

## Aspect Ratio Plot.vbs

### Description

This script allows element aspect ratios to be plotted with a Contours layer. It creates a scripted results entity “**UserResults**” and a results component “**AspectRatio(Edges)**” giving an element nodal result (not averaged nodal) constant per element to the value of the ratio between the longest element edge and the shortest element edge. If any elements of an aspect ratio greater than 10:1 are found then each element exceeding this ratio is identified in a message in the text output window and the element is added to a group called “**EltsAspRatGrtrThan10**”.

This script is particularly useful for identifying and remedying meshing problems, where elements of poor shape have been created.

### Notes

1. THIS SCRIPT IS NOT PART OF LUSAS SOFTWARE AND AS SUCH IS NOT QUALITY APPROVED OR SUPPORTED. IT IS PROVIDED ON AN AS IS BASIS FOR DEMONSTRATION PURPOSES ONLY.
2. The script can be run on the model after meshing and before solving.
3. The script can be restricted to operate on a selection if the selection is made before running the script, otherwise all visible elements will be considered
4. The script works for any surface mesh element type or for any volume mesh element type.
5. The script will flush any other scripted results that have been previously created.
6. If the model is remeshed after the script has been run, the “**AspectRatio(Edges)**” results will be invalid and the script will need to be rerun.
7. The scripted results can be cleared from the model by typing the following command in the LPI Command bar “**database.flushScriptedResults()**”
8. For quadratic solid elements the distance between corner nodes is considered only and for quadratic surface mesh elements the distance between nodes is used and the mid-side nodes are included and thus assumed to be half way between corner nodes.
9. The element aspect ratios returned may differ from those reported by Solver for the same elements as the script uses a simple calculation that gives the ratio of the longest element edge to the shortest element edge.