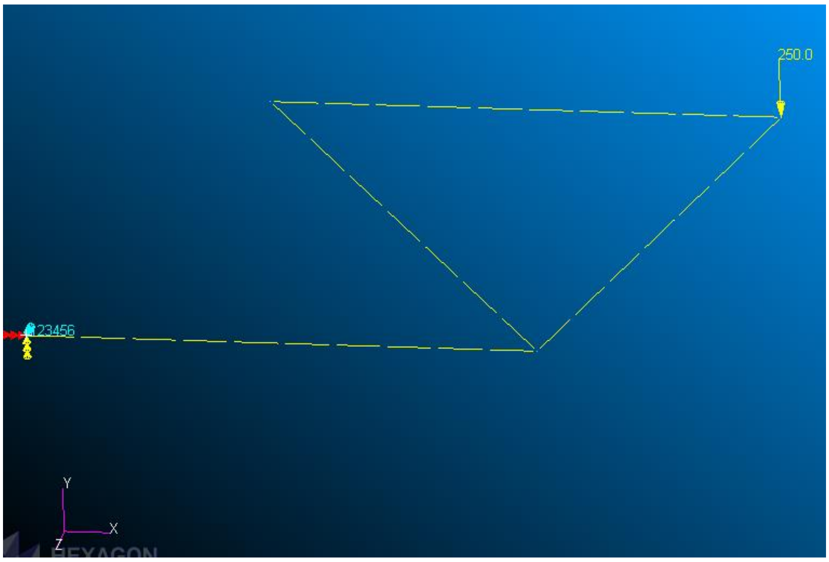
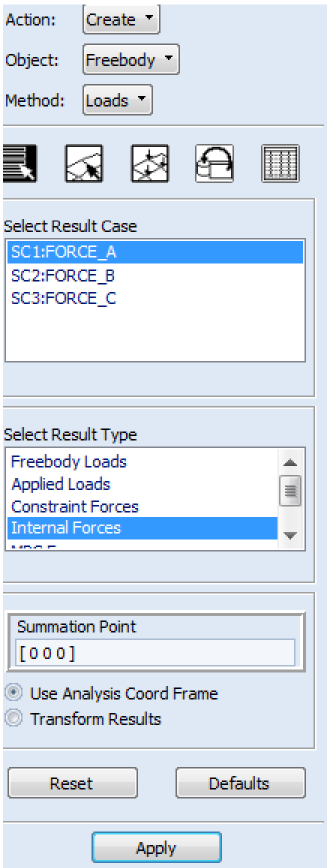
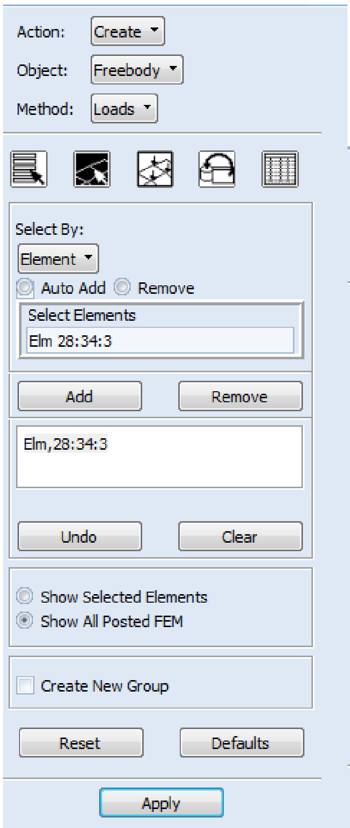
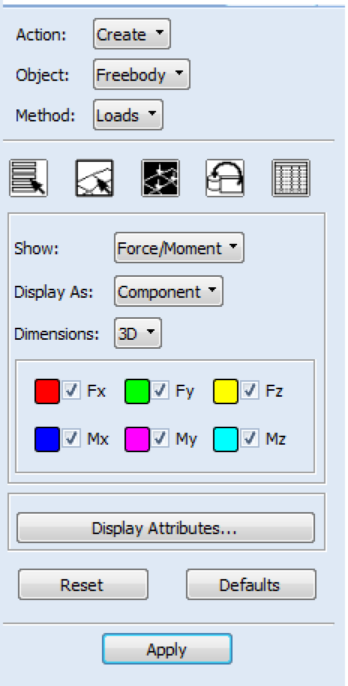
Test model: 4 beams modelled with a number of elements. A load of 250 in the top right and a total fixing bottom left.(I did multiple load cases but I think just this first one is sufficient to illustrate). The elements are shrunk for clarity.



Create results as follows: note using internal forces

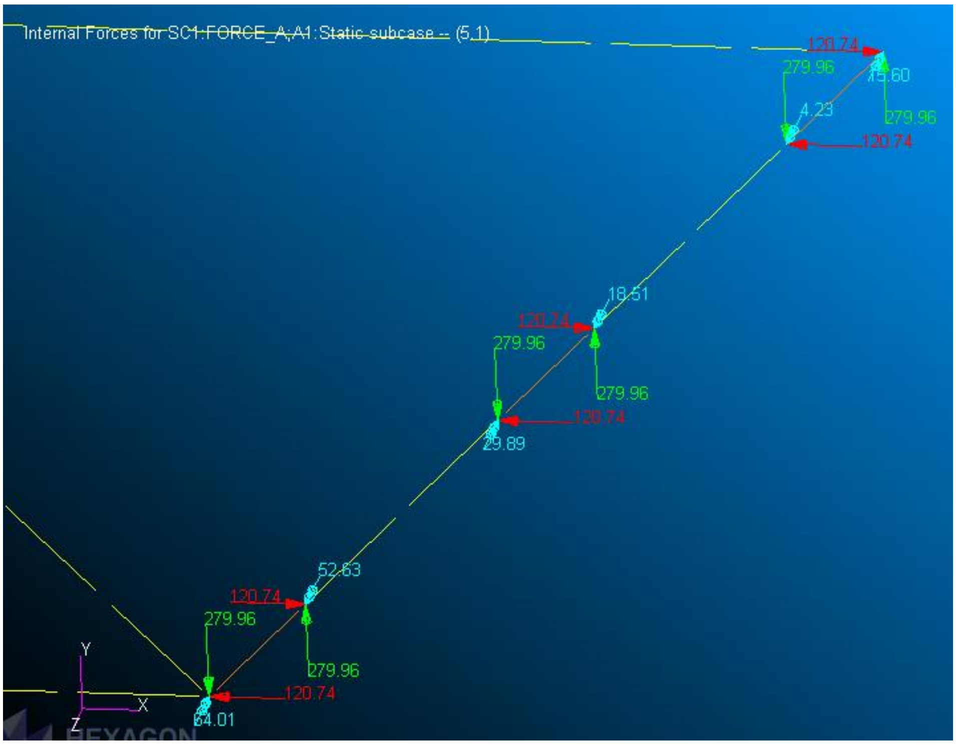




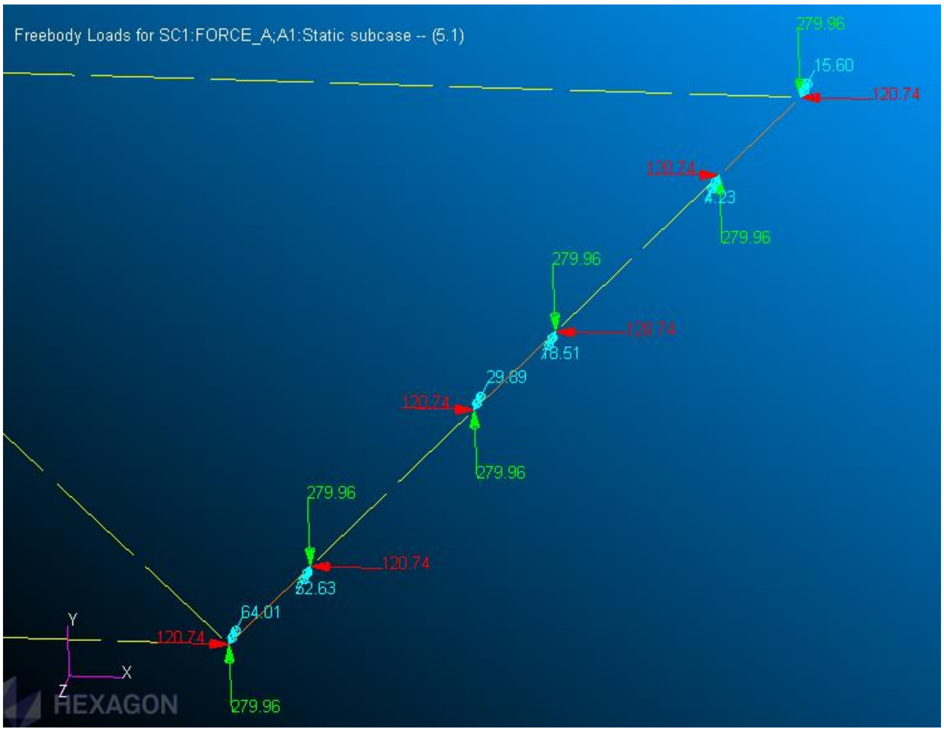


Under the third icon I have selected to show both force/moment, this can clutter the display quickly so I will only process a few elements. Selected above, and highlighted in the plots below.

These plots show the sum of the forces from the selected elements at their nodes,
where an element is selected and not its neighbours then it is the" internal forces" in that element.

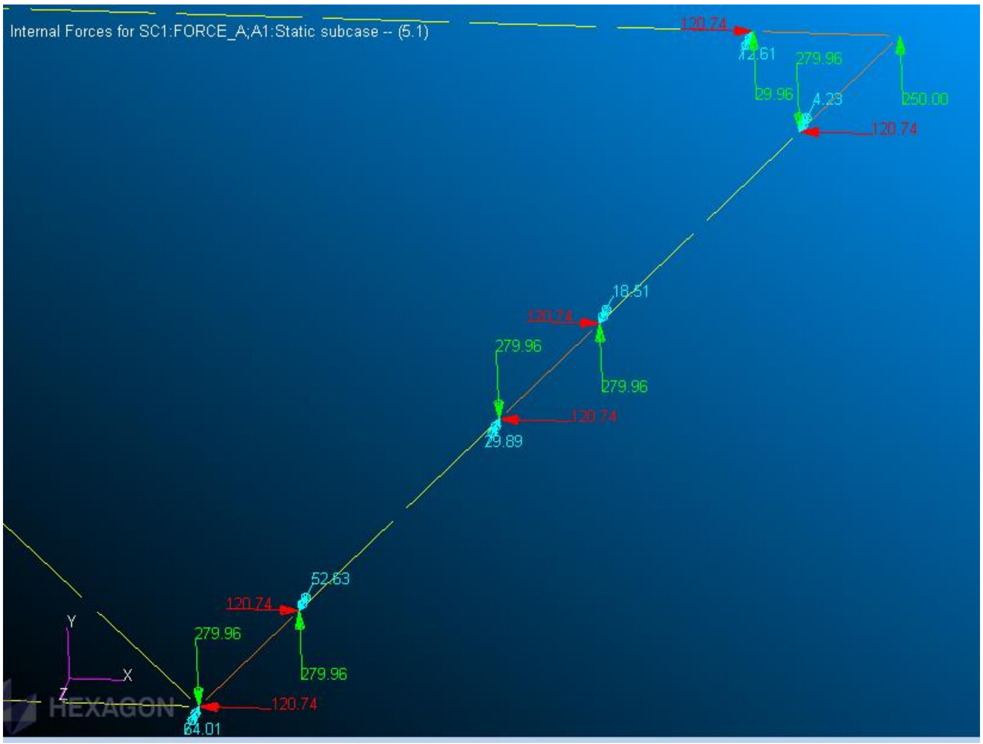


Change results type from internal forces to Freebody Loads is like the opposite so gives:



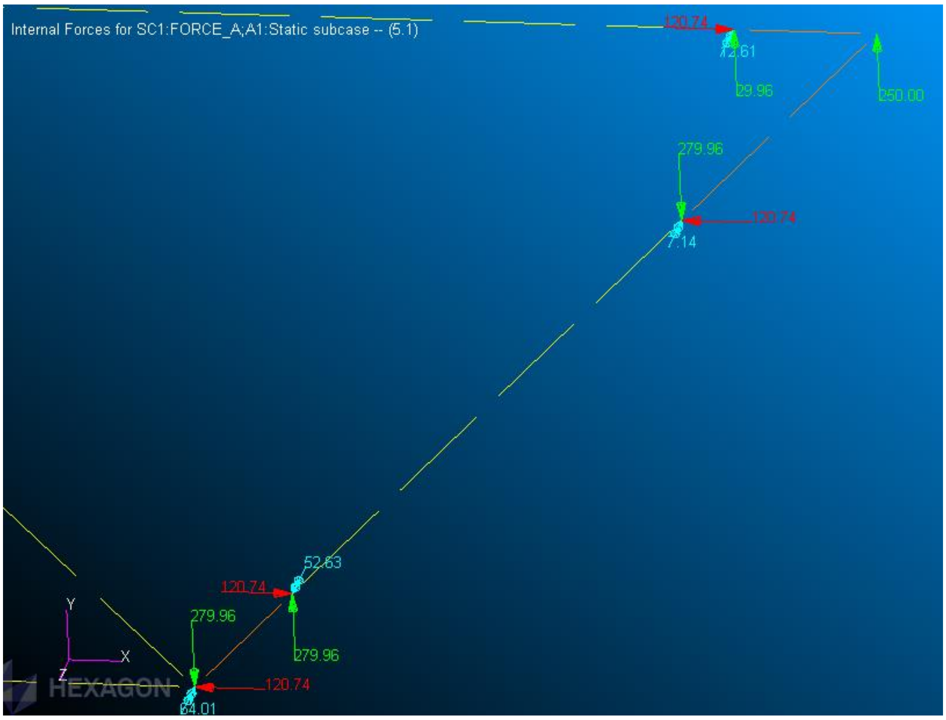
The top right corner there is an –Y load of 250,why do we see 279.96? and not 250?

This is because of the load “carried” by the top horizontal member, adding this element into the plot gives:



The internal forces in the two top right elements where they join should add up to counteract the applied force of 250 – which they do.

Add next element coming down right hand member (and remove the central one for clarity) gives

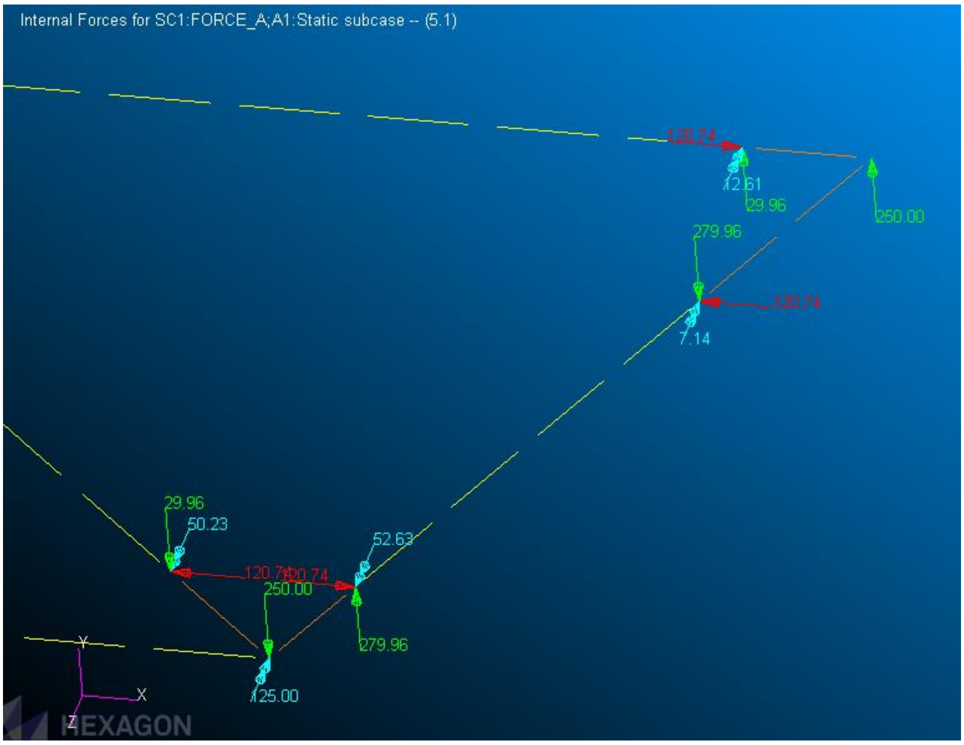


This shows that where there is no external load the internal element forces cancel each other. This is statics so everything is in equilibrium, no resultant force on a node.

Items to note: the forces (red/green) do not change as you come down the right hand member, this is reassuring as it is what theory says, However the moments as you come further away from the external load application point increase as a function of distance. To check this a quick hand calc: the force applied was 250, the length of the two horizontal members is 1, so the moment arm at the bottom junction point (perpendicular distance between the point and direction of applied force) is 0.5

This means the moment at that bottom junction should be 250. * 0.5 = 125

Currently the plot is showing a moment of 64.01. this is because we are only looking at the one element, add the other element bringing load into the bottom junction and you get:



The load at that junction going from the two diagonal members into the horizontal one is a force of 250, and a moment of 125. FE matches theory.

I hope this helps to illustrate how you can use the tool. The best way to work out what you want to use is by playing with a simple test model like this. I don’t know why you want to put an element in the junction.