

REPORTER 21.1

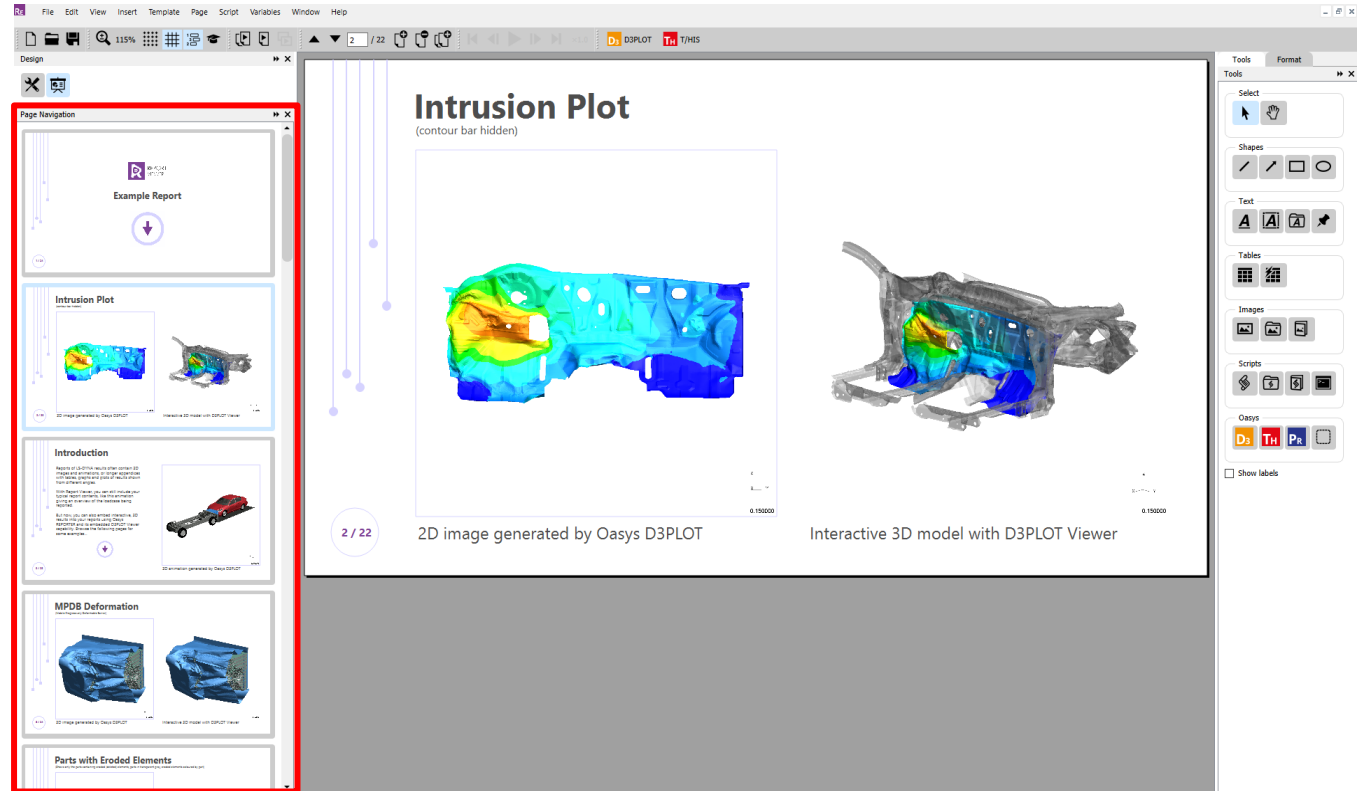
REPORTER 21.1 – Contents

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Page Navigation

Page Navigation

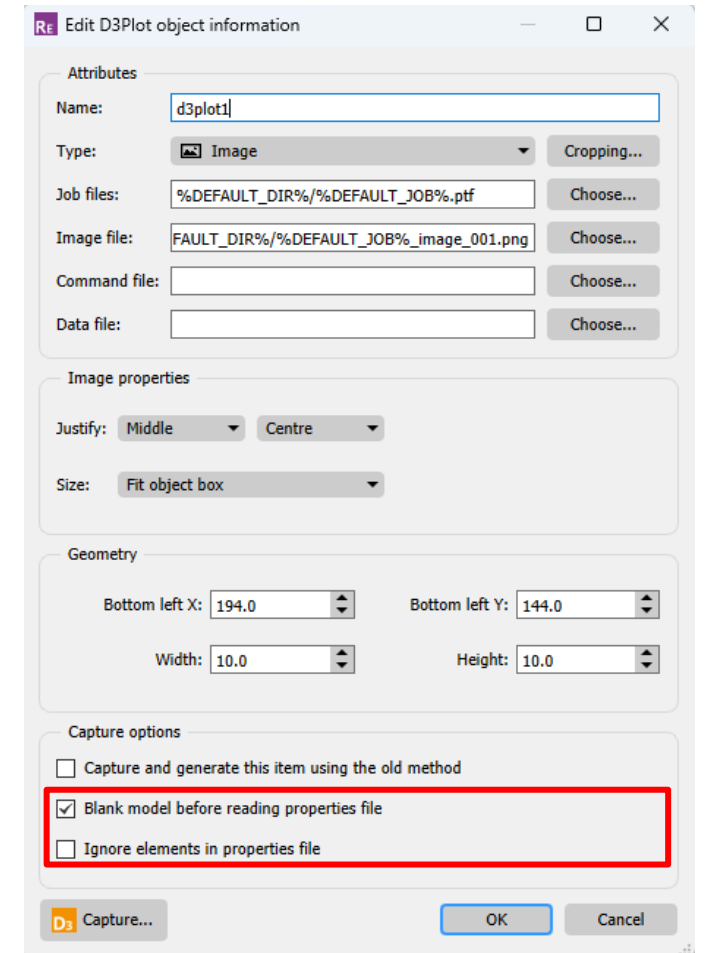
- REPORTER now has a Page Navigation bar to help you easily navigate your report.
- This bar also allows you to carry out the following actions by interacting with the page thumbnails:
 - Drag-and-drop to re-order pages.
 - Right click to insert page after/before, delete a page, and duplicate a page.



Blanking in D3PLOT Items

Blanking in D3PLOT Items

- D3PLOT items in REPORTER now have two extra options to help provide consistency in captures:
 1. Blank the D3PLOT model before reading the properties file.
 2. Ignore elements when reading the properties file.
- These options are particularly useful when you want consistent captures even if parts/elements are added or re-numbered in the model when you reload the capture or generate the item.
- These options will be saved to the report or template which will ensure consistent captures when it is shared with users that have different preferences set.



Blanking in D3PLOT Items

- The D3PLOT pre-blanking option will blank the whole model before the properties file is read, preventing any additional parts from showing up in the capture.

D3PLOT: 144



Original capture.

D3PLOT: 144



Capture **without** the pre-blanking option when the item is reloaded/generated with the model with additional car door parts.

D3PLOT: 144



Capture **with** the pre-blanking option when the item is reloaded/generated with the model with additional car door parts.

Python API

Python API

- The new Python API will allow you to do most things you can do from the JS API.
- Advantage: the Python scripts run outside the programs: from the same script it is possible to speak to PRIMER, D3PLOT, T/HIS and REPORTER, and to any other software that has a Python API. It also allows importing any Python module into the script.
- Install the Python modules:
 - <https://pypi.org/project/Oasys.PRIMER/>
 - <https://pypi.org/project/Oasys.D3PLOT/>
 - <https://pypi.org/project/Oasys.THIS/>
 - <https://pypi.org/project/Oasys.REPORTER/>
 - <https://pypi.org/project/Oasys.gRPC/>
- There is a comprehensive [Python API documentation](#) to help you start scripting.



Workflows

[Workflows User Data](#)

[Automotive Assessments](#)

[Energy Check](#)

[Entities of Interest](#)

[Seismic Workflows](#)

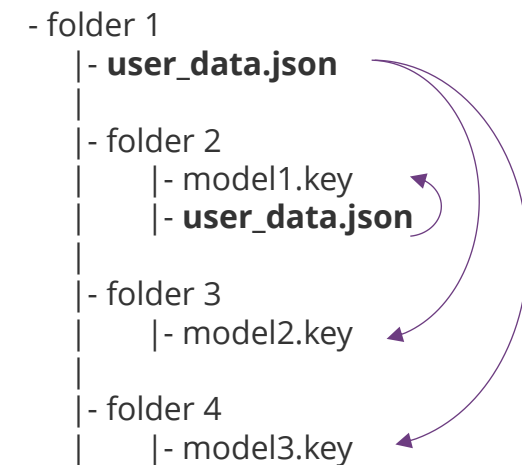
[Defined and Undefined Workflows](#)

[Virtual Testing](#)

Workflows User Data

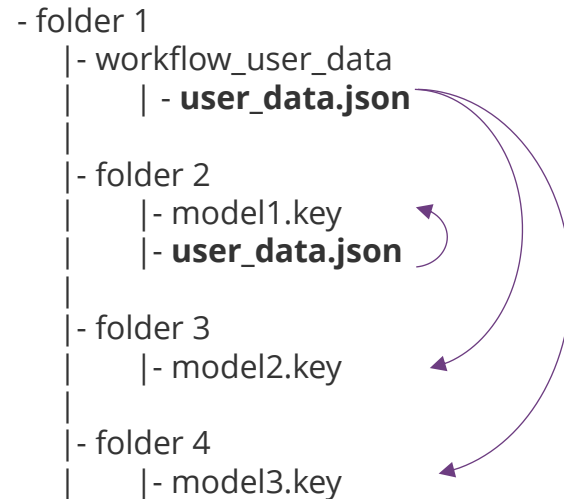
- We have made it easier for you to save Workflows user data to be re-used by multiple models and LS-DYNA runs.
- In Oasys 20, the JSON user data file written by a workflow tool had to be saved in the same folder as the model/results. This meant that if you had multiple variations of a model, you had to have copies of the same JSON file in each model/results folder, which was time consuming if edits needed to be made to the data.
- In Oasys 21, JSON user data can now also be saved in the parent folders of models, meaning the same data can be used for multiple models. The model folder is searched first, and then parent and grandparent folders are searched for valid JSON files. Preference **oasys*workflow_max_upward_folder_search_depth** can be set to control the number of parent folders that are searched. The default is 4.

In this folder structure [right], the user_data.json file in **folder 1** will be used for the models in folder 3 and folder 4, and the user_data.json file in **folder 2** will be used for the model in folder 2:



Workflows User Data

- The scan will also look for user data in a folder named '**workflow_user_data**' in the model folder and its parent folders.
- For example, in the folder structure below, the user_data.json file in **folder 1/workflow_user_data** will be used for the models in folder 3 and folder 4, and the user_data.json file in **folder 2** will be used for the model in folder 2:



- The name of the folder to search can be changed by setting the preference **oasys*workflow_user_data_directory_name**

Automotive Assessments

In Oasys 21 the assessment values and scores are now presented in a table making it easier to view the results

The screenshot displays the 'Automotive Workflow POST' software interface. The main window is titled 'Crash Test: ODB' and contains several configuration panels:

- Regulation:** EuroNCAP, Rating Version: 2017, Unit Systems: M1 - U2 (mm, t, s)
- Occupants:** Driver, Front-passenger
- Body Parts:** HEAD, NECK, CHEST, FEMUR, KNEE
- Occupant Assessment Types:** LEFT_KNEE_COMPRESSION, RIGHT_KNEE_COMPRESSION
- Structures:** A-Pillar, Accelerator Pedal, Brake Pedal, Clutch Pedal, Steering Column
- Structure Assessment Types:** (Empty)

Below the configuration panels is an 'Options' section with radio buttons for graphing preferences:

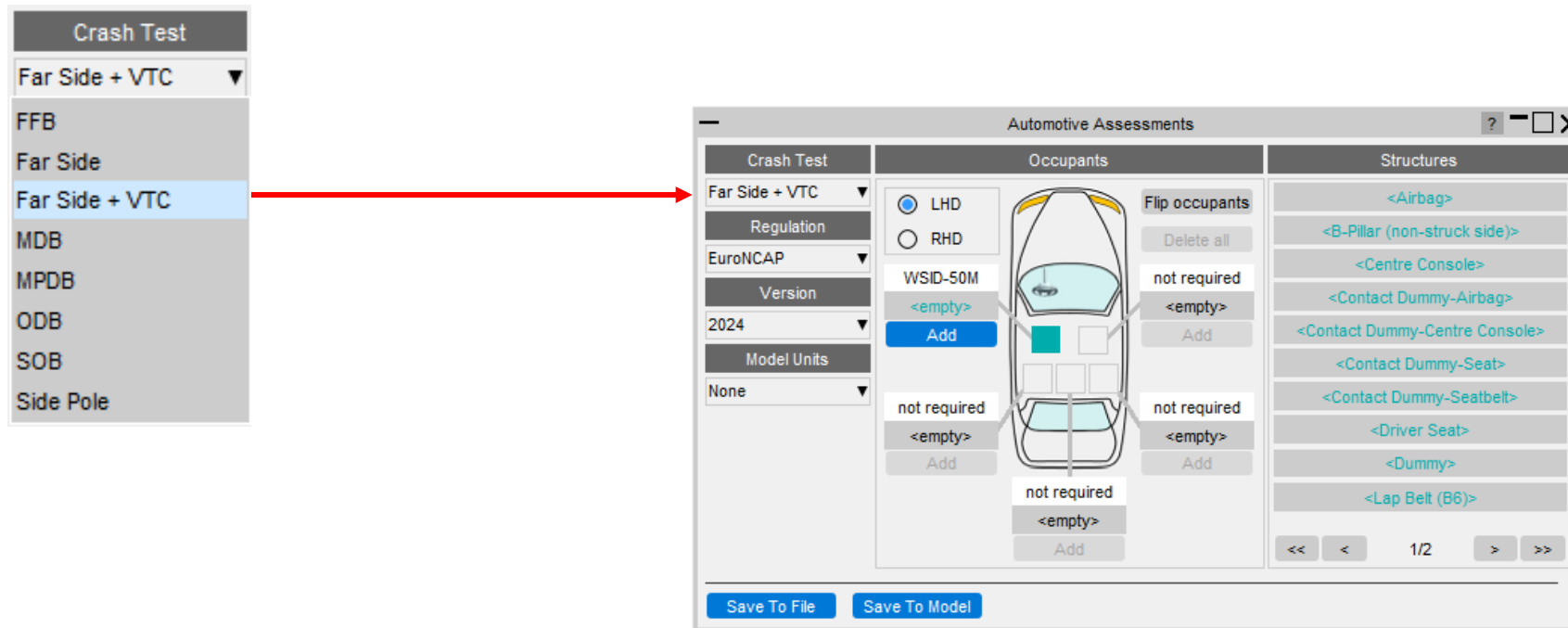
- Graphs on same page
- Graphs on separate pages
- Overwrite existing graphs
- Append to existing graphs

Buttons for 'Plot' and 'Import ISO-MME...' are visible. At the bottom, an 'Output' table displays the results of the assessments:

Tag	Location	Assessment Type	Parameter	Value	Duration	Score	Curve
M1	Front passenger	LEFT_KNEE_COMPRESSION	Max	6.50343 mm		3.776	->
M1	Front passenger	RIGHT_KNEE_COMPRESSION	Max	2.58155 mm		4.000	->

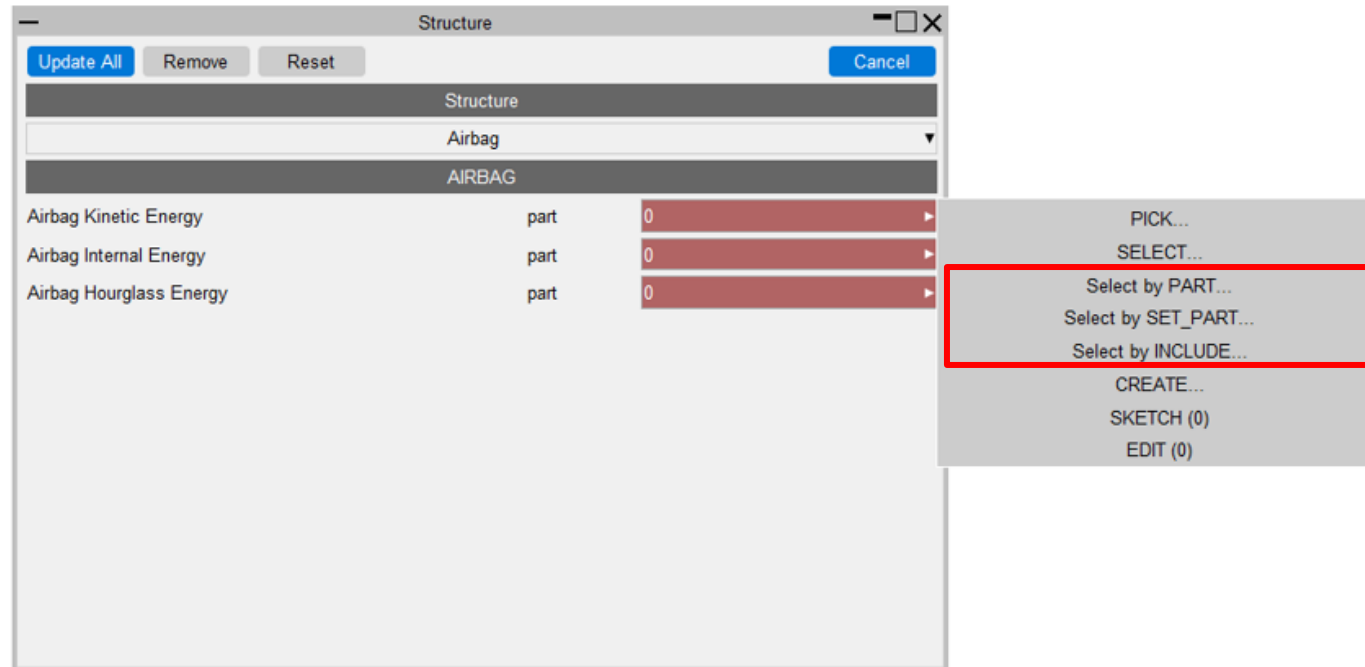
Far Side + VTC crash test

- New **Far Side + VTC** crash test has been added in the Automotive Assessments workflow to support [Virtual Testing](#).
- Includes support for all 115 channels (Occupants + Structures) required for the [Euro NCAP Virtual Far Side Simulation & Assessment Protocol](#)



Improved entity selection for multiple parts

- To facilitate multiple PARTs selection, new options have been added in the Automotive Assessments entity selection popup:
 1. Select by PART
 2. Select by SET_PART
 3. Select by INCLUDE
- In the Far Side + VTC crash test, these options are useful for selecting multiple PARTs for structural channels like Kinetic Energy, Internal Energy, and Hourglass Energy, for Airbag, Centre Console, Driver Seat and Dummy.



Updated support for different occupant versions

- We now support the DYNAmore/PDB WorldSID 50M occupant in versions 4.0, 6.0, 7.6 and 8.0 for left-hand and right-hand drive.
- We have reviewed and corrected various entity IDs and history titles in occupant JSON files that are supported in Automotive Assessments workflow. The list of occupant JSON files and corresponding manual referenced for checking are listed in this [table](#).

Euro NCAP Virtual Far Side Validation Criterion 2

- Automotive Assessments can be used to check Validation Criterion 2 manually, according to Section 6.3 of the [Euro NCAP Virtual Far Side Simulation & Assessment Protocol](#).
- Validation Criterion 2 check can also be automated using [Euro NCAP Virtual Far Side 2024 VC2 \(Assessment Criteria\) REPORTER](#) template .

The screenshot displays the 'Automotive Workflow POST' software interface for a 'Crash Test: Far Side + VTC'. The interface is divided into several sections:

- Regulation:** EuroNCAP, Rating Version: 2024, Unit Systems: M1 - U2 (mm, t, s), T1 - U1 (m, kg, s).
- Occupants:** (M1) Driver, (T1) Driver.
- Body Parts:** HEAD, NECK, SHOULDER, CHEST, ABDOMEN.
- Occupant Assessment Types:** HEAD_HIC, HEAD_THREE_MS_EXCEEDENCE, DRIVER_HEAD_EXCURSION (highlighted).
- Structures:** (M1) B-Pillar (non-struck side), (M1) Centre Console, (M1) Contact Dummy-Centre Console, (M1) Contact Dummy-Seat, (M1) Contact Dummy-Seatbelt.
- Structure Assessment Types:** (Empty list).
- Options:** Graphs on same page (selected), Overwrite existing graphs (selected), Graphs on separate pages, Append to existing graphs.
- Plot:** (Button).
- Test Model:** Import a test model: Import ISO-MME/CSV..., Select a test model: T1, Distance between head CoG and Orange line (mm): 770.34, Distance between head CoG and Red line (mm): 895.34, Countermeasure: (Empty).
- Output Table:**

Tag	Location	Assessment Type	Parameter	Value	rAC Sim	rAC Test	dAC	Duration	Score	Curve
M1	Driver	DRIVER_HEAD_EXCURSION	Max	639.970 mm	0.811151	1.03511	0.223956		YELLOW	->
T1	Driver	DRIVER_HEAD_EXCURSION	Max	794.576 mm	N/A	1.03511	N/A		RED	->

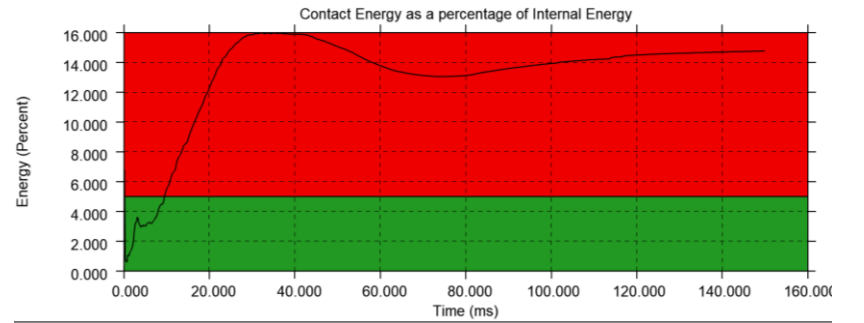
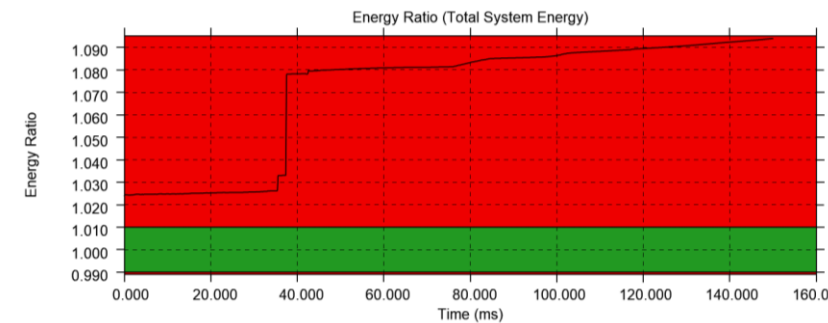
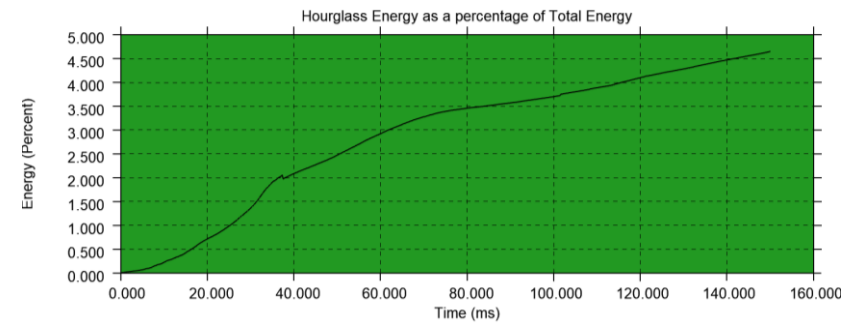
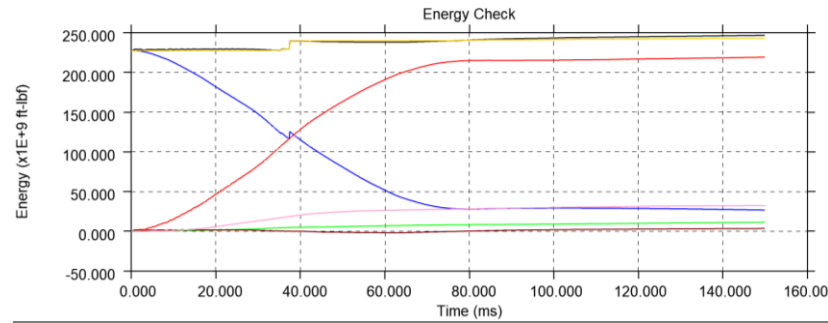
New Protocols

- In Oasys 21.1, the following new protocols have been added to the Automotive Assessments workflow. Each of these represents a different loadcase required as part of the C-NCAP Management Regulation (2024 Edition).

Crash Test	Regulation	Version	Description
Far Side + VTC	C-NCAP	2024 (SID2-SBLD)	<ul style="list-style-type: none"> Front passenger side impact, assessing driver (Far Side Occupant) injury. Injury scoring according to Chapter III section 1.2.1.5.3 of C-NCAP Management Regulation (2024 Edition) and Virtual Testing according to Appendix H.1.2.1.3.
Far Side + VTC	C-NCAP	2024 (WSID)	
Far Side Pole	C-NCAP	2024 (ES-2re+WSID)	<ul style="list-style-type: none"> Front passenger side impact, assessing driver (Far Side Occupant) injury according to Appendix H.1.2.2.2. Injury scoring based on Chapter III section 1.2.1.5.4 of C-NCAP Management Regulation (2024 Edition).
Far Side Pole	C-NCAP	2024 (WSID+WSID)	
Side Pole	C-NCAP	2024 (WSID+ES-2re)	<ul style="list-style-type: none"> Driver side impact assessing driver injury according to Appendix D. Injury scoring based on Chapter III section 1.2.1.4 of C-NCAP Management Regulation (2024 Edition).
Side Pole	C-NCAP	2024 (WSID+WSID)	

Energy Check

- Previously, the Energy Check tool simply plotted total, kinetic, internal and hourglass energy for your model. In Oasys 21, the tool now plots more energies, produces visual checks, and more.



Energy Check

Hourglass Energy is within your tolerance of Total Energy ✓

Absolute Total Contact Energy has hit a maximum of 15.99% of Internal Energy. This exceeds your tolerance of 5% ✗

Energy Ratio (Total System Energy) has increased to 1.09. This exceeds your tolerance of 1% ✗

Model Units U6 (m, t, s) Hourglass Energy Warning 5 %

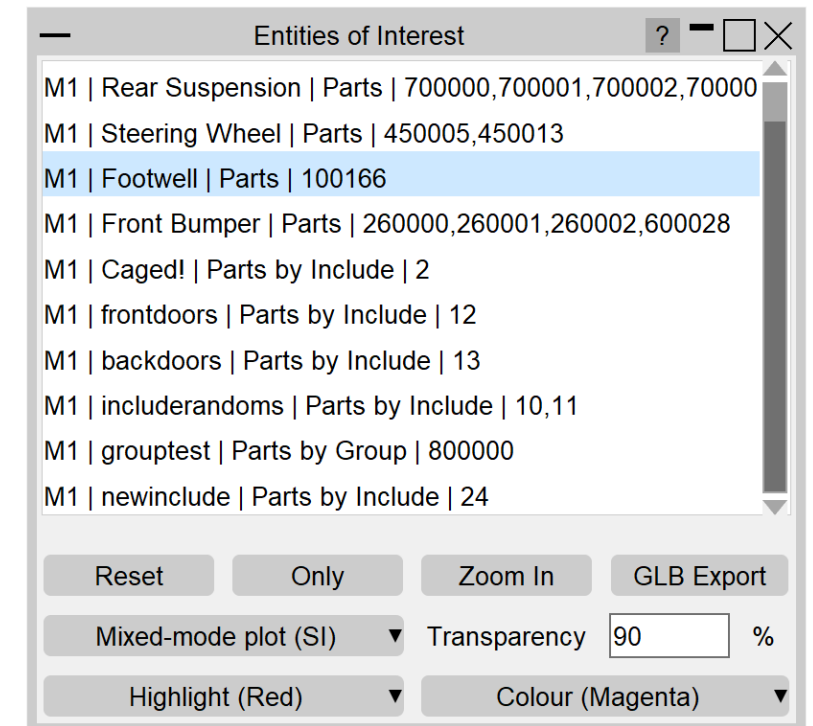
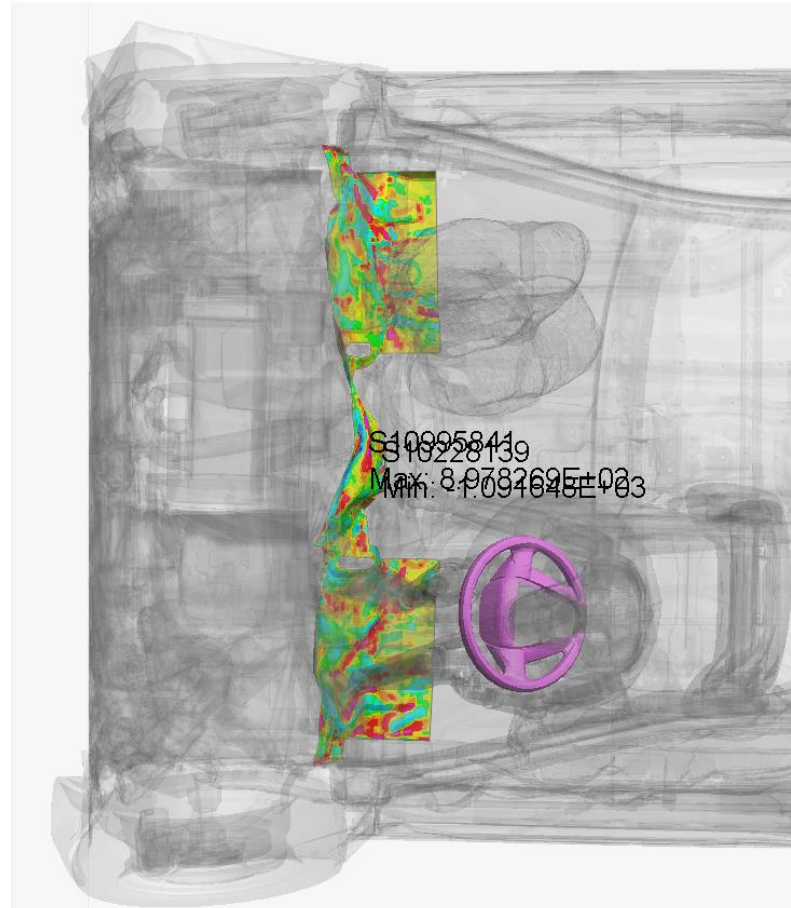
Display Time Units Milliseconds [ms] Contact Energy Warning 5 %

Display Energy Units Foot-Pounds [ft-lbf] Energy Ratio Tolerance 1 % [Recalculate](#)

Plot Parts with Greatest Total Energy (Max 6) 6 [Plot Parts](#)

Entities of Interest

- Previously, the Entities of Interest tool was able to Only, Highlight and complete GLB Exports for selected entities grouped by Parts or Part Sets. In Oasys 21, you can now Zoom In, Colour By and produce Mixed-Mode Plots grouped by Parts, Parts by Set, Parts by Include and Parts by Group.



The image shown is an SI Mixed-Mode Plot on the Footwell and Coloured by Magenta on the Steering Wheel

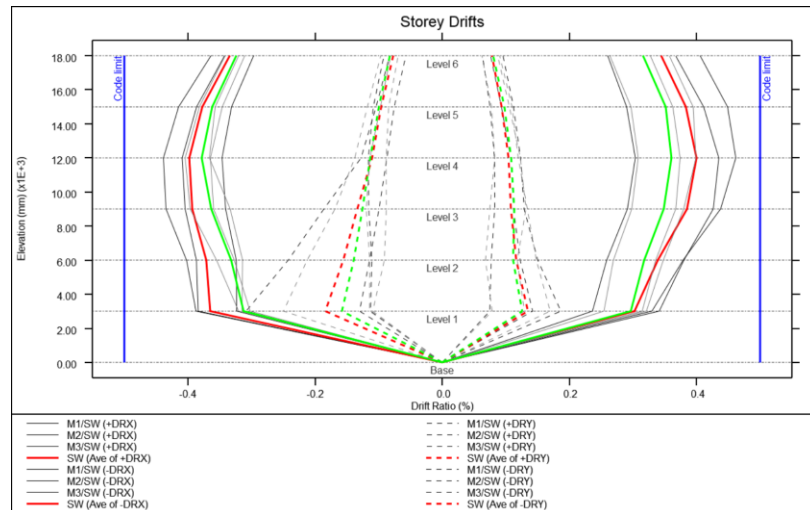
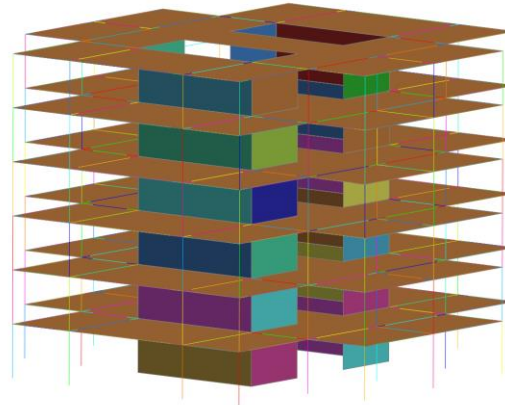
Seismic Workflows

Oasys 21 features new tools to power two of the most common seismic analysis workflows:

Storey Drift

In PRIMER, define drift nodes at different locations, for each storey.

In T/HIS, storey drifts are plotted for each location defined.

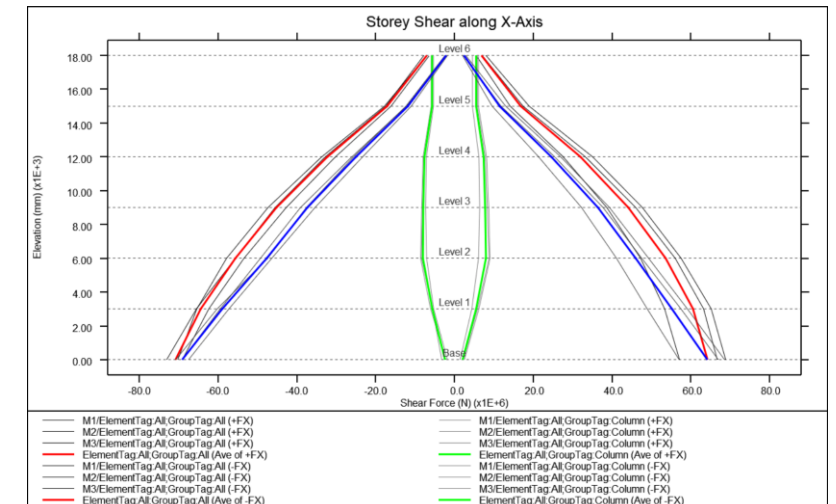


The Workflows can process a single model or a sweep of LS-DYNA runs for a set of ground motions.

Storey Force

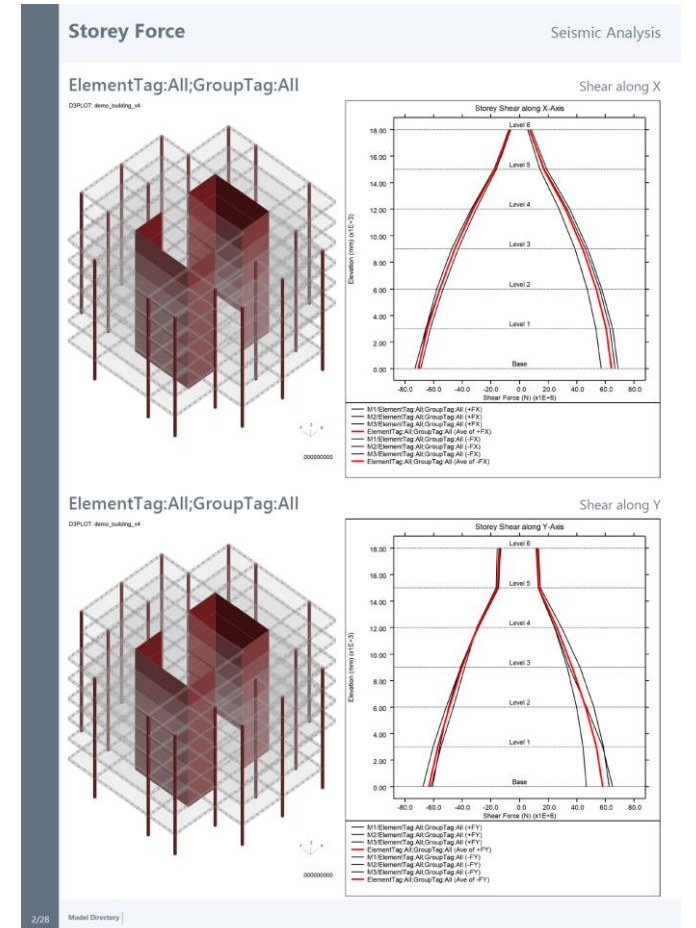
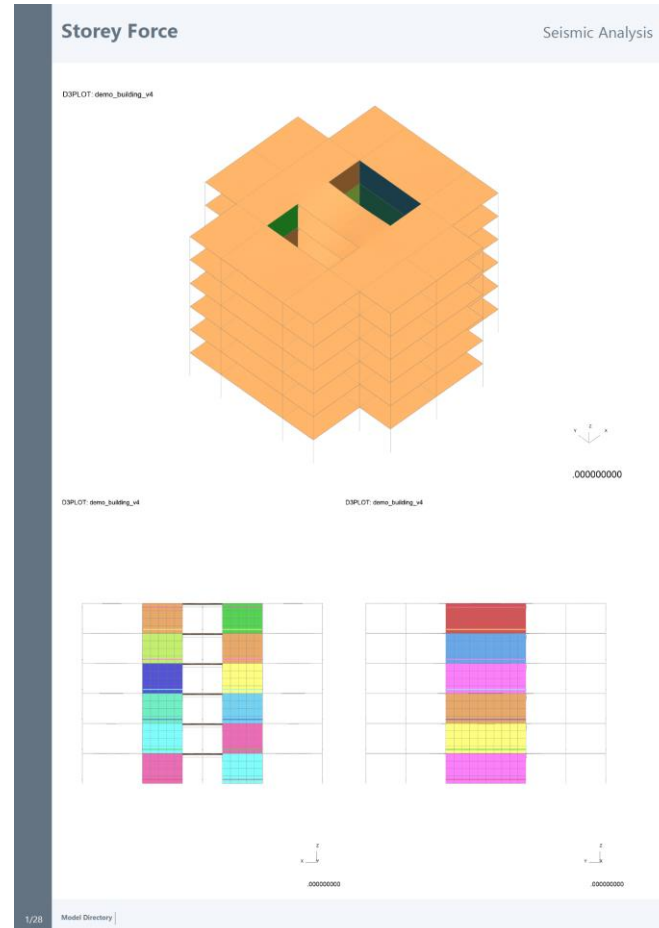
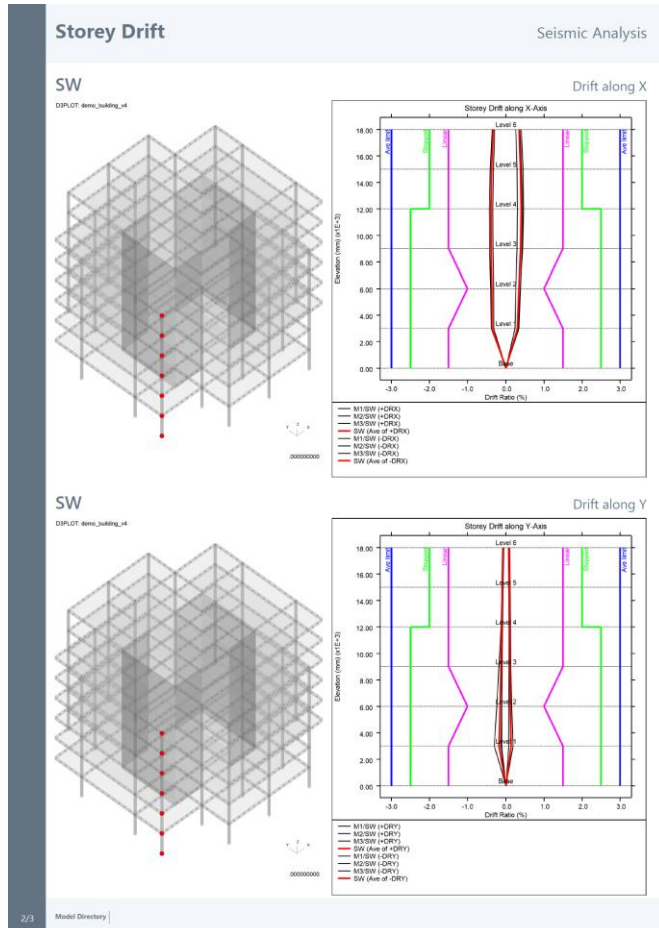
In PRIMER, define DATABASE_CROSS_SECTIONS for selected structural members grouped into SET_PARTs, for each storey.

In T/HIS, storey section forces are extracted for the cross-sections defined.



Seismic Workflows

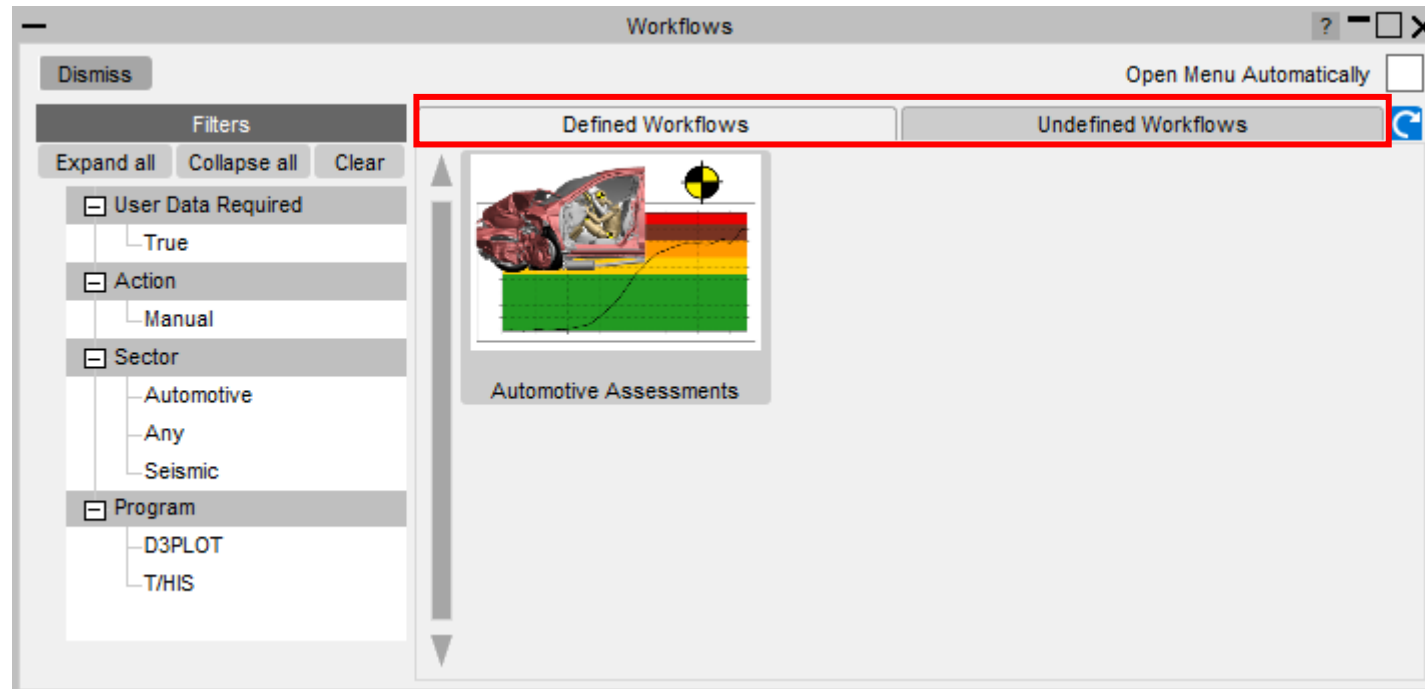
You can also generate automated reports with the REPORTER templates provided:



Defined and Undefined Workflows


The Workflows menu has been split into two tabs:

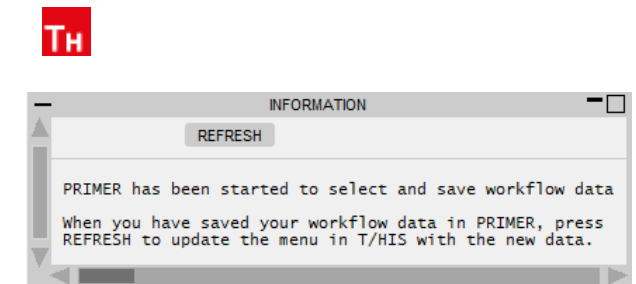
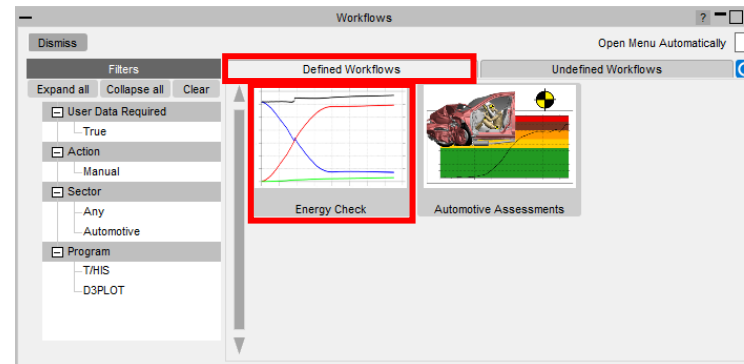
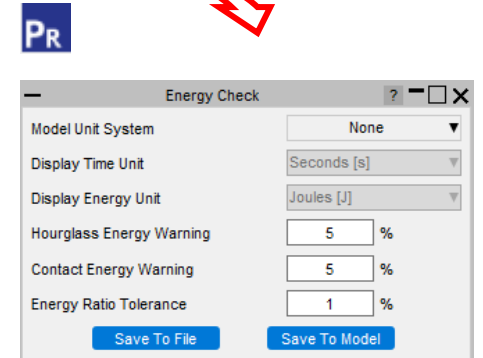
- **Defined Workflows** – shows workflows that can be run in T/HIS and have the required data
- **Undefined Workflows** – shows workflows that could be run in T/HIS, but don't have the required data



Defined and Undefined Workflows

Selecting a workflow in the **Undefined Workflows** tab will open the model in PRIMER and start the workflow to select the required data.

In T/HIS, a window will open telling you to press **Refresh**  when the data has been saved. This will update the Workflows menu, moving the workflow to the **Defined Workflows** tab so it can be run in T/HIS.



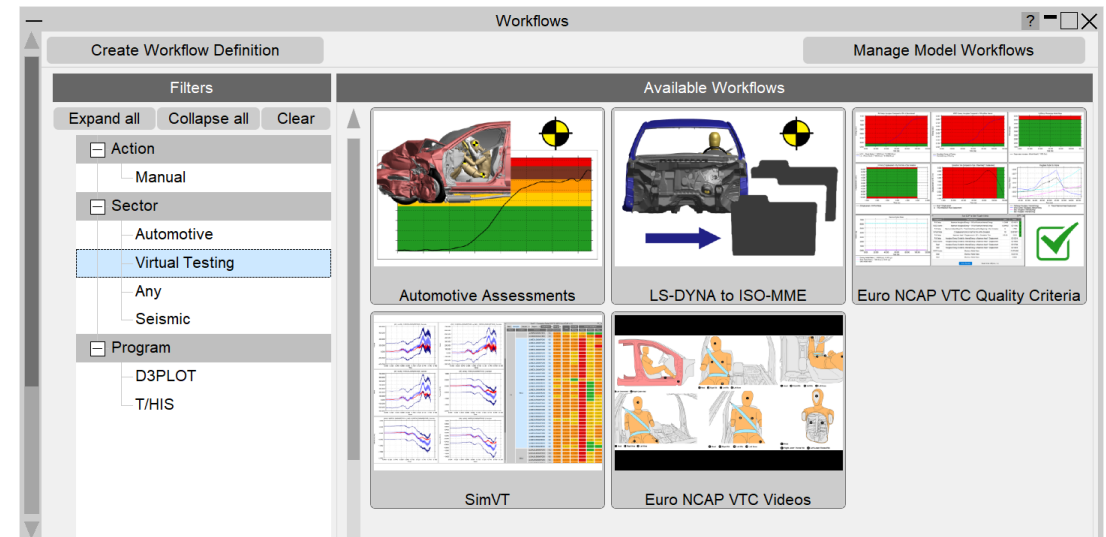
Virtual Testing

Virtual Testing

At Oasys Ltd., we are working on software features to support the upcoming Virtual Testing Crashworthiness protocols. The first protocols to be introduced are the [Euro NCAP Virtual Far Side Simulation & Assessment Protocol](#), and [C-NCAP Management Regulation \(2024 Edition\)](#), with others to follow soon.

Oasys 21 contains a set of integrated and complementary Workflow tools to power your Virtual Testing CAE workflows:

- [Automotive Assessments](#) (now supports the Euro NCAP and C-NCAP virtual testing protocols)
- [LS-DYNA to ISO-MME](#)
- [SimVT](#)
- [VTC Quality Criteria](#)
- [VTC Videos](#)



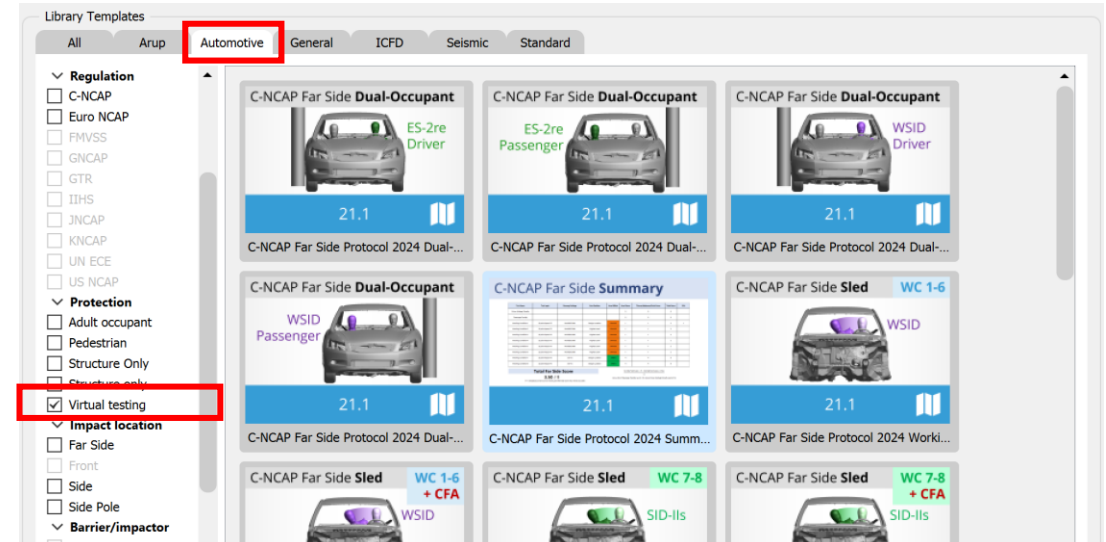
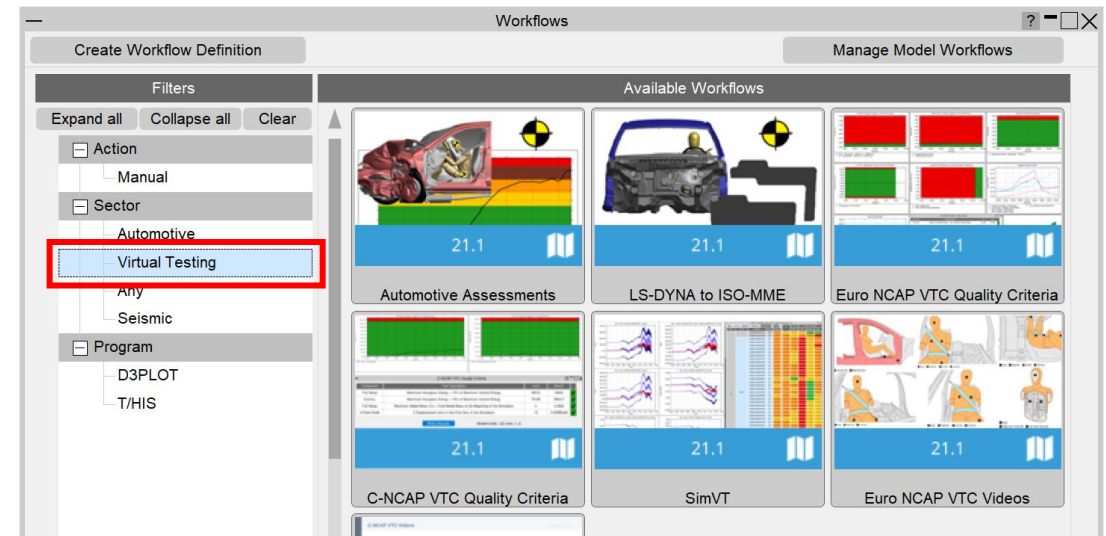
Virtual Testing

Virtual Testing presents several challenges for CAE workflows:

- Q1. Good correlation is moving from beneficial to mandatory. As CAE teams, we can no longer rely on conservative assumptions. How do we ensure that physical tests perform as predicted?**
- A1. [SimVT](#) is a powerful new tool for correlation analysis, providing flexibility, and the ability to interrogate correlation results in detail, to help you understand your models' accuracy, robustness, and sensitivity.
- Q2. How do we ensure that the format and quality of information is sufficient when submitting results to Euro NCAP? How to avoid rework and resubmission?**
- A2. Use the [VTC Quality Criteria](#) tools to ensure your models meet the required standard. Use the [VTC Videos](#) tools to provide the video evidence required. Use the [LS-DYNA to ISO-MME](#) tool to export your results data in the required format.
- Q3. CAE teams will need to work more with physical test data, and safety teams will need to work more with simulation. We will also be dealing with more metrics than ever before. How do we improve collaboration and processing?**
- A3. The [LS-DYNA to ISO-MME](#) tool provides seamless transition between simulation and test formats. [SimVT](#) supports test data stored in ISO-MME format as well as a configurable CSV format.
- Q4. How can we manage the large volume of data and processing required for Virtual Testing?**
- A.4 [SimVT](#) helps you summarise the correlation analysis results for all the occupant and structures data channels, as well as providing the ability to sift through the data in more detail. Other tools include REPORTER templates to automate the processing of data. Results tables, graphs and scores can be exported in various formats to link with your team's data management tools and processes.

Virtual Testing

- All the new Virtual Testing tools can be accessed from the **Tools** → **Workflows** menus in PRIMER, D3PLOT and T/HIS by filtering for **Virtual Testing**.
- REPORTER templates can be found at **File** → **Open Library Template...** by selecting the **Automotive** tab and filtering for **Virtual testing**.



LS-DYNA to ISO-MME

- “LS-DYNA to ISO-MME” is a new Workflow tool to convert LS-DYNA results into the ISO-MME format specified by the Euro NCAP Virtual Far Side protocol. It can also be used to export the channels required by the C-NCAP Far Side Occupant Protection Protocol.
- [Automotive Assessments](#) workflow user data removes the need to manually map LS-DYNA entities to ISO-MME channel codes.
 1. In **PRIMER**, populate all the fields required by the Euro NCAP or C-NCAP protocol. Contact data and Distance between head CoG and excursion lines can be populated automatically. When you save these, you can reuse the settings for subsequent LS-DYNA runs.
 2. In **T/HIS**, perform the export to ISO-MME format. Solver and simulation information can also be populated automatically.

The screenshot displays the 'LS-DYNA to ISO-MME' software interface, which is divided into several sections for data entry:

- Automotive Assessments User data:** Includes fields for 'Automotive Assessments Crash Test' (Far Side + VTC), 'Automotive Assessments Regulation' (EuroNCAP), and 'Automotive Assessments Version' (2024).
- User data:** Includes fields for 'Test name' (Far side), 'Laboratory name' (Oasys LS-DYNA Environment), 'Customer name' (Euro NCAP), 'Customer test ref number' (001), 'Customer project ref number' (1234), 'Virtual testing ref ID' (FS_Pole_75_x-ref_z-ref_50M_Sim_1), 'Test date' (30/01/2024), 'ISO-MME format' (1.6), 'Title' (Euro NCAP 2024), 'Regulation' (Far side VTC), 'Type of data source' (Simulation), 'Dummy Simulation Model Specification' (WSID 50M v7.6), 'Reference to Dummy Model Qualification Documentation' (WSID 50M v7.6.pdf), and 'Required output channels CSV' (NCAP_VTC_Channels\EuroNCAP_VTC_LHD.csv).
- Contact data:** Includes fields for 'Contact Type between dummy and seat' (S2S SOFT0 FS=0.2) and 'Contact Type between dummy and seatbelt' (S2S SOFT1 FS=0.2), with a 'Get contact information' button.
- Vehicle data:** Includes fields for 'Name' (TUG), 'Reference number' (1234), 'Longitudinal velocity' (20), 'Lateral velocity' (12), and 'Mass' (1000).
- Distance between head CoG and excursion lines:** Includes fields for 'Distance between head CoG and green line (in metres)' (0.520), 'Distance between head CoG and yellow line (in metres)' (0.645), 'Distance between head CoG and orange line (in metres)' (0.770), and 'Distance between head CoG and red line (in metres)' (0.8), with a 'Calculate distance' button.

A red warning box at the bottom right states: 'Textbox fields with this colour are required for successful LS-DYNA to ISO-MME conversion. Note that all fields are required to conform to the Euro NCAP VTC protocol.'

LS-DYNA to ISO-MME

- The LS-DYNA to ISO-MME Workflow can be automated using the REPORTER template provided. The report generated contains a summary of the ISO-MME file information and individual channel graphs, as well as highlighting any missing data for correction.

LS-DYNA to ISO-MME Euro NCAP Virtual Far Side Simulation & Assessment Protocol v1.0 (2024)

User Data	
Description	Value
Test Name	Far side
Laboratory Name	Oasys LS-DYNA Environment
Customer Name	Euro NCAP
Customer Test Reference Number	001
Customer Project Reference Number	1234
Virtual Testing Reference ID	FS_Pole_75_x-ref_z-ref_S0M_Sim_1
Type of Test	SideImpact
ISO-MME Format Version	1.6
Subtype of Test	Far Side + VTC
Regulation	Far side VTC
Test Date	30/01/2024
Title	Euro NCAP 2024
Type of data source	Simulation
Dummy Simulation Model Specification	WSID S0M v7.6
Reference to Dummy Model Qualification Documentation	WSID S0M v7.6.pdf
Distance between head CoG and green line	0.520
Distance between head CoG and yellow line	0.645
Distance between head CoG and orange line	0.770
Distance between head CoG and red line	0.5

LS-DYNA to ISO-MME Euro NCAP Virtual Far Side Simulation & Assessment Protocol v1.0 (2024)

Solver Information	
Description	Value
Solver Name	LS-Dyna
Solver Version	ls-dyna_mpp_s_R11_2_2
Solver Precision	SP
Platform Name	Xeon64 System

Simulation Information	
Description	Value
Number of CPUs	32
Time step setting	6.7698e-8 s
Contact Type between dummy and seat	S2S SOFT1 nu=0.2
Contact Type between dummy and seatbelt	S2S SOFT1 nu=0.2
Number of contacts used in the overall simulation setup	39
Number of elements	1796163
Mass of total setup (used for quality checks)	343
Mass of dummy in kg	4
Mass of seat in kg	2
Mass of sled in kg	20
Mass of centre console in kg	2

Vehicle Data	
Description	Value
Name	TUG
Reference number	1234
Longitudinal velocity	20
Lateral velocity	12
Mass	1000

LS-DYNA to ISO-MME Euro NCAP Virtual Far Side Simulation & Assessment Protocol v1.0 (2024)

Channel 88 of 115

Missing user data for 11ARBG000WSFOX0

LS-DYNA to ISO-MME Euro NCAP Virtual Far Side Simulation & Assessment Protocol v1.0 (2024)

Channel 4 of 115

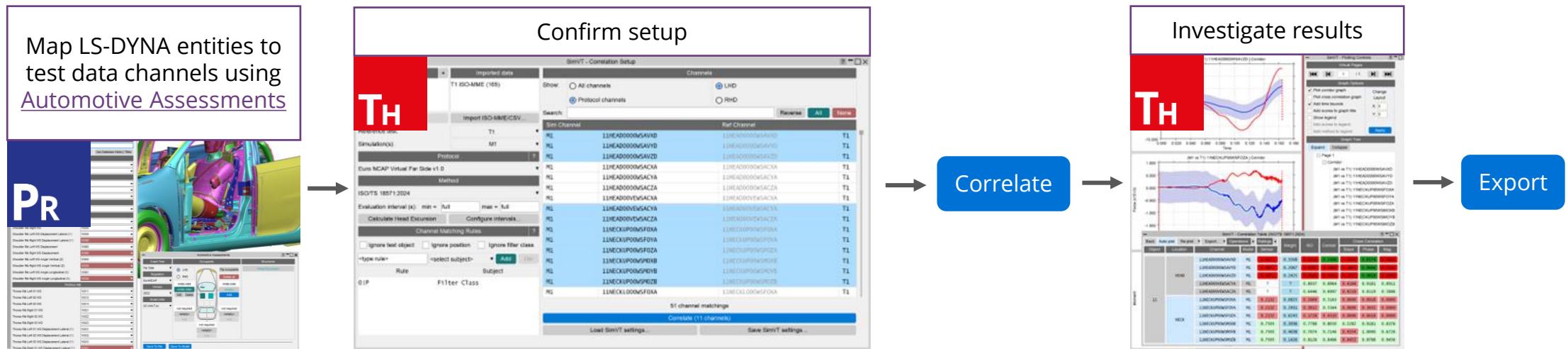
Dummy Front Left Head WS Angular Velocity Longitudinal (X) Unfiltered

Model | C:\Cases\Care_32799\post\reports\post_light_32799\03_FS_Pole_75_x-ref_z-ref_S0M_Sim_1.key
Required output channel CSV | C:\SOURCE2\workflow_wizard\workflow_definition_VT_dev\scripts\ldyna_to_iso_mme\EuroNCAP_VTC_Channels\EuroNCAP_VTC_LHD.csv
Output directory | C:\Cases\Care_32799\post\reports\post_light_32799\ldyna_to_iso_mme

Model | C:\Cases\Care_32799\post\reports\post_light_32799\03_FS_Pole_75_x-ref_z-ref_S0M_Sim_1.key
Required output channel CSV | C:\SOURCE2\workflow_wizard\workflow_definition_VT_dev\scripts\ldyna_to_iso_mme\EuroNCAP_VTC_Channels\EuroNCAP_VTC_LHD.csv
Output directory | C:\Cases\Care_32799\post\reports\post_light_32799\ldyna_to_iso_mme

SimVT

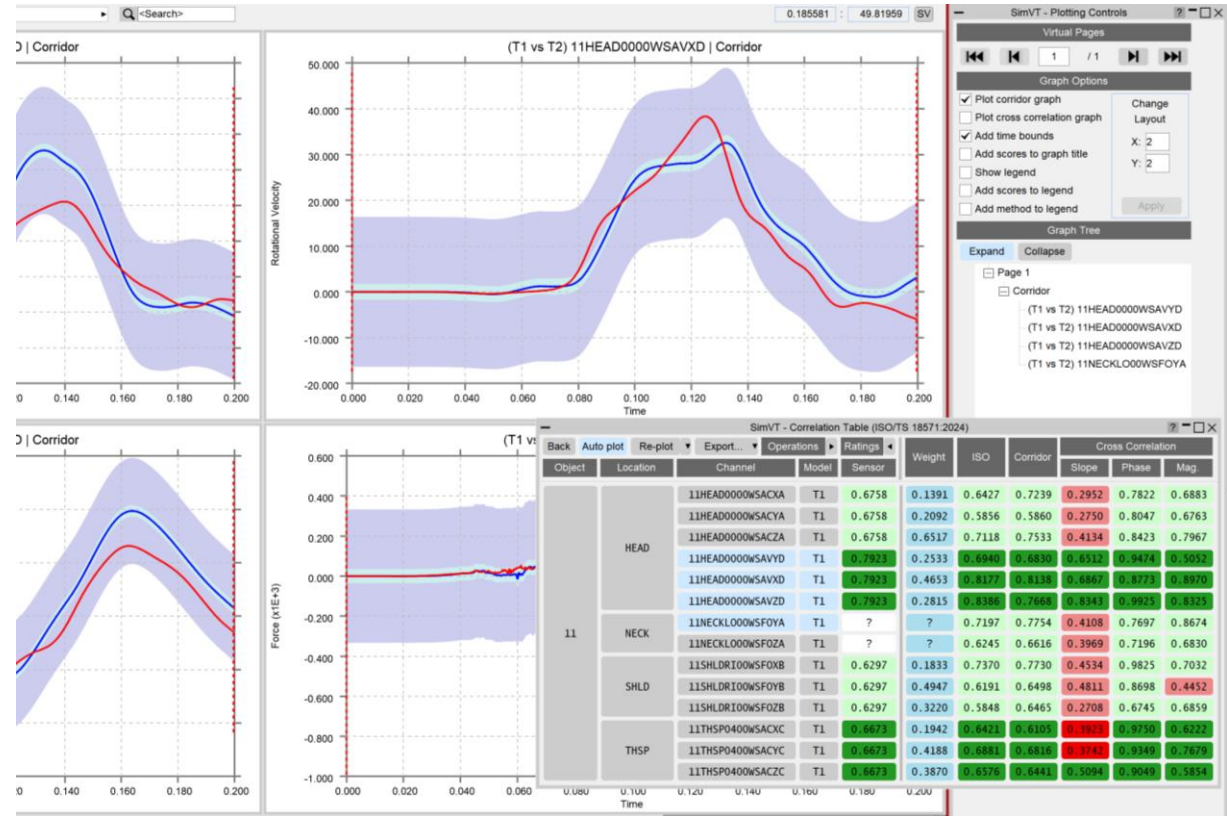
- SimVT is a powerful interactive tool for correlating simulation data vs test, or indeed any combination of: LS-DYNA models, ISO-MME data or CSV data.
- SimVT supports the Euro NCAP and C-NCAP Virtual Testing protocols and can be used to identify sensors that fail to pass Validation Criterion 1 or correlation fitting index requirements.



The SimVT Workflow

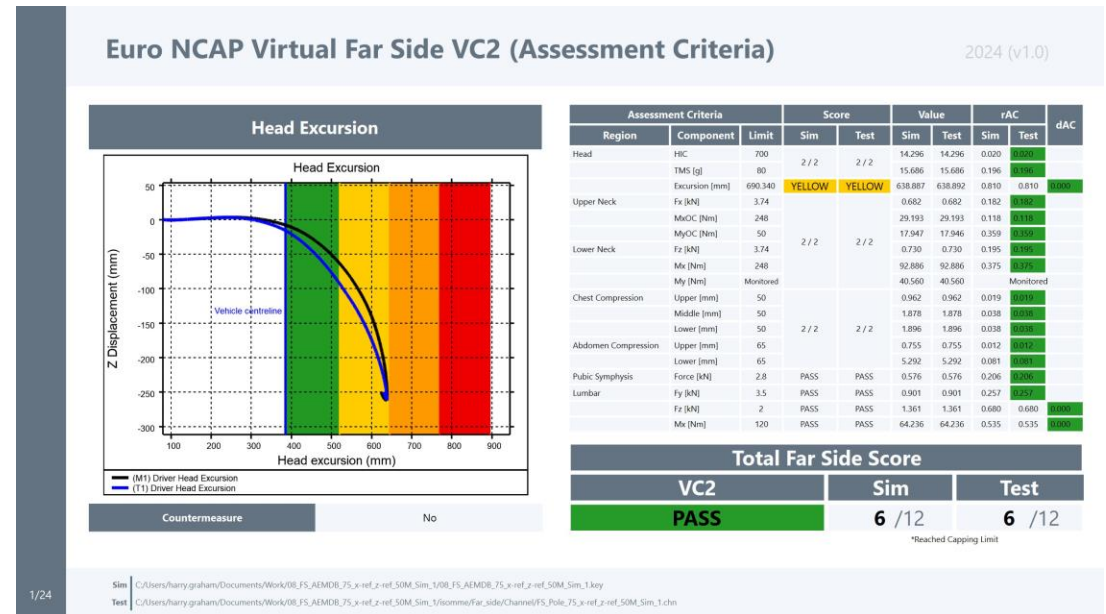
SimVT

- SimVT seamlessly aligns simulation curves to tests using ISO-MME Channel Codes.
- You can create custom rules for pairing approximate matches.
- Hundreds of correlations are achievable with a single click.
- Results are displayed in a table and can be exported to CSV.
- Graphs of all correlations can be easily plotted and navigated.
- Settings files can be saved to restore previous sessions.



Euro NCAP Virtual Far Side Validation Criterion 2

- The **Euro NCAP Virtual Far Side 2024 VC2 (Assessment Criteria)** REPORTER Template can be used to perform the Validation Criterion 2 (Assessment Criteria) check according to section 6.3.10 of the Euro NCAP VTC Simulation and Assessment Protocol v1.0.
- Before running the template, you need to set up user data in PRIMER's Automotive Assessments Workflow using the Euro NCAP 'Far Side + VTC' protocol.
- You can also perform [VC2 manually in T/HIS](#).

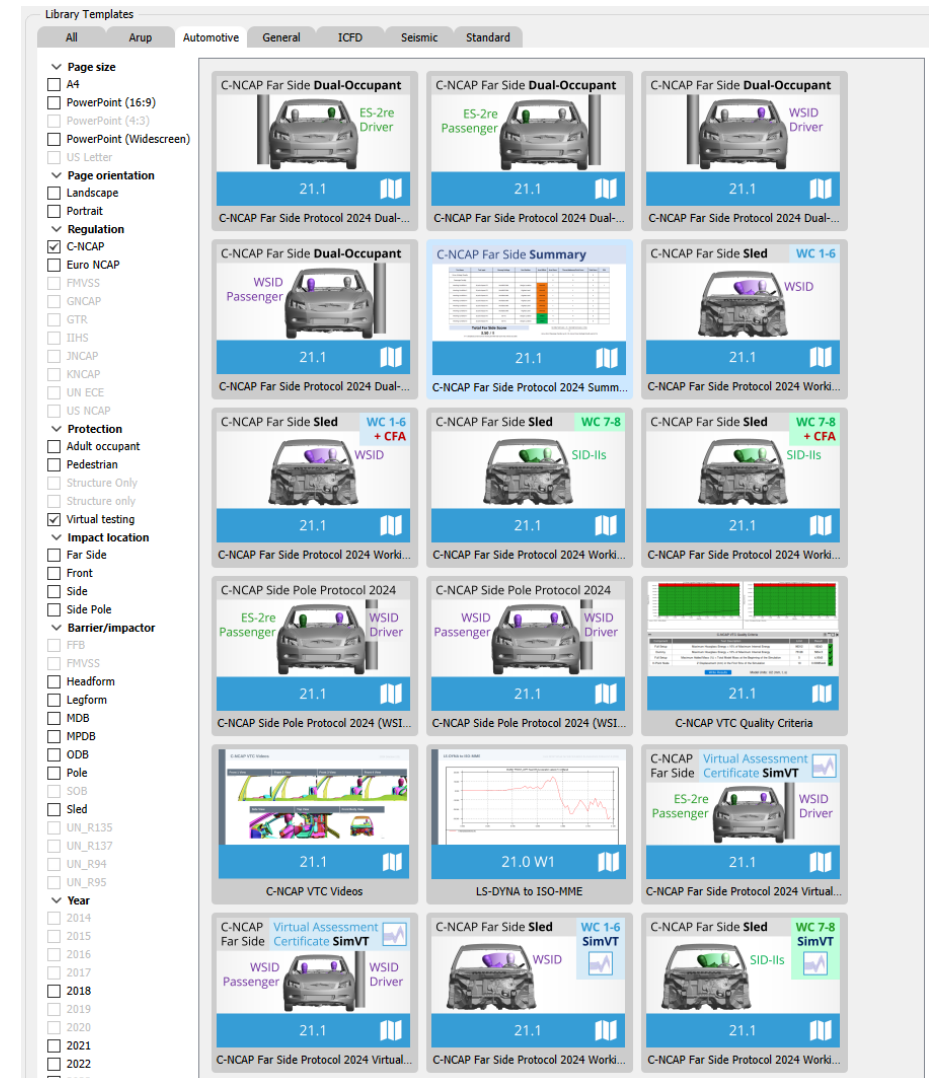


C-NCAP Management Regulation (2024 Edition)

Oasys 21.1 has new support for the various requirements of the C-NCAP Far Side Occupant Protection Protocol, including:

- For each of the eight Working Conditions:
 - Occupant injury assessment
 - ISO Correlation Fitting indices
 - Correction Factor A
- Dual-Occupant Penalty calculation
- ISO correlation fitting indices for the Virtual Assessment Certificate (prerequisite for the symmetry of far side occupant protection airbags)
- Overall score calculation

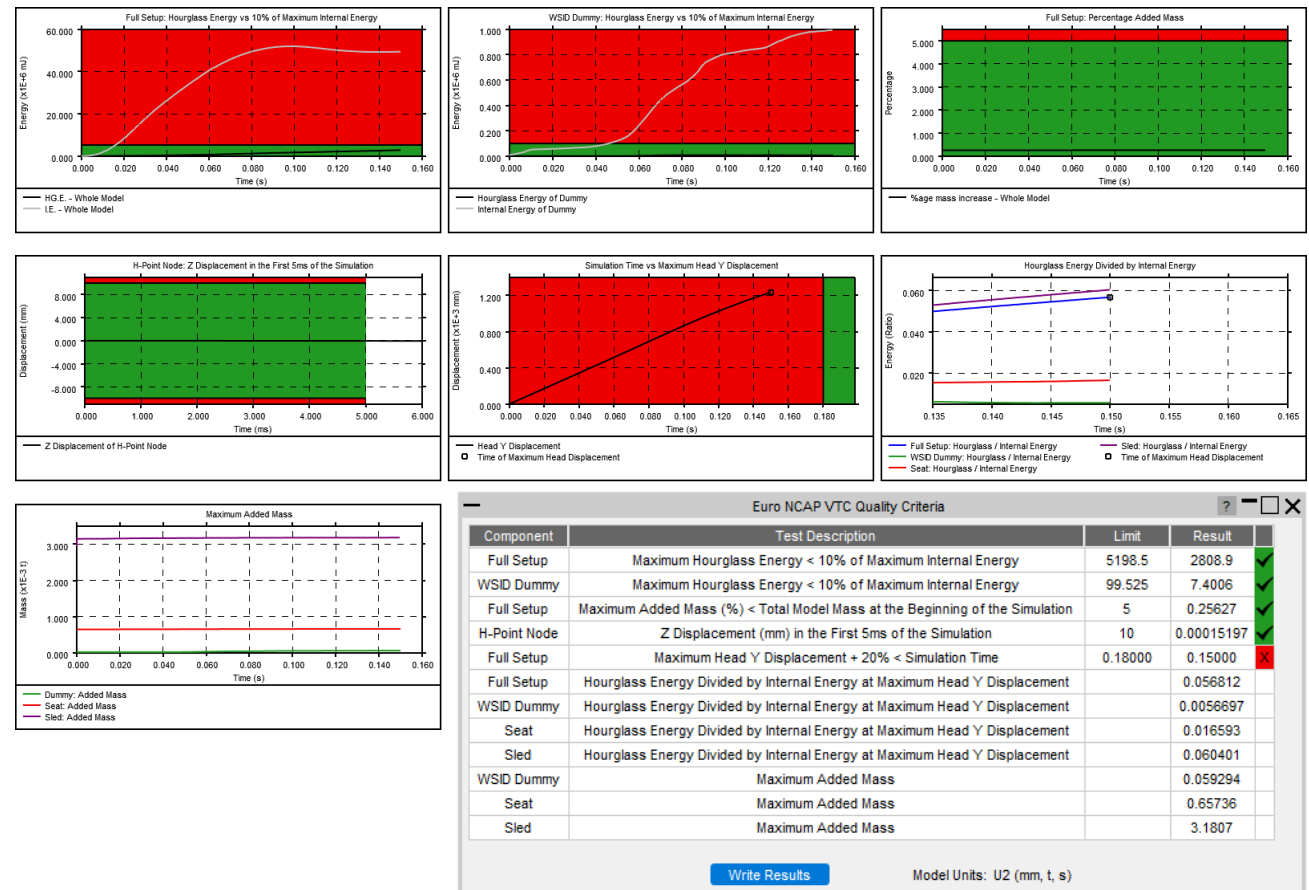
[Read the documentation to learn more](#)



Euro NCAP VTC Quality Criteria

- “Euro NCAP VTC Quality Criteria” is a new, convenient tool for assessing the quality criteria specified in section 6.1 of the Euro NCAP Virtual Far Side protocol.

1. In **PRIMER**, select the model entities required for the quality checks, and the relevant model and display units. Saved user data can be reused for subsequent LS-DYNA runs.
2. In **T/HIS**, the quality checks are calculated immediately. Graphs illustrate the results of each check. A summary table appears, with the option to write the results to a CSV file.



Euro NCAP VTC Quality Criteria

- The Euro NCAP VTC Quality Criteria Workflow tool can be automated using the REPORTER template provided.

Euro NCAP VTC Quality Criteria 2024 (Version 1.0)

Summary				
Component	Test Description	Value	Limit	Result
Full Setup	Maximum Hourglass Energy < 10% of Maximum Internal Energy	2.8089e+6	5.1985e+6	PASS
WSID Dummy	Maximum Hourglass Energy < 10% of Maximum Internal Energy	7400.6	99525	PASS
Full Setup	Maximum Added Mass (%) < Total Model Mass at the beginning of the simulation	0.25627	5	PASS
H-Point Node	Z Displacement (mm) in the first 5 ms of the simulation	70.006	10	FAIL
Full Setup	(Time of Maximum Head Y Displacement) + 20% < Simulation Time	0.15	0.18	FAIL
Full Setup	Hourglass Energy divided by Internal Energy at Time of Maximum Head Y Displacement	0.056812	[monitored]	[monitored]
WSID Dummy	Hourglass Energy divided by Internal Energy at Time of Maximum Head Y Displacement	0.0056697	[monitored]	[monitored]
Seat	Hourglass Energy divided by Internal Energy at Time of Maximum Head Y Displacement	0.016593	[monitored]	[monitored]
Sled	Hourglass Energy divided by Internal Energy at Time of Maximum Head Y Displacement	0.060401	[monitored]	[monitored]
Dummy	Maximum Added Mass	5.9294e-5	[monitored]	[monitored]
Seat	Maximum Added Mass	0.00065736	[monitored]	[monitored]
Sled	Maximum Added Mass	0.0031807	[monitored]	[monitored]

1/8 Model | C:\Users\harry.graham\Documents\Work\QualityCheck\far_side_Pole_2022.key

Euro NCAP VTC Quality Criteria 2024 (Version 1.0)

Criterion	Limit	Value	Result	Percent
"Maximum Hourglass Energy of full setup must be <10% of maximum Internal Energy"	5.1985e+6	2.8089e+6	PASS	5.4033

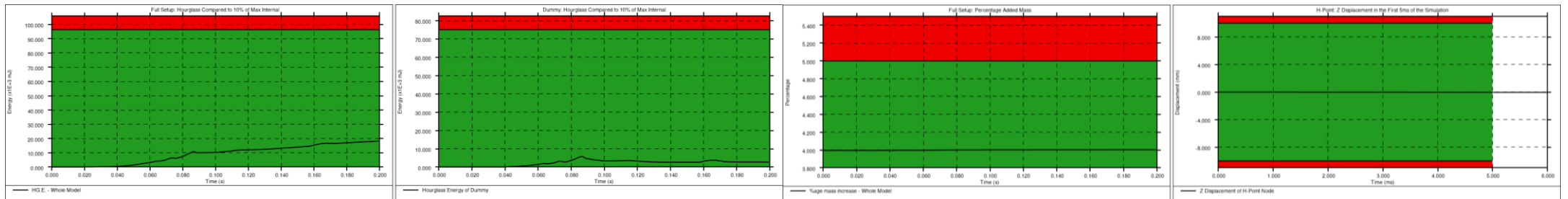
2/8 Model | C:\Users\harry.graham\Documents\Work\QualityCheck\far_side_Pole_2022.key

C-NCAP VTC Quality Criteria

- The C-NCAP VTC Quality Criteria Workflow tool follows the same principals as the Euro NCAP version but assesses the quality criteria specified in section H.1.1(f) of the C-NCAP Far Side Simulation & Assessment Protocol.
- The tool can be automated using the REPORTER template provided.

Component	Test Description	Limit	Result	
Full Setup	Maximum Hourglass Energy < 10% of Maximum Internal Energy	96312	18243	✓
Dummy	Maximum Hourglass Energy < 10% of Maximum Internal Energy	75128	5834.5	✓
Full Setup	Maximum Added Mass (%) < Total Model Mass at the Beginning of the Simulation	5	4.0043	✓
H-Point Node	Z Displacement (mm) in the First 5ms of the Simulation	10	0.00085449	✓

Write Results Model Units: U2 (mm, t, s)



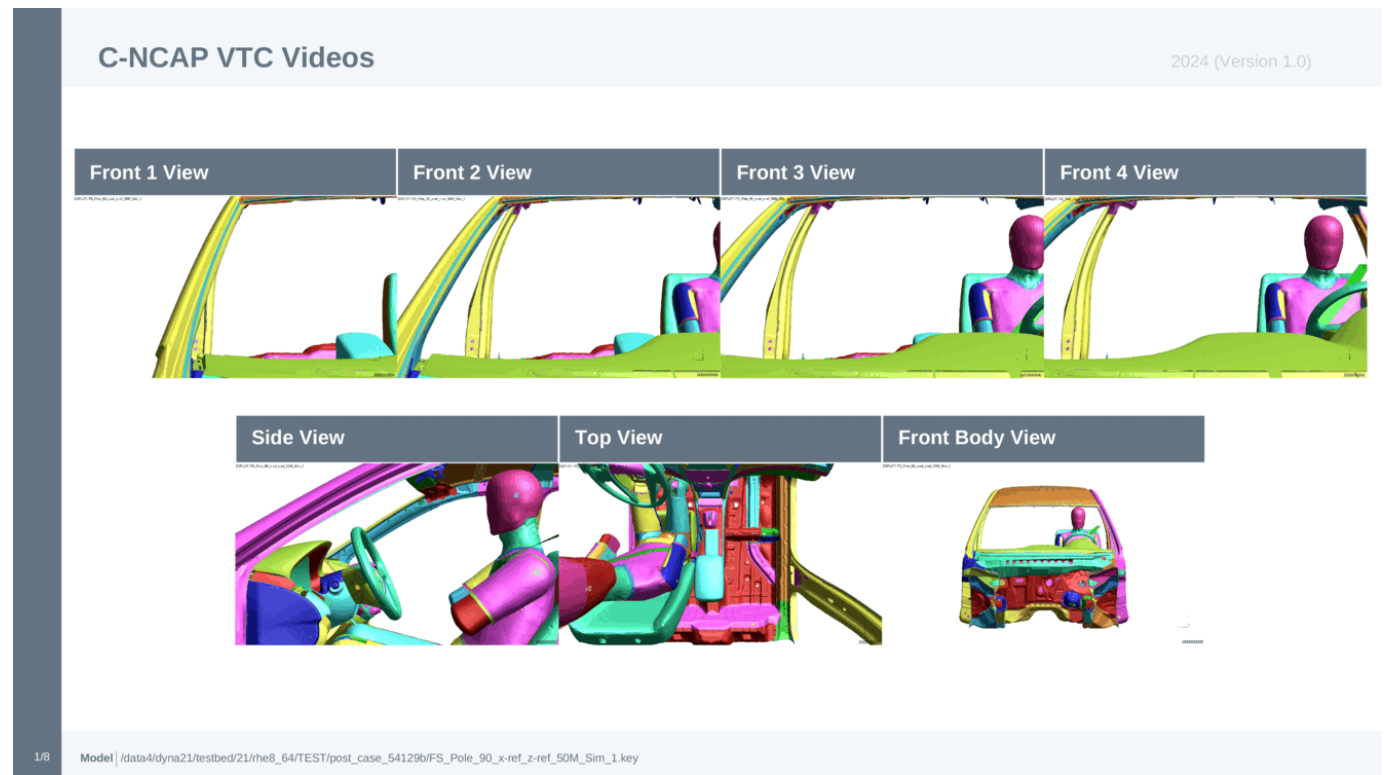
Euro NCAP VTC Videos

- The **Euro NCAP VTC Videos** Workflow tool helps you calculate the views and export the videos specified in section 5.2.1 of the Euro NCAP Virtual Far Side protocol.
- The tool attempts to calculate the camera positions automatically based on model entities you define in **PRIMER**. You can then adjust and save the views in **D3PLOT** to be reused to capture the videos for future LS-DYNA runs. The whole process can be automated using the **REPORTER** template provided.



C-NCAP VTC Videos

- The **C-NCAP VTC Videos** Workflow tool follows the same principles as the Euro NCAP version but helps you calculate the views and export the videos specified in section H.2.8 of the C-NCAP Far Side Occupant Protection Protocol (2024 Edition).
- Use the standard Workflow method in **PRIMER** and **D3PLOT** or the whole process can be automated using the **REPORTER** template provided.



Automotive Library Templates

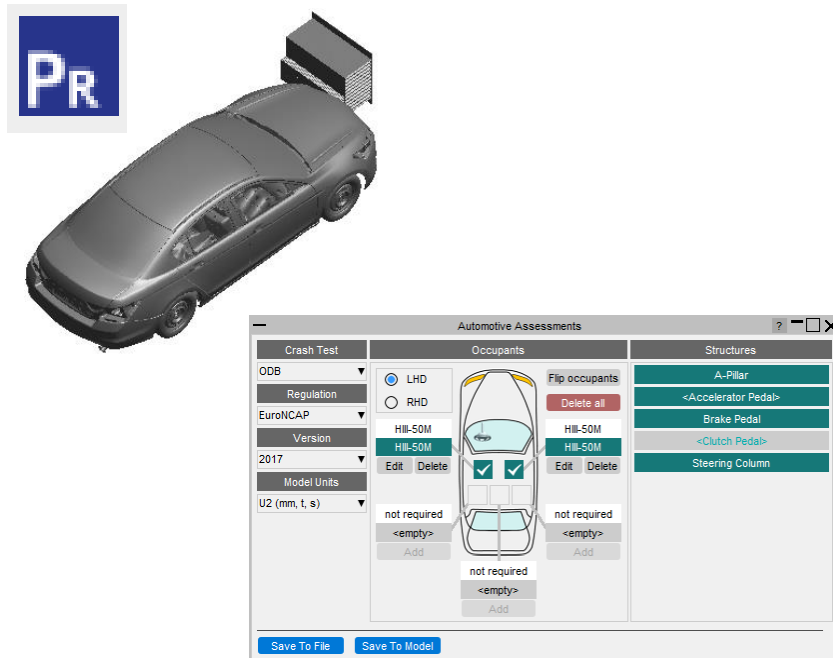
Migration to Workflows


The following Automotive templates have been migrated to use data saved from the Automotive Assessments Workflow:

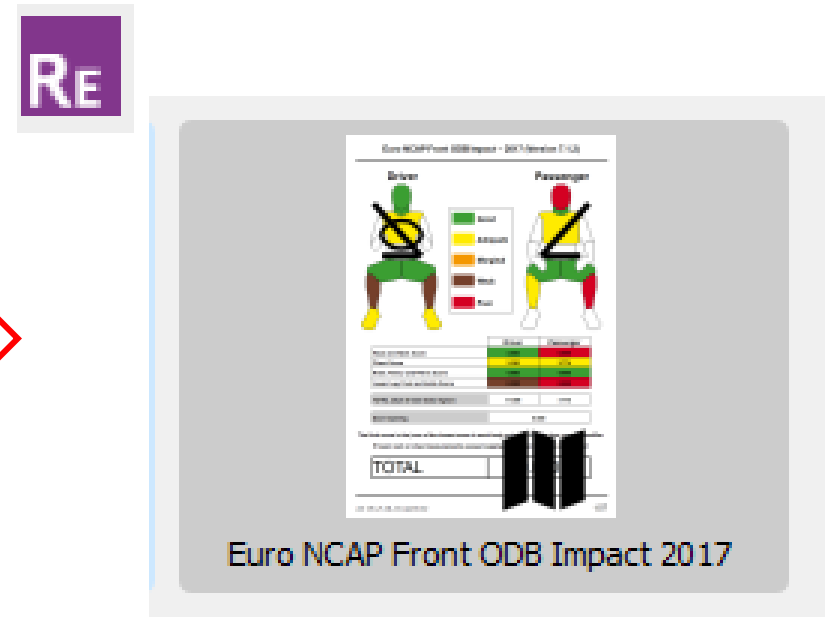
- EuroNCAP_Front_FFB_Impact_2017
- EuroNCAP_Front_MPDB_Impact_2020_Occupant_Assessment
- EuroNCAP_Front_ODB_Impact_2017
- EuroNCAP_Side_MDB_Impact_2022
- EuroNCAP_Side_Pole_Impact_2022
- CNCAP_Front_MPDB_Impact_2022_Occupant_Assessment
- IIHS_Front_ODB_Impact_2021 (*new in v21.1*)
- IIHS_Front_ODB_Impact_2021_StructureOnly (*new in v21.1*)
- IIHS_Front_SOB_Impact_2021 (*new in v21.1*)
- IIHS_Front_SOB_Impact_2021_StructureOnly (*new in v21.1*)
- IIHS_Side_MDB_Impact_2021 (*new in v21.1*)
- IIHS_Side_MDB_Impact_2021_StructureOnly (*new in v21.1*)
- USNCAP_Front_FFB_Impact_2015 (*new in v21.1*)
- USNCAP_Side_MDB_Impact_2015 (*new in v21.1*)
- USNCAP_Side_Pole_Impact_2015 (*new in v21.1*)

Migration to Workflows

To use the new templates you need to specify and save the required data from the Automotive Assessments Workflow in PRIMER



In REPORTER the templates can be run from **File -> Open Library Templates**. The new templates that use Workflow data are indicated by the  icon.



Migration to Workflows

Migrating the templates to use data saved from the Automotive Assessment Workflow has the following benefits:

- Setting up the data and generating the templates is simpler with fewer steps required
- The same data can be used in in the Automotive Assessment workflow in T/HIS to interactively plot and interrogate results
- It makes it easier to add templates for new protocol versions and protocols not currently supported

Eigout Table

Extract eigenvalues (modal frequencies) from LS-DYNA's eigout file

Eigout Table

A new script has been added for Library Program items to extract eigenvalues (modal frequencies) from LS-DYNA's eigout file. The script creates REPORTER variables, allowing the eigout results to be tabulated in a report. The following library templates and pages are now provided:

- Eigout Table (A4 Portrait Layout)
- Eigout Table (PowerPoint Layout)

Mode	Eigenvalue	Frequency (rad)	Frequency (Hz)	Period (s)
1	71889.1	268.12	42.67	0.0234
2	88703.7	297.83	47.40	0.0211
3	102198.0	319.68	50.88	0.0197
4	109448.3	330.83	52.65	0.0190
5	112211.7	334.98	53.31	0.0188
6	113456.6	336.83	53.61	0.0187
7	113688.1	337.18	53.66	0.0186
8	116641.0	341.53	54.36	0.0184
9	125036.7	353.61	56.28	0.0178
10	125326.4	354.01	56.34	0.0177
11	166304.4	407.80	64.90	0.0154
12	181088.1	425.54	67.73	0.0148
13	189493.3	435.31	69.28	0.0144
14	196922.2	443.76	70.63	0.0142
15	208863.8	457.02	72.74	0.0137
16	209988.9	458.25	72.93	0.0137
17	210390.3	458.68	73.00	0.0137
18	211030.8	459.38	73.11	0.0137
19	213627.6	462.20	73.56	0.0136
20	221216.5	470.34	74.86	0.0134

REPORTER Variables

Default names for REPORTER variables

- Before Oasys 21, the default names for variables created by D3PLOT and T/HIS items were prefixed with ITEM_ n , where n was the number of the item on the page in the D3PLOT or T/HIS item tree. Because items in the item tree are numbered from 1 on each page, it was common to have the same prefix for default variable names on multiple pages and therefore to have identical default variable names for items on multiple pages, resulting in variables being overwritten in REPORTER.
- In Oasys 21, default variable names are prefixed with the REPORTER item name, which defaults to a format like “d3plot6”, “d3plot6_1” for D3PLOT items (or “this6”, “this6_1” for T/HIS items). Since item names in REPORTER are unique, this ensures default variable names generated in D3PLOT and T/HIS are also unique.

Preferences

Libraries and Workflows

You can now define a single location for each of Libraries and Workflows. This allows you to switch REPORTER to use a different directory when you customise the templates provided with the installation, or when you receive an updated bundle of templates from Oasys Ltd.

The screenshot shows the 'Oasys Items' tab in the 'Preferences' dialog. It contains instructions on how to configure REPORTER to search for templates, pages, and scripts. Below the instructions are sections for 'Library directories' and 'Workflows directories', each with fields for installation directory, environment variables, and a 'Choose...' button. There are also checkboxes for 'Only this' and a 'Save Preferences' button at the bottom left, along with 'OK' and 'Cancel' buttons at the bottom right.

RE Preferences

Editing Grid Fonts and Colours Date and Time Library **Oasys Items** Startup Accessibility

Configure REPORTER to search for templates, pages, and scripts on startup with the oa_pref options reporter*library_directory and oasys*workflow_definitions_directory, used to define new Library and Workflows directories respectively.

Each Library and Workflows directory should contain subdirectories named **templates** and **pages** to contain the respective items. For Library directories, a **scripts** subdirectory can also be used.

By default, REPORTER will scan **all** of the directories listed. If you check "Only this", REPORTER will scan **only** the specified Library or Workflows directory, and none of the directories above it (Library and Workflows are treated separately via reporter*library_only_use_specified_directory and oasys*workflow_only_use_specified_directory). This allows you to switch REPORTER to use a different directory when you customise the templates provided with the installation, or when you receive an updated bundle of templates from Oasys Ltd.

Library directories

Installation directory: C:\Oasys 21\reporter_library

Set via OA_ADMIN oa_pref: <not set> Only this

Set via OA_INSTALL oa_pref: <not set> Only this

Set via HOME oa_pref: Z:\my\specific\reporter\library\location Only this

Workflows directories

Installation directory: C:\Oasys 21\workflows

Set via OA_ADMIN oa_pref: <not set> Only this

Set via OA_INSTALL oa_pref: <not set> Only this

Set via HOME oa_pref: Z:\my\specific\oasys\workflows\location Only this

Image thumbnails

Size 128

Save Preferences OK Cancel

New Preferences

Preference	Description
oasys*workflow_only_use_specified_directory	Only scan location set by preference oasys*workflow_definitions_directory for Workflow definitions.
oasys*workflow_user_data_directory	Name of a folder to search in for workflow user data
oasys*workflow_max_upward_folder_search_depth	Maximum number of folders to search up to look for workflow user data
oasys*initial_view_orientation	Initial view orientation for the graphics window
reporter*library_only_use_specified_directory	Only scan location set by preference reporter*library_directory for Library templates, pages and scripts.

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