

Data Plotting

Plotting Options

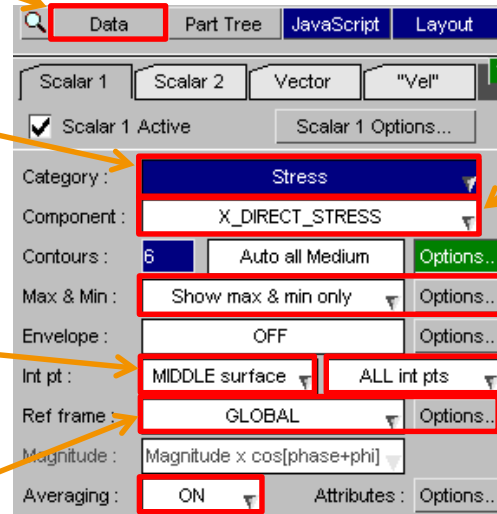
The 'Data' menu controls which data components are plotted and the plotting options.

Data category

Through thickness integration point plotting options for shell elements / layer for composite parts.

Reference frame for stresses and strains:

- Global – Default setting.
- Local - Global stresses are converted to a local system.
- Cylindrical – Local axis is calculated based on a cylindrical co-ordinate system.
- User-defined



Data component

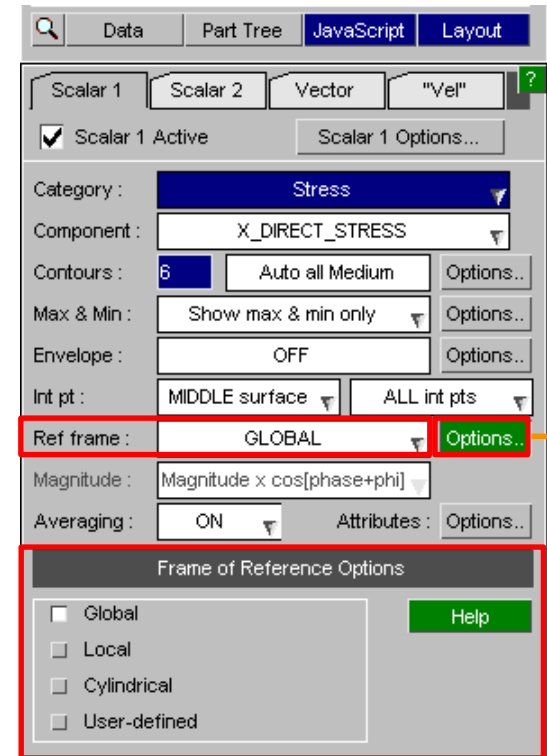
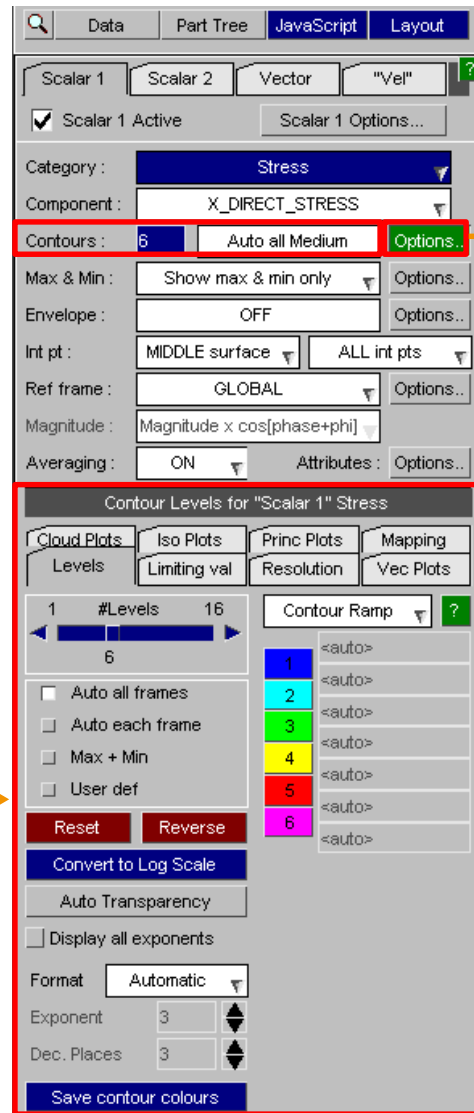
Show min / max points in graphics window

In-plane integration point plotting options.

Data averaging across nodes / elements

Further Options

Some of the plotting options within the 'Data' menu have an 'Options...' button next to them. Clicking this button will display further options for that specific plotting option in the lower half of the 'Data' menu.



Contour Options

Within the data component plotting options, the 'Levels' tab allows control over the number of contour levels that are set, their ranges, colours and number format.

The number of contour levels can be changed to have a maximum of 16 levels.

- Automatic/manual contour level selection:
- **Auto all frames** - Automatically sets the contour levels of the minimum and maximum data values across all frames.
 - **Auto each frame** - Automatically sets the contour levels of the minimum and maximum data values for each frame separately.
 - **Max + Min** - the contour levels are automatically spaced with user defined minimum and maximum values.
 - **User def** - all contour levels are user defined.

The 'Contour Ramp' option allows the colour scheme for the contour levels to be changed to various other pre-defined colour schemes.

Manually enter the values for the contour levels. Values can only be entered into the text entry boxes that appear in green.

The colour scheme of the contour levels can be manually selected by clicking on each contour level number.

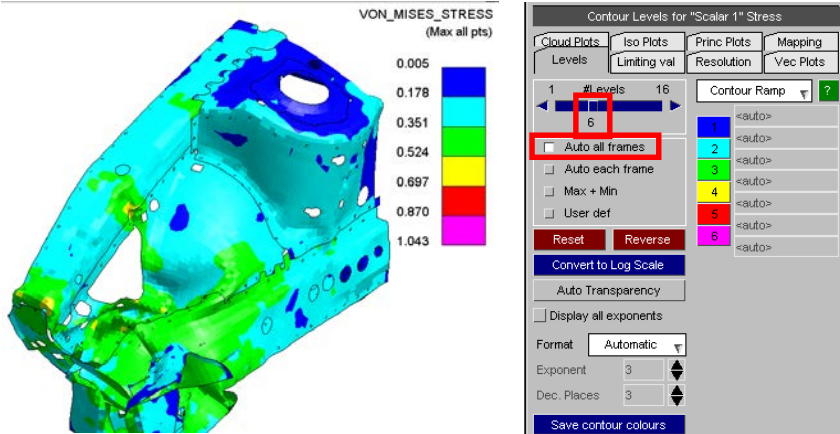
Set the transparency of the current model.

Set the number format either automatically or manually.

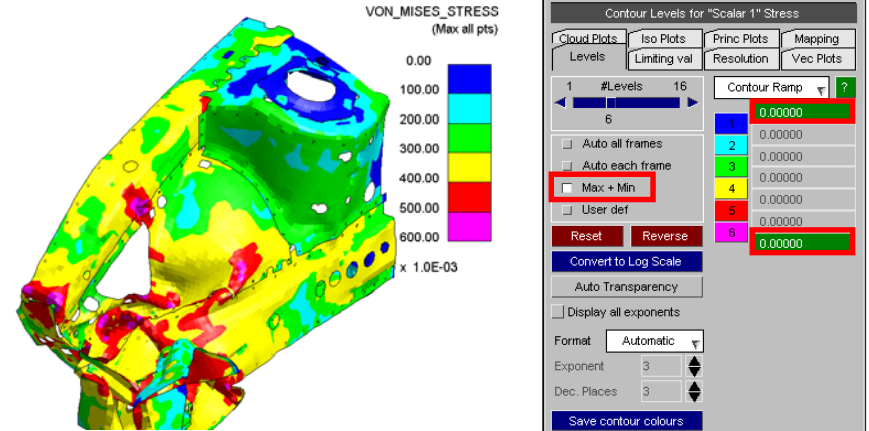
Level	Value
1	-0.118572E-02
2	-0.639170E-03
3	-0.926256E-04
4	0.453919E-03
5	0.100046E-02
6	0.154701E-02

Contour Options

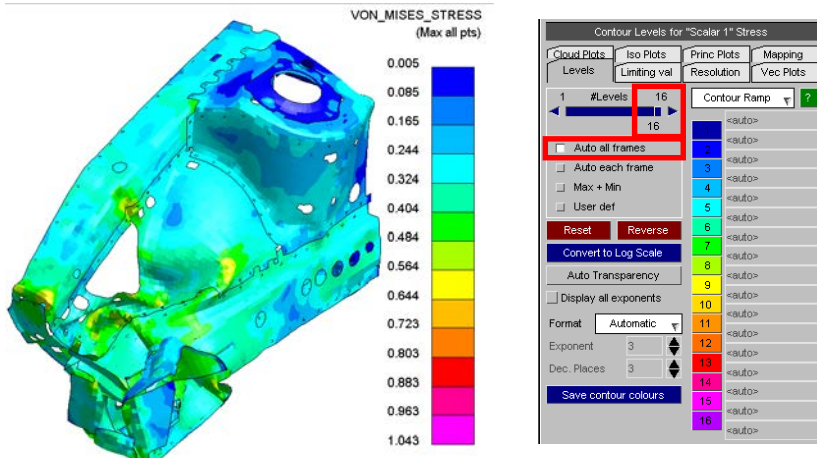
Control settings: Auto option – 6 levels



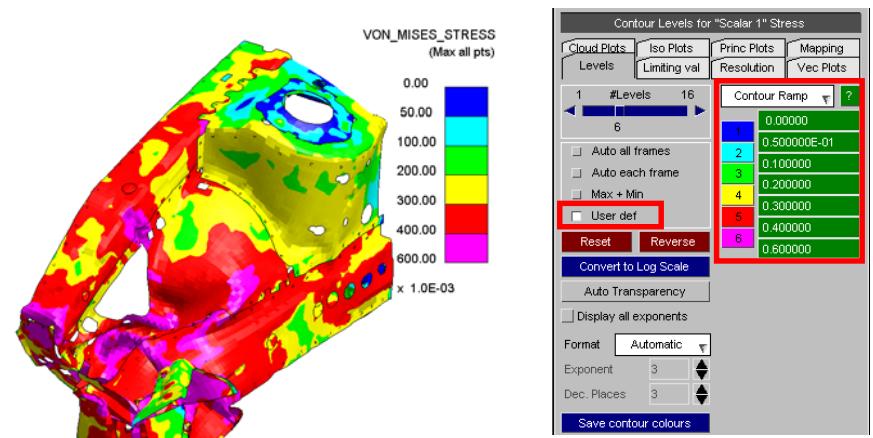
Control settings: Max + Min – enter the max and min values



Control settings: Auto option – 16 levels



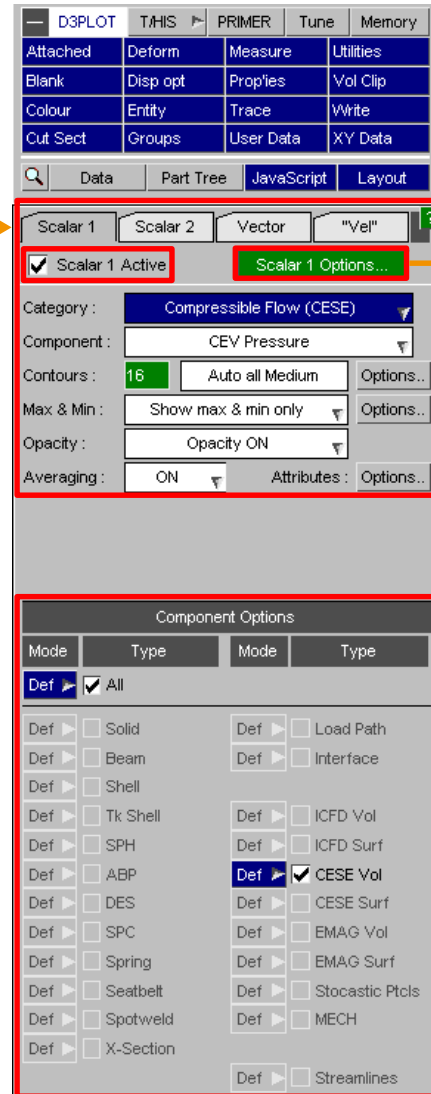
Control settings: User def – enter all the levels manually



Advanced – Plotting Multiple Data Components

- Sometimes it is desirable to plot several data components simultaneously on one plot. For example; in a fluid-structure interaction, the data plot can show both the fluid pressure and the stress on the shells.

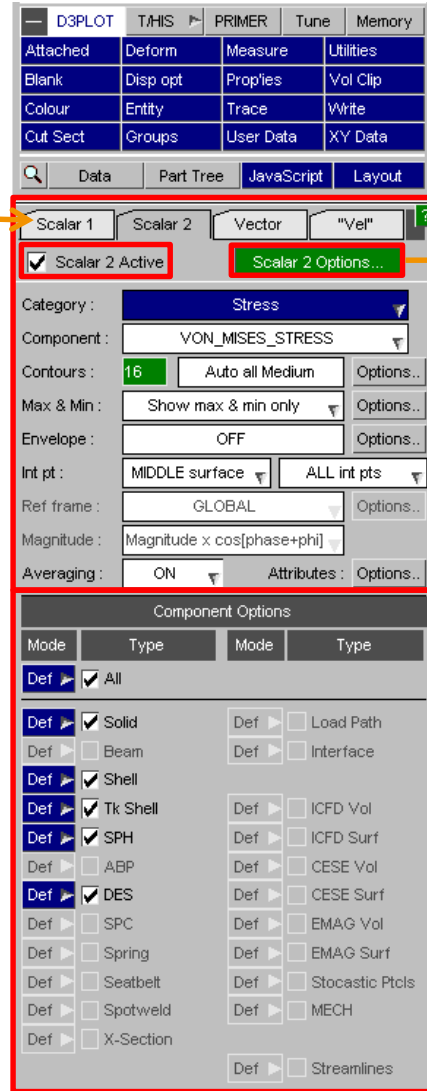
1. To plot several data components, within the 'Data' menu ensure the 'Scalar 1' tab is selected. In this tab, select the first data component to be displayed. Ensure the 'Scalar 1 Active' box is ticked, else the first data component will not be displayed.



2. Clicking the 'Scalar 1 Options' button, displays the 'Component Options' menu. Within this menu, the entity type (e.g. Shell) which the data component is plotted for can be controlled. For example, shells cannot display two (scalar) data components. If both Scalar 1 and Scalar 2 are active for an entity, the Scalar 2 data will be displayed. Also in this menu, a plotting mode for each entity can be chosen (e.g. CT, SI, etc).

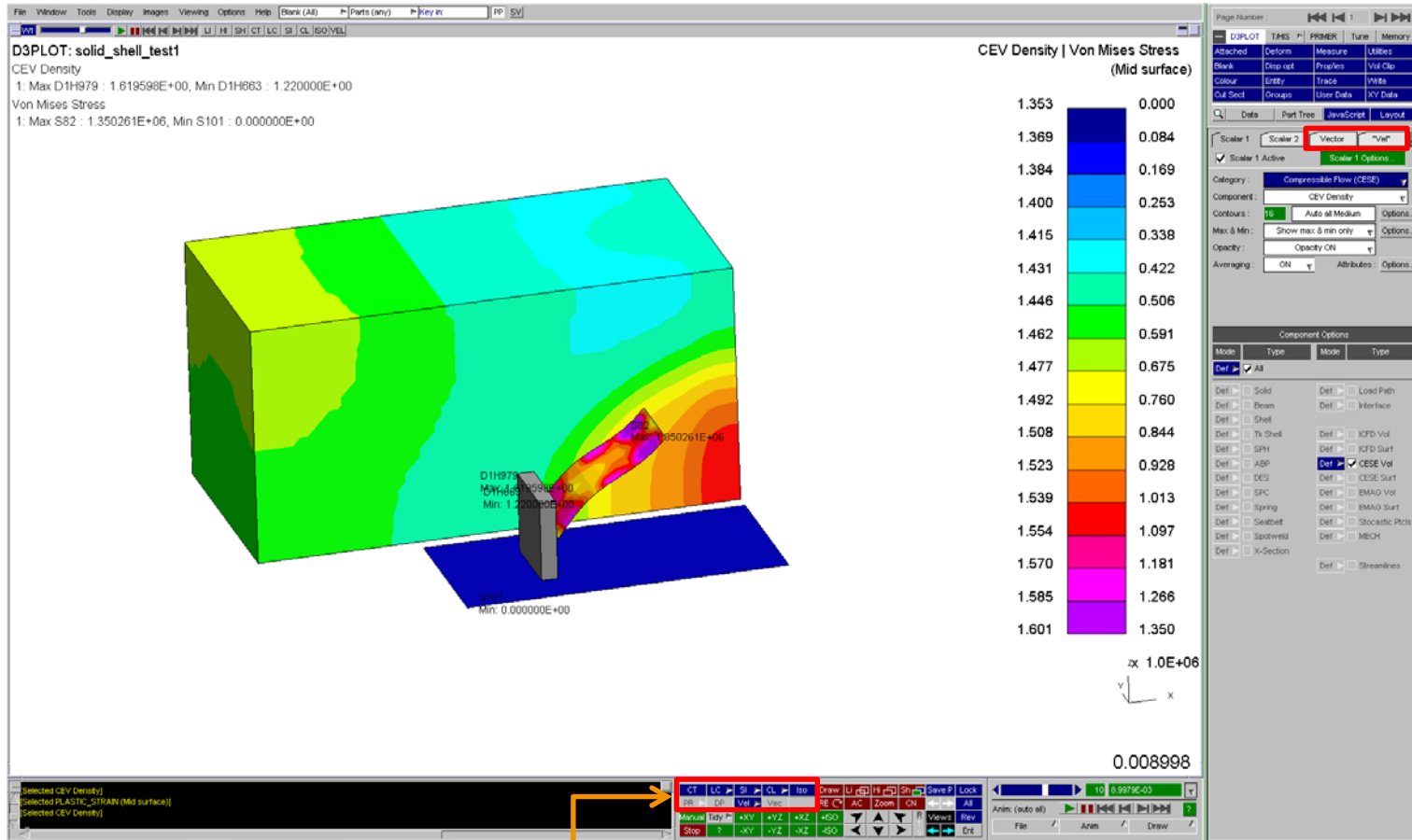
Advanced – Plotting Multiple Data Components

3. To plot the second data component ensure the 'Scalar 2' tab is selected within the 'Data' menu. Within this tab, select the second data component required to be displayed. Ensure the 'Scalar 2 Active' box is ticked, else the second data component will not display.



4. It is important to ensure that the same entity types are not selected for the Scalar 1 and Scalar 2. If both Scalar 1 and Scalar 2 are active for an entity, the Scalar 2 data will be displayed.

Advanced – Plotting Multiple Data Components



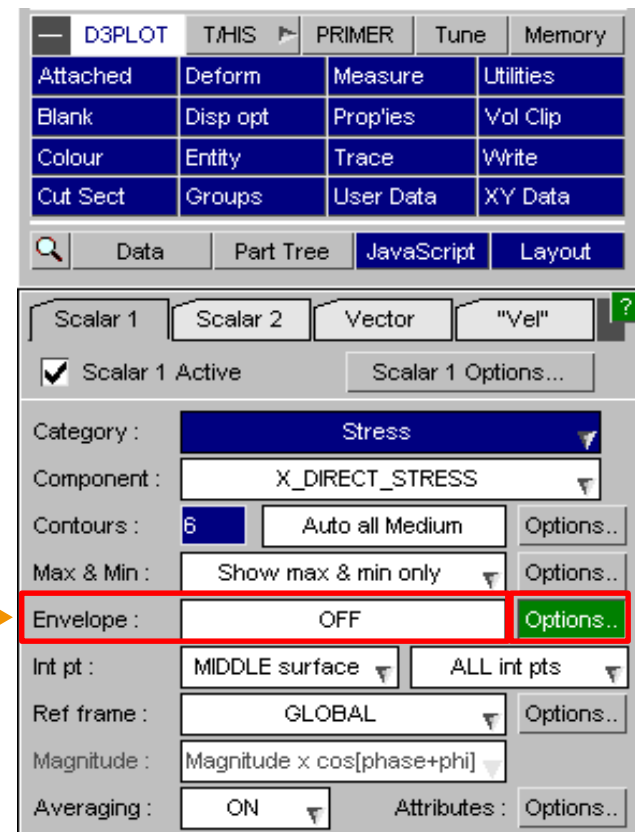
This example of plotting several data components is also valid for plotting 'Vector' and 'Vel' data components.

5. It is necessary to select a data plotting mode for the model, in order to display both data components.

Advanced – Envelope Plotting

- Sometimes it may be desired to only display the maximum value of a data component at a specific state(s). For example; plotting the maximum stress of a cantilever beam at state 4. This can be achieved through envelope plotting.

1. Envelope plotting can be used to plot either the minimum, maximum or the absolute maximum data values within a range of states. The times of the states which the values occur at can also be plotted. To select which data value to plot, click the 'Options' button.



Advanced – Envelope Plotting

2. Within the 'Envelope Options' menu, the 'Component' to be plotted (e.g. Maximum value) can be chosen. Also the 'States' which the values occur can be chosen.

Envelope Options

Component

Off

Maximum value

Time of max value

Minimum value

Time of min value

Absolute value

Time of abs value

States

Select all

Deselect all

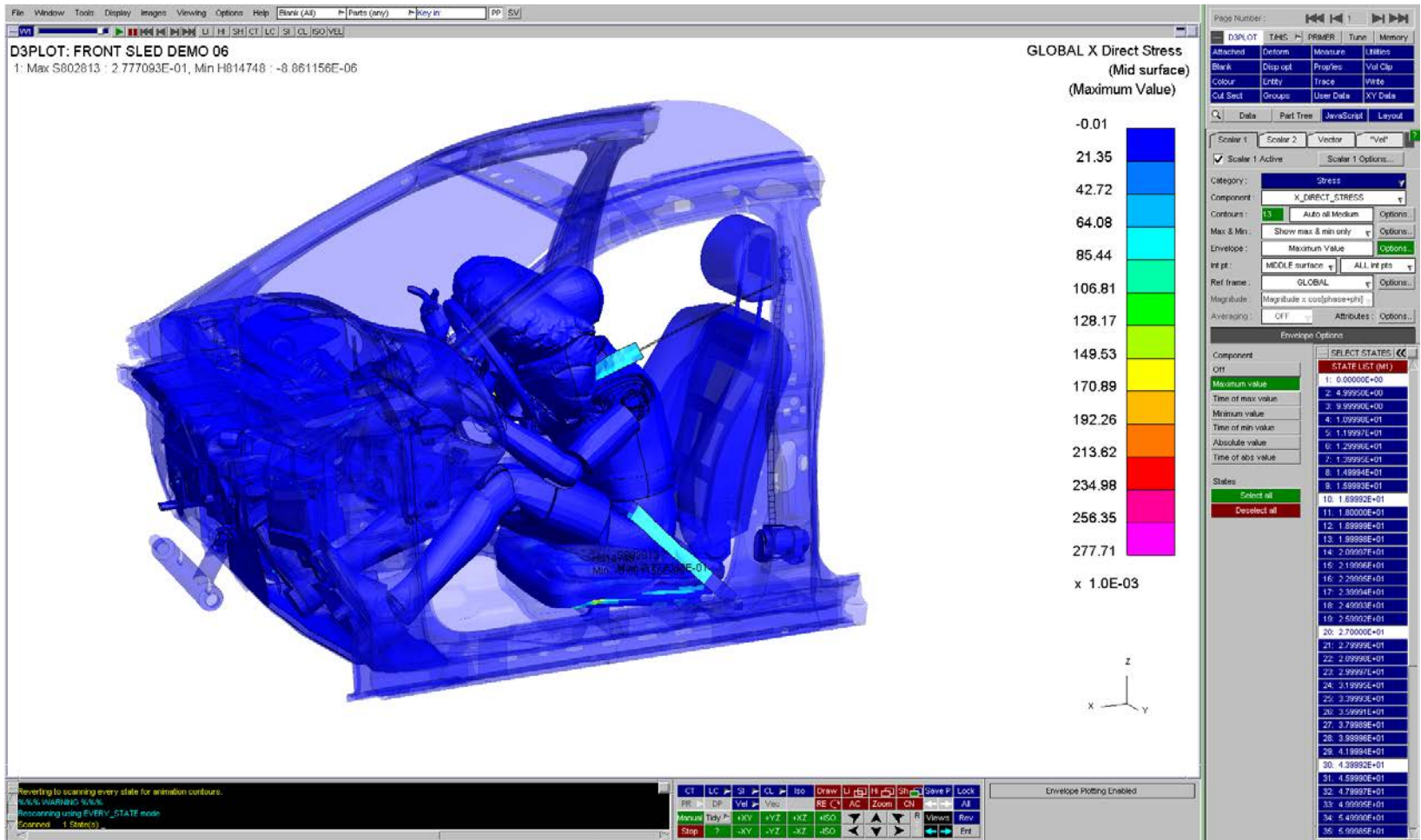
SELECT STATES <<

STATE LIST (M1)

1:	0.00000E+00
2:	4.99950E+00
3:	9.99990E+00
4:	1.09998E+01
5:	1.19997E+01
6:	1.29996E+01
7:	1.39995E+01
8:	1.49994E+01
9:	1.59993E+01
10:	1.69992E+01
11:	1.80000E+01
12:	1.89999E+01
13:	1.99998E+01
14:	2.09997E+01
15:	2.19996E+01
16:	2.29995E+01
17:	2.39994E+01
18:	2.49993E+01
19:	2.59992E+01
20:	2.70000E+01
21:	2.79999E+01
22:	2.89998E+01
23:	2.99997E+01
24:	3.19995E+01
25:	3.39993E+01
26:	3.59991E+01
27:	3.79989E+01
28:	3.99986E+01
29:	4.19994E+01
30:	4.39992E+01
31:	4.59990E+01
32:	4.79997E+01
33:	4.99995E+01
34:	5.49990E+01
35:	5.99985E+01

Advanced – Envelope Plotting

3. The plot should then display the requested value(s) at the selected states. For this particular example, the plot displays the maximum value over the selected envelope plot states (1, 10, 20 and 30).



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