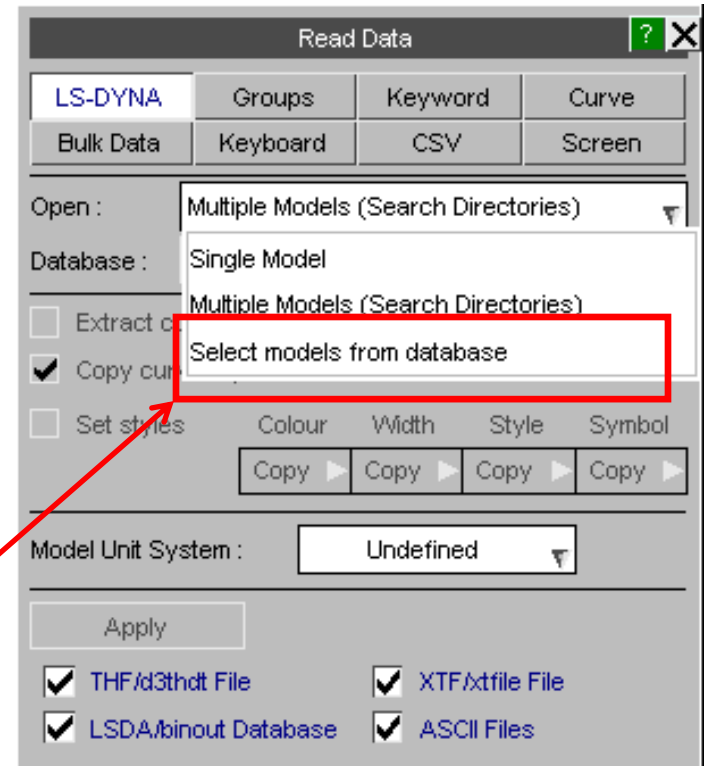
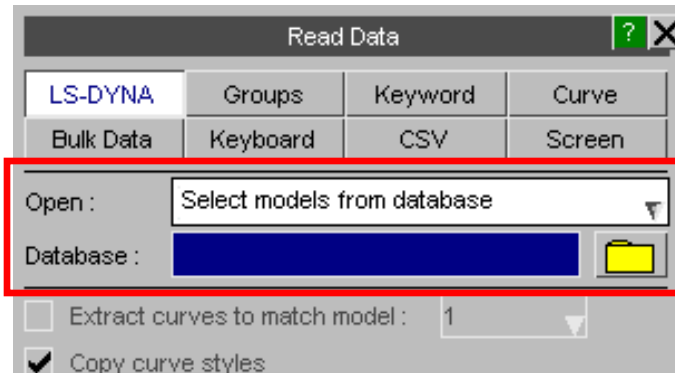


T/HIS 10.0

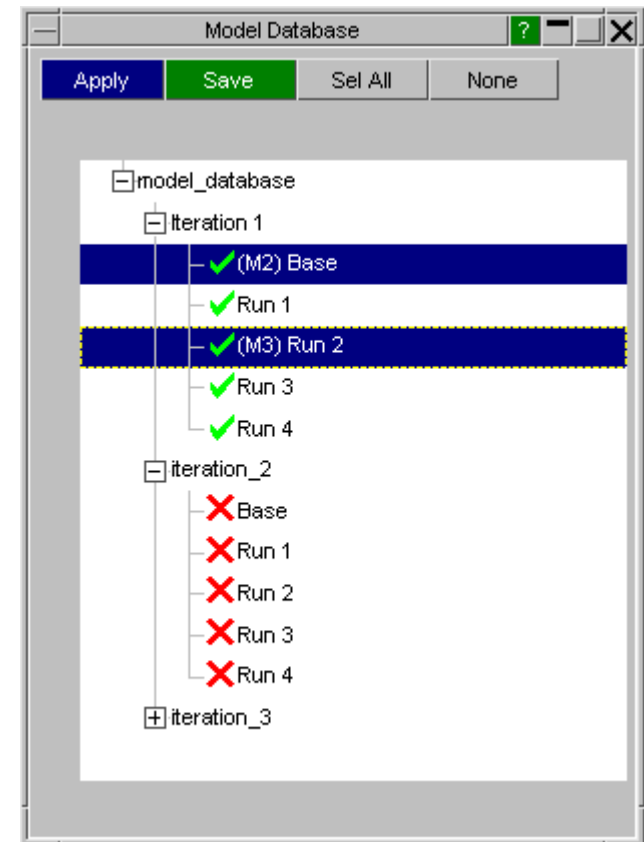
- [Opening Models](#)
 - [Select Models from Database](#)
- [New Data Files and Components](#)
- [View/Edit curve operation history](#)
- [COR operation updates](#)
- [Changes to Line Labels](#)
- [Javascript](#)
- [New preferences and command line options](#)

- A new option to select multiple models from a model database has been added.





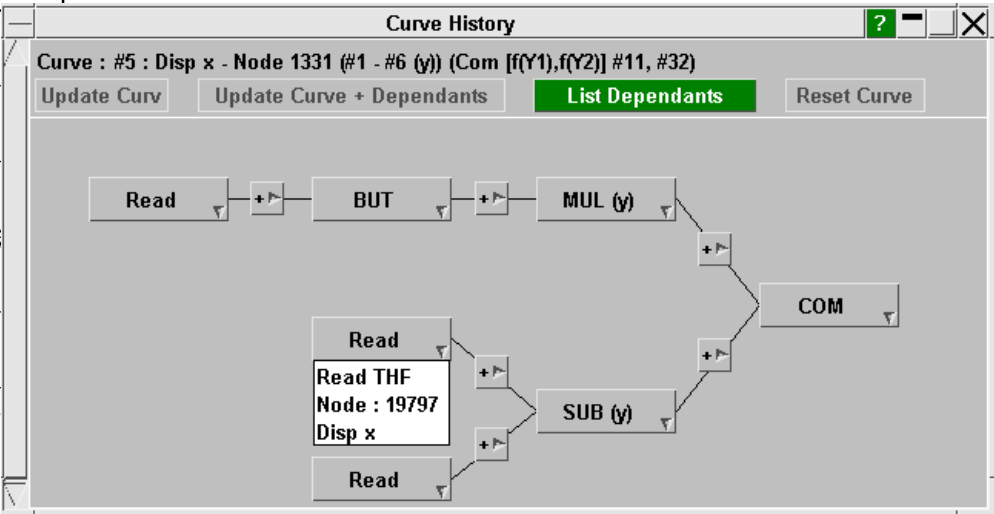
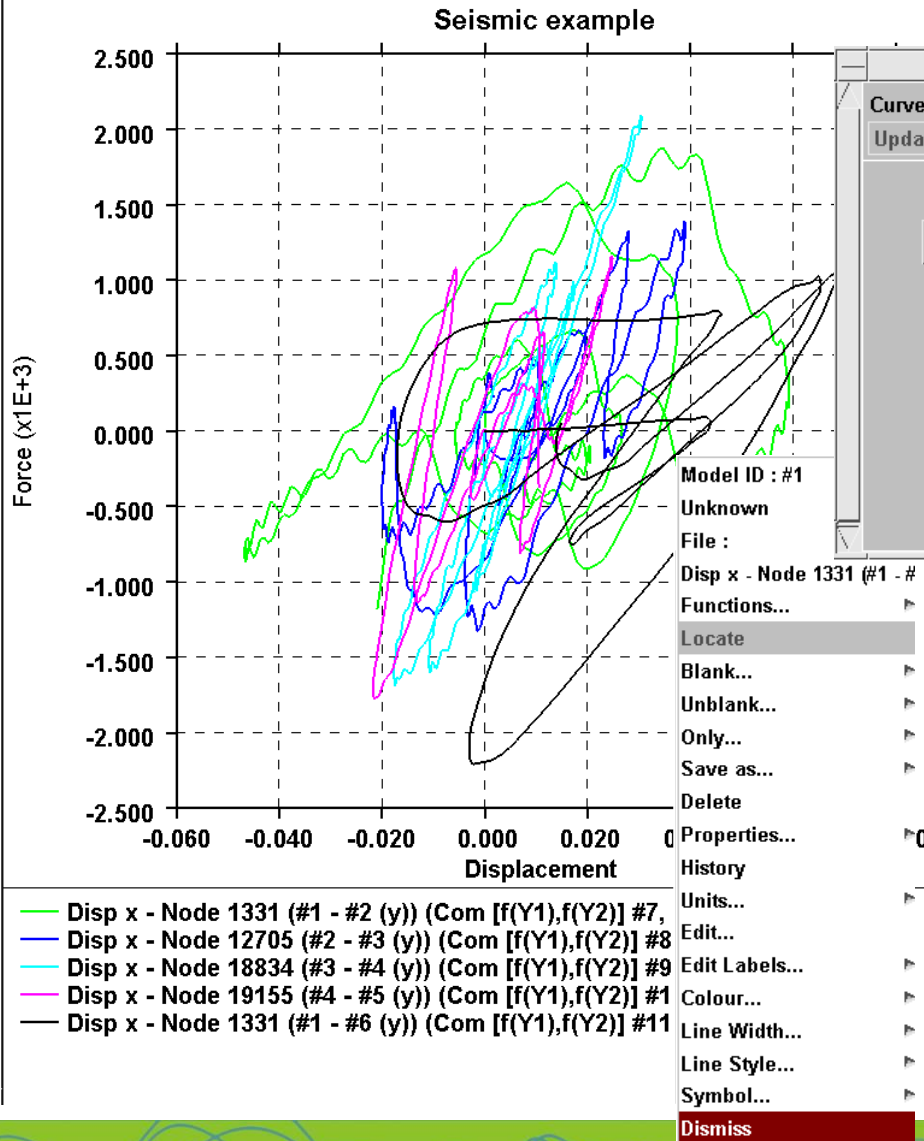
- The same database of models is used for D3PLOT and T/HIS.
- As models are selected they are highlighted. M1, M2, etc indicate the D3PLOT model number after reading in.
- Models that cannot be found are marked with a red cross.
- Entries can be modified and deleted by right-clicking on them.
- New models can be added to the database interactively and the database saved for future use.
- The database file is XML based and can easily be edited by hand.



T/HIS 10.0 supports the following new files and data types

- LSDA - TPRINT (Node Thermal Data)
DBFSI (Fluid Structure interface)
TRHIST (Tracer History)
CPM_SENSOR ()
ABSTAT (Airbag Chambers)

- ASCII - TRHIST (Tracer History)
CPM_SENSOR ()



- Right-click on curve => history
- The history of data reading and operations resulting in the curve is shown in the menu
- Hover => description of operation
- Small + button => insert new operation

- Right-click => can edit the operation details. E.g. for Read, can change Node ID or data component; for an operation such as filtering, can change the filter class or substitute a different operation.
- Then press Update Curve to implement the changes and replace the curve.
- If this curve is used as an input to other curves, the choice “Update Curve & Dependents” causes those other curves also to be replaced.

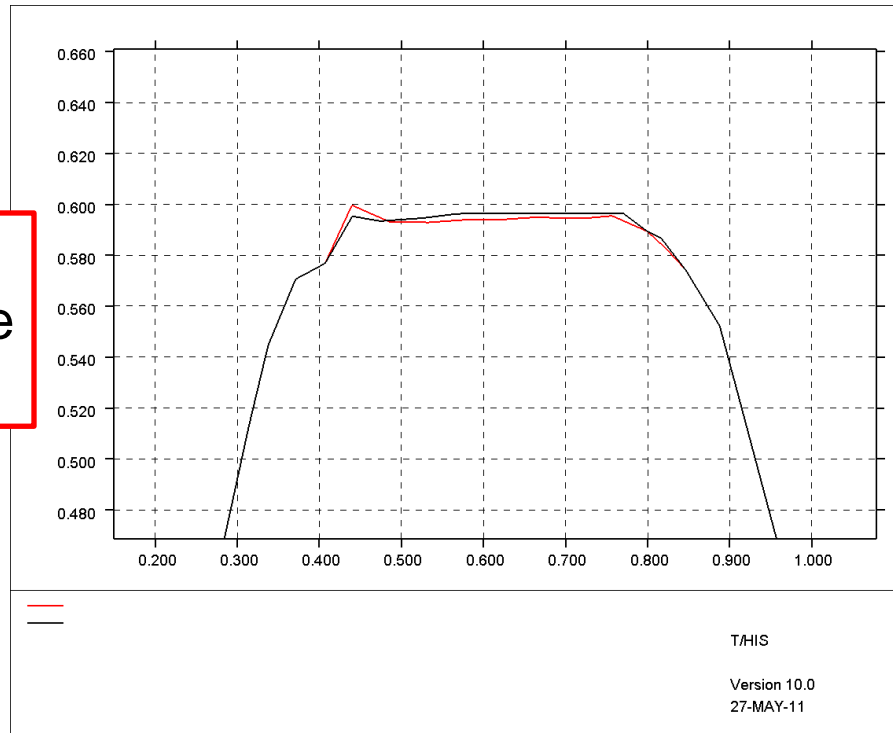
The screenshot shows the 'Curve History' window with the following details:

- Title: Curve History
- Curve: #5 : Disp x - Node 1331 (#1 - #6 (y)) (Com [f(Y1),f(Y2)] #11, #32)
- Buttons: Update Curv, Update Curve + Dependants, List Dependants, Reset Curve
- Diagram: A dependency tree where 'Read' nodes are inputs to 'BUT', 'SUB (y)', and 'MUL (y)', which are then combined into a 'COM' node.
- Context Menu (for a 'Read' node):
 - Read : THF
 - Type : Node
 - ID : 19476
 - Component : Disp x
- Component List:
 - Disp x
 - Disp y
 - Disp z
 - Disp mag
 - Vel x
 - Vel y
 - Vel z
 - Vel mag
 - Accel v

The COR1 and COR2 correlation operations have been updated:

- In some cases curves with flat peaks could return a low score for matching the timing of the peaks. The algorithm has been improved to better match flat peaks.

V9.4 – Peak matching score **9.2** out of 20

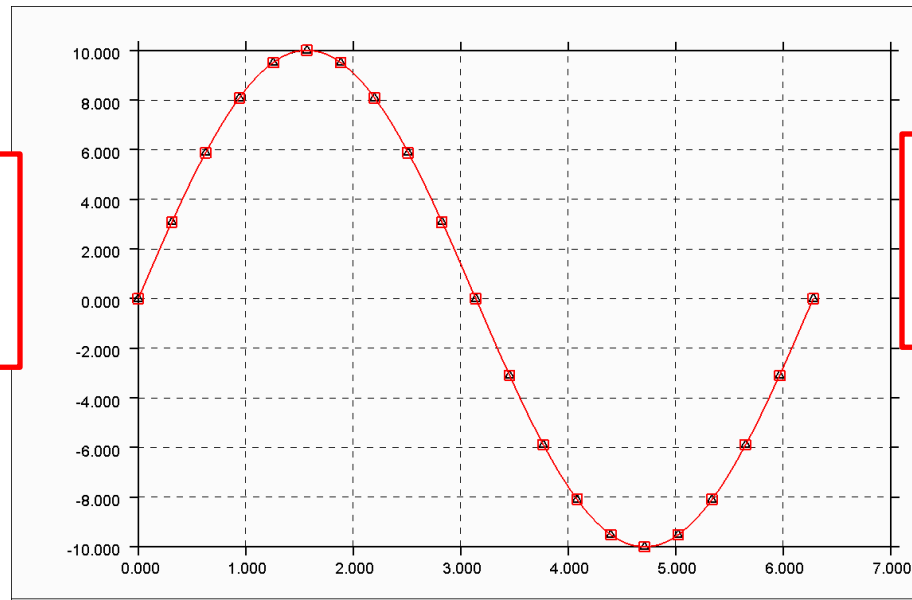


V10.0 – Peak matching score **19.9** out of 20

- The number of peaks that can be matched is now unlimited. Previously it was limited to 10 peaks.

- The area match could return a low score for almost identical curves if the area of both the curves were close to zero, e.g. if they oscillated about $y=0$. The area matching has been changed so it now compares the absolute area of the curves, i.e. $\text{area} = +\text{ve area} + -\text{ve area}$









V9.4 – Area
matching score
11.3 out of 20



V10.0 – Area
matching score
20.0 out of 20

- These changes mean that the same pair of curves will in general give a different correlation result from T/HIS version 10.0 compared to 9.4.

- After curve operations, the resulting curve label now contains a more detailed description of the operation used to generate the curve.

1		Accel x - Node 7
2		Accel y - Node 7
3		Accel z - Node 7
4		Accel x - Node 7 (C 180)
5		Accel y - Node 7 (C 180)
6		Accel z - Node 7 (C 180)
7		Accel x - Node 7 (C 180) (Vec (y1,y2,y3) #4, #5, #6)
8		Accel x - Node 7 (C 180) (Vec (y1,y2,y3) #4, #5, #6) (/ 9810.0 (y))

- To see long line labels in the curve menu, press “Undock”.

From version 10.0 onwards T/HIS has a Javascript capability that can be used to extend its functionality.

- Intended mainly for making your own curve operations.
- T/HIS macros can be used for simple cases where existing curve operations are combined in sequence – don't need Javascript for this.
- Javascript is needed for more complex cases, e.g. defining your own injury/failure criteria.
- A Javascript can be run from within a FAST-TCF script. Any curves created by the Javascript can be accessed by subsequent FAST-TCF commands in the same script.
- The Javascript capability is designed to complement the FAST-TCF scripting language, NOT replace it.

- `Curve.Create(...)` - Create a new curve
- `Curve.Copy(...)` - Copy an existing curve
- `Curve.Delete(...)` - Delete a curve
- `Curve.Exists(...)` - Check if a curve exists
- `Curve.First(...)` - Return 1st curve.
- `Curve.FirstID(...)` - Return ID of 1st curve.
- `Curve.FirstFreeID(...)` - Return ID of 1st free curve
- `Curve.GetFromID(...)` - Return a curve object from a curve ID
- `Curve.GetFromTag(...)` - Return a curve object from a curve TAG
- `Curve.FlagAll(...)` - Flag all curves
- `Curve.UnflagAll(...)` - Unflag all curves
- `Curve.Pick(...)` - Pick a single curve
- `Curve.Select(...)` - Select multiple curves

- `AddPoint(...)` - Add a new point to the end of a curve
- `GetPoint(...)` - Get the X,Y values for a curve point
- `InsetPoint(...)` - Insert a new point in the middle of a curve
- `SetPoint(...)` - Set the X,Y values for a curve point
- `AddToGraph(...)` - Add a curve to a graph.
- `RemoveFromGraph(...)` - Remove a curve from a graph.
- `SetFlag(...)` - Set a curve flagging bit
- `ClearFlag(...)` - Clear a curve flagging bit
- `Flagged(...)` - Test a curve flagging bit
- `Next(...)` - Return the next curve
- `Previous(...)` - Return the previous curve
- `Update(...)` - Update the statistics for a curve (min, max average,... values)

- The following curve properties can be accessed via JavaScript

ID	Minimum X value	HIC value
Model	Maximum X value	Start of HIC window
Title	Minimum Y value	End of HIC window
Label	Maximum Y value	HIC(d) value
X Axis Label	X value at Y minimum	Start of HIC(d) window
Y Axis Label	X value at Y maximum	End of HIC(d) window
Number of Points	Average value	3ms Clip Value
Colour	RMS value	Start of 3ms Clip Window
Line Width		End of 3ms Clip Window
Line Style	Unit system	
Line Symbol	X Axis Unit	
	Y Axis Unit	

- T/HIS shares the following Class Types with PRIMER and D3PLOT

Window Class	-	Functions for creating your own GUI windows
Widget Class	-	Functions for creating components for your own GUI
File Class	-	Functions for reading/writing text files

- T/HIS also contains the following simple class types

Graph Class	-	Used to create additional graph
Colour Class	-	Defines constants for specifying colours
Line Style Class	-	Defines constants for specifying line styles
Units Class	-	Defines constants for specifying curve units.

- Colour curve by model

```
//name: Colour By Model
highest_model = Model.HighestID();
num_models = Model.Total();
num_curves = Curve.HighestID();
for(i=1;i<= Curve.HighestID;i++)
{
    curve = Curve.GetFromID(i);
    if(curve)
    {
        model = curve.model;
        if (model > 0)
        {
            curve.colour = model;
        }
        else
        {
            curve.colour = highest_model+1;
        }
    }
}
```

- **Model Database**
 - **database_dir** : **Default directory for model database files**
 - **database_file** : **Default file for model database**
 - **database_expand** : **Controls how many database levels are expanded when a database is 1st opened.**

- **Other**
 - **curve_palette** : **Controls the number of colours used by curve**
 - **asi_method** : **Set ASI calculation method to either 1998 standard or the newer 2010 standard.**

The following new command line options have been added

-mdb=filename Specify a model database file to open

ARUP

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