

Altair HVVH Tutorials 2019

HVVH-7000: Result Tab

altairhyperworks.com

In this tutorial you will learn how to:

• Compare results from a single solver across two Altair HyperView versions.

Step 1: Compare result from a Solver across different HV versions

1. From the **Result** tab, select the **Result comparison HV versions** tab.

Solver Tune - Moner 10	* Tolerance: default	10-5 _ 4m		HTM Report 4
source date: haberee		1	~7	HINK NEPOT
Current		Reference	-	
Version 2017		Version 34.130	1	
Load Model				2
Load Result				2
Output				2
directory				
				Apply
Subcase	Simulation		Result type	
	<u>Î</u>	ĺ.		[
E Al	E AL		E Al	
			Tolerance	Αρρίγ
ompare result :				
Curr	ent file	Reference	file	Report
				Report Report
		Html Report		

- 2. For *Solver type*, select Hyper3D.
- 3. Leave *Tolerance* as default (1e-06).
- 4. Click HTML Report.
- 5. Under *Current*, set *Version* to 2017.
- 6. Under *Reference*, set *Version* to 14.130.
- 7. For Load Model, click the open file icon, , to load the BOXBEAM.h3d, located in ...\tutorials\hvvh\Result\Result\comparisonHVVersions.



- 8. For Load Result click the open file icon, it is how have a set of the boxbeam.h3d, located in ... tutorials how here sult result comparison HVV ersions.
- 9. For the **Output directory** field, use the open file icon, $\stackrel{\bigcirc}{\vdash}$, to select an output directory.

10. Click **Apply**.

The results available (Subcase, Simulation, and Result type) in the result file are loaded in their respective windows.

Subcase	Simulation	Result type	
Loadcase 1	 Time = 0.0000e+000 Time = 1.0006e-001 Time = 2.0018e-001 Time = 3.0035e-001 Time = 4.0012e-001 	Displacement Contact Forces Velocity Plastic Strain Von Mises	
		🗆 Ali	

11. Select **All** under each window and click **Apply**.

Results comparison of the current results and reference results are generated.

- 12. In the **Messages** window, the run details are displayed along with the log file location.
- 13. In case the difference > tolerance, it is indicated as **Fail**, otherwise, they are shown to **Pass**.

on CAD FE Model: Solu	tion Result Ma	nufacturing solution					
ult comparison HV vers	one Result com	parison HG versions Com	pare HG Versions	Template-Sessio			
Solver Type : Hyper3D	3	Tolerance : default	•	34-8	App	W.	HTML Report
Current Version 2017	-			Reference Version	.130	3	
oed Model C:/After/J	117.0.0.14/demo	u/hwh/Result/Result.comp	rison HV Versions/	BOKBEAM.h3d		518	1
oad Result C/Altur/2	117.0.0.14/demo	/hwh/Nesuit/Result comp	rison WV Versions/	BORBEAMINEd			2
Dutput CUNNING	lutbir						6
							Αρρίγ
Subcase		Simulation				Result type	
Loodkese 1		Time +0.0 Time +1.0 Time +1.0 Time +1.0 Time +1.0	00e+000 00e-001 03e-001 03e-001 03e-001		6 IAI	Displacement Confact Forces Welocity Plastic Strain Yon Mises	j
E AI		92 AS				DAL	
						Tolerance	Αρρίγ
impare result (
vvH/OutDV/Nesult_Com /HVVH/OutDV/Nesult_Co /HVVH/OutDV/Nesult_Co	Current file paretti Versions/ imparetti Version inparetti Version	Current_BOXBLAW_Contact s/Current_BOXBLAW_Velo s/Current_BOXBLAM_Veron	force/s/H/OutDe/M Hy_1/HV/H/OutDe Det_NY/H/OutDe	Re esult_CompareNVV (Nesult_CompareN Nesult_CompareN	Perence (Version)/ A/Version	Me Reference_BCRBLAM_ContactFo sy/Reference_BCRBLAM_Veloci sy/Reference_BCRBLAM_VonMis	Report V Resi V Resi V Resi
			Html Re	hod			

14. Click **HTML Report** to open the report. Across two Altair HyperView versions, the solver results are compared. Comparison of different data types are available. For example, for a vector (Displacement) all components Magnitude, X-displacement, Y-displacement, and Z-displacement are compared for the entire model and the results are shown.

HyperWorks Verif	ication and Validation Harness	
Result - Result C	Comparison HV Versions Report	
Solver Type : Hyper3D	Current Version : 2017 Reference Version : 14.130	
Current file	Reference file	Report Launch HV
C:HVVH OutDir Result_CompareHvVersions Current_BOXBEAM_ContactForces_1	C:HVVH OutDir Result_CompareHvVersions Reference_BOXBEAM_ContactForces_	NA NA
C:HVVH OutDir Result_CompareHvVersions Current_BOXBEAM_Velocity_1	C:HVVH OutDir Result_CompareHvVersions Reference_BOXBEAM_Velocity_1	Pres NA
C:HVVH OutDir Result_CompareHvVersions Current_BOXBEAM_VonMises_1	C/HVVH-OutDir Result_CompareHvVersions/Reference_BOXBEAM_VonMises_1	NA NA
C:HVVH OutDir Result CompareHvVersions Current BOXBEAM PlasticStrain 1	C:HVVH OutDir Result CompareHvVersions Reference BOXBEAM PlasticStrain 1	This NA

- 15. Click **Pass/Fail** in the HTML report to open a detailed comparison report.
- 16. In the report above, the left window displays the diff contour (Current-Reference) and right window displays the diff plot in Altair HyperGraph (see image below).



- 17. Click the left window to open the diff-values H3D in HyperView Player.
- 18. Click the right window to maximize/minimize the plot.
- 19. If there is any case of difference > tolerance, it is indicated as *Fail*, otherwise *Pass*.

nolon	Loadcase 1, ContactFo	orces
Leadens 1, Castartforces	Contract Index_Git(2) Lobdodoo 1: I imo = 0.00000+900: Frame=1 Analysis system 0.0000=00 0.0000=00 0.0000=00 0.0000=00 0.0000=00 0.0000=00 0.0000=00 0.0000=00 Mex = 0.0000=00 Node 77 Nin = 0.0000=00 Node 77 X	Dynamic MinMax Result 1E-005 Min ContactForces, diff/Mag) 4E-007 Min ContactForces, diff/Mag) 4E-007 Min ContactForces, diff/N) 4E-007 Min ContactForces, diff/N)

Step 2: Result comparison for different solver results across two Altair HyperGraph versions.

Result comparison for different solver results across two Altair HyperGraph versions.

1. From the **Result** tab, select the **Result comparison HG versions** tab.

K HVVH - HyperWorks Verification and Validation Harness (v2017)	- O - X -
File Edit Help	
Design CAD FE Model Solution Result Manufacturing solution	
Result comparison HV versions Result comparison HG versions Compare HG Versions - Template-Session	
Current version: 2017 Reference version: 14.130 Percentage Tolerance : default 1e-6 Apply	HTML Report
Data File C:/Altair/2017.0.0.14/demos/hvvh/Result/Result comparison HG Versions/car.pch	i
Output directory:	iii iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii
Automation Check	Apply

- 2. For Current version, select 2017.
- 3. For Reference version, select 14.130.
- 4. Click *HTML Report*.
- 5. For **Data File**, click the open file icon, $\stackrel{\blacktriangleright}{\vdash}$, to load the car.pch file, located in ...\tutorials\hvvh\Result\ResultcomparisonHGVersions.
- 6. For the **Output directory** field, use the open file icon, it is select an output directory.
- 7. Activate the **Plot only failed** option.



8. Click Apply.

ү түре	Y Request	Y Component	
Displacements GPForce	 Point id 1130488 Elem id 1082288 QUAD4 Point id 1130488 Elem id 1082309 QUAD4 Point id 1130488 Elem id 1082423 QUAD4 Point id 1130488 Elem id 1082427 QUAD4 Point id 1130488 Elem id 1074735 BUSH 	REL FX REL FY REL FZ REL MX REL MY	() ()
🖾 Ali	E All	🖾 All	

9. Select each *All* under the Type/Request/Component columns, and click the second *Apply* button.

A results comparison of the current results and reference results are generated.

10. In the **Messages** window, the run details are displayed along with the log file location.

sult comparison HV versi	peg Result comparison HG v	ensionel Compara HG Version	a - Template-Session			
Current version: 2017	* Auflemence version:	4.110 • Percentage Tolerance	etaut 👌 🗍	10-0	Apply H	Mi Report 4
Data File C/Altan/20	17.0.0.14/damco/hwth/NesuR/	Result comparison HG Versions/	ise.pch			6
Output Crymonics	utbe					ai i
			Automation	Check		Apply
Subcase Subcase 2 (*	nodal_frequency_res 1 X	Type Prequency (Hz)	1 2 Pot	only failed		
v type		Y Request		Y Component		
Displacements Gifforce	1	Point of 1130480 Elem of 200 Point of 1130480 Elem of 200	2188 QUADH 2189 QUADH 2121 QUADH 2127 QUADH 2127 QUADH 2127 QUADH	REL FX REL FY REL FZ REL MIX REL MIX		and a
II AK		E AI		E AR		
					<u></u>	Apply
Compare result :						
C/WWW/DutDie/AdvRess Cu/WWW/DutDie/AdvR	Current file It_CompareHOVersions/Current Insult_CompareHOVersions/Cu	nt_Displacements 2/HVVN/Ou ment_G/Horos C/HVVN/	Referen tDir/Advitesuit_Comparent OutDir/Advitesuit_Compar	or file Oversions/Neference_D eHOversions/Neference	nplacements GPT ence	No-diff
		Harri J	leport			

11. Click **HTML Report** to open the report. A comparison of different type, request, and component (TRC) is available for the same result file across two Altair HyperGraph versions.



HyperWorks Verification and Validation Harness				
Result - Result Comparison HG Versions Report				
Current HW Version : 2017 Reference	HW Version : 14.130 Solver Version : 14.0.230)			
Current file Reference file Report				
C:/HVVH/OutDir/AdvResult_CompareHGVersions/Current_Displacements C:/HVVH/OutDir/AdvResult_CompareHGVersions/Reference_Displacements No diff				
C:/HVVH/OutDir/AdvResult_CompareHGVersions/Current_GPForce	C:/HVVH/OutDir/AdvResult_CompareHGVersions/Reference_GPForce			

As the results match, the plots coincide and a difference curve will be a straight line along the X-axis, or points very close to it.

Step 3: Altair HyperGraph Versions - Template-Session

In this step, results comparison for different solver results across two Altair HyperGraph versions using template and session files.

1. From the Result tab, select the Compare HG Versions - Template-Session tab.

🖒 HVVH - HyperWorks Verification and Validation Harness (v2017)	- 0 - X -
File Edit Help	
Design CAD FE Model Solution Result Manufacturing solution	
Result comparison HV versions Result comparison HG versions Compare HG Versions - Template-Session	
Current version: 2017 Reference version: 14.130	HTML Report
Input File C:/Altair/2017.0.0.14/demos/hvvh/Result/Campare HG Versions - Template -Session/hg.mvw	6
Output directory :	2
	Apply

- 2. For Current version, select 2017.
- 3. For Reference version, select 14.130.
- 4. Click HTML Report.
- 5. For **Data File**, click the open file icon, \smile , to load the hg.mvw file, located in ...\tutorials\hvvh\Result\CompareHGVersions-Template-Session.
- 6. For the **Output directory** field, use the open file icon, $\stackrel{\frown}{\rightarrowtail}$, to select an output directory.
- 7. Activate the *Plot only failed* option.
- 8. Activate the Visible Only option.
- 9. Click Apply.



Plot only failed	Visible Only	
Plot Name(s)		
Internal Energy Kinetic Energy X-Momentum		-
🛛 All		

Plots that are available in the result file are listed.

10. Click Apply.

Results comparison of the current results and the reference results are generated.

11. In the **Messages** window, the run details are displayed along with the log file location.

WVH - HyperWorks Verification and Validation Harness (v2017)	
Edit Help	
sign CAD FE Model Solution Result Manufacturing solution	
esult comparison HV versions Result comparison HG versions Compare HG Versions - Template-Session	
Current version: 2017 Reference version: 34.330	HTML Report
Input File C:/Altair/2017.0.0.34/demos/hvvh/Result/Campare HG Versions - Template -Session/hg.mvw	2
Output directory: C:/WVVH/DutDir	2
	Apply
Plot only failed Visible Only	
Plot Name(s)	
Internal Energy Kinetic Energy X-Momentum	ĺ
2 Al	Apply
Compare result :	
Current file Reference file /H/OutDir/Result-CompareHGVersions_Template_Session/Current_Kinetic (H/OutDir/Result-CompareHGVersions_Template_Session/Reference_Kine /M/OutDir/Result-CompareHGVersions_Template_Session/Current_X-Moni+/OutDir/Result-CompareHGVersions_Template_Session/Reference_X-M Html Report	Report C
Messages 🖌	
ding results completed. ise refer logfile for status : C:/HVVH/OutDir/Result-CompareHGVersions_Template_Session/logfile_HGcompareTemplateSession.txt k Completed.	



12. Click *HTML Report* to open the report. Comparisons of different type, request, and components (TRC) are available.

HyperWorks Verificat	tion and Validation Harness	
Result - Compare HG	Versions - Template-Session	
Current Version : 2017	7 Reference Version : 14.130	
Current file	Reference file	Report
C /HVVH OutDir Result-CompareHOVersions_Template_Session Current_Kinetic Energy	C HVVH OutDir Result-CompareHGVersions_Template_Session Reference_Kinetic Energy	No deff
C:/HVVH OutDir Result-CompareHGVersions_Template_Session/Current_X-Momentum	C/HVVH OutDir Result-CompareHGVersions_Template_Session Reference_X-Momentum	No diff
C: HVVH OutDir Result-CompareHGVersions_Template_Session Current_Internal Energy	C:HVVH OutDir Result-CompareHOVersions_Template_Session Reference_Internal Energy	No diff

As the results match, the plots coincide and a difference curve will be a straight line along the X-axis, or points very close to it.

Step 4: Altair HyperView Versions - Template-Session

Here, results are compared for different solver results across two Altair HyperView versions using template and session files.

- 1. From the **Result** tab, select the *HV Versions Template-Session* tab.
- 2. For Current version, select 2017.3.
- 3. For Reference version, select 2017.
- 4. For **Input File**, click the open file icon to load the hv.mvw file, located in:

..\tutorials\hvvh\Result\HVVersion-Template-Session

- 5. For the *Output directory* field, use the open file icon to select an output directory.
- 6. Click Apply.

The results available (subcase, simulation, and result type) in the result file are loaded in their respective windows.

Subcase		Simulation		Result type		
Loadcase 1	~ ~	Time = 0.0000e+000 Time = 1.0006e-001 Time = 2.0018e-001 Time = 3.0012e-001 Time = 4.0012e-001	^	Displacement Contact Forces Velocity Plastic Strain Von Mises	< >	

7. Select **All** under each window and click **Apply**.

Results comparison of the current results and reference results are generated.

8. In case the difference is greater than the tolerance, **Fail** is indicated; otherwise, they are shown to **Pass**.

I/OutDir/Result-HVversions Template Session/Current BOXBEAM Contact/Out	Dis/Decide URI-sections, Templete, Consider (Deference, DOVDCALL Cont	1000 CO 000 CO
	toir/Result-Hyversions_Template_Session/Reference_BUXBEAM_Cont	IC Pass
VH/OutDir/Result-HVversions_Template_Session/Current_BOXBEAM_Velov/H/	OutDir/Result-HVversions_Template_Session/Reference_BOXBEAM_V	Pass
vH/OutDir/Result-HVversions_Template_Session/Current_BOX8EAM_VonMH/C	OutDir/Result-HVversions_Template_Session/Reference_BOXBEAM_Vo	nf Pass

9. In the **Messages** window, the run details are displayed along with the log file location.

🗹 Messages 🥒	
Loading results completed.	^
Please refer logfile for status : C:/HVVH/OutDir/Result-HVversions_Template_Session/logfile_CompareResults.txt	_

10. Click **HTML Report** to open the report. Across two Altair HyperView versions, the solver results are compared. Comparisons of different data types are available. For example,



for a vector (displacement) all components (magnitude, X-displacement, Ydisplacement, and Z-displacement) are compared for the entire model and the results are shown.

HyperWorks Verification and Validation Harness Result - Comparison HV Template-Session Report Current file Reference file

Current file	Reference file	Report
C:/HVVH/OutDir/Result-HVversions_Template_Session/Current_BOXBEAM_ContactForces_1	C:/HVVH/OutDir/Result-HVversions_Template_Session/Reference_BOXBEAM_ContactForces_1	Pass
C:/HVVH/OutDir/Result-HVversions_Template_Session/Current_BOXBEAM_Velocity_1	C:/HVVH/OutDir/Result-HVversions_Template_Session/Reference_BOXBEAM_Velocity_1	Pass
C:/HVVH/OutDir/Result-HVversions_Template_Session/Current_BOXBEAM_VonMises_1	C:/HVVH/OutDir/Result-HVversions_Template_Session/Reference_BOXBEAM_VonMises_1	Pass
C:/HVVH/OutDir/Result-HVversions_Template_Session/Current_BOXBEAM_PlasticStrain_1	C:/HVVH/OutDir/Result-HVversions_Template_Session/Reference_BOXBEAM_PlasticStrain_1	Pass
C:/HVVH/OutDir/Result-HVversions_Template_Session/Current_BOXBEAM_Displacement_1	C:/HVVH/OutDir/Result-HVversions_Template_Session/Reference_BOXBEAM_Displacement_1	Pass

- 11. Click **Pass/Fail** in the HTML report to open a detailed comparison report.
- 12. In the report above, the left window displays the diff contour (Current-Reference) and right window displays the diff plot in Altair HyperGraph (see image below).
- 13. Click the left window to open the diff-values for H3D in HyperView Player.
- 14. Click the right window to maximize/minimize the plot.
- 15. If there is any case of difference greater than tolerance, it is indicated as a **Fail**; otherwise, **Pass**.



