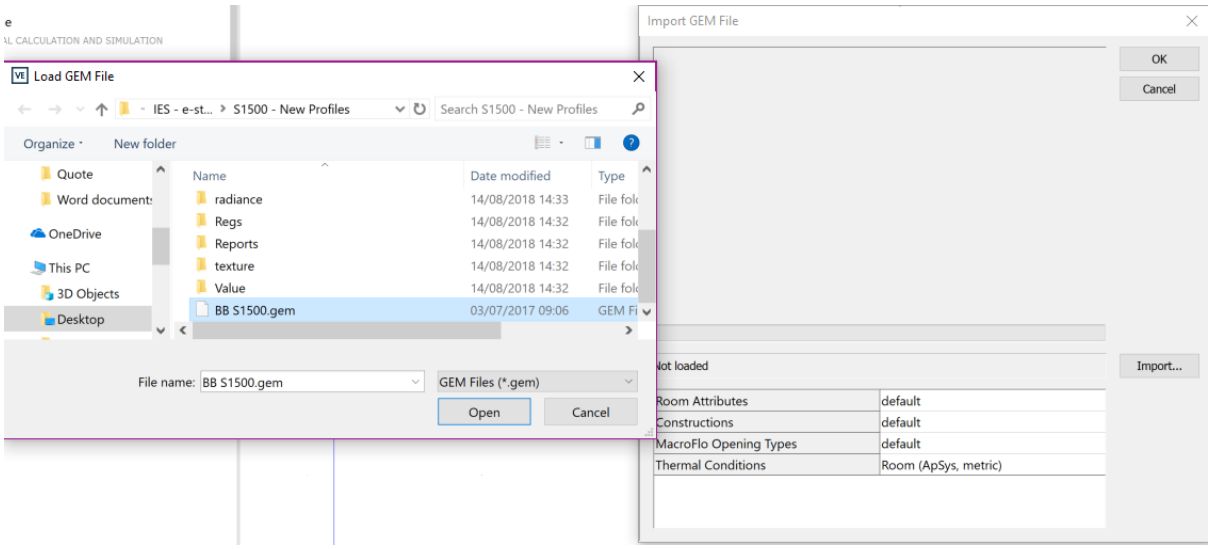
Download the file, right-click on the folder and extract the contents into an appropriate location for your project. It is important the files are extracted from their initial zipped state for IES to be able to import the geometry of the e-stacks.

Importing the geometry into your project

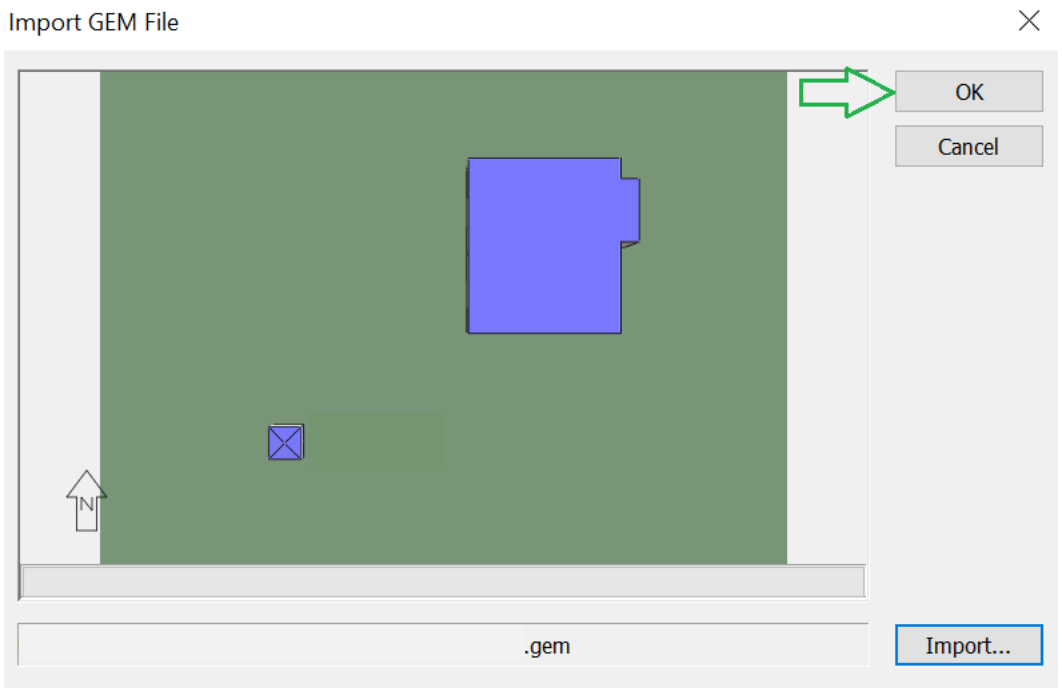
Open your project file in IES and click on the *'Import GEM File'* button as shown below:



Click the *'import'* button, locate the folder where the geometry is saved, and open the *'GEM files.gem'* file as shown below (Shown here for the S1500 e-stack unit):

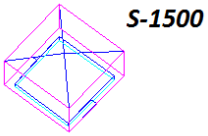


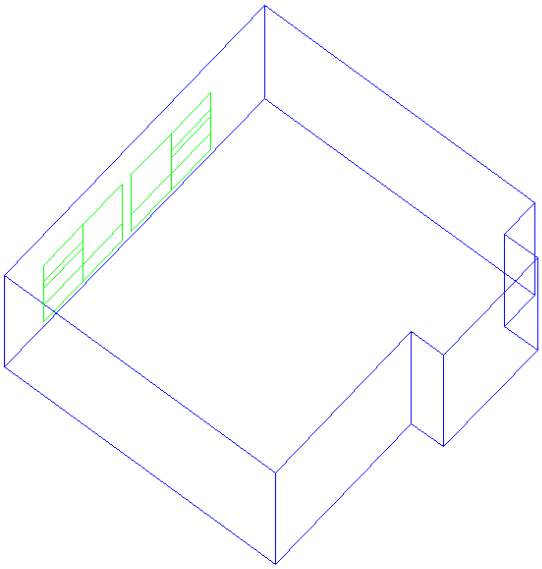
The geometry is for one of our e-stack units, in this example the S1500 has been selected, click the *'OK'* button, and the units will be placed beside your model in the IES file as shown below:



Identifying e-stack units within GEM file

Delete the units which will not be required for your model; the units modelled are labelled below:

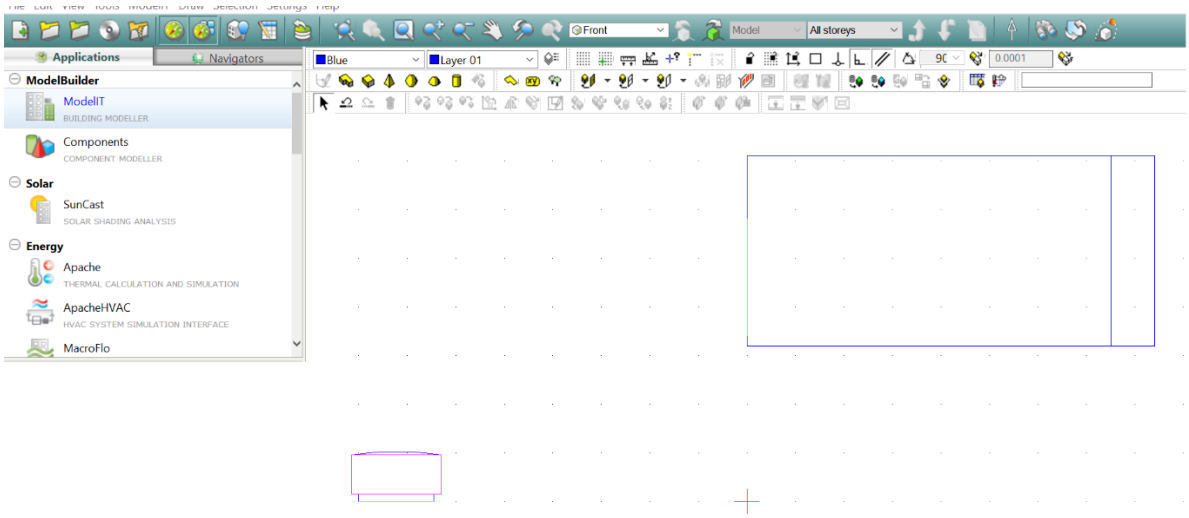




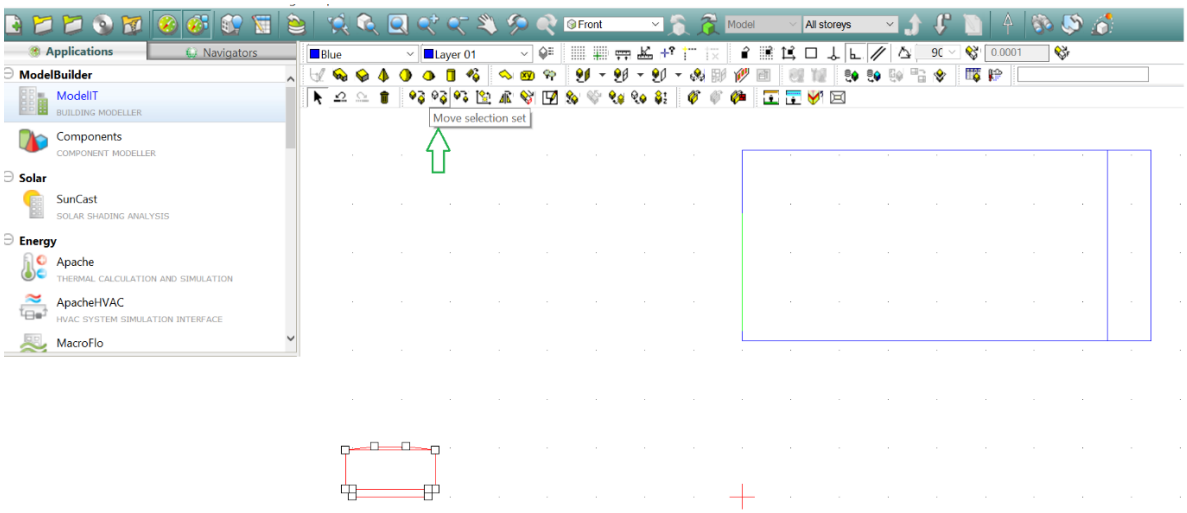
Attaching an e-stack unit to your model

In this example the room will be fitted with one of our R-Series units, as is typical with IES VE there are multiple ways to do this, here is just one example.

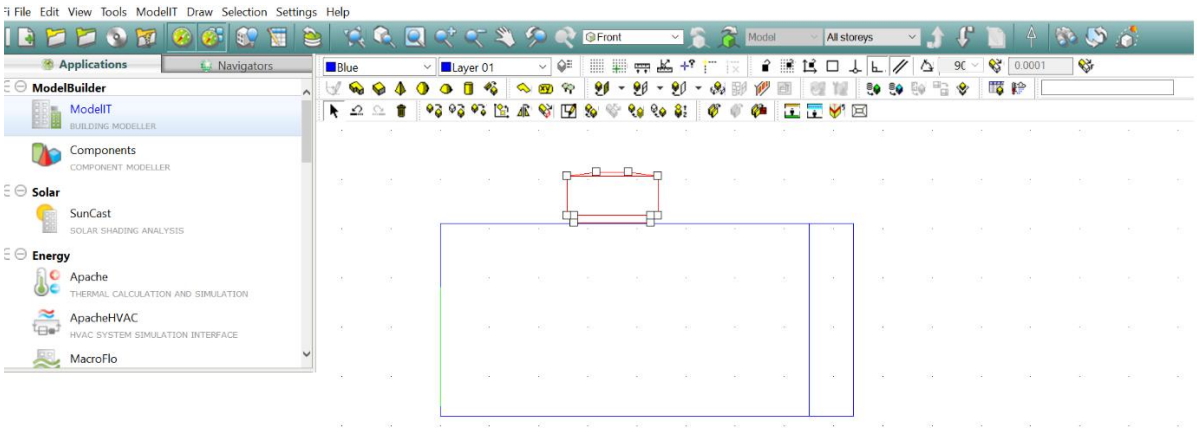
Change to a side view of the room, the idea will be to align the unit to the correct plane (height) to fit into the model. The image below shows the same model from a *front* view, as opposed to the *axonometric* view in the image above.



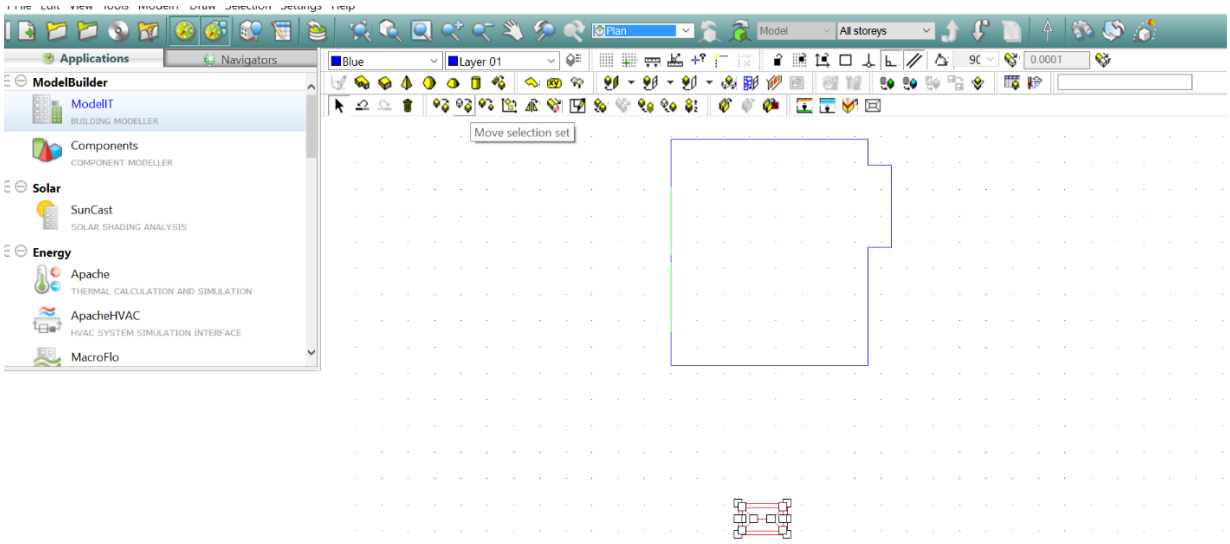
Select the e-stack unit, and click the ‘move selection set’ button as shown below:



Use the ‘type in’ box in IESVE as change the height of the unit to be equal to the height of the roof. For example if the roof is at 3m, type x=0,3 to move the unit to be at the same height as the roof.

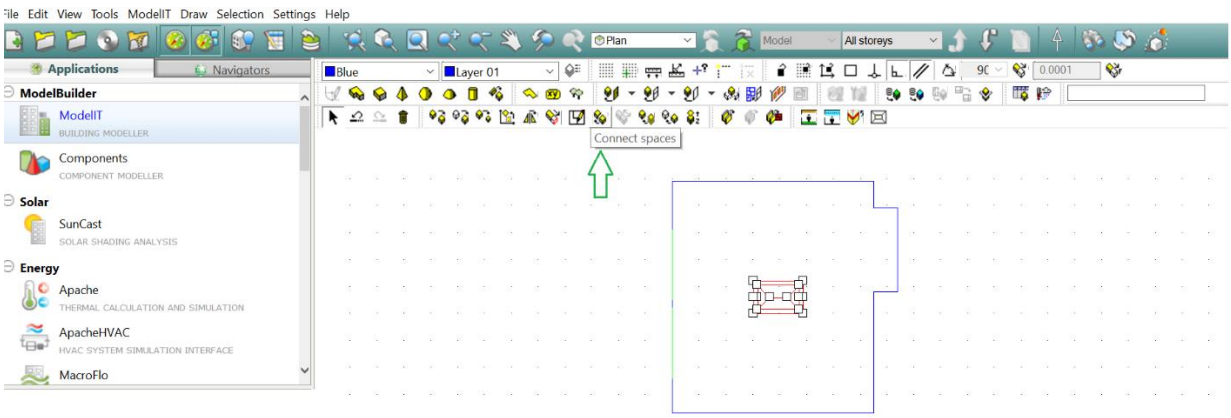


The e-stack unit is now at the correct height, but as can be seen from a plan view, its position is still not quite correct. In the plan view use the same *‘move selection’* set button to drag the e-stack unit to its correct position.

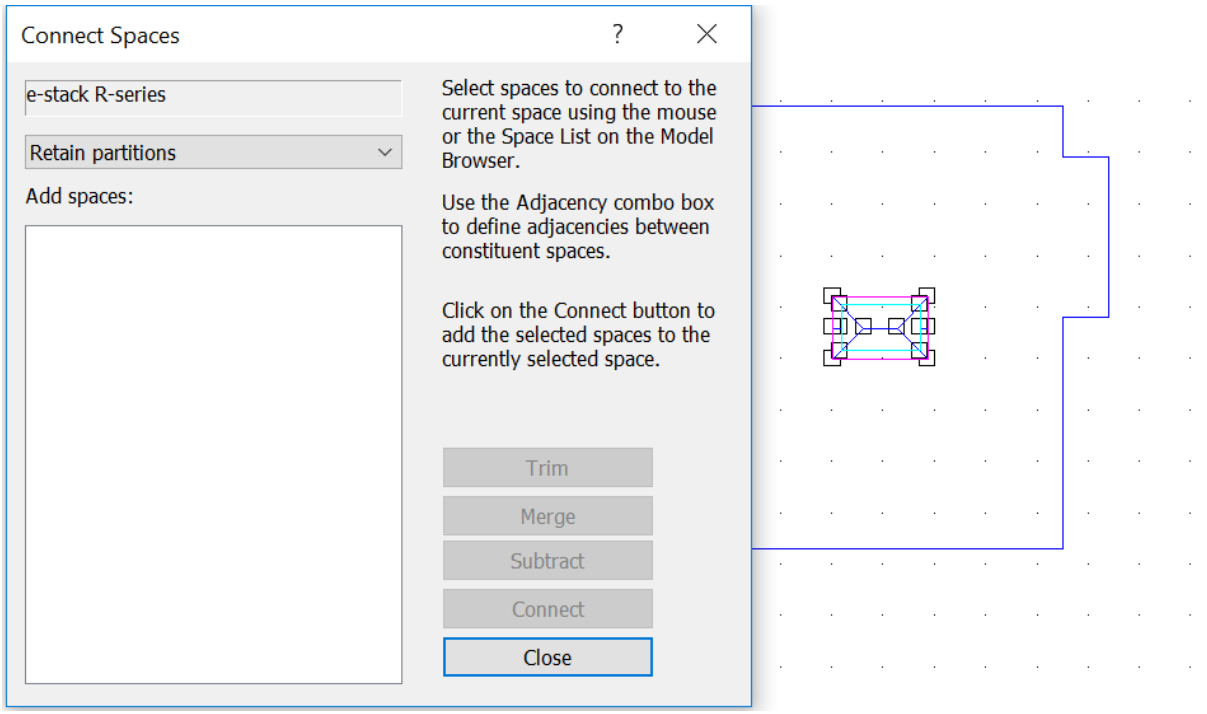


It is important that the unit does not intersect the ceiling, and that there is also no gap between the two parts. When the unit has been properly attached to the building there will be a line which appears along the surface of the ceiling, indicating the unit has merged properly.

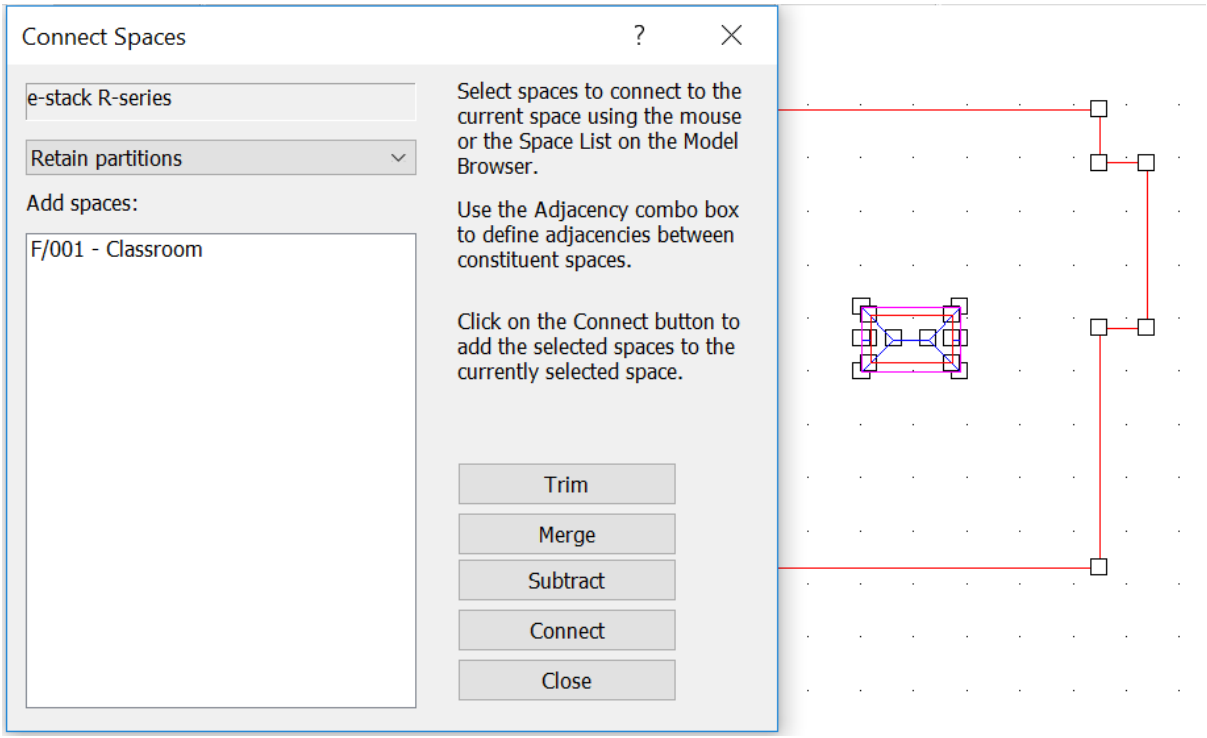
Once in the correct position as shown below, select the e-stack unit and click the *'connect spaces'* button as shown below:



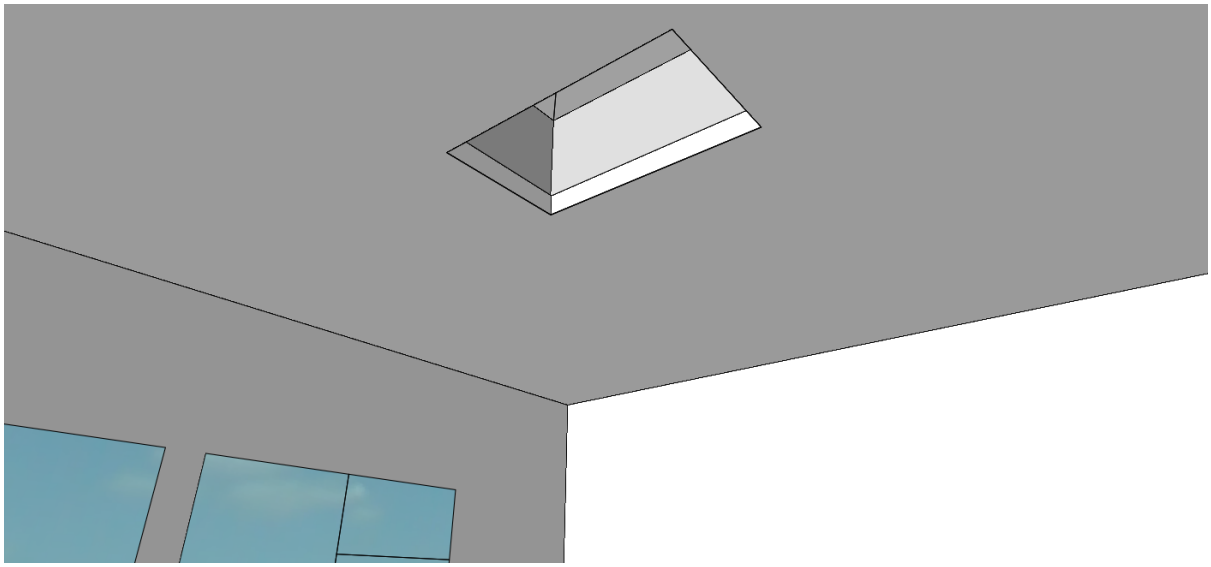
Doing so will reveal the selection box:



While open simply select the room to which the e-stack unit is to be connected, and it will appear in the '*Add spaces*' box:



Click the '*merge*' button, and the two parts connect.



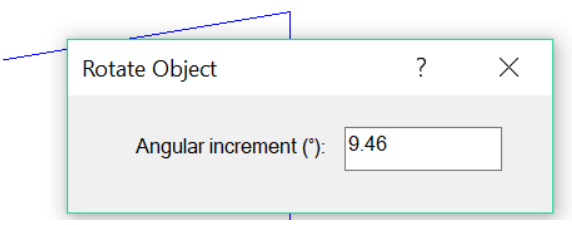
Attaching an e-stack unit to a Room with a Pitched Roof

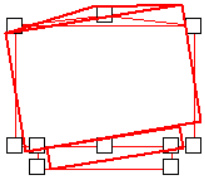
In practice, it is important that Breathing Buildings E-Stack systems are installed horizontally on a weathered upstand, however this can be somewhat time consuming to implement in IES VE. Whilst not a recommended installation arrangement in practice, for the purposes of IES modelling it may be easier to simply rotate the terminal geometry to the pitch of the roof (described below) and connect with the room as described above. Using this 'shortcut' is unlikely to significantly alter the modelled airflow through the terminal in IES and could save considerable time and effort in the modelling approach.

Using the Rotation Method

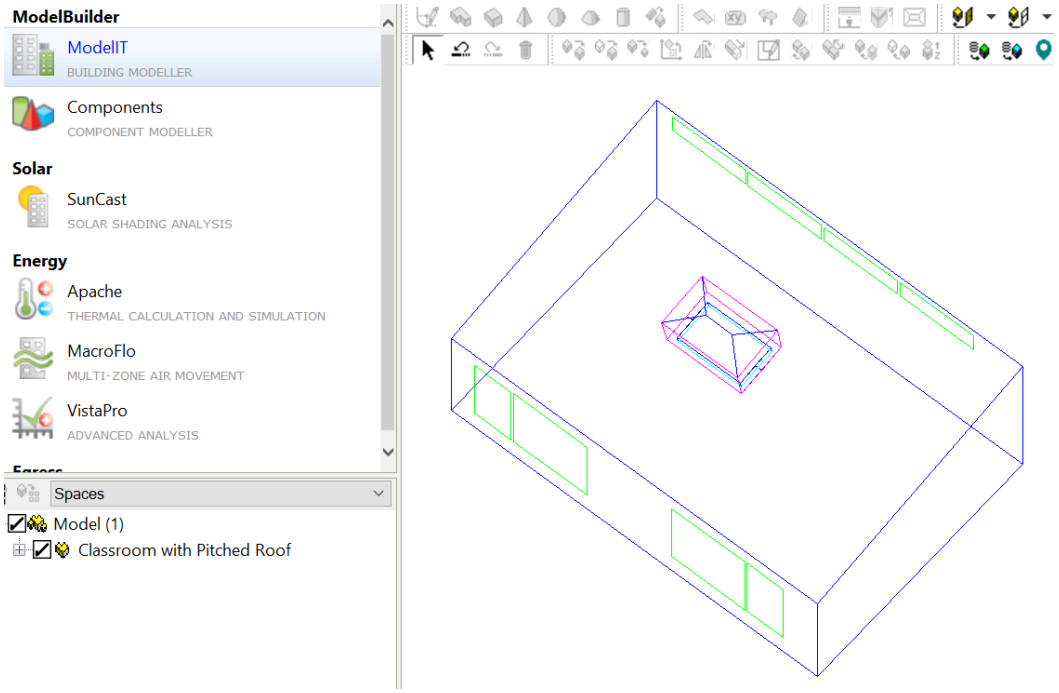
1. Select the imported roof terminal geometry and click the "Rotate Selection Set" button in ModelIT.

2. Select the rotation angle to match the pitch of the roof and use the mouse to rotate the terminal to the correct angle, click to finalise this new position.



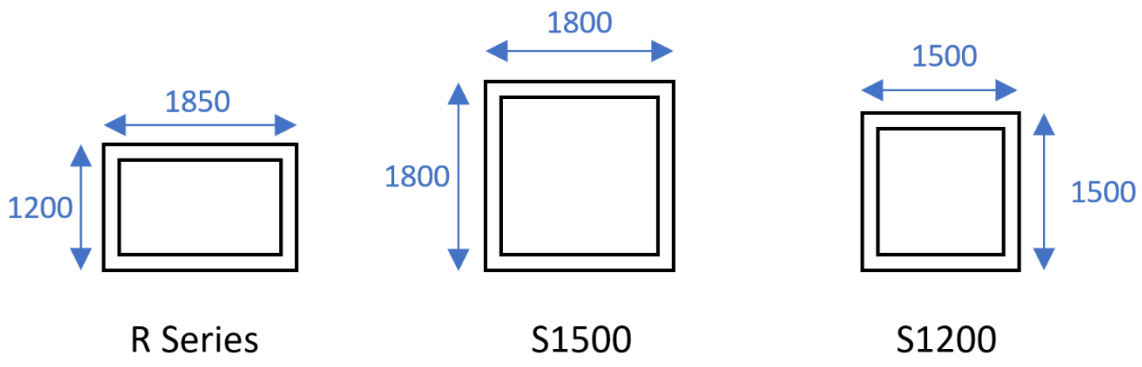


3. The rotated roof terminal can now be moved onto the roof and connected to the space as described above.



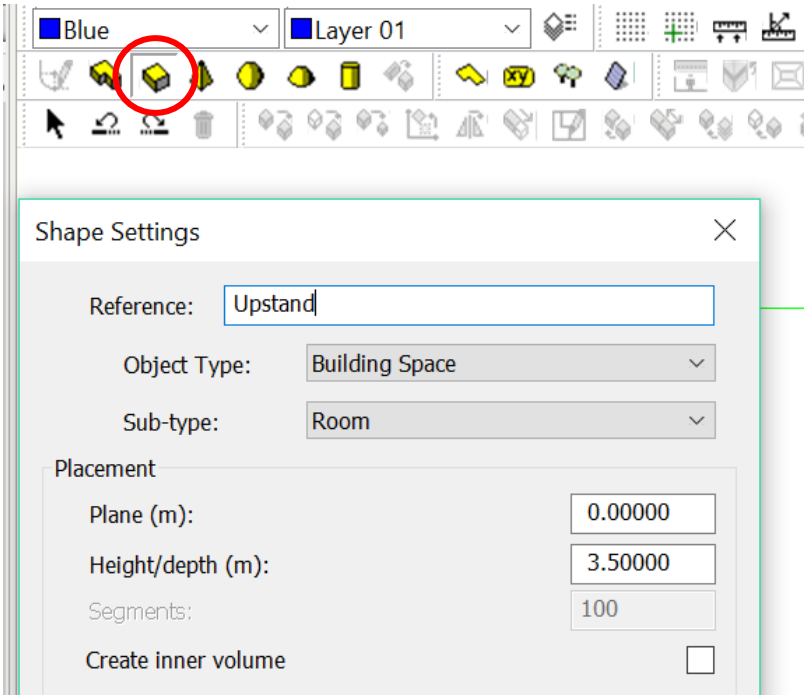
Using the Upstand Method

The figure below shows the overcurb dimensions for the R Series, S1500 and S1200 units, we also recommend a minimum height of 150mm for the upstand to guard against splash-back during inclement weather.

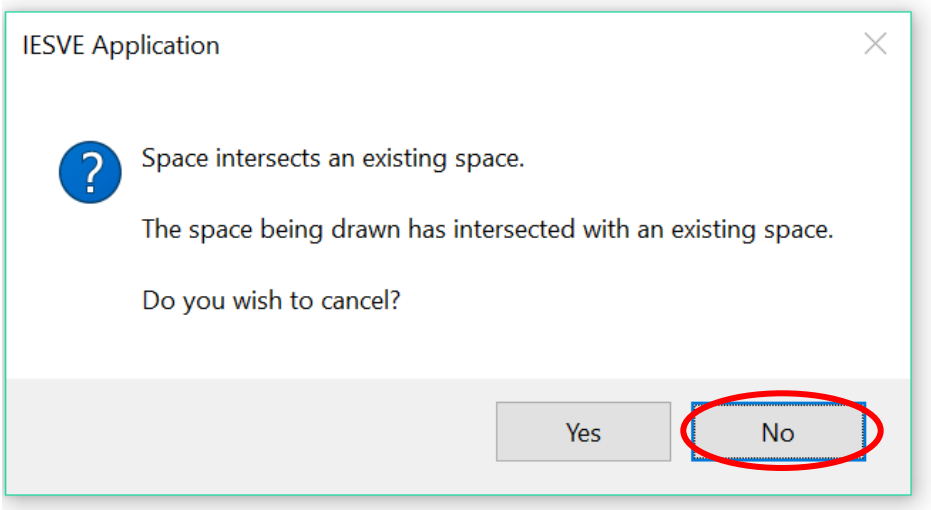


Adding an upstand to the roof can be done in a number of different ways, one such method is shown here:

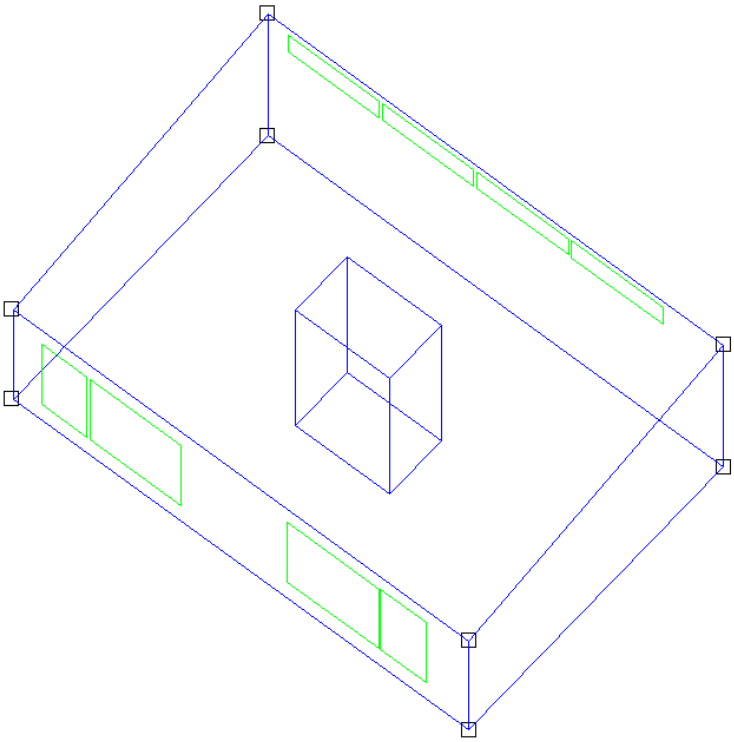
1. Go into plan view and select the “draw prism” button in ModelIT and enter value for plane and height/depth such that the new shape will intersect the roof where you would like the roof terminal placed.



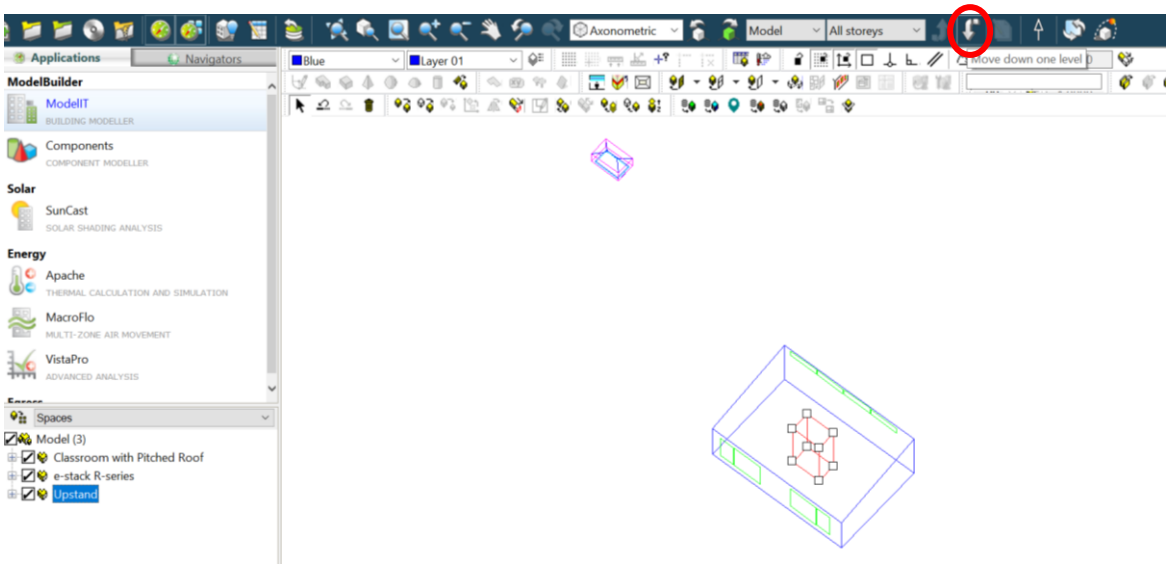
2. Click “No” when an error message appears once you have drawn an upstand to the correct dimensions.



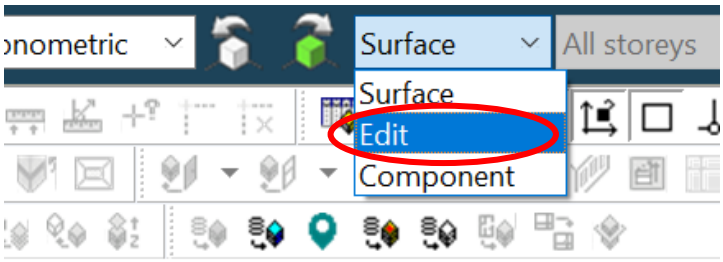
3. You should have achieved something like the below, with a prism intersecting the roof.



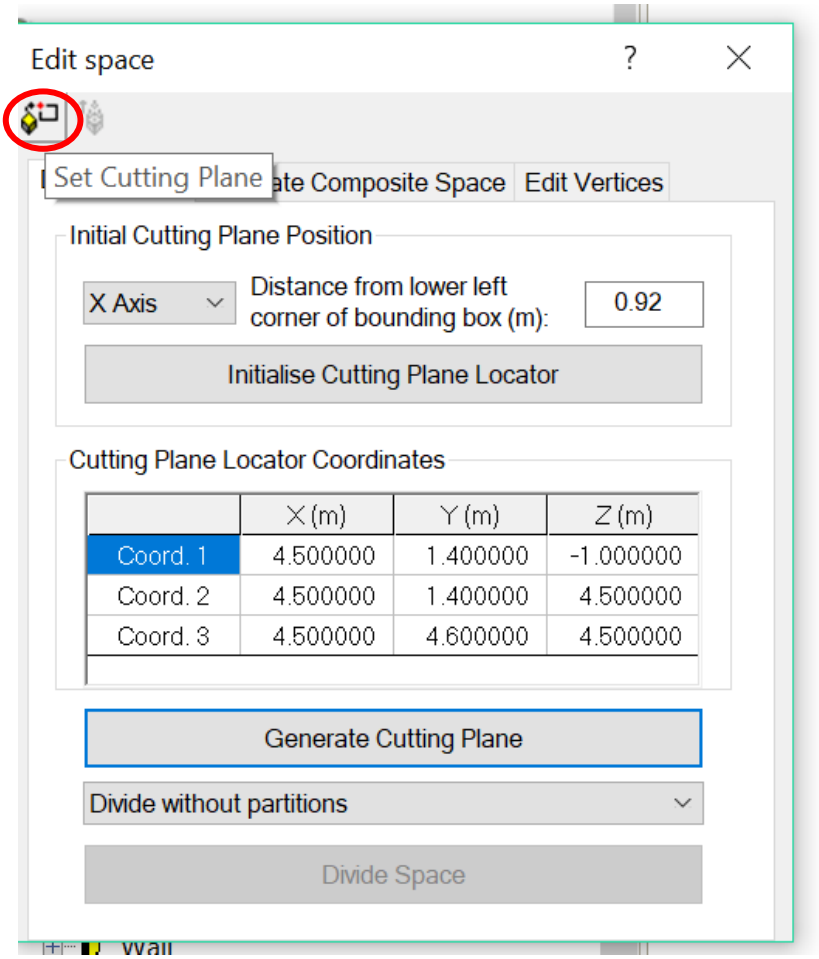
4. Select the newly-created prism and move down one level.

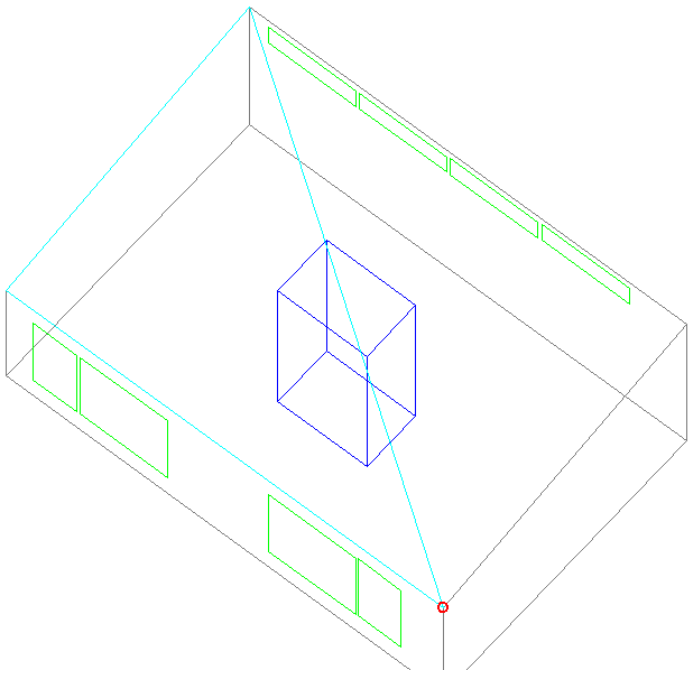


5. In the dropdown menu, select ‘Edit’

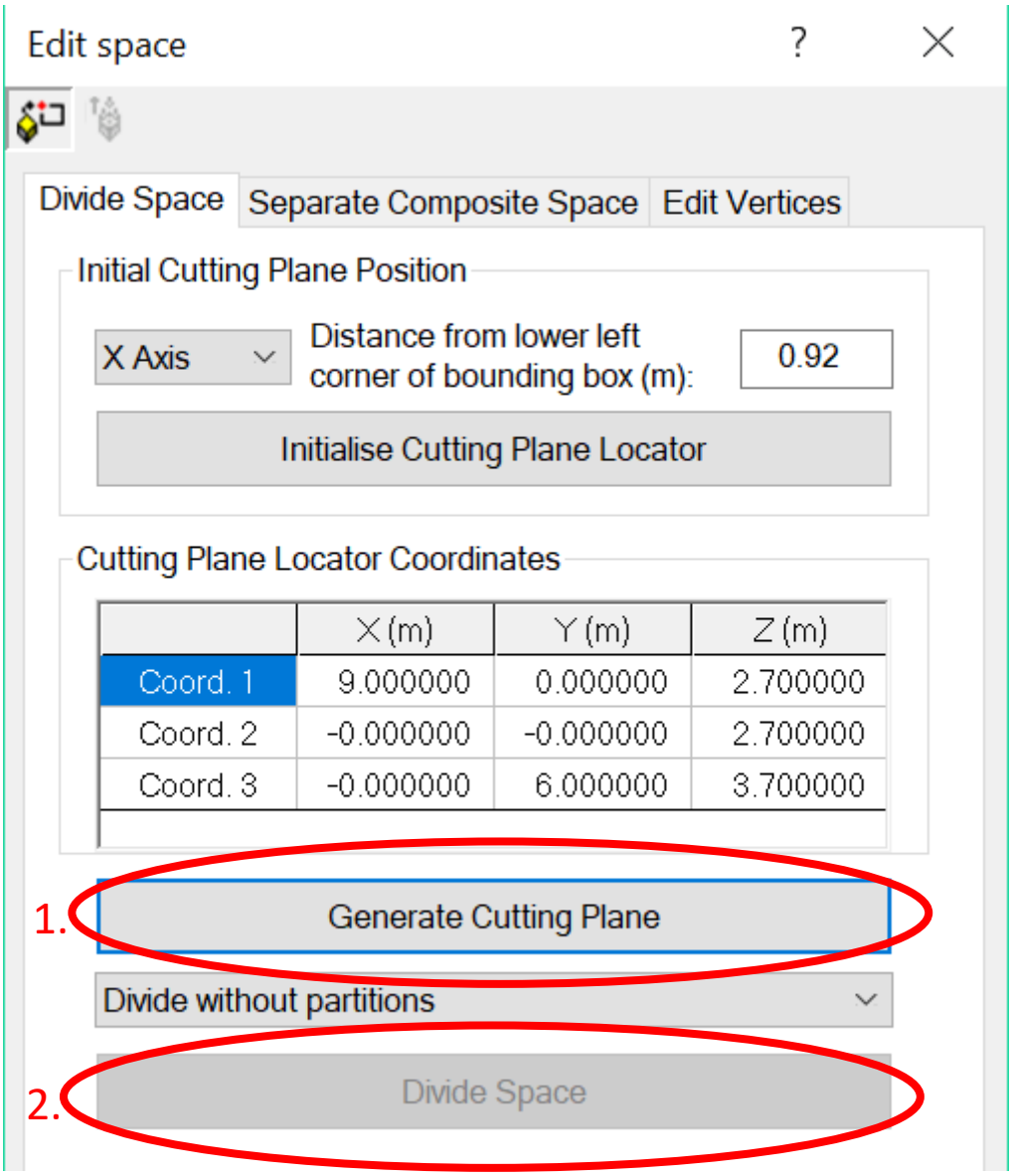


6. Click the ‘Set Cutting Plane’ button in the popup window which appears and set the coordinates so that the cutting plane matches the plane of the pitched roof.

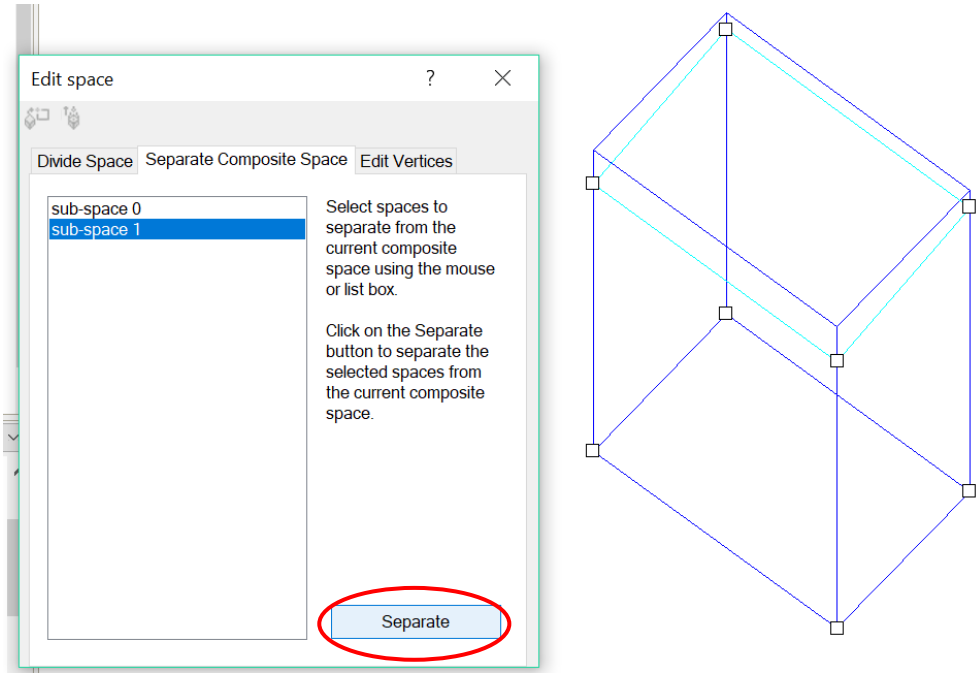




7. Once the cutting planes is set, first click ‘Generate Cutting Plane’ then click ‘Divide Space’

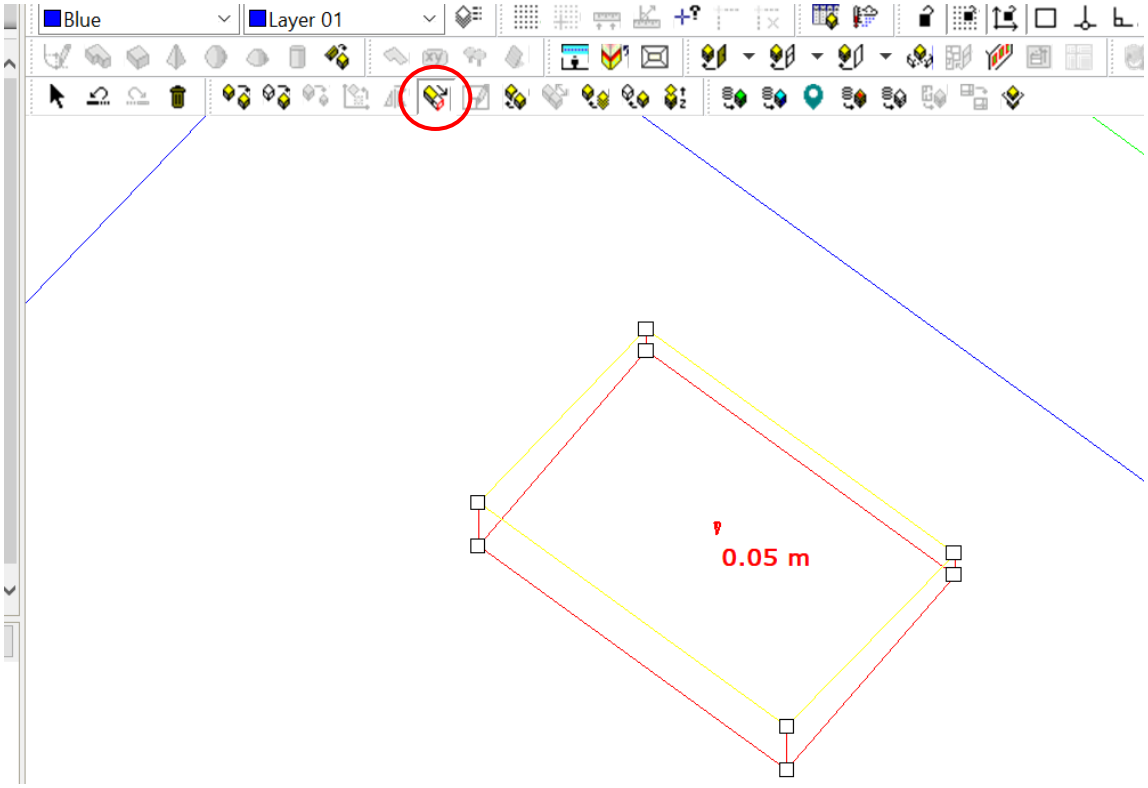


8. In the ‘Separate Composite Space’ tab of the ‘Edit space’ window select one of the sub-spaces and click ‘Separate’.

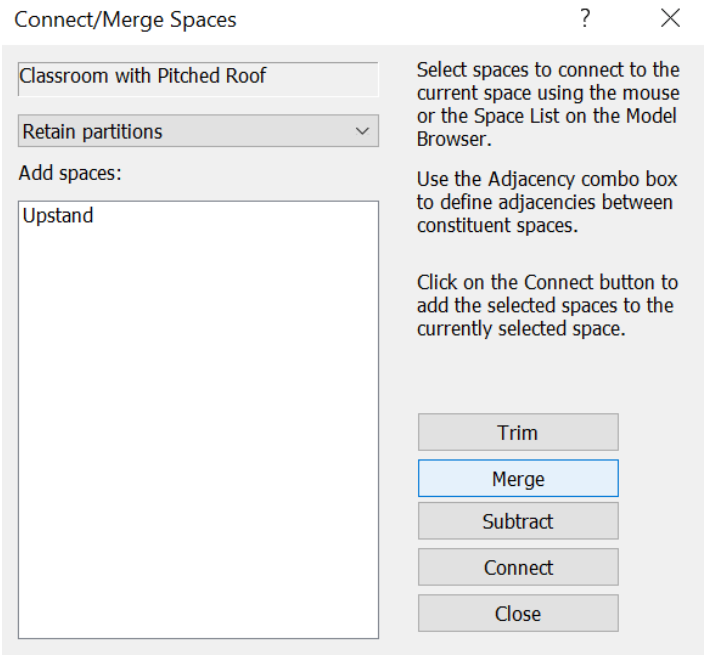


9. The bottom section of the upstand (below roof level) can then be deleted.

10. The upstand height can now be adjusted, if necessary, to give a minimum height for the upstand of 150mm (to prevent splashback).



11. The upstand can now be merged with the room by selecting the room and using the ‘Connect/Merge Spaces’ button as documented earlier in this document.



12. The roof terminal can now be connected to the upstand using the method as described in the ‘Attaching an e-stack unit to your model’ section of this document.