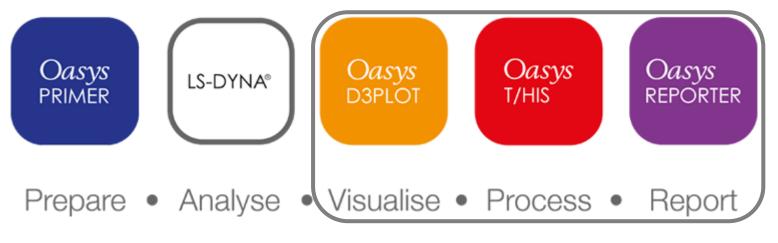
Oasys Post Processing

New Features in Version 16.0



www.arup.com/dyna



Oasys D3PLOT

- Model Visualisation
- Plot Tension and Compression
- Display Loads
- Transparent
 Cut-Sections
- Save and Retrieve Sessions

- Curve Table
- Regression Curves

Oasys

T/HIS

- Anti-aliased Curves
- Save and Retrieve Sessions
- FAST-TCF Scripting
- JavaScript

- Oasys REPORTER
- Standard Templates to Summarise Model Output
- New Fonts
- Table
 Enhancements





D3PLOT 16.0

Oasys D3PLOT





Model Visualisation





		Lighting	?
Update	plot		
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5 : Off	0	Light 5 (%)	100
Set			100
6 : Off	0	Light 6 (%)	100
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	0	Light 7 (%)	100
7 : Off Set	 — 		
		1:	100
8 : Off		Light 8 (%)	100
Set			100





Material Attributes

New in D3PLOT 16, the Material Attributes panel allows for a greater range of part-specific colour and lighting control.

Page Numbe	er: 🖡	4 14 1			Display Attributes				
					Hidden options	Free edges			
- D3PLOT		PRIMER Tu			Window dressing	Graticule			
Attached	Deform	Measure	Utilities		Fonts	Line Options			
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Colour	Entity	Trace	VVII.e		Material Attributes				
Cut Sect	Groups	User Data	XY Data						
Q Data	Part Tree	e JavaScrip	t Layout	Use Mate	rial Attributes Smooth Shading	Material Attribute	S		
					Available Materials et Save Reload erial attributes aints Preen Clue Plastic << undefined >>	Properties	Palette 100 100 100 100 2 100 2 2 2 2 2 2 2 2 2	Selec	Parts Material Attributes ? Material ? Material Attributes ? Material ? Mate

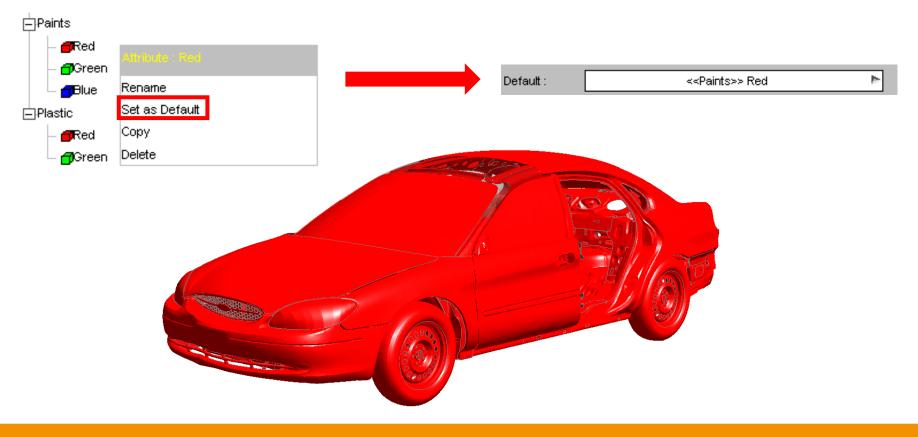




DEMO

An Attribute can be set as the "Default" attribute to apply by right clicking the attribute.

Setting this will apply the selected attribute to all parts within the model that do not currently have an attribute applied to them.



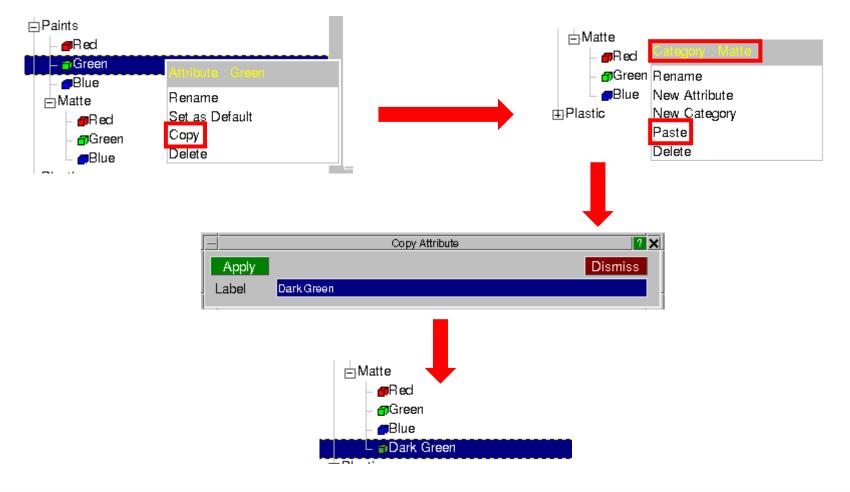




Material Attributes

DEMO

Attributes can be copied and pasted into other categories so that variants can be quickly created without having to re-adjust all of the material properties.





















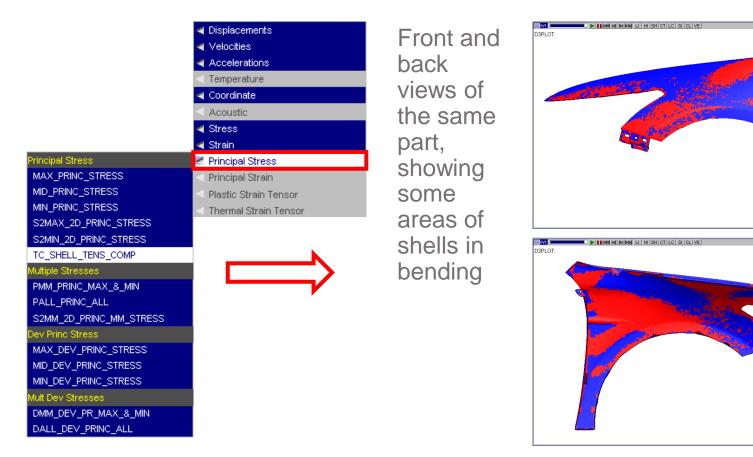


Shell Tension/Compression Data Component





D3PLOT 16 can display a component that shows whether the surface of a shell that the user can see is in tension or compression. The contour colours on the top and bottom surface of the shell can be different colours, e.g. if the shell is in bending.





Shell Tension Compressio

Tension

No Stress Compress

k_ x

0.070000

Shell Tension Compression

Tension No Stress

Compression

x_y

0.070000



The surface of the shell is considered to be in tension if the maximum principal stress is greater in magnitude than the minimum principal stress and vice versa for compression.

If the principal stress values on the shell surface are zero then the shell surface is contoured in green, e.g. at the beginning of an analysis.

If the shell surface cannot be computed then the shell surface is contoured in grey, for example if the number of through thickness integration points output does not include the top surface of the shell.





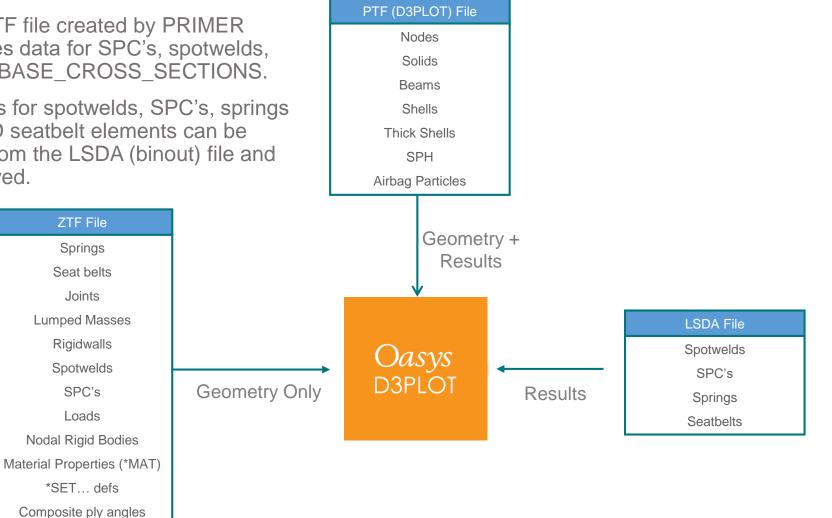






Data Read into D3PLOT

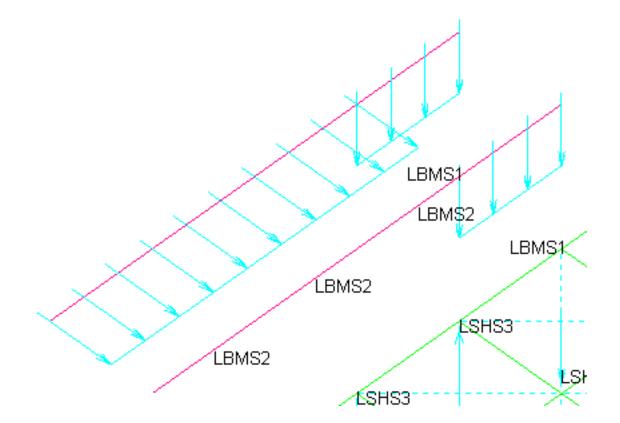
- The ZTF file created by PRIMER • includes data for SPC's, spotwelds, *DATABASE CROSS SECTIONS.
- Results for spotwelds, SPC's, springs • and 1D seatbelt elements can be read from the LSDA (binout) file and displayed.







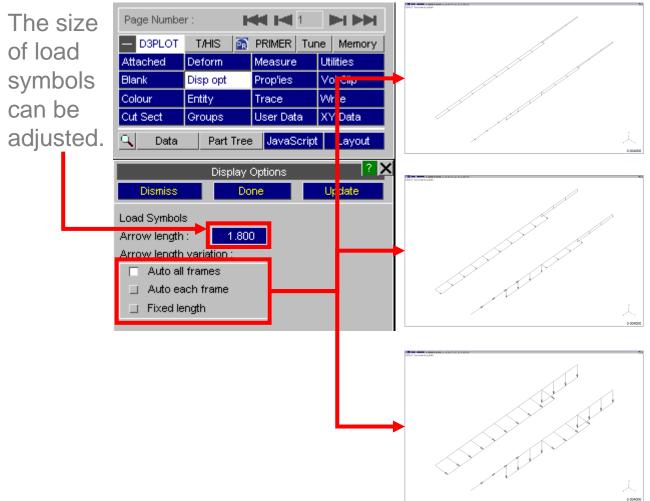
D3PLOT v16 introduces the ability to display loads on the model. Load information is transferred to D3PLOT via the ZTF file, so it is necessary to generate a ZTF file with PRIMER v16 for load plotting to be available.







The display of loads can be controlled in Disp opt >> Loads



Auto all frames – load symbols normalised to maximum value across all states – as you step through states loads will 'grow'.

> Auto each frame – load symbols normalised to maximum value in current state – shows distribution but not time variation.

Fixed length – load symbols all shown with fixed length.





~

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		SET_SHELL	
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		NODE	
		SOLID	
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		LOAD_NODE_POINT	
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		LOAD_SHELL	
		LOAD_SHELL_SET	
		LOAD_SEGMENT	
		LOAD_SEGMENT_SET	
		LOAD_BEAM	
		LOAD_BEAM_SET	

Loads can be blanked via the Blanking menu or using Quick Pick

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		Parts	Þ	
		Entities		
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		Nodes		
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				*LOAD_BEAM_SET
				Explain this

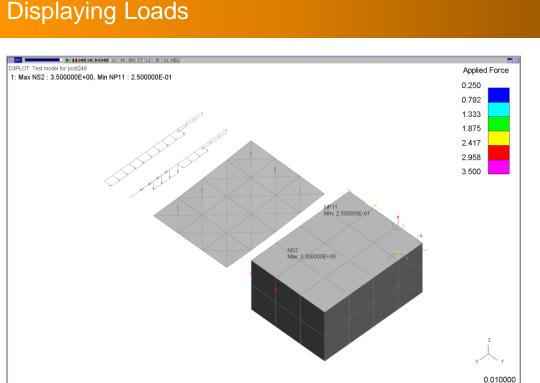
Loads can be set to be shown only when the node or element they are applied to is visible, or to always be shown.

	Entity			? X
Lab Drn	Туре	Name	Lab	Drn
Element Contact	All Loads Attached Loads	3		
Database Rigidwall Node Restr Airbag Joint Spotweld X-Section Load Path ICFD CESE EM Stochastic MECH NRB Loads	All Loads NODE_POINT NODE_SET SHELL_SET SEGMENT SEGMENT_SET BEAM BEAM_SET		RLLLRLR X	X X X X X X X X





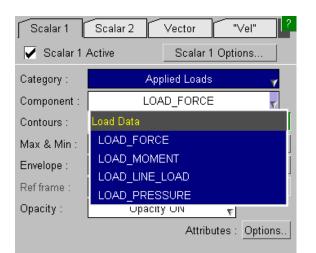




A new component category "Applied Loads" has been added. This contains four components:

- LOAD_FORCE (node loads DOF 1-4)
- LOAD_MOMENT (node loads DOF 5-8)
- LOAD_LINE_LOAD (beam loads)
- LOAD_PRESSURE (shell & segment loads)

Loads can be contoured in CT and SI plot modes







Load display has the following limitations:

- Only the following load types can be plotted:
 - LOAD_NODE_POINT / SET,
 - LOAD_BEAM(_SET),
 - LOAD_SHELL(_SET),
 - LOAD_SEGMENT(_SET).
- Loads defined with functions are not supported and will not be displayed.
- The information to display loads is new to the v16.0 ZTF file, so the ZTF file must be generated with v16.0 PRIMER.







Save and Retrieve Sessions





Session Files

D3PLOT 16.0 introduces the ability to save and restore 'sessions', permitting the user to quickly revert to the state they were at when they last exited D3PLOT. Sessions may be saved via either the File popup menu, the Utilities panel or the EXIT window.

File Window Tools Display Open new model Close model Rescan model Reread model Page setup Print Settings/Properties file	EXIT CP_EXIT (Keep CP File) SAVE_SESSION_EXIT CANCEL (Continue) Confirm EXIT: EXIT will tidy up and exit. CP_EXIT will save the current Checkpoint file and then exit. SAVE_SESSION_EXIT will save a D3PLOT session file with the name d3plot_ <date>_<time>.dsf to a user-defined location (defaults to HOME) and exit. CANCEL will return to the programme.</time></date>	Page Number : Image: Constraint of the second s
Session file Write KEYWORD data Write Compressed PTF File Memory Status Command file	Auto-save	Modify title Give new title Failure options Deleted/failed elements Graphics Special graphics options Data components Data comp diagnostics Metal forming Forming Limit Plot Die closure Workpiece/Die Closure Visualisation Visualisation Output Settings file Save/Retrieve settings Session file Save/Retrieve setsion
Exit	Explicit session path and name Utilities ? Apply Close Save Session File File : my_path/d3plot001.dsf	External data Read "Blob Plot" data Shortcut keys Define shortcuts Compress Cutdown PTF/d3plot file Response Spectrum Combine modal analyses Coarsen Coarsen mesh Clamp data Clamp rogue values LC Combination Combine static loadcases Entity Names User defined names GSA Data Add results to .gwa file Streamlines Plot ICFD streamlines

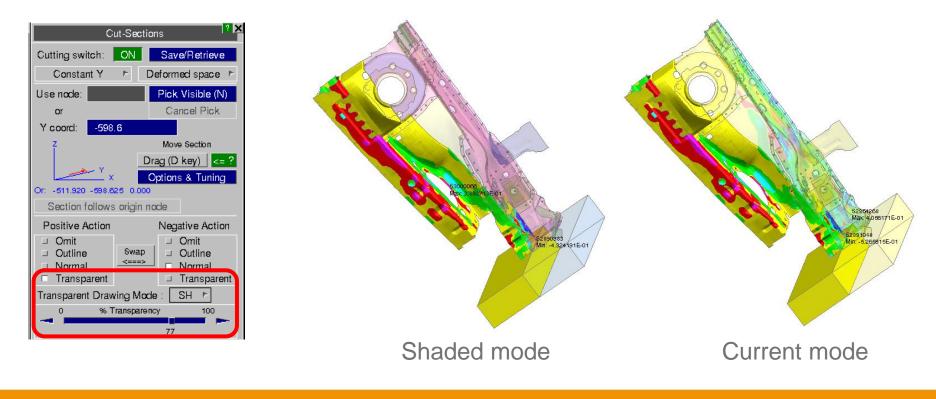




Oasvs Ltd

DEMO

Cut Sections now have a new 'Transparent' option for drawing either side of a Cut Section. Within this option, there are two drawing modes for colouring the transparent region, namely 'Shaded', which takes the colours from the original colours of the elements in the model, and 'Current', which takes the current colours of the model, such as contours with respect to a data component. The percentage transparency can be adjusted using the slider.







T/HIS 16.0

Oasys T/HIS













Curve Table





	Curve Table														
Dism	Dismiss View 🛪 Update Filter by : Model 🛪 Label 🛪 Type 🛪 Component 🛪 Save as :														
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🗹 Au	Auto resize width Graph buttons Curve properties														
<u> </u>	ID	Label/Group Name	Component	Style	Min Y	Max Y	Min X	Max X	X @ Min Y	X @ Max Y	Average	RMS	# POINTS	HIC val	THIV val
Ê.	1	Pressure - Airbag 1	Pressure	<u> </u>	0.1000521	0.1712826	7.2e-07	0.02990016	7.2e-07	0.01340064	0.1654779	0.1660907	300		-
	2	Volume - Airbag 1	Volume		4223730	4223730	7.2e-07	0.02990016	7.2e-07	7.2e-07	4223732	4216685	300		-
	3	Internal energy - Airbag 1	Internal energy	~~	986470.7	1701430	7.2e-07	0.02990016	7.2e-07	0.01330056	1643130	1649399	300		
	4	Mass rate in - Airbag 1	Mass rate in	- <u>x</u> -	0	0.0009999467	7.2e-07	0.02990016	0.0050004	0.00200016	8.36136e-05	0.0002357984	300		-
	5	Mass rate out - Airbag 1	Mass rate out	→ ~	0	1.4943679-05	7.2e-07	0.02990016	7.2e-07	0.02810016	1.489381e-06	3.5028429-06	300		-
	1	Model_1	*	Mixed	0	4223730	7.2e-07	0.02990016	0.0050004	7.2e-07	-	-	-	-	-
\sim –															

Multiple new features have been added to the curve table:

- Curve properties and injury values
- Write to CSV and XLSX files
- Operating on curves
- Annotating curves with property values







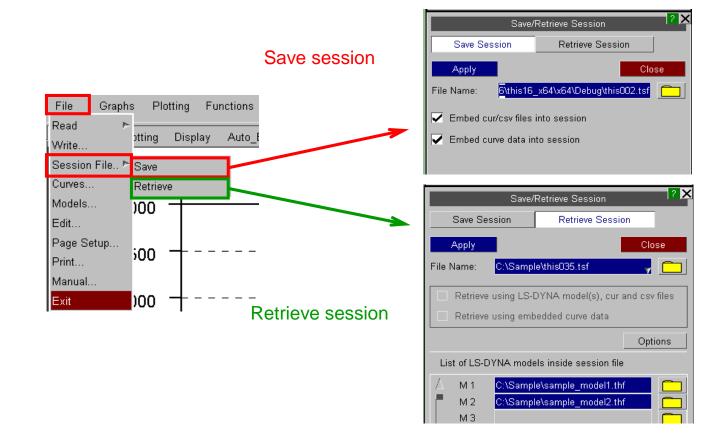
Session Files





T/HIS Session – Save and Retrieve

A T/HIS session can now be saved as a session file (.tsf), which can be read back in to restore the saved session.

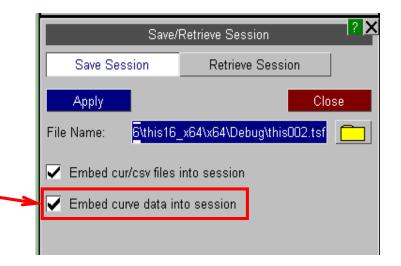






DEMO

The XY coordinate data for each curve in a session can be embedded into the session file. A session file with embedded curve data can be retrieved even if the model files are missing. Sessions retrieved using embedded curve data lose information such as curve IDs and graph properties. This option can be turned-on always, by using the new preference.







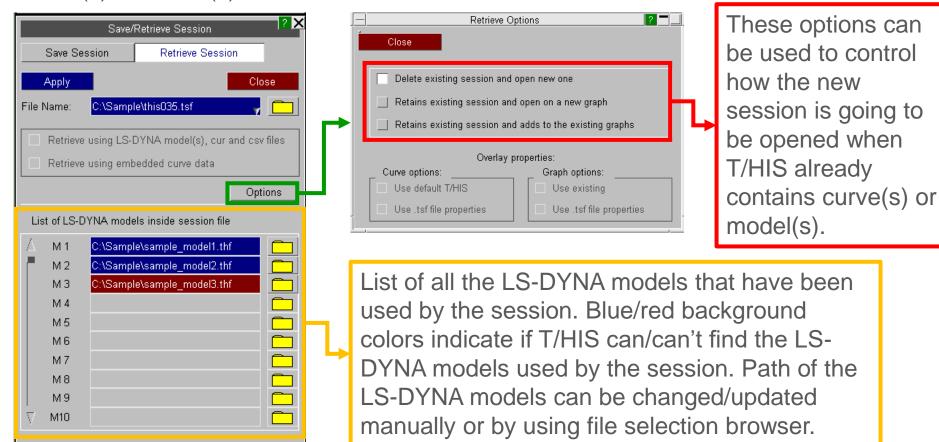


T/HIS Session - Retrieve

DEMO

Retrieving a session file which does not contain embedded curve data

The 'Options' button will be available if the current T/HIS session already contains curve(s) or model(s).



Oasys T/HIS



The following preferences have been added to T/HIS and D3PLOT:

- session_auto_save Saves a session unconditionally on exit. By default T/HIS does not save session on exit.
 ON/OFF
- session_save_option Sets the location for auto saving of session on exit. By default will be saved to OA_HOME. HOME/USER_DEFINED/DESKTOP
- **session_save_dir** Defines the user-defined location for auto save on exit. *string* "pathname"







The following preferences have been added to T/HIS:

- session_embed_cur/csv_files Embed the cur and csv files used into the session file. By default cur/csv files are not embedded into session file. ON/OFF
- session_embed_curve_data Embed the curve data into the session file. This can help in retrieving a session even when LS-DYNA results are missing. By default curve data is not embedded into session files. ON/OFF
- show_session_retrieve_on_start A pop-up panel to retrieve T/HIS session file pops-up every time T/HIS is started. This panel does not appear by default. ON/OFF







New Preferences





New Preferences

- hic_time_window
 Set default time window for HIC automotive function.
 float value
- hic_scale_factor
 Set default scale factor for HIC automotive
 function.
 float value
- auto_hide Auto-hides the graph toolbar. By default it is FALSE.
 TRUE/FALSE
- drive_n Mapping from Windows drive "n" to a unix path, where n is any drive from [a-z] i.e. drive_a, drive_q etc.. This can be used with the "oasys*" prefix as the preference is now common between PRIMER, D3PLOT and T/HIS.
 string "pathname"





Curve Operations





The Regres operation applies least squares regression to fit data with either a linear, polynomial (degree 1-4), logarithmic or exponential curve.

	k	Оре	orate		? ×		
ABS	ADD (y)	ADD (x)	AVE	CAT	CLIP		
COM	DIF	DIV (y)	$DIV\left(x\right)$	ENV	ERR		
INT	LSQ	MAP	MAX	MIN	MON		
MUL (y)	MUL (x)	NOR (y)	NOR (x)	ORDER	REC		
RES	REV	R-AVE	SMO	SQR	STRESS		
SUB (y)	SUB (x)	SUM	TRA	VEC	VEC(2D)		
WINDO	ZERO	dB	dBA	Octave	Regres		
Copy Style from Input to Output Curve							
🗌 🗌 Lin	ear						
Polynomial (degree 1-4)							
□ Logarithmic							
☐ Exponential							

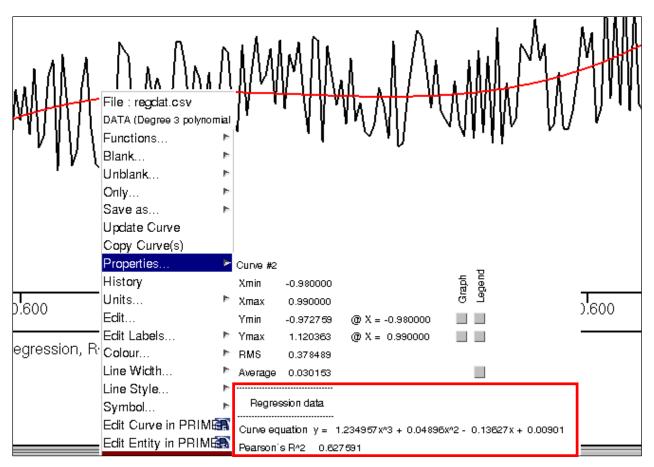






Curve Operations - Regression

The equation of the output curve and Pearson's R² coefficient can be viewed by right-clicking on the curve and selecting Properties.

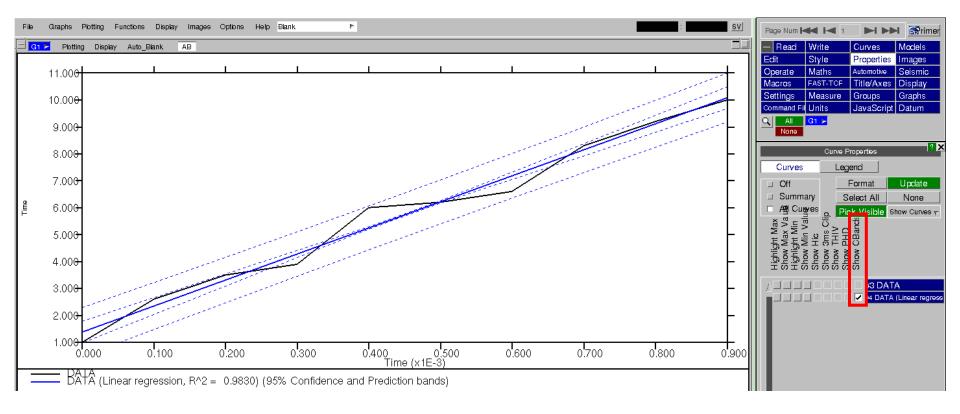






Curve Operations - Regression

In the case of linear regression, additional statistics are given in the properties popup. Additionally, for linear regression it is possible to display 95% confidence and prediction bands around the output curve. These are displayed by selecting the Properties menu in the top-right panel and then ticking Show CBands.







Antialiasing Curves





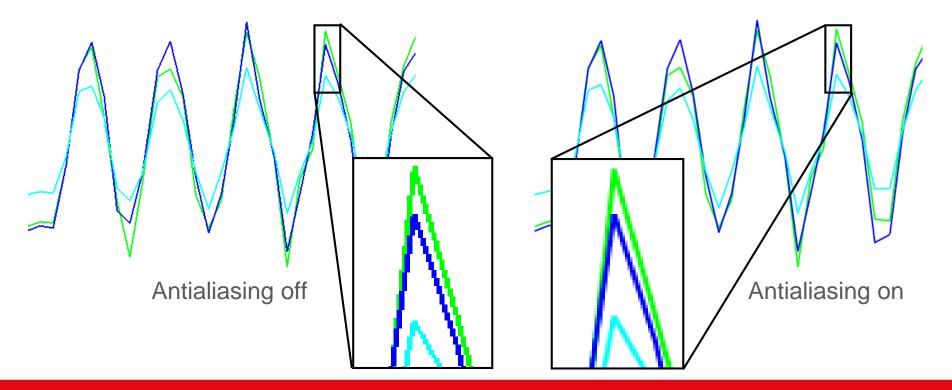
Antialiasing Curves

Curves are now antialiased by default in T/HIS, which gives them a smoother look. This can be turned on and off via:

Display -> Use Antialised Lines

There is also a preference that can be used to turn this on or off by default:

this*line_antialias: ON/OFF







JavaScript





Function	Description
Page.RemoveGraph(page, graph, graph_start, graph_end)	Removes graph <i>graph</i> from page <i>page</i> . If <i>graph</i> = 0, remove graphs with graph numbers between <i>graph_start</i> and <i>graph_end</i> , or just remove the highest ID graph if these are not specified.
Page.Layout(<i>page, layout, n_x, n_y</i>)	Sets the layout of page <i>page</i> to the layout given by the specifier <i>layout</i> , which can be any of "wide", "tall", "cascade", "1x1", "2x2", "3x3", "xy". If <i>layout</i> = "xy", then n_x and n_y give the number of graphs in the x- and y- directions respectively. If <i>page</i> = 0, the layout is set on all graphs individually. If <i>page</i> = -1, the layout is set globally, as in the 'Graphs' panel.





New JavaScript Functions – Group Class

Function	Description
Group.xmin/xmax	Minimum/maximum X value over all curves in the group.
Group.ymin/ymax	Minimum/maximum Y value over all curves in the group.
Group.x_at_ymin/ymax	X value at minimum/maximum Y value over all curves in the group.
Group.crv_at_ymin/ymax	Curve number of the curve with the minimum/maximum Y value in the group.
Group.xminpos/yminpos	Minimum positive X value/Y value over all curves in the group.
Group.x_at_yminpos	X value at minimum positive Y value over all curves in the group.





New JavaScript Functions – Read Class

Function	Description
Read.CSV(filename, file_type, sep_opt, curve_label_row, axis_label_row, x_vals_col, x_start, x_int)	Reads a CSV file named <i>filename</i> into T/HIS. The filetype can be specified, either 1 for XYXY or 2 for XYYY. The separator used in the file can be specified, either 0 for comma, 1 for space or 2 for tab. The rows containing the curve labels and axis labels can also be specified. Respectively, these are 1 and 2 by default. Either the column containing the x-values or a user defined start value and interval between points can be defined for the x-axis.

Read.Cur(filename)

Reads a .cur file named *filename* into T/HIS.



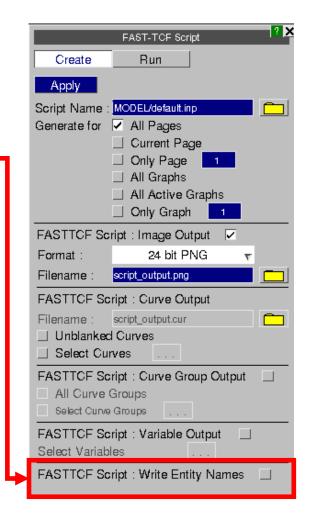








An option has been added to the FAST-TCF create panel, so that one can choose to write entity names (when they exist), in place of IDs, into any generated FAST-TCF script. These names will then be used to identify the entities when running the script.









The following commands have been added to FAST-TCF:

Command	Arguments		Description
colour	n	RRGGBB	Set the n-th user-defined colour (up to 6) using a 6-digit hexadecimal to specify the RGB values.
colour_rgb	n	R G B	Set the n-th user-defined colour (up to 6) using three integers in the range 0-255 to specify the RGB values.
y_min, ymax, y2_min, y2_max	auto_vis		Set the minimum/maximum value on the y/y2-axis to the automatic value based on the currently visible section of the x-axis. Similar to 'Y' shortcut key.





Command	Arguments	Description
y_ranges	auto auto_vis y_auto y_auto_vis y2_auto y2_auto_vis	Set the minimum and maximum values simultaneously on either the y-axis, the y2-axis or both together. These can be set either to the automatic values based on the whole x-axis or just on the visible portion.
varr vara varf tab taba tabc tabcr	all_minx all_maxx all_miny all_maxy all_xatmin all_xatmax all_catmin all_catmax	New variables for properties relating to all curves. These give the min/max x, min/max y, x value at min/max y and curve number at min/max y respectively, each of which is calculated over all curves.





REPORTER 16.0

Oasys reporter





Oasys REPORTER

- Standard Templates to Summarise Model Output
- New Fonts
- Table
 Enhancements

Casys Is-DYNA ENVIRONMEN 準備 Analyse分析 _{显示}Vi/Ugli/e LS-DYNA ENVIRONMENT Process 后期处理 Report





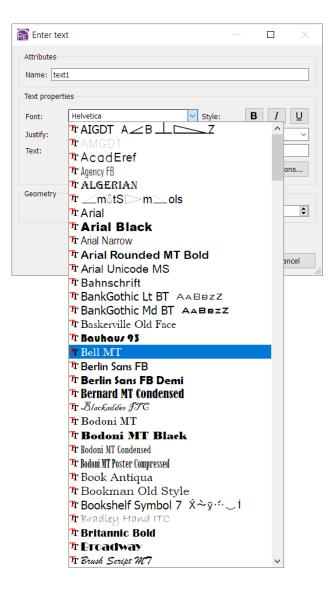
Fonts

Until now, REPORTER has only supported four fonts (with very basic add-on support for Chinese, Japanese and Korean fonts):

Courier Helvetica Times $\Sigma \psi \mu \beta o \lambda$ (Symbol)

Version 16.0 offers support for many more fonts, giving you greater control over the look of your reports, and allowing you to create templates that match your organisation's branding.





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The Software House of ARUP



Fonts (continued)

Technical Details

Support for the four legacy fonts (Courier, Helvetica, Symbol, Times) is unchanged, so your existing REPORTER templates should be unaffected.

Now, REPORTER supports the following font types:

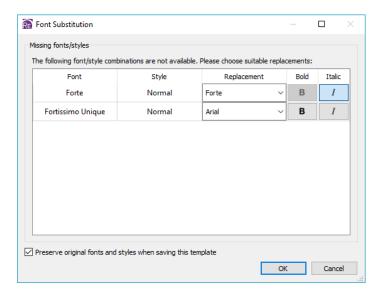
- TrueType fonts and collections (.ttf and .ttc files)
- OpenType fonts and collections (.otf and .otc files)
- Certain Type1 fonts (Printer Font Binary .pfb files and their .pfm metrics files)

Font Mapping

Customisable font mapping is provided to improve compatibility between users and operating systems. If another user shares a template with you that uses a font that is not installed on your system, suitable alternatives will be suggested in the Font Substitution dialog that appears when you open the template.

If you create templates on Windows but then run them in batch on a Linux server, font mapping will help preserve the look and style of your output.

For more details, see chapter 11 of the REPORTER 16.0 manual.







Exporting Tables to Excel

REPORTER 17.0 dev - 64 bit (build 1318) - [Page 1 of 1: C:/executables/export_tables_excel/tables_excel_demo.ort*]

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3	В	5.00	83.92	0.02	1.16
A Tools & X	с	8.79	79.61	1.11	0.44
	D	13.44	81.50	-0.38	0.25

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	A	В	с	D	E	F	
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6	D	13.44	81.5	-0.38	0.25		
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	Row 3	Α	1.02	78.45	-0.94
	Row 4	в	5.00	83.92	0.02
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6	1.00	om left X: 26.0	\$	Bottom left Y	: 62.0
Geomet	Bott	Width: 178.0	+		: 64.0

Table and Autotable items can now be exported in Microsoft Excel format, complete with formatting (cell size, text alignment, font style, borders, colours, merged cells).

In the Table or Autotable dialog, check 'When generating save to XLSX file' and choose a filename.





Tables in the JavaScript API

Various new functions have been added to the Item class of the JavaScript API to enable full control over Table and Autotable items. For example, it is now possible to:

- Insert/delete/resize rows/columns
- Merge/unmerge cells
- Get/set cell properties (e.g. text, alignment, font, colour, border width)
- Get/set cell conditions







ARUP

www.arup.com/dyna

For more information please contact the following:

UK Contact:	China Contact:	India Contact:	USA West Contact:
The Arup Campus	Arup China	Arup India	Arup Americas
Blythe Valley Park	39/F-41/F Huaihai Plaza	Ananth Info Park, HiTec City	c/o 560 Mission Street Suite 700
Solihull	1045 Huaihai Road (M)	Madhapur Phase-II	San Francisco
United Kingdom	Xuhui District, Shanghai	Hyderabad	United States
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