



What's New in Simcenter Femap – 2022.2

SIEMENS

Simcenter Femap Roadmap – Updated Release Cadence



Feature Release Every Six Months

Database Change, UI Updates including Localization, Licensing Updates – January & June

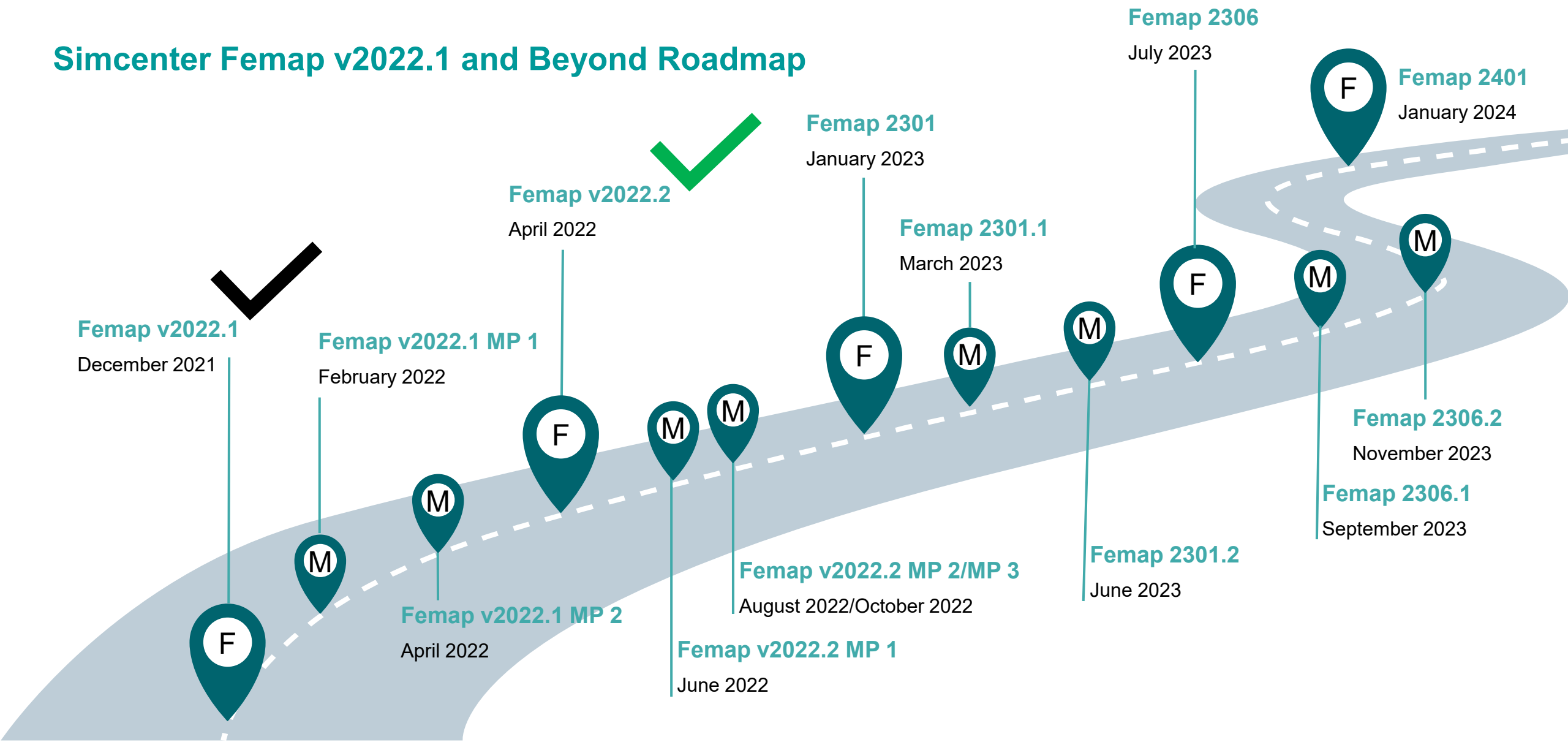
Maintenance Release 1

Database, UI, Licensing Unchanged
Bug Fixes/Critical Updates Only

Maintenance Release 2/3 – If Required

Database, UI, Licensing Unchanged
Bug Fixes/Critical Updates Only

Simcenter Femap v2022.1 and Beyond Roadmap

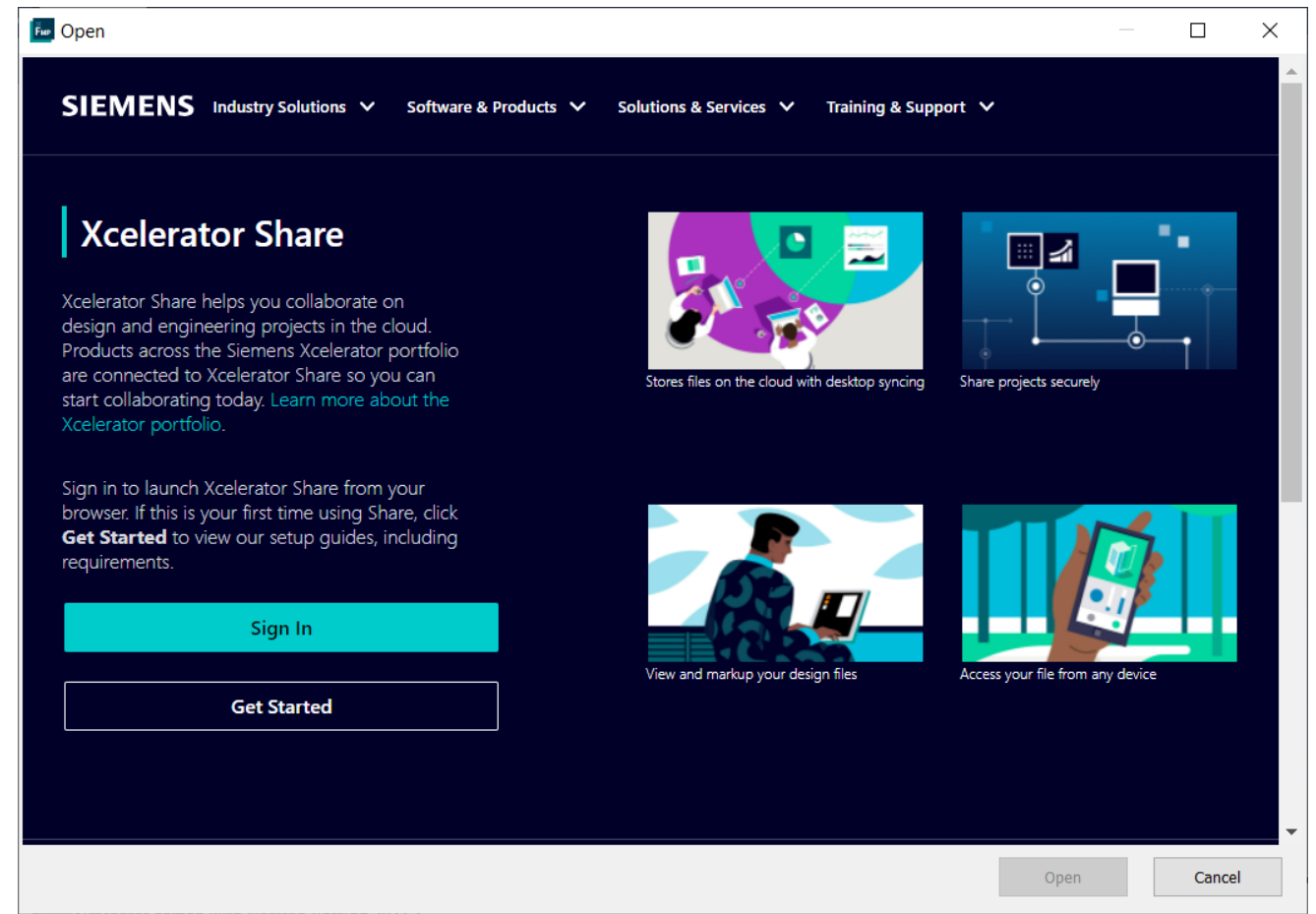


Xcelerator Share

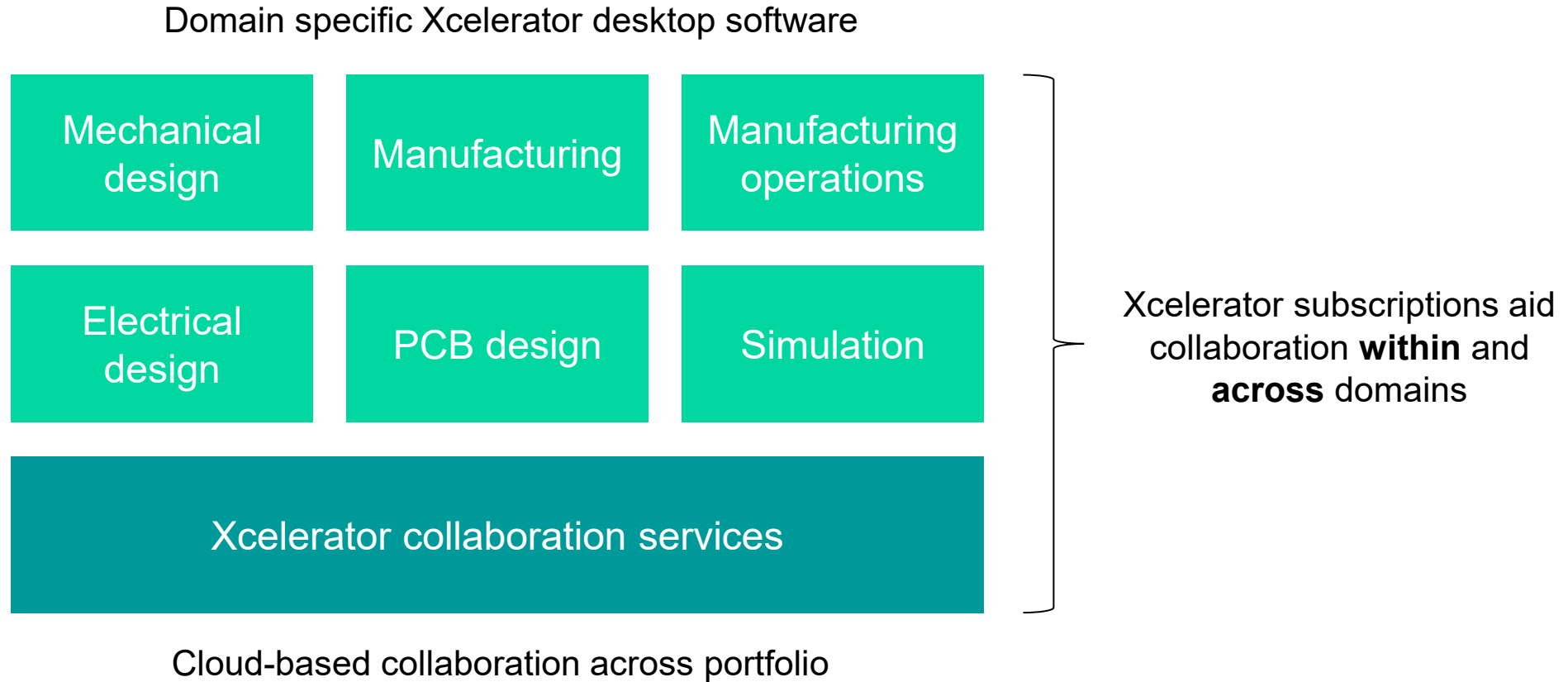
Xcelerator Share – Overview

Xcelerator Share, Siemens next-generation, cloud-based collaboration solution, is now integrated with Simcenter Femap 2022.2.

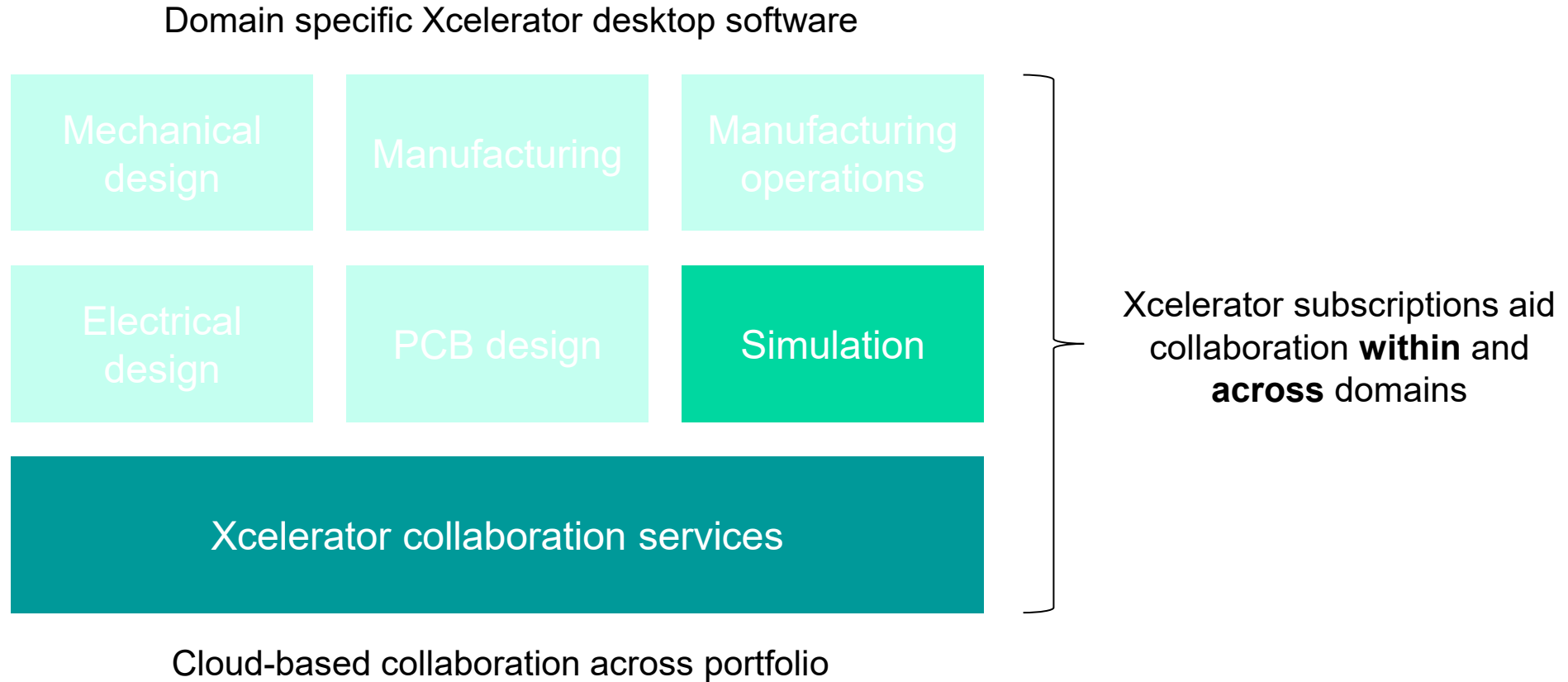
- Instantly, securely, and easily collaborate with colleagues, partners and customers
- Xcelerator Share is the first cloud component of our Xcelerator as a Service (XaaS) subscriptions
- Not a standalone product. It's also not a replacement of the stand-alone Simcenter Femap product.
- Simcenter Femap XaaS brings everything familiar about Simcenter Femap, with the benefits of cloud services through a SaaS subscription option – making Xcelerator more accessible, flexible and scalable.



Xcelerator Share – Overview

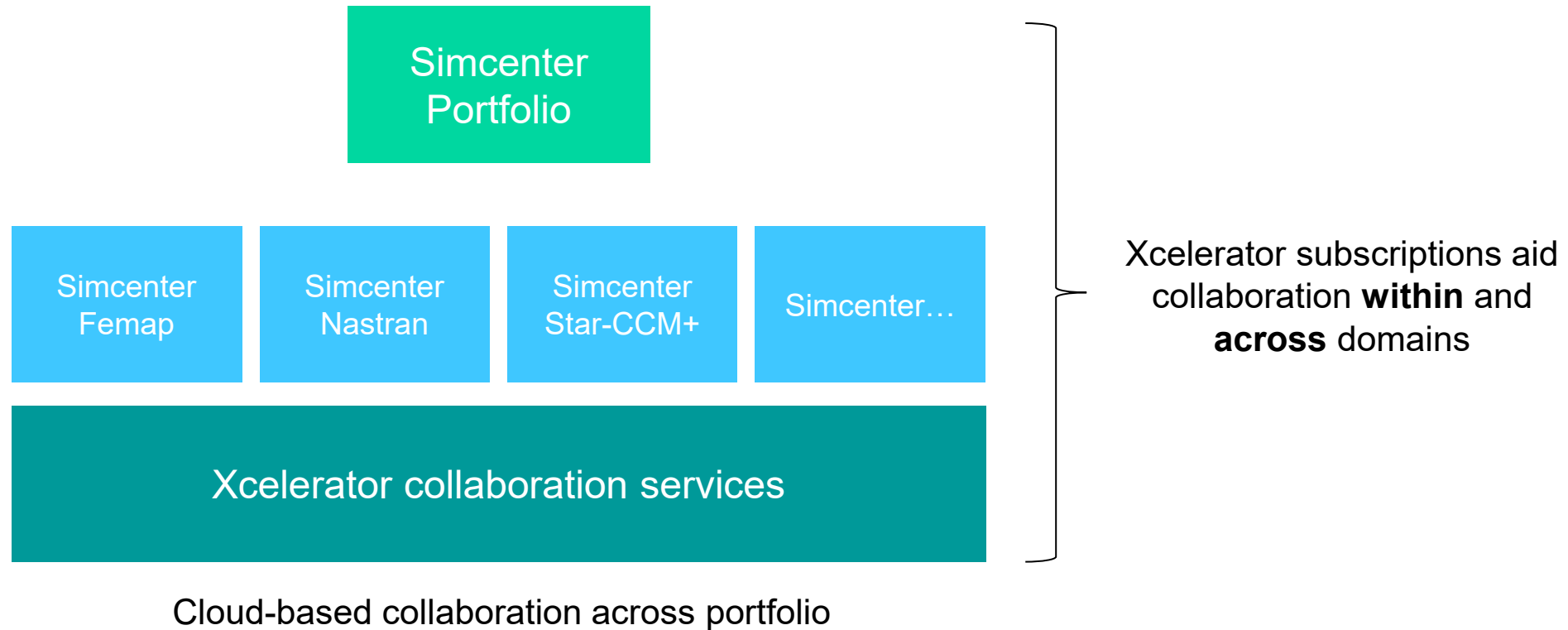


Xcelerator Share – Overview



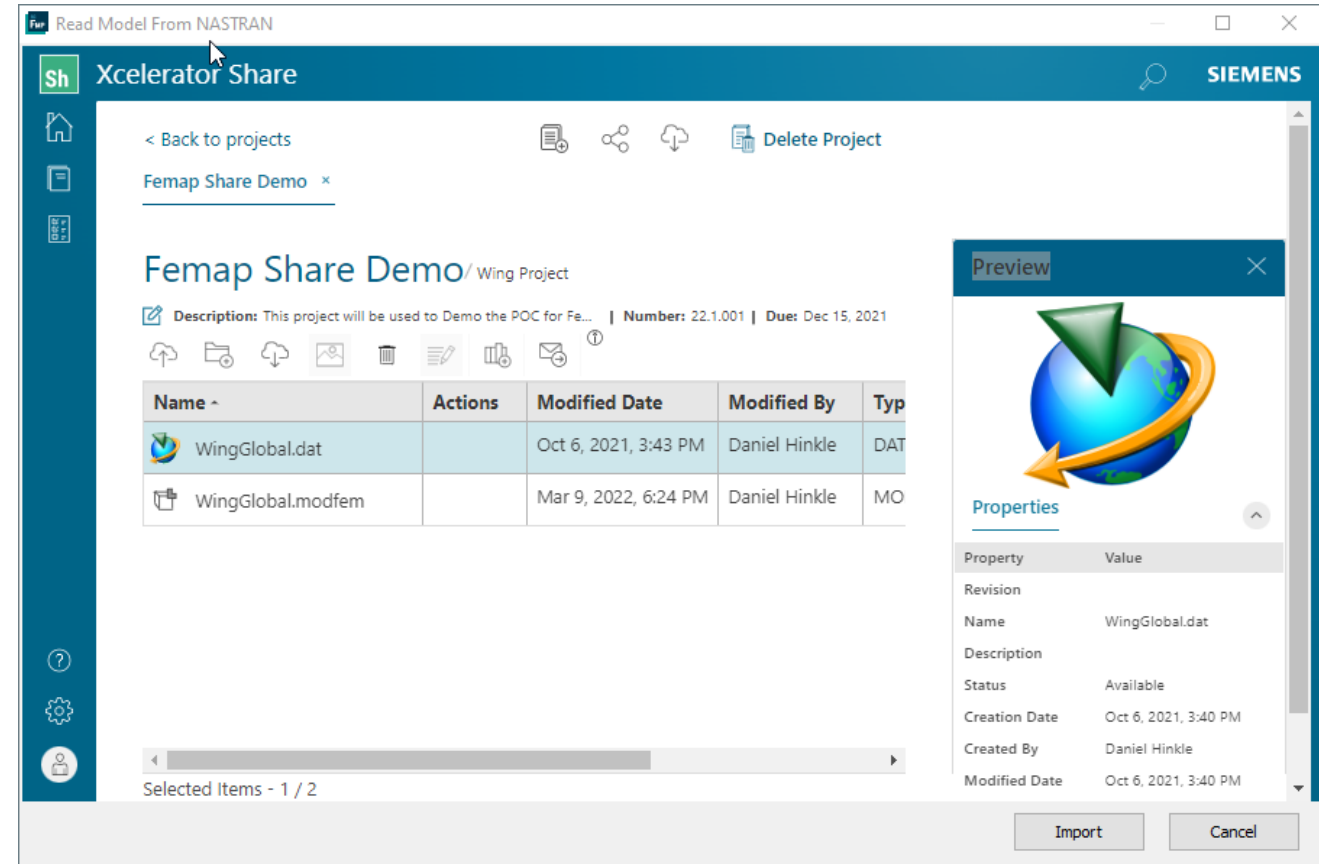
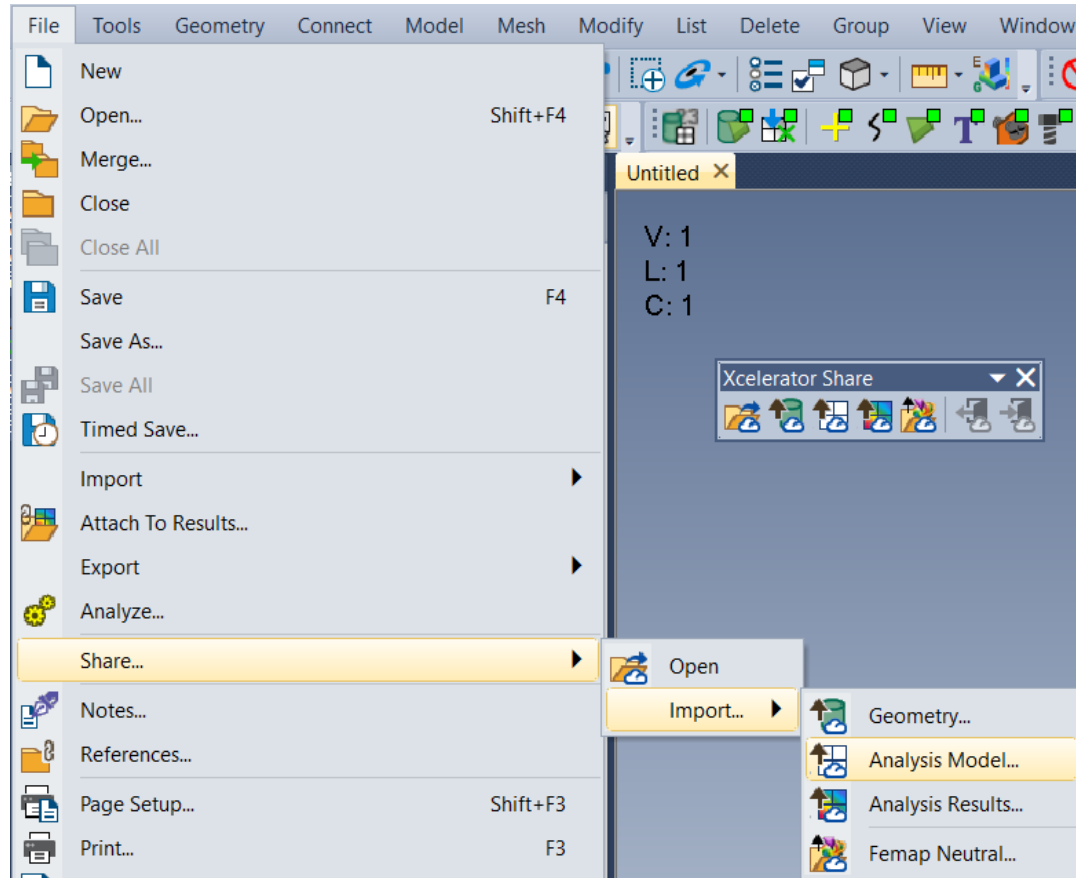
Xcelerator Share – Overview

Domain specific Xcelerator desktop software



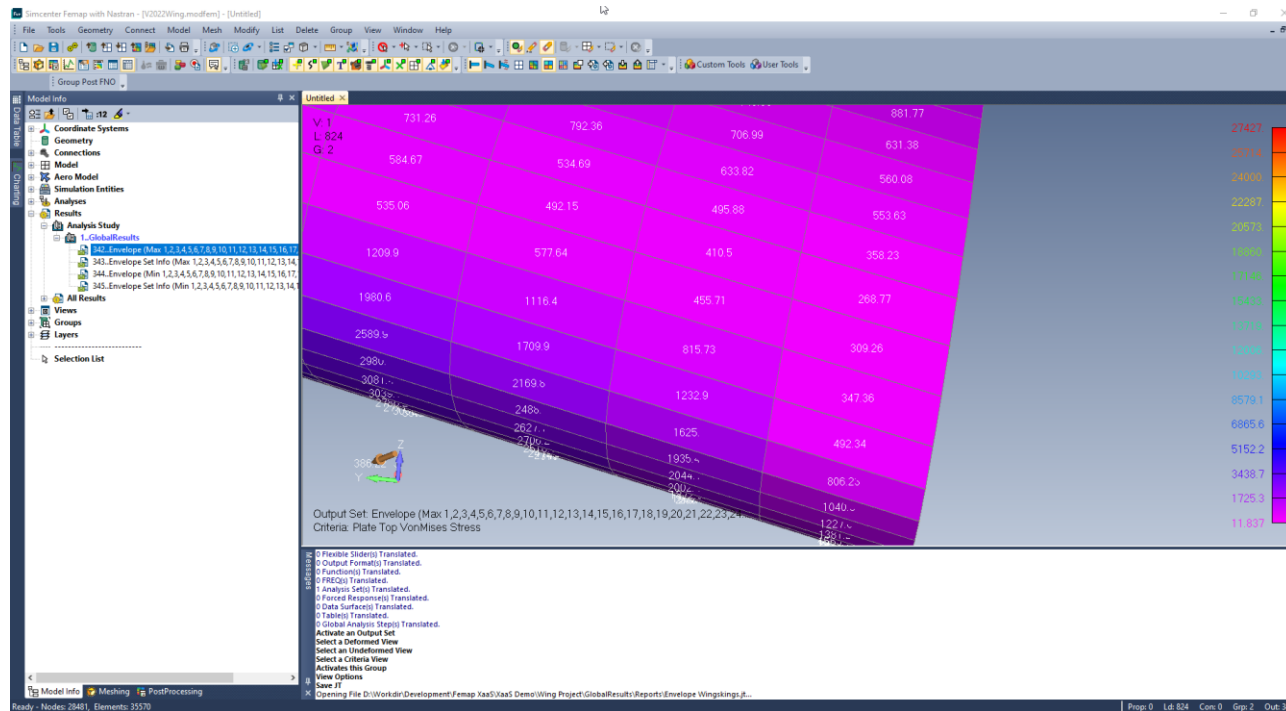
Xcelerator Share – Femap Workflow

Import Simcenter Nastran input file from Share project directly into Femap



Xcelerator Share – JT File Export from Femap (enhanced for v2021.2)

JT visualization files can be exported using the
File->Picture-Save JT command



JT File Options

Title: C:\Program Files\Siemens\Femap 2022.2\Examples\wingpost

Version: 10.3 Units: Inch

Type: ☒ Standard Output ☐ Multi Result Output

Standard

Load Sets: None

Constraint Sets: None

JT Hierarchy

- ☒ Model
- ☒ Entity Type
- ☒ Entity Subtype
- ☐ Layer
- ☐ Property
- ☐ Material
- ☐ Curve & Surface ID

☐ Draw Lines as Cylinders

Diameter: 1.

Multi Result

Select Output...(Nothing Selected)

☐ Raw Output Data

☒ Collated Vectors and Tensors

☐ Use Averaging Options

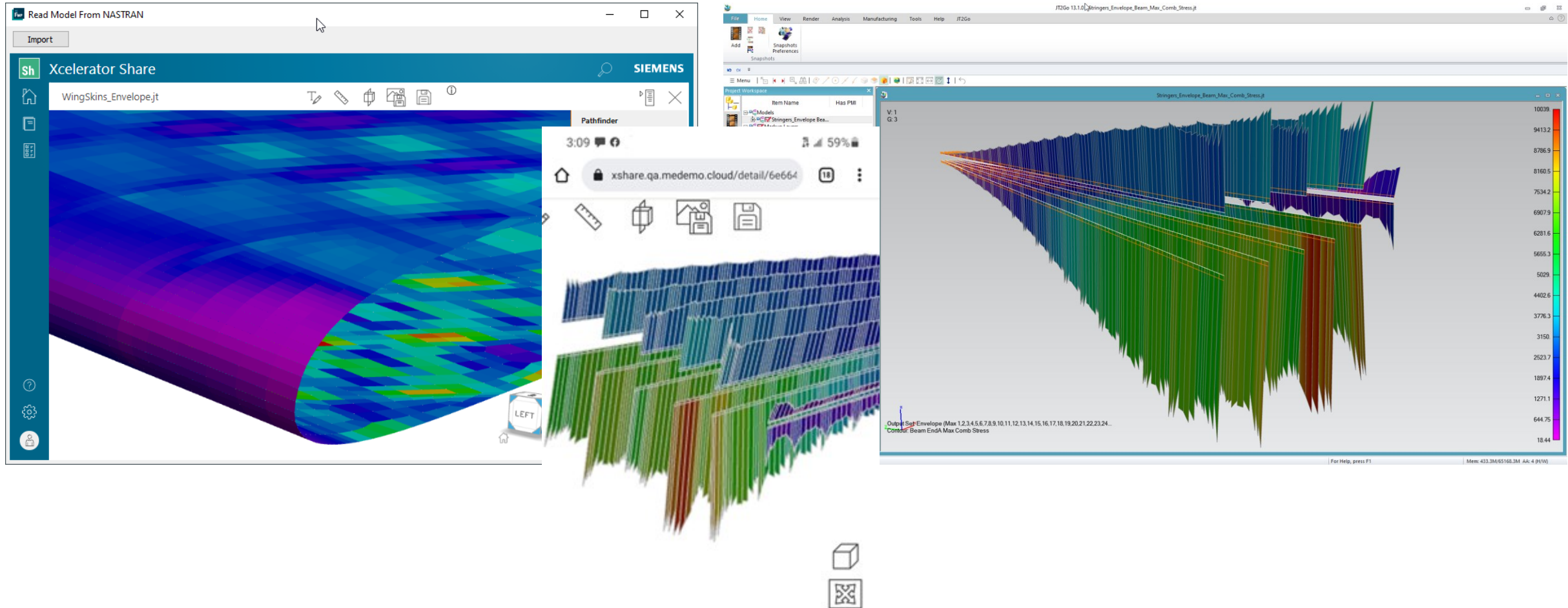
☐ Use Transformation Options

☐ Use Corner Data

OK **Cancel**

Xcelerator Share – JT Files

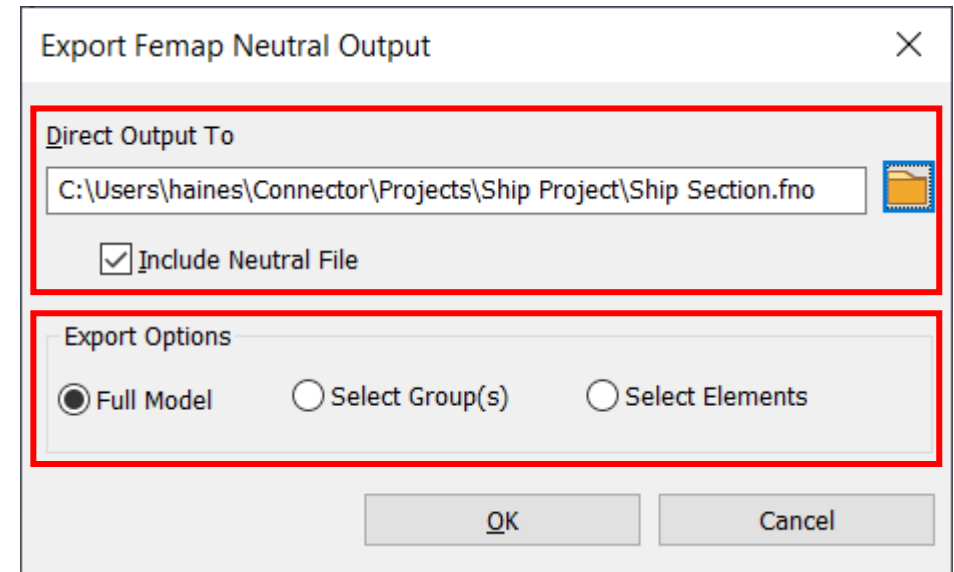
JT files can be visualized in Xcelerator Share, JT2Go desktop, or JT2Go mobile app



Xcelerator Share – Femap Neutral Output Export

To reduce size and/or create a high-performance output file, which can potentially be used with Xcelerator Share, Femap Neutral Output files (*.FNO) can now easily be generated by Femap

- File->Export->Femap Neutral Output command
- Direct Output To section – Specify location and File Name
 - Option to Include Neutral File containing only entities which correspond to an exported *.FNO file
- Export Options section – 3 Options control how much of model is exported for selected output vectors
 - Full Model – Output is exported for entire model
 - Select Group(s) – Output is exported for nodes and/or elements found in any number of selected groups
 - Select Elements – Output is exported for selected elements and nodes associated with those elements

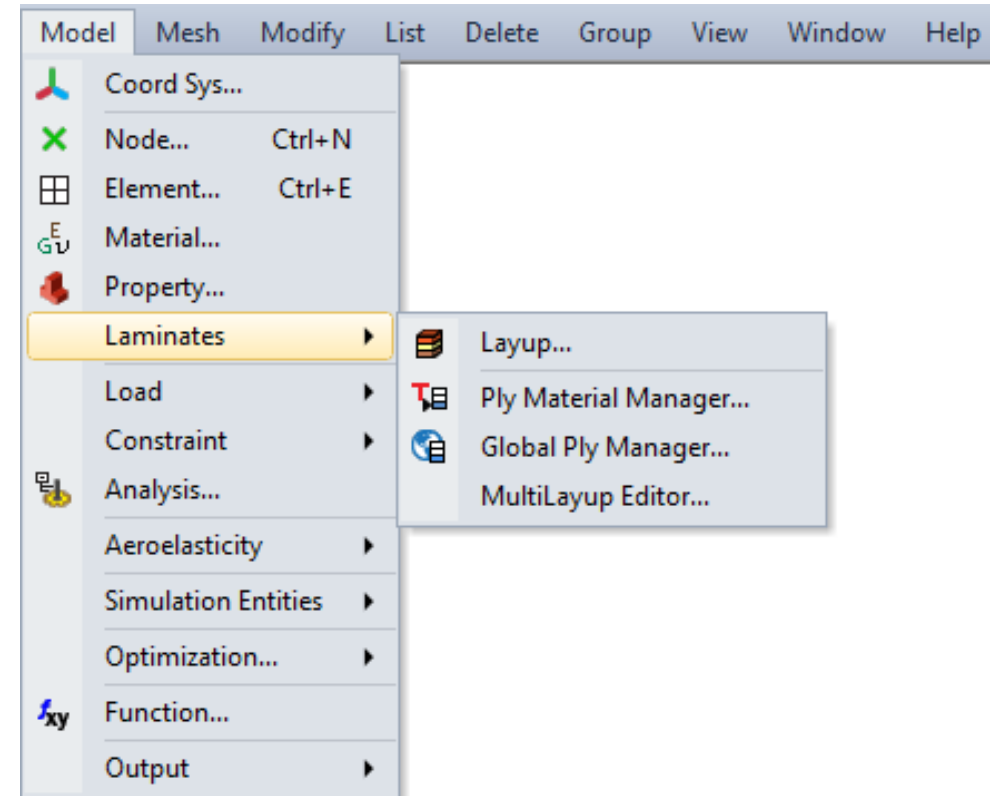


Laminates Enhancements

Laminate Enhancements – Overview

Several enhancements have been implemented for creation and modification of laminates in Femap 2022.2:

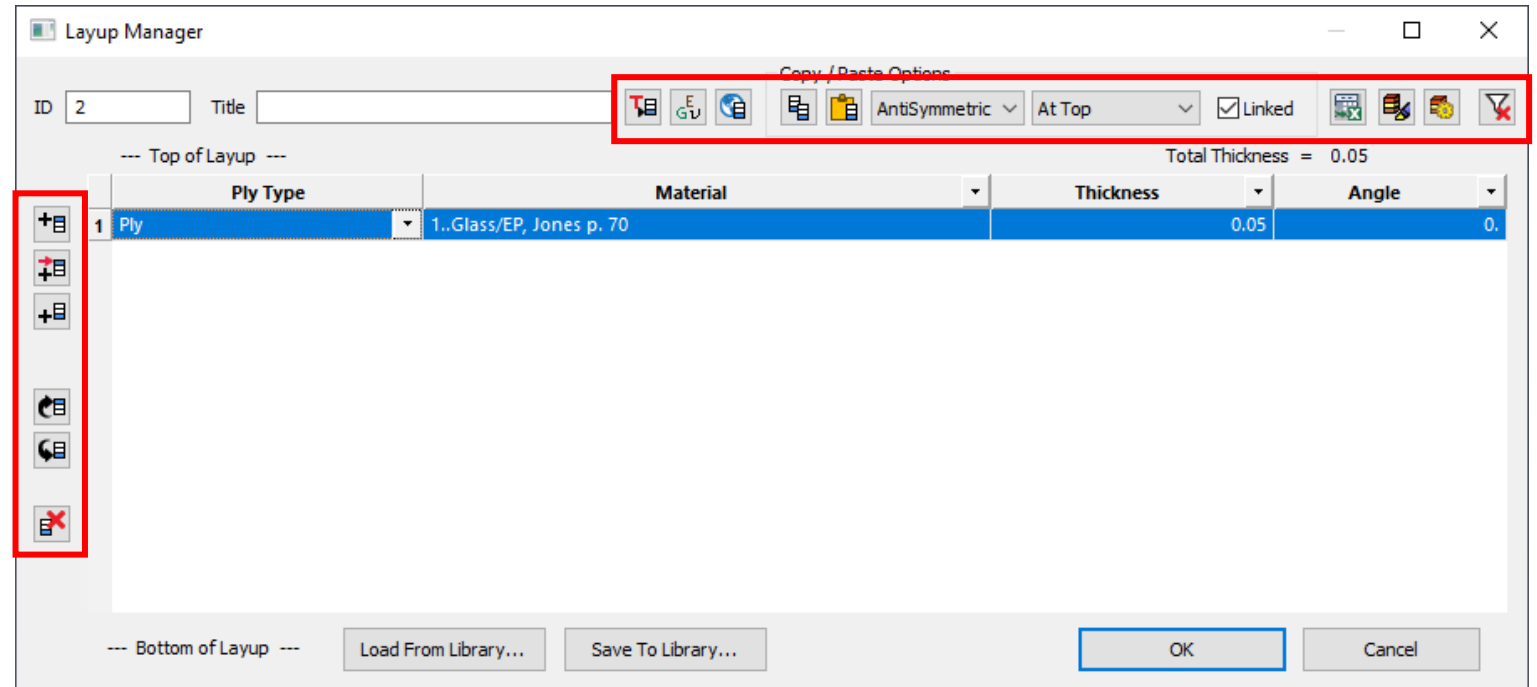
- Model->Laminates submenu replaces Model->Layup
- Layup Manager
 - User-Friendly and More Intuitive
 - Powerful New Capabilities
 - Promotes Re-use of Data (Layups and Ply Layups)
- Ply Material Manager – New for 2022.2!
 - Ply Material entities which ensure Thickness, Material, and Failure Theory on a predefined ply.
 - Any Number can be Referenced within a Layup
- MultiLayup Editor – New for 2022.2!
 - Allows Multiple Layups to be viewed side-by-side
 - Helpful to add, delete, or insert a ply into multiple layups



Laminate Enhancements – Layup Manager – General

Enhancements to Layup Manager:

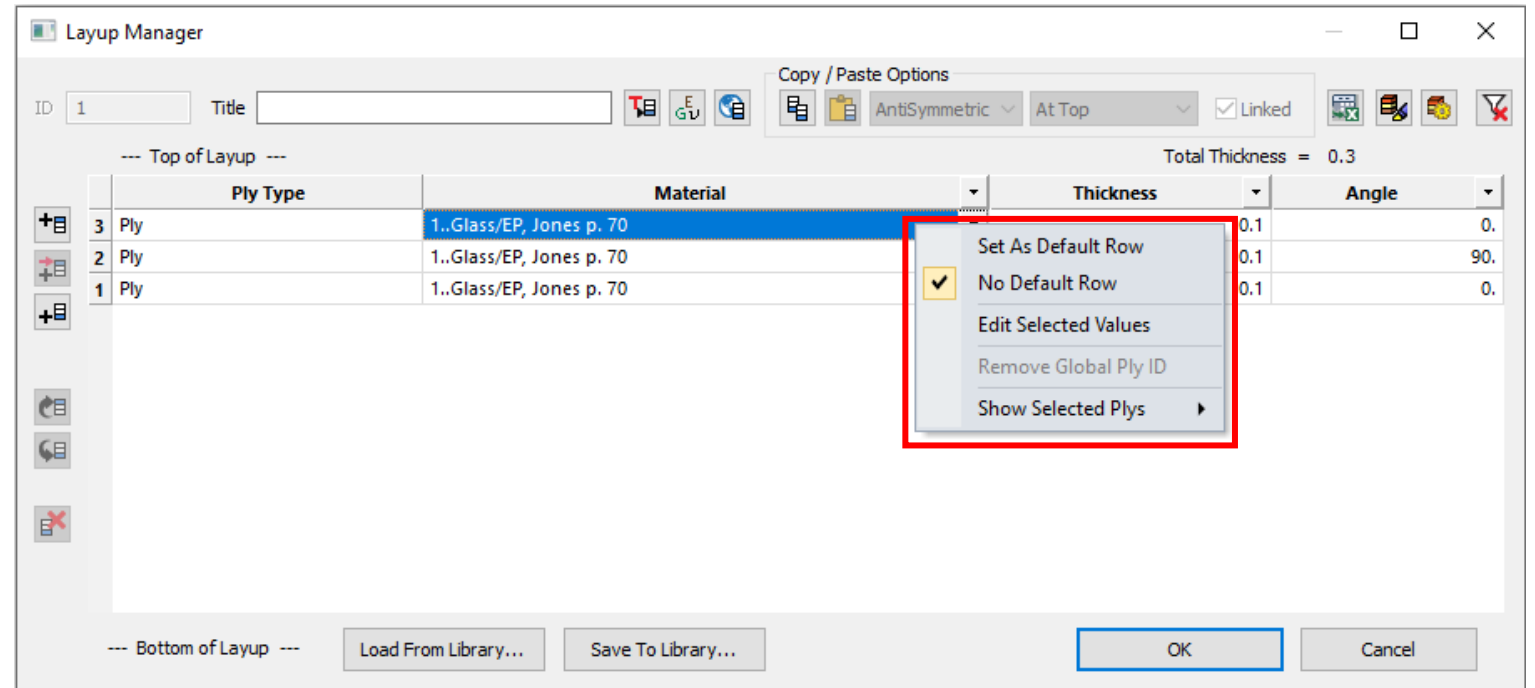
- Icons Across Top Row
 - Opens Ply Material Manager
 - Creates Material
 - Opens Global Ply Manager
 - Copy/Paste Options section
 - Send to Excel
 - Layup Viewer
 - Compute Laminates Properties
 - Clear All Column Filters
- Icons Down Left Side
 - Insert Ply at Top/Above Selected/Bottom
 - Move Plies Up/Down
 - Delete Plies



Laminate Enhancements – Layup Manager – Individual Cells

Enhancements to Layup Manager:

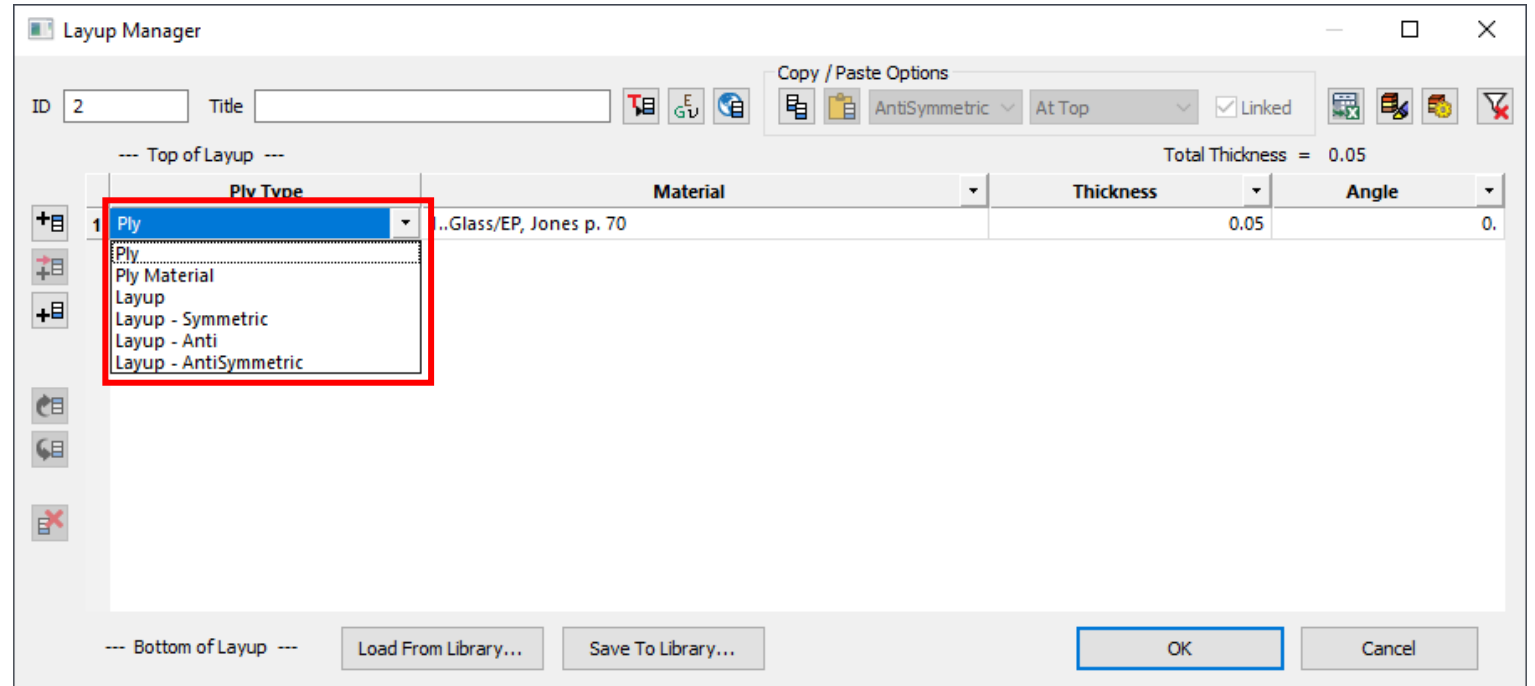
- Cells – Text can be edited, or available options/entities selected via drop-down in each individual cell
- Cells – Context-Sensitive menu
 - Set as Default or No Default Row
 - Edit Selected Values – updates any number of cells in the same column with the entered value
 - Remove Global Ply ID – removes the global ply from the row of the highlighted cell
 - Show Selected Plys – highlights all elements which use the selected plies in graphics window



Laminate Enhancements – Layup Manager – Ply Types

Enhancements to Layup Manager:

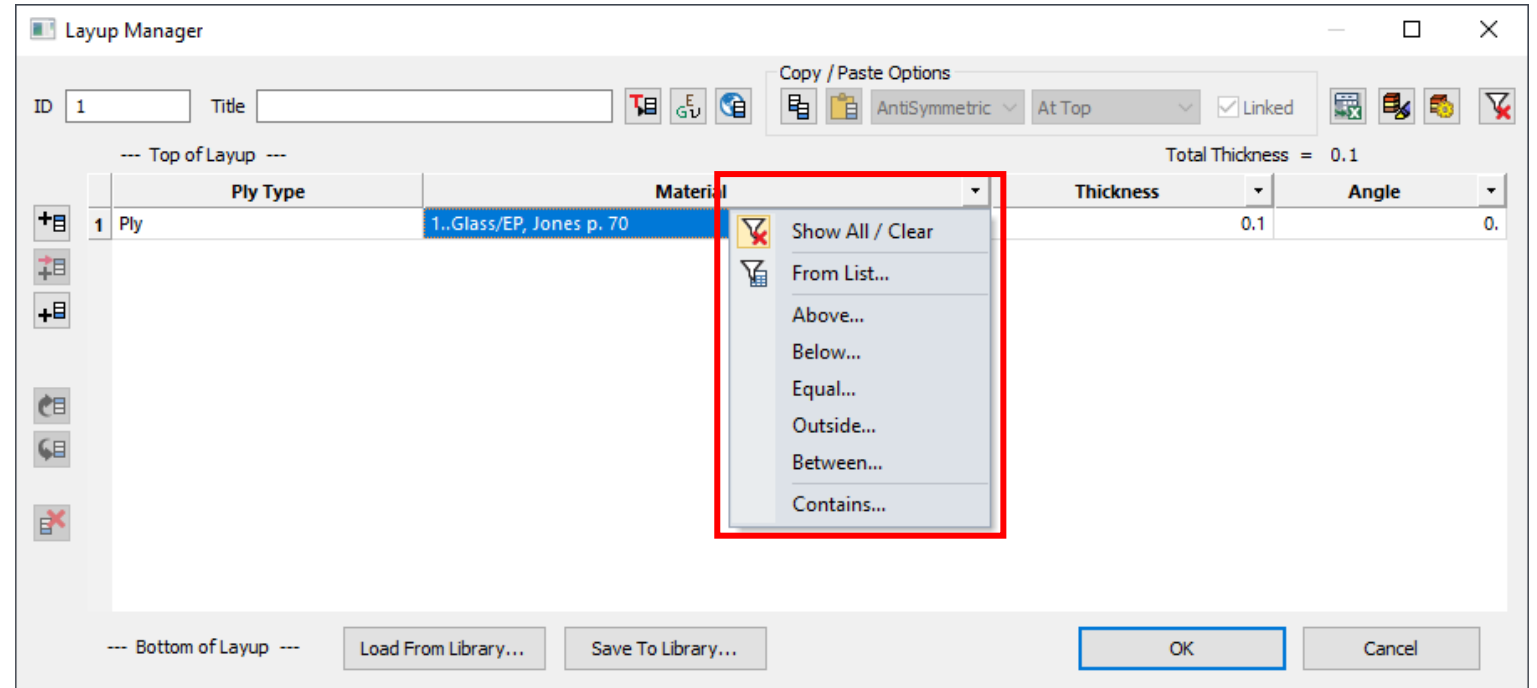
- Ply Type can now be specified
 - Ply
 - Ply Material (predefined ply)
 - Layup
 - Layup – Symmetric (ply order of layup reversed)
 - Layup – Anti (angles of layup reversed)
 - Layup – Anti-Symmetric (ply order and angled or layup reversed)
- Matched Plies – new ply can be linked to an existing ply of any type



Laminate Enhancements – Layup Manager – Columns

Enhancements to Layup Manager:

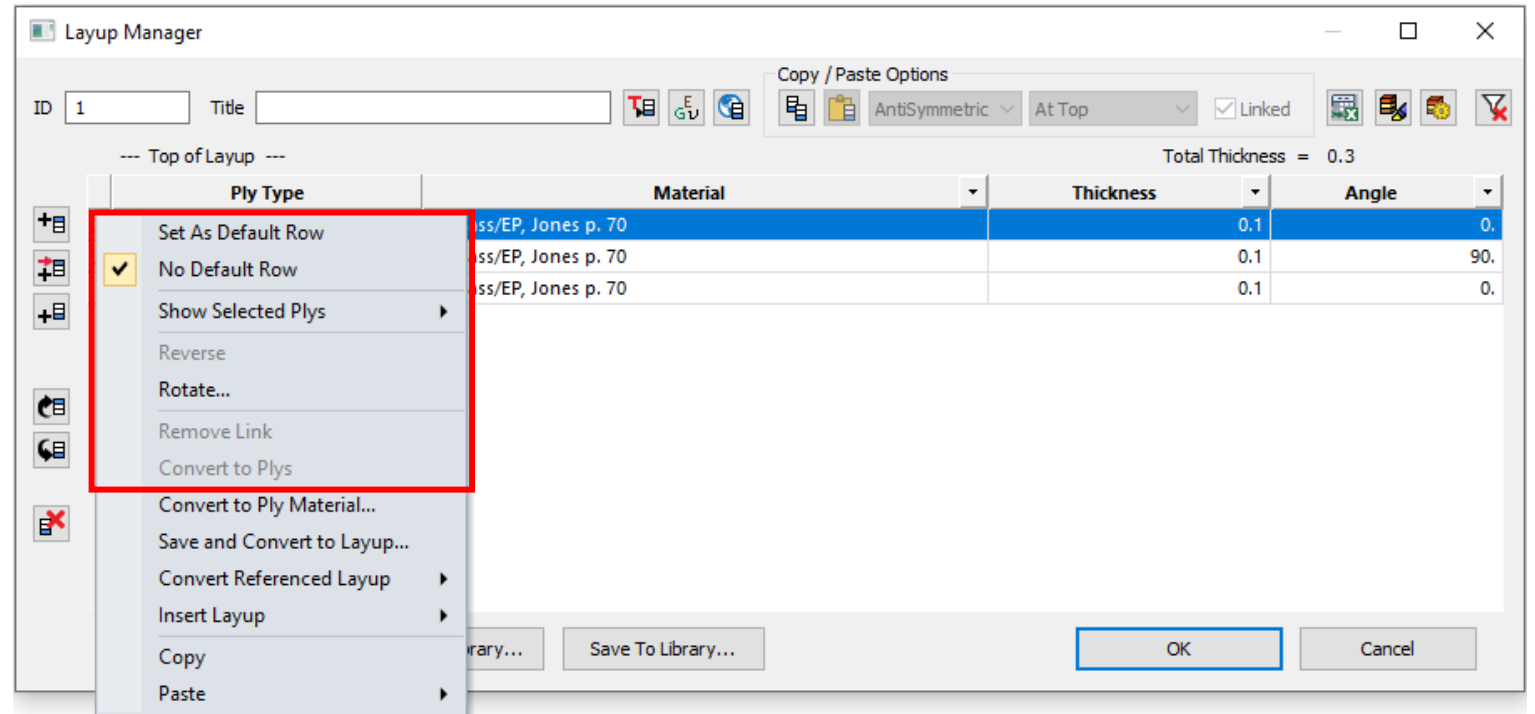
- Columns – Context-Sensitive menu
 - Show Ply On/Off Column
 - Show Global Ply ID Column
 - Show Ply Failure Column
- Columns – On/Off Column
 - When column is visible, items in list can be toggled On/Off
 - Only items which are On will be exported to analysis input file
- Columns – Filter Rows based on Material, Global Ply, Thickness, and/or Angle using Numerical Value (Above, Below, Equal, Outside, Between) or Contains (Text)



Laminate Enhancements – Layup Manager – Rows

Enhancements to Layup Manager:

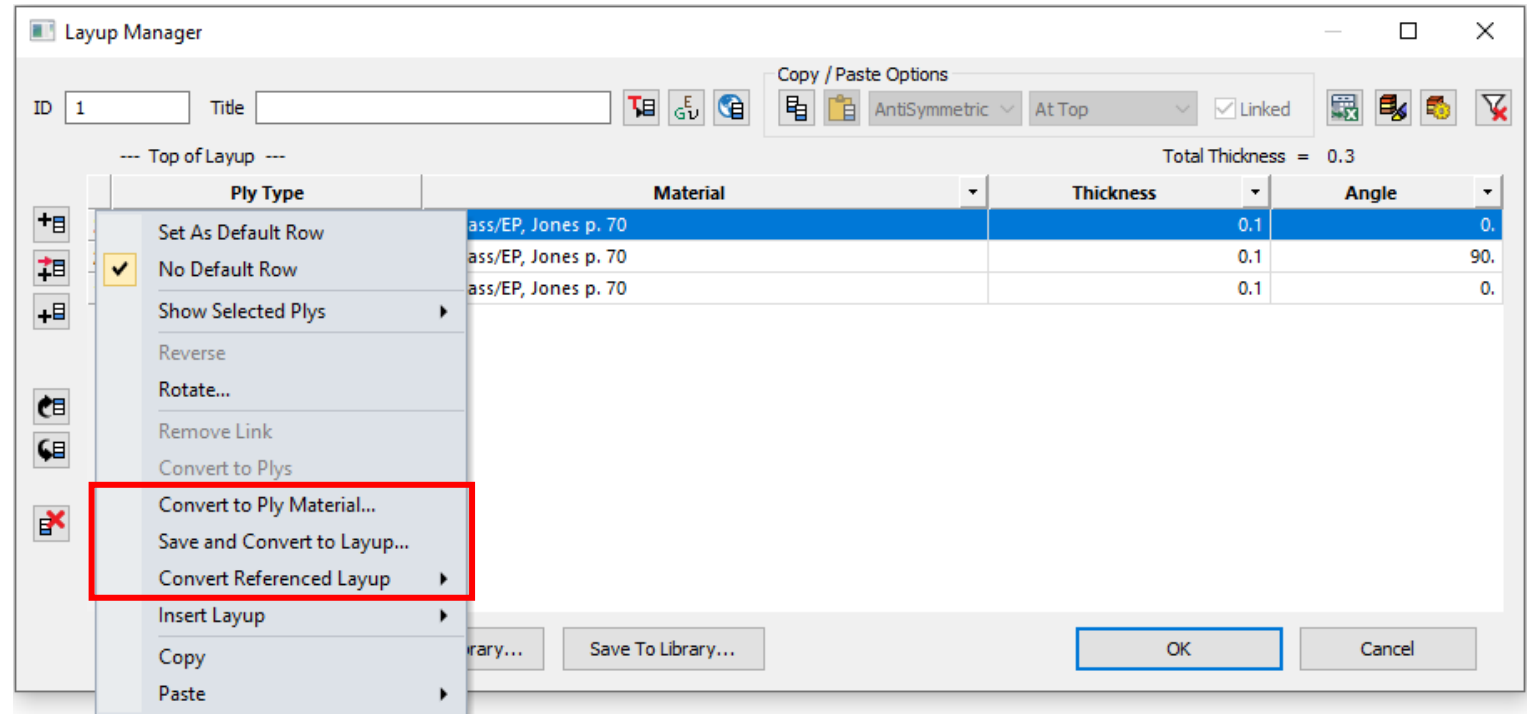
- Rows – Context-Sensitive menu
 - Set as Default or No Default Row
 - Show Selected Plys – highlights all elements which use the selected plies in graphics window
- Reverse – reverses order of selected plies (only available when multiple plies are selected)
- Rotate – changes Angle by value
- Remove Link – removes reference for ‘matched’ plies or layups
- Convert to Plys – converts a referenced layup into individual plies



Laminate Enhancements – Layup Manager – Rows (continued)

Enhancements to Layup Manager:

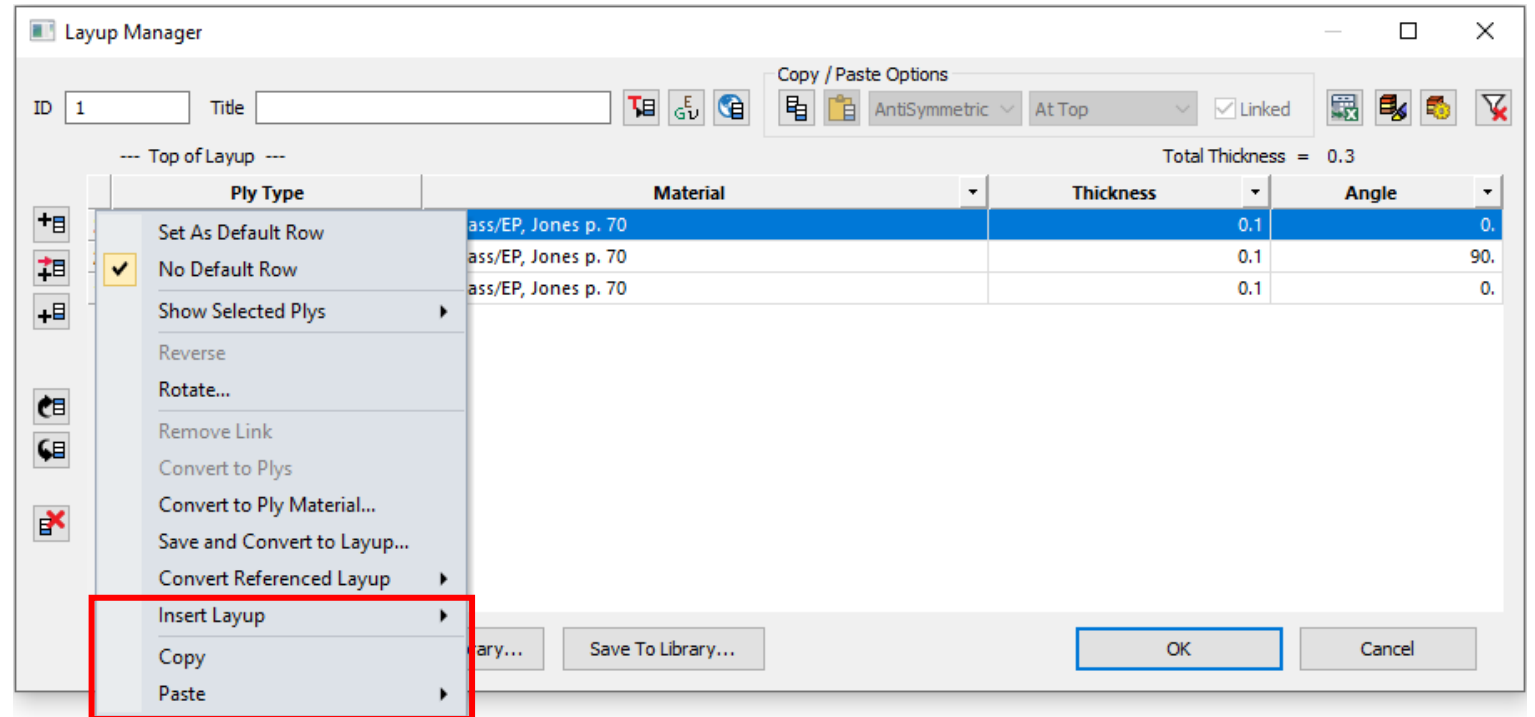
- Rows – Context-Sensitive menu
 - Convert to Ply Material – saves the selected plies as new Ply Material(s) or updates plies to existing Ply Material(s) which have matching Material and Thickness values
- Save and Convert to Layup – saves the selected plies as a layup and converts them to Layup in current layup
- Convert Referenced Layup – converts an existing layup into another type of layup



Laminate Enhancements – Layup Manager – Rows (continued)

Enhancements to Layup Manager:

- Rows – Context-Sensitive menu
 - Insert Layup – Inserts a Layup At Top, Above Selection, Below Selection, or At Bottom
- Copy – Copies selected rows to the clipboard
- Paste – Pastes rows on clipboard into the layup with options
 - As Matched Plies – if on, pasted Plies, Ply Materials, or Layups are 'linked' to original entities
- Inserts plies at a specified location using Matched Order, as Symmetric, or as Antisymmetric



Laminate Enhancements – Layup Manager – Example

Layup Manager populated with a Ply, “Matched Ply”, referenced Ply Material, and referenced Layups

Layup Manager

ID: 2 Title:

Copy / Paste Options: AntiSymmetric At Top Linked

--- Top of Layup --- Total Thickness = 1.35

	++	Ply Type	Reference	Material	Thickness	Angle
	-	Layup - Symmetric	1..Layup to Reference			
13		Ply		1..Glass/EP, Jones p. 70	0.1	0.
12		Ply		1..Glass/EP, Jones p. 70	0.1	45.
11		Ply		1..Glass/EP, Jones p. 70	0.1	90.
10		Ply		1..Glass/EP, Jones p. 70	0.1	-45.
9		Ply		1..Glass/EP, Jones p. 70	0.1	0.
8		Linked	6..Ply 6	1..Glass/EP, Jones p. 70	0.15	45.
7		Ply Material	1..Ply Material 1	1..Glass/EP, Jones p. 70	0.05	90.
6		Ply		1..Glass/EP, Jones p. 70	0.15	45.
	-	Layup	1..Layup to Reference			
5		Ply		1..Glass/EP, Jones p. 70	0.1	0.
4		Ply		1..Glass/EP, Jones p. 70	0.1	-45.
3		Ply		1..Glass/EP, Jones p. 70	0.1	90.
2		Ply		1..Glass/EP, Jones p. 70	0.1	45.
1		Ply		1..Glass/EP, Jones p. 70	0.1	0.

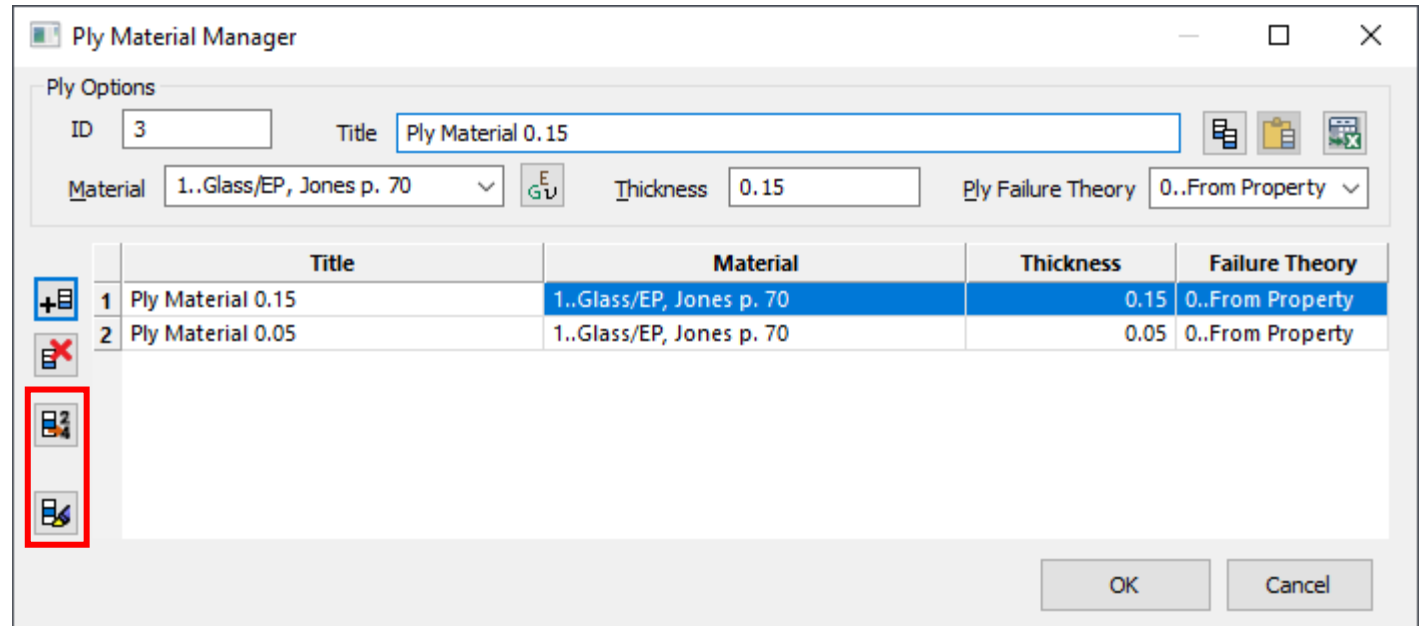
--- Bottom of Layup ---

Load From Library... Save To Library... OK Cancel

Laminate Enhancements – Ply Material Manager

New entity type for Femap 2022.2!

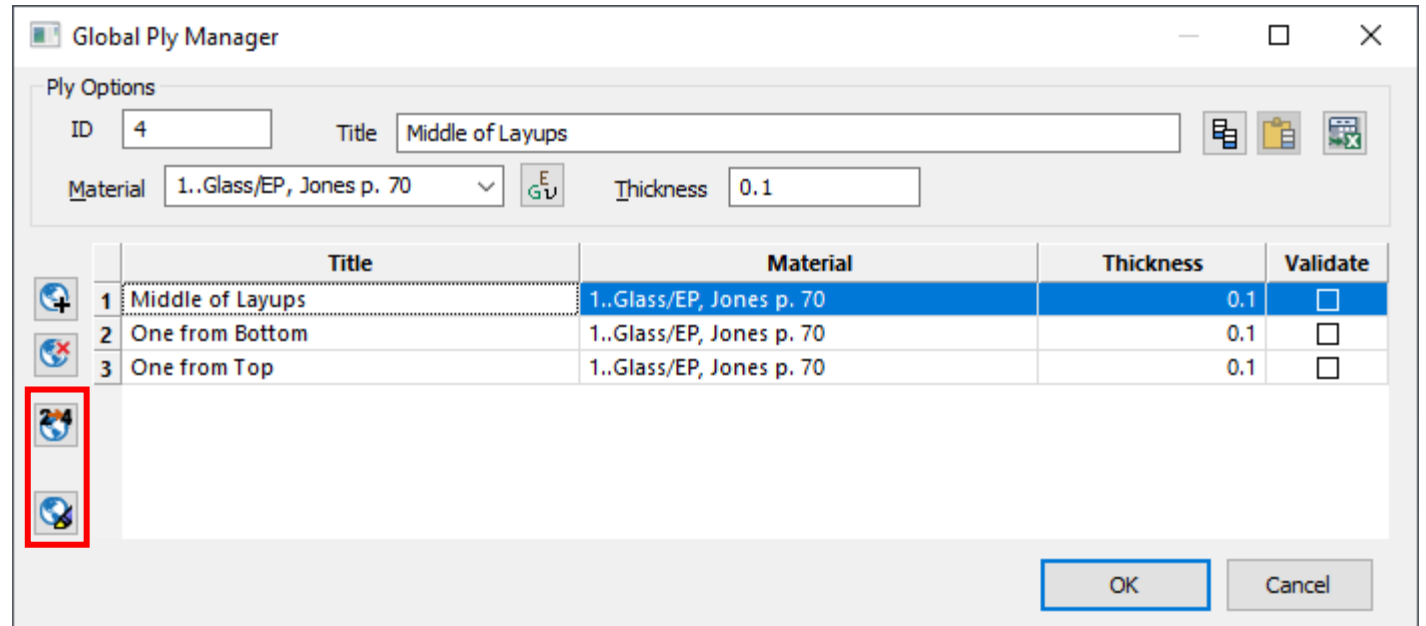
- Model->Laminates->Ply Material Manager or Ply Material Manager icon in the Layup Manager opens Ply Material Manager
- Creates and edits Ply Materials
- Specify ID, Title, Material, Thickness, and optionally Ply Failure Theory
- Unique icons for Ply Material Manager
 - Renumber – one Ply Material at a time
 - Show Ply Material – highlights elements which use selected Ply Materials in the graphics window
- Similar icons to Layup Manager for Copy/Paste (no options), Send to Accel, Add Ply (always at bottom), and Delete



Laminate Enhancements – Global Ply Manager

New look and feel for Femap 2022.2!

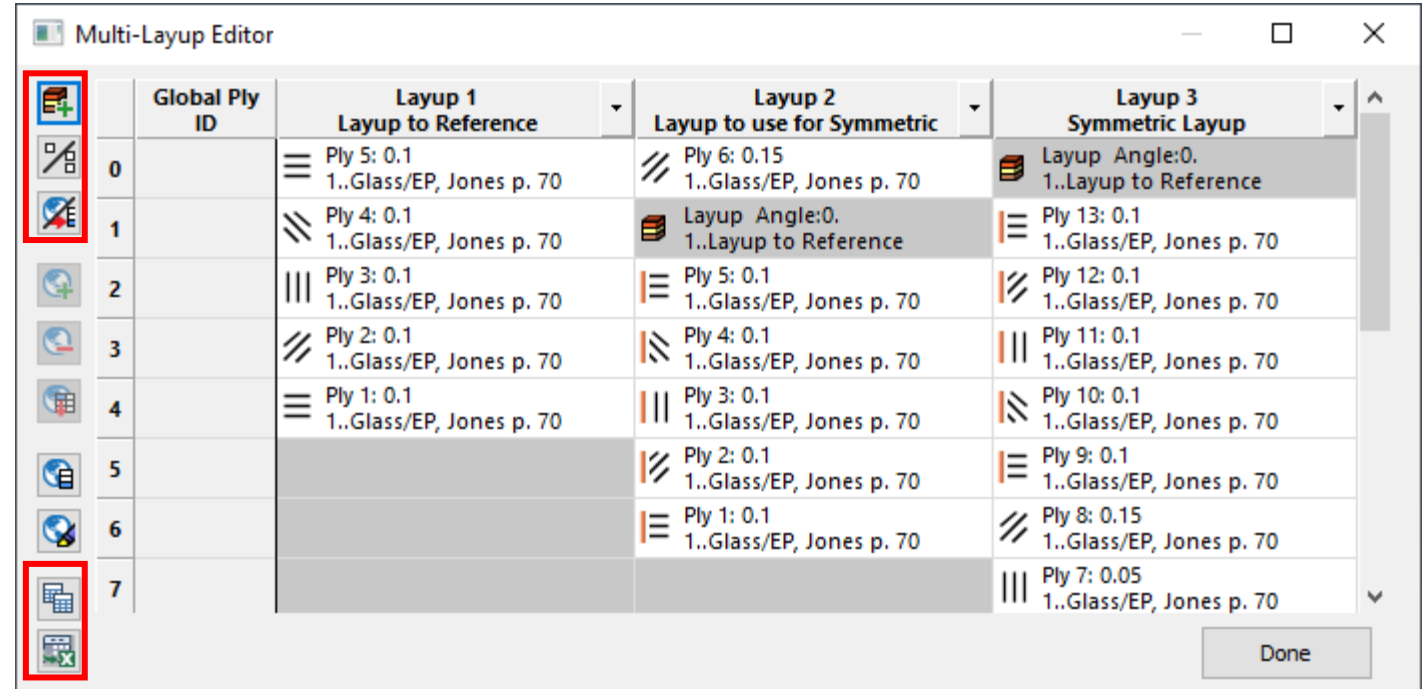
- Model->Laminates->Global Ply Manager or Global Ply Manager icon in the Layup Manager opens Global Ply Manager
- Creates and edits Global Plies
- Specify ID, Title, Material, and Thickness
- Option to Validate Global Ply assignment
- Unique icons for Ply Material Manager
 - Renumber – one Global Ply at a time
 - Show Global Ply – highlights elements which use selected Global Plies in the graphics window
- Similar icons to Layup Manager for Copy/Paste (no options), Send to Accel, Add Ply (always at bottom), and Delete



Laminate Enhancements – MultiLayup Editor – General

New command for Femap 2022.2!

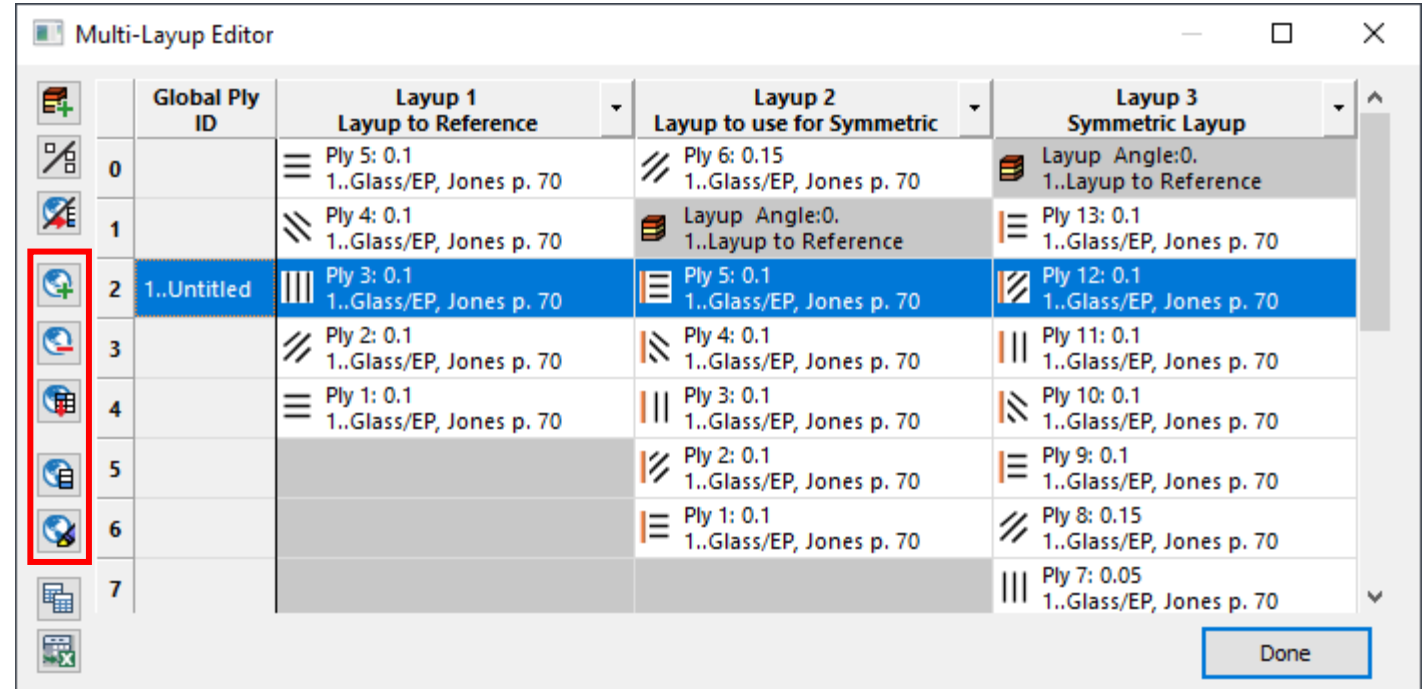
- Model->Laminates->MultiLayup Editor
- Allows any number of layups to be compared to one another side-by-side
- Two modes available, both automatically update all layups needed for update
 - Set Global Ply ID
 - Insert a Ply, Ply Material, or Layup
- Icons for both modes
 - Add Layup – adds layup(s) to editor
 - Toggle between one or two lines of text
 - Toggle between Global Ply/Insert modes
 - Copy to Clipboard
 - Send to Excel



Laminate Enhancements – MultiLayup Editor – Set Global Ply ID

Set Global Ply ID mode

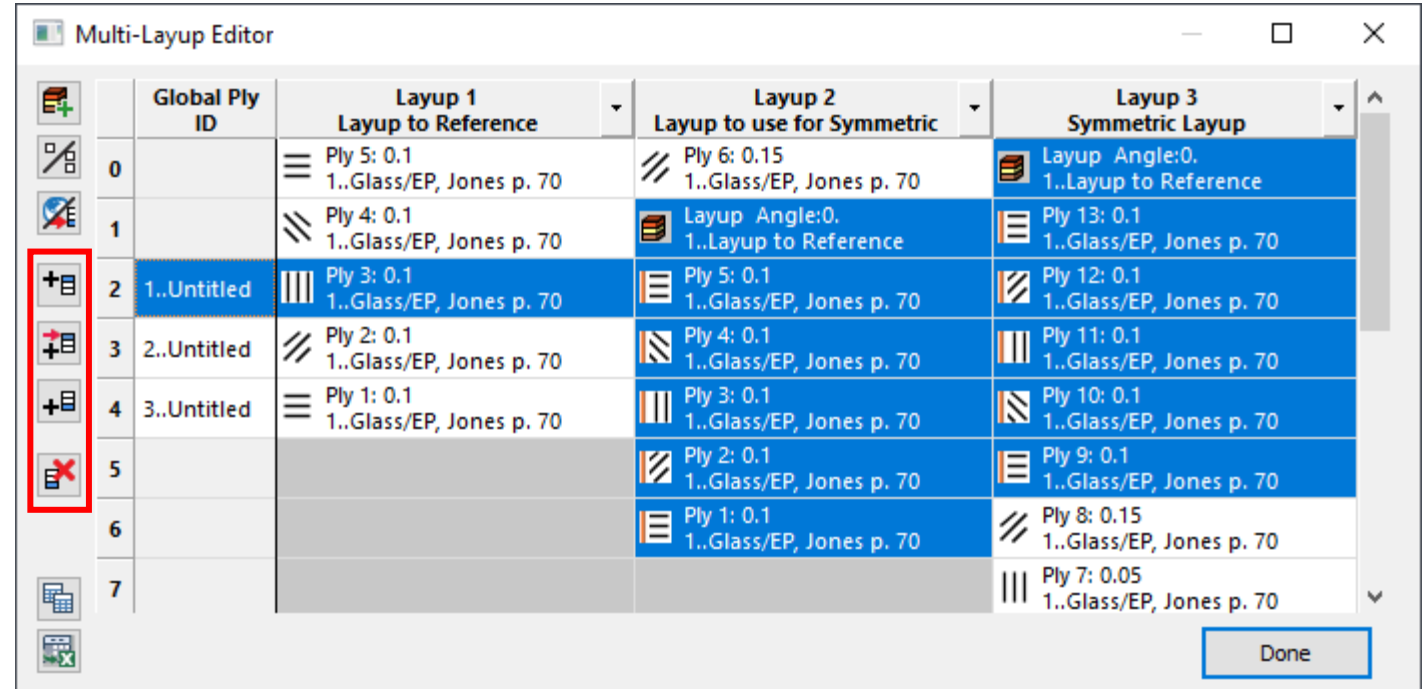
- Can only be used successfully when only Plies and/or Ply Materials are highlighted in all selected layups
- Global Ply IDs can be assigned one at time, unassigned in bulk, or automatically created using a user-specified increment
- Unique Icons for Set Global Ply ID Mode
 - Add or Update Global Ply
 - Remove Global Ply
 - Fill Selected Plies to Create New Global Plies
 - Global Ply Manager
 - Show Global Ply – Highlights elements which use global plies in graphics window



Laminate Enhancements – MultiLayup Editor – Insert Ply, Ply Material, or Layup

Insert Ply, Ply Material, or Layup mode

- Will only insert Ply, Ply Material, or Layup at specified location for layups which have specific plies highlighted in the table
- Unique Icons for Insert Ply, Ply Material, or Layup Mode
 - Add item at Top of each qualified layup
 - Add item Above Selected row of each qualified layup
 - Add item at Bottom of each qualified layup
- Delete highlighted plies – When an entire row is highlighted, everything highlighted in the table will be deleted



Simulation Entities

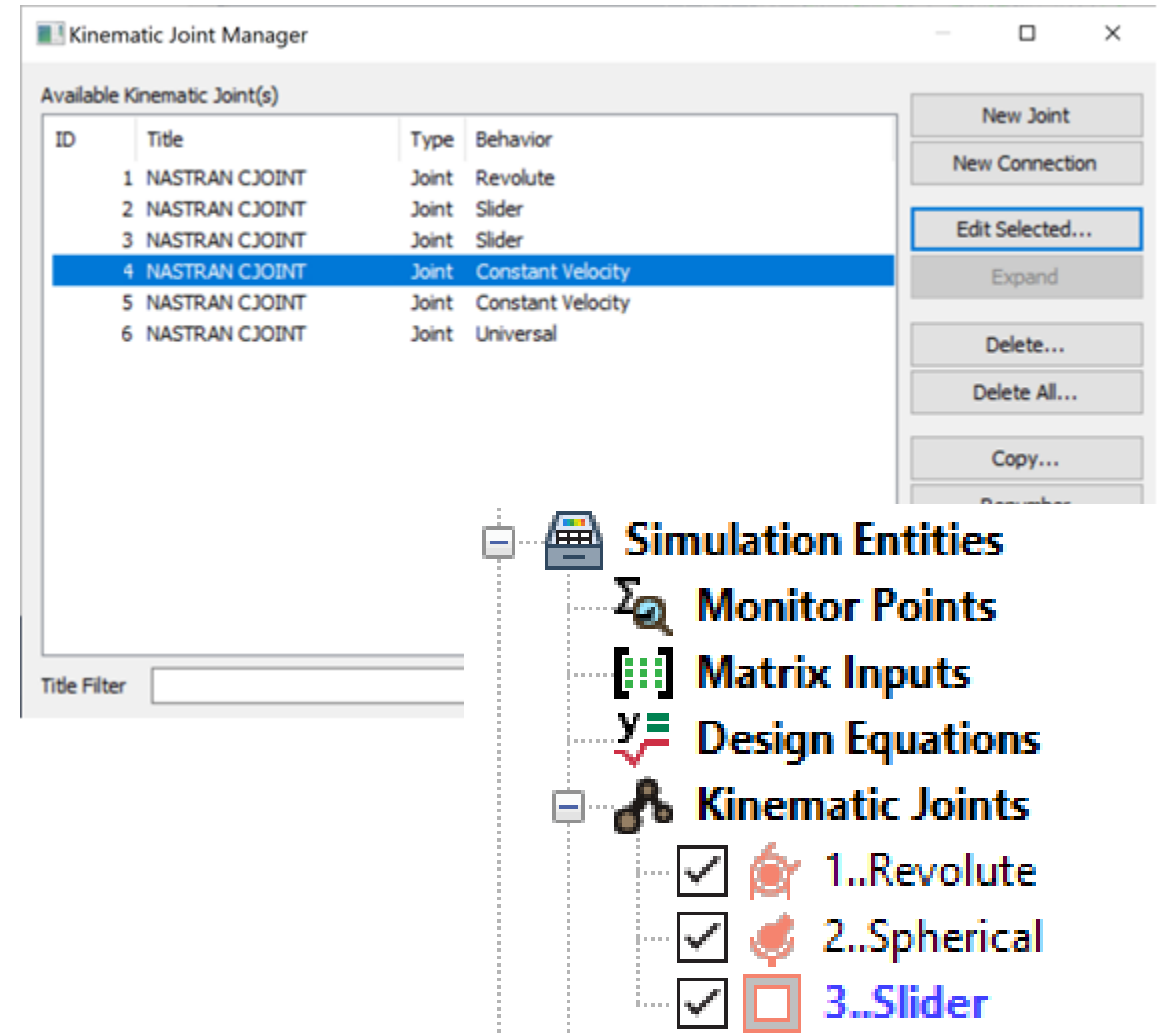
Kinematic Joints – Overview

1D Connection Entities that allow for analysis of Flexible Multi-Body Dynamic Systems in SOL402 and **ANSYS** (future support planned for ABAQUS)

- Aerostructures
- Gas turbines
- Industrial Robots

Joint Definition

- Connect two nodes
- 6 relative Degrees-Of-Freedom (DOF)
- Kinematic constraints imposed on displacement and rotational DOF to create different joint types
 - Revolute, Slider, Universal, etc.
- Local CSys Definition at nodes



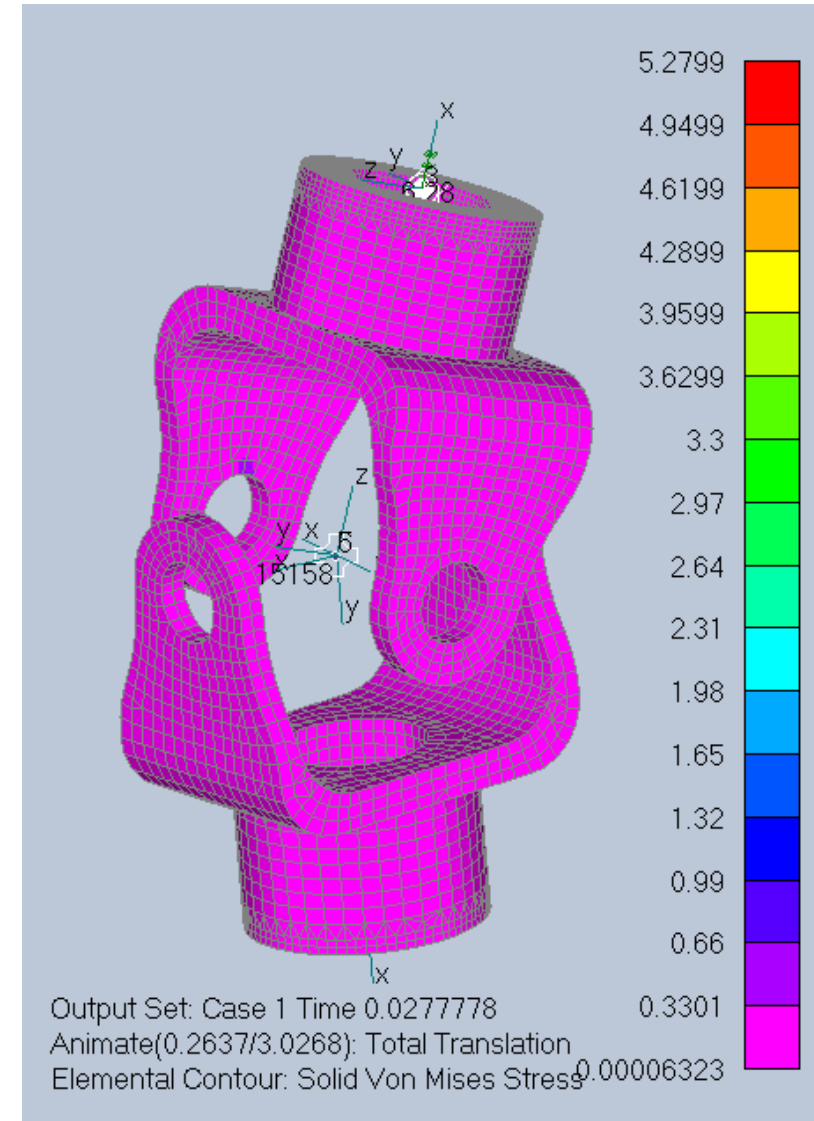
Kinematic Joints – Simcenter Femap Interface

Solver-Neutral Interface

- Kinematic Joints are a new “Simulation Entity” that provide a single unified interface to the joint elements in SOL402 and **ANSYS** (future support planned for ABAQUS)
 - SOL402 – CJOINT/PJOINT/PJOINT2
 - **ANSYS – MPC184/SECTYPE,ID,JOINT,(Joint Type)/
SECDATA/SECJOINT/SECNUM/SECLOCK/SECSTOP/
SECJ,TB**

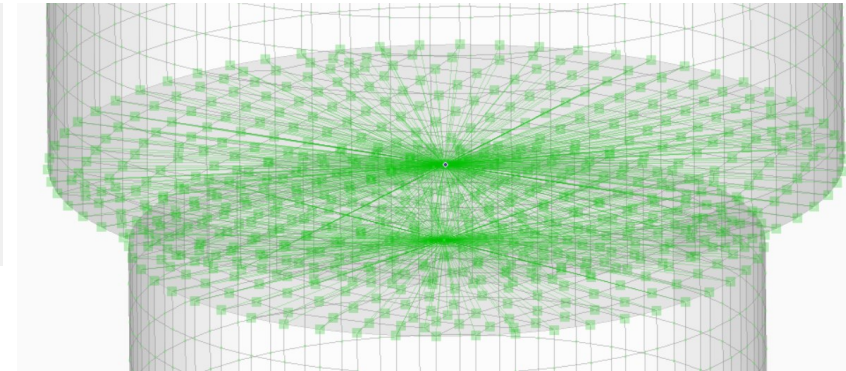
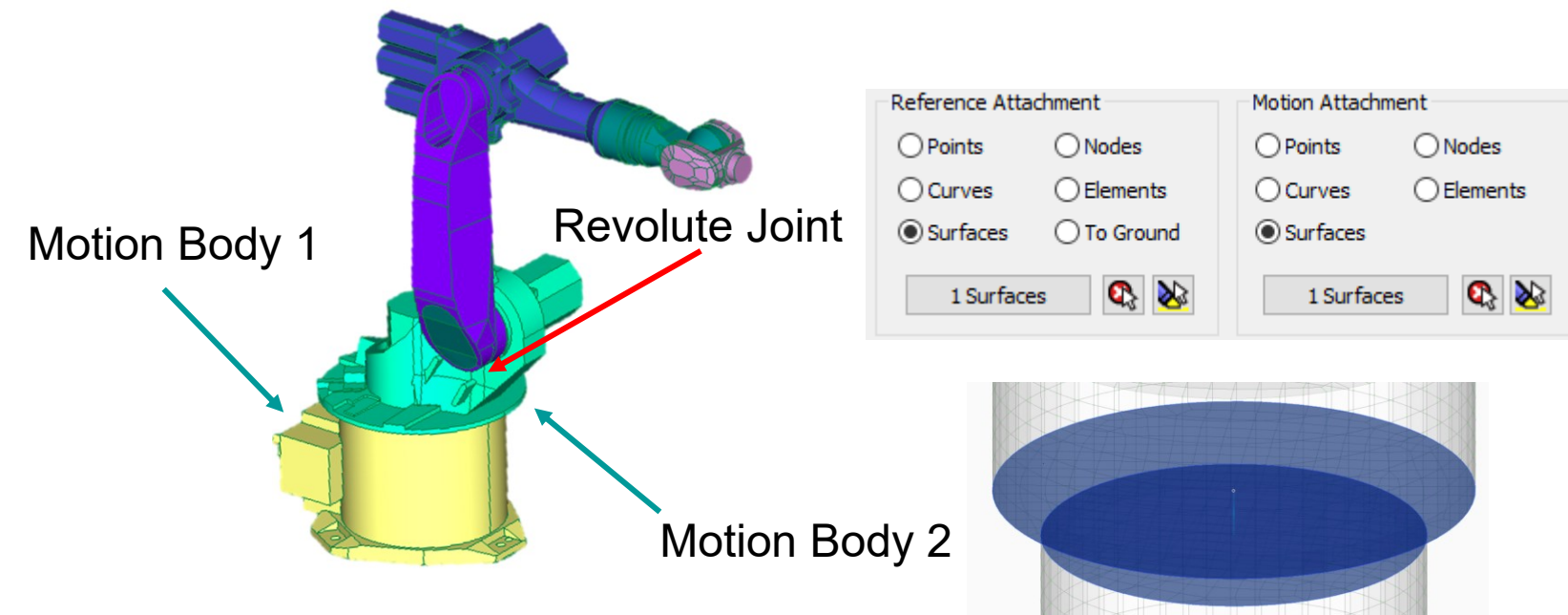
Supported Behaviors

- Joints with Coincident Nodes
 - Revolute, Spherical, Fixed, Universal, Constant Velocity
- Slider Joints
 - Inline, Slider, Cylindrical, Slider-Universal, Screw
- **General Joints – User defines DOF and other options.**
Added for 2022.2, ANSYS only



Kinematic Joints – Benefits of using Joint Connections

- When multiple solvers are supported, provides Solver-Neutral Approach to Defining Joints and attachments to motion bodies via Finite Element Entities, Geometric Entities, or Both
- Connection to motion bodies automatically expanded on export to different solvers (Simcenter Nastran – RBE2s or RBE3s, **ANSYS – MPC184s**, ABAQUS – TBD)



Connections automatically generated on export

Kinematic Joints – Properties

Additional Joint Properties (General tab - ANSYS)

- Solver Expansion Options – Currently not used

Additional Joint Properties (ANSYS tab)

- Reference Lengths/Angles – Writes values to SECDATA entries
- Locks – Writes values to SECLOCK entries
- Stops – Writes values to SECSTOP entries
- Misc Data – Writes values to SECJ and TB entries

Joint Properties

Simcenter Nastran **ANSYS**

Reference Lengths/Angles (SECDATA)

L1 (Ref Length in Fx-Ux)	0.
L2 (Ref Length in Fy-Uy)	0.
L3 (Ref Length in Fz-Uz)	0.
Phi1 (Ref Angle in Mx-Rx)	0.
Phi2 (Ref Angle in My-Ry)	0.
Phi3 (Ref Angle in Mz-Rz)	0.

Locks (SECLOCK)

	Minimum	Maximum
<input type="checkbox"/> UX	0.	0.
<input type="checkbox"/> UY	0.	0.
<input type="checkbox"/> UZ	0.	0.
<input type="checkbox"/> RX	0.	0.
<input type="checkbox"/> RY	0.	0.
<input type="checkbox"/> RZ	0.	0.

Misc Data (SECJ, TB)

Screw Pitch	0.
Outer Radius	0.
Inner Radius	0.
Effective Length	0.
Stiffness	0.
Damping	0.
Friction mu	0.

Stops (SECSTOP)

	Minimum	Maximum
<input type="checkbox"/> UX	0.	0.
<input type="checkbox"/> UY	0.	0.
<input type="checkbox"/> UZ	0.	0.
<input type="checkbox"/> RX	0.	0.
<input type="checkbox"/> RY	0.	0.
<input type="checkbox"/> RZ	0.	0.

OK Cancel

Monitor Points – Overview

Allow analysts to print labeled output for Integrated Loads on Structural and Aerodynamic models

Model->Simulation Entities->Monitor Points

Creation, editing, previewing, and management via NASTRAN Monitor Point Manager

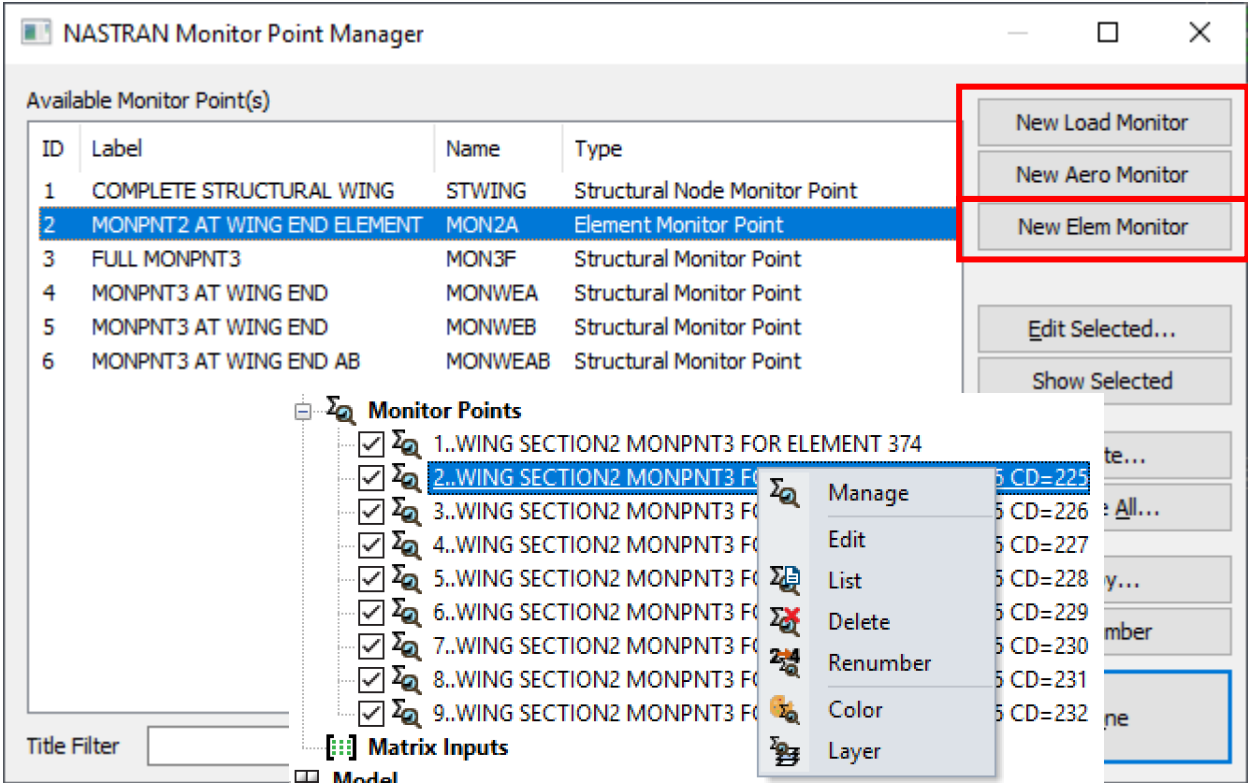
Available in Simulation Entities branch of Model Info Tree and a symbol is drawn in graphics window at summation point for location-based types

Types Supported in v2020.1 (initial release):

- NASTRAN Aerodynamic Control Monitor Point (MONPNT1)
- NASTRAN Structural Monitor Point (MONPNT3)

New type added for v2022.2!

- NASTRAN Element Monitor Point (MONPNT2)



Type	Simcenter Nastran Supported SOLs	MSC Nastran Supported SOLs
MONPNT1	144	101, 108, 109, 111, 112, 144, 146, 200, 400
MONPNT2	101, 103	101, 103, 108, 109, 111, 112, 144, 146, 200
MONPNT3	101, 103	101, 103, 108, 109, 111, 112, 144, 146, 200, 400

Monitor Points – NASTRAN Element Monitor Point (MONPNT2)

NASTRAN Element Monitor Point

- Writes MONPNT2 bulk data entry for Simcenter Nastran and MSC Nastran
- Defines load monitor point at named element and outputs component of stress, strain, or force
- Created and edited using the NASTRAN Element Monitor Point dialog box
- Two Way to Select Output
 - Output Vector Selection – choose Femap Output Vector ID from drop-down and table is populated automatically for selected elements
 - Manual Selection – choose options using output type, element type, and component drop-downs to populate table for selected elements

NASTRAN Element Monitor Point

ID: 1 Label: MONPNT2 AT WING ELEMENT Name: MON2A

Output Vector Selection

3000..Bar EndA Plane 1 Moment

Manual Selection

1..STRESS

0..Simple beam element (CBAR)

4..AXIAL

	Type	Table	Component	Element ID
0	CBAR	STRESS	AS	15000

OK Cancel

User Interface Updates

Element Update

Modify->Update Elements->Line Element Offsets

- Dialog box reorganized by offset method
 - Allows user to pick exactly how they want to offset line elements which was sometimes not clear in previous versions
 - For some methods, eliminates need to enter values in additional dialog boxes
- Added the ability to offset a specified length along the user-defined vector when using the Around Vector method
- Can be combined with the Radial Offset value

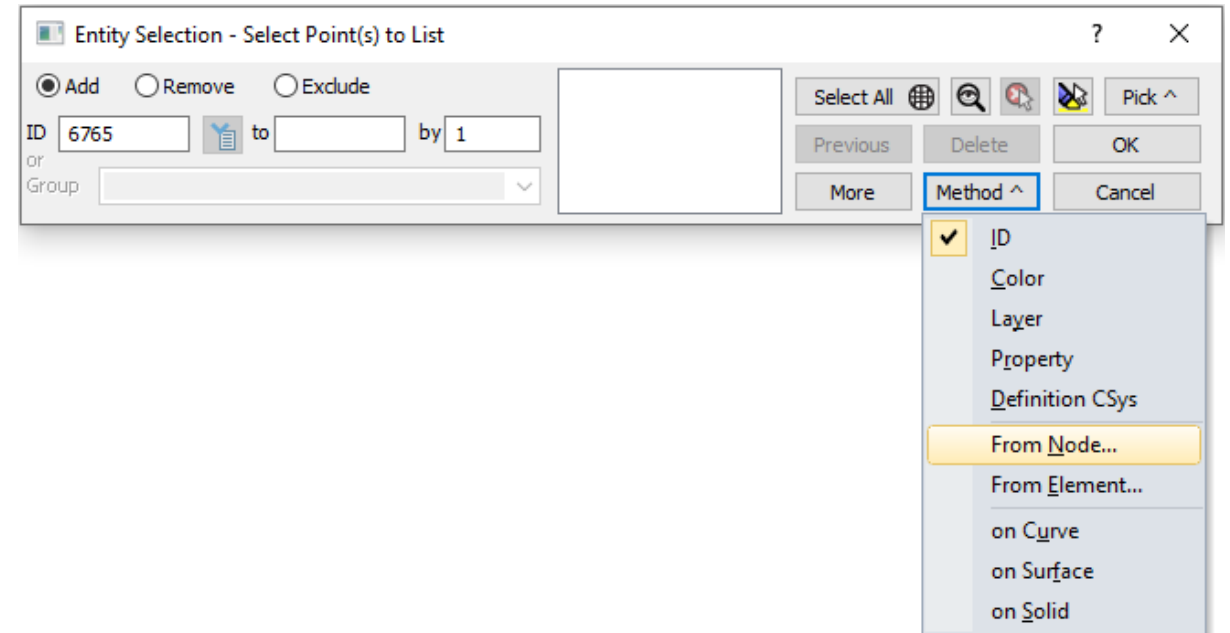
The screenshot shows the 'Update Line Element Offsets' dialog box with the following settings:

- Offset Method:**
 - ☒ **Vector Offset**
 - ☒ Update End B = End A
 - ☒ Update End A
 - ☒ Update End B
 - ☐ Move To Reference Point
 - ☐ Offset From Reference Point
 - Y Offset: 0.
 - Z Offset: 0.
 - ☐ Around Point
 - Radial Offset: 0.
 - ☐ Around Vector
 - Radial Offset: 0.
 - Along Vector: 0.
 - ☐ Remove Offsets
 - ☒ Remove End A
 - ☒ Remove End B

Buttons: OK, Cancel

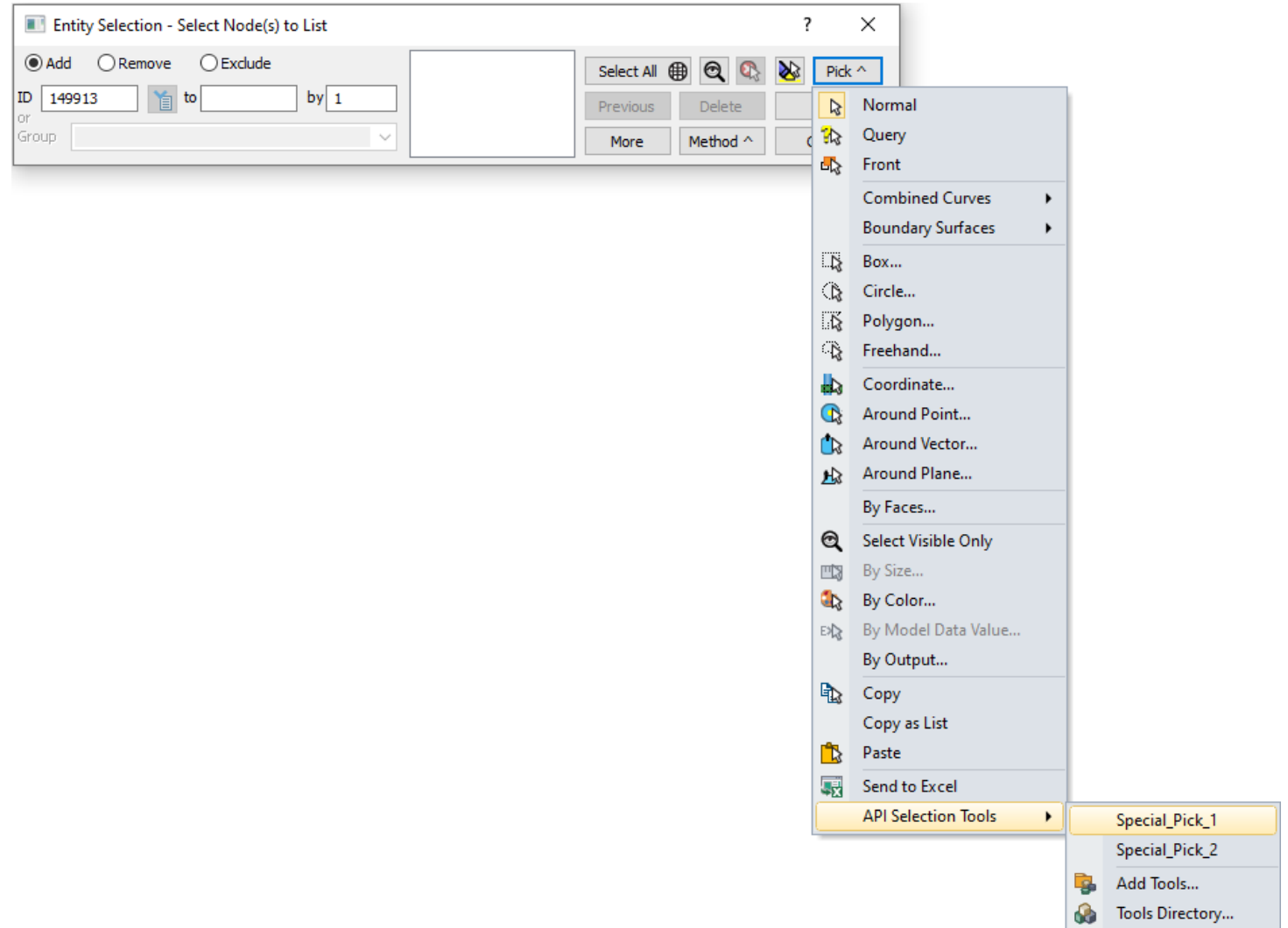
Grouping and Selection

- New Group Commands to include geometric entities in a group based on an associated node or element
 - “Group, Point, From Node”
 - “Group, Point, From Element”
 - “Group, Curve, From Node”
 - “Group, Curve, From Element”
 - “Group, Surface, From Node”
 - “Group, Surface, From Element”
 - “Group, Solid, From Node”
 - “Group, Solid, From Element”
- Similar options added to Method^ menu in Standard Entity Selection dialog box for Points, Curves, Surfaces, and Solids



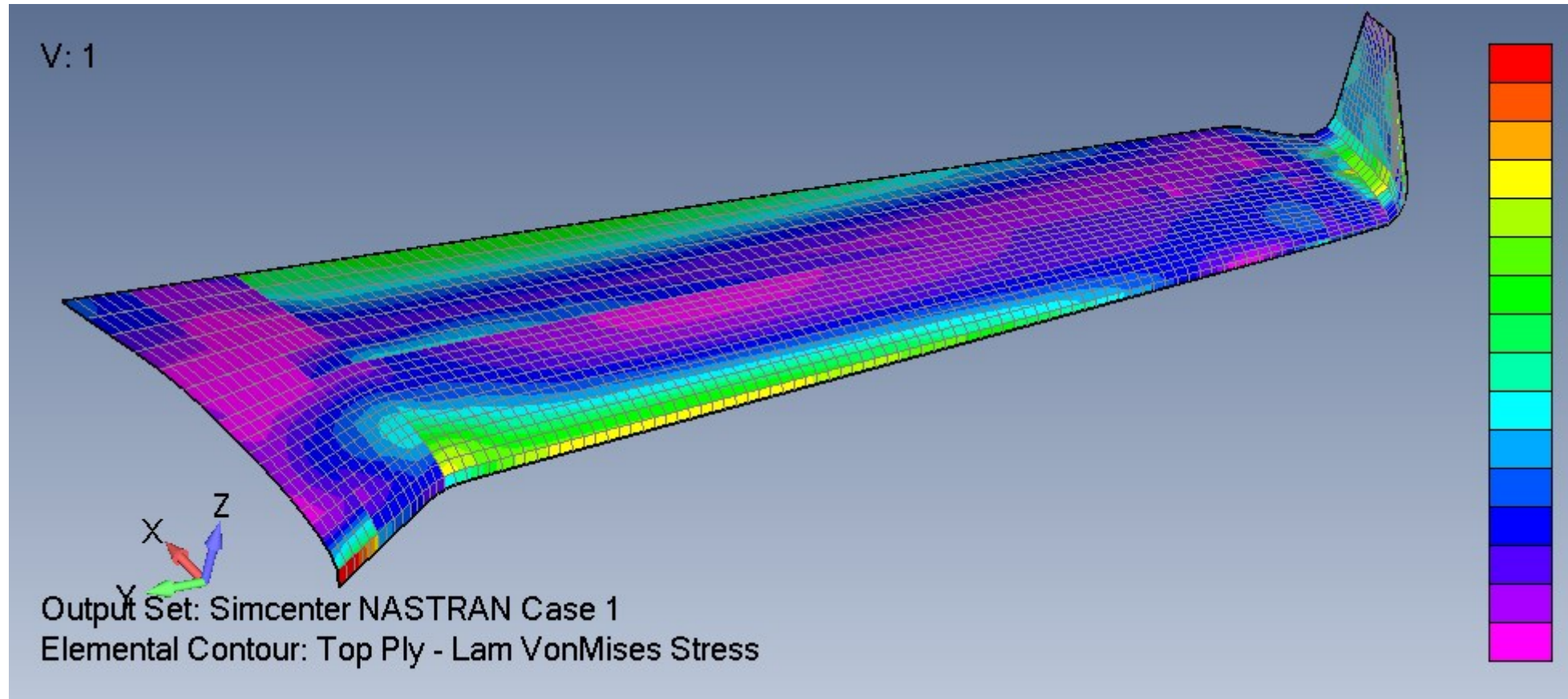
Grouping and Selection

- API Selections Tools submenu has been added to Pick^ menu of the standard entity selection dialog box
- Allows API script to be executed to add or remove items from the selection while dialog box is open.
- Submenu works like Custom Tools and User Tools menus directory to store API scripts can be set on the Library/Startup tab of Preferences
- Unique API calls added which should be in every script used for this purpose
 - feStartSelectionTool
 - feEndSelectionTool
 - feAbortSelectionTool



Contour/Criteria Legend – No Labels Options

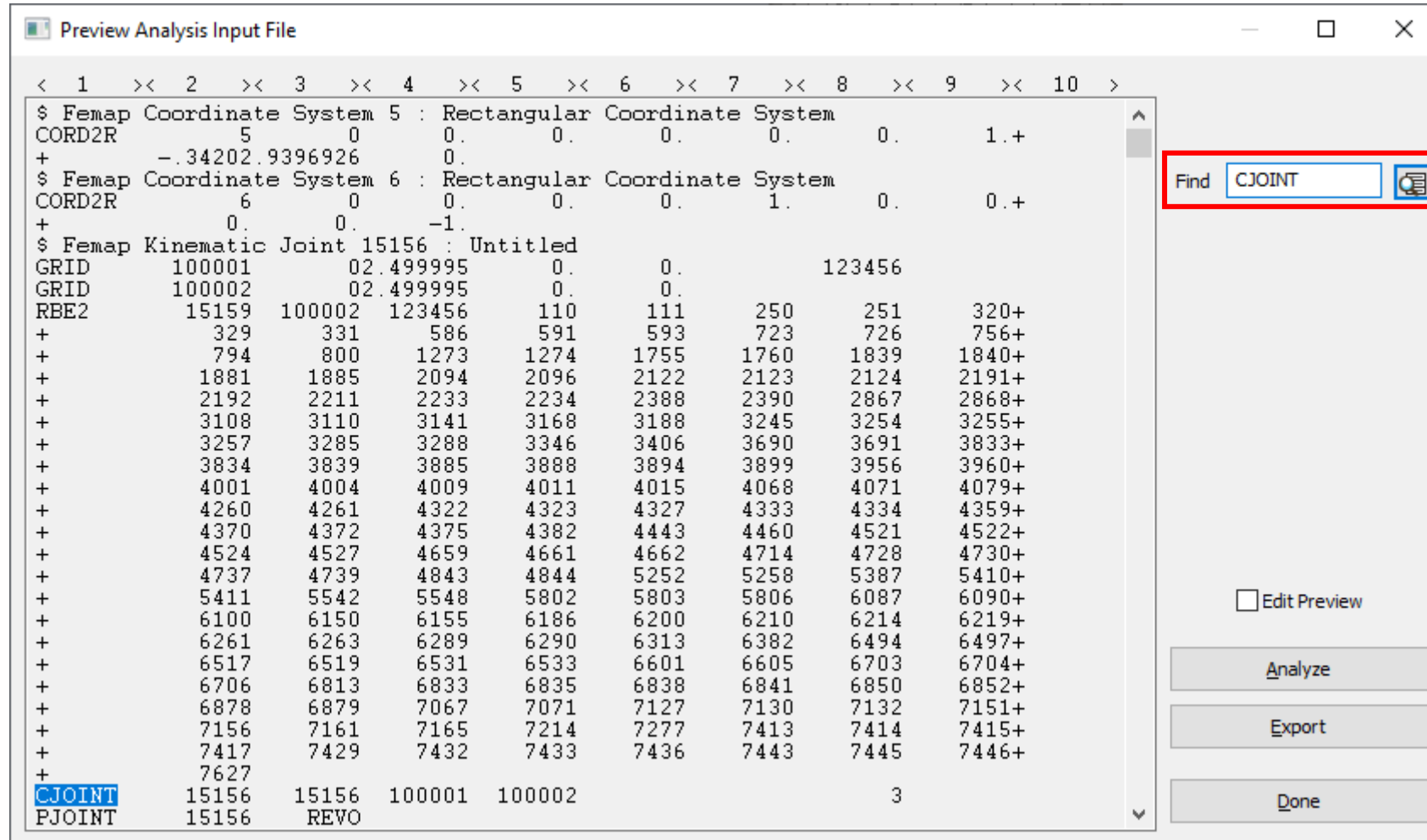
Option to no display labels on the Contour/Criteria Legend using either Contour Colors or View Color



Pair either option with new methods on User Defined Graphics API Object to create custom Labels

Analysis Set Manager – Find functionality

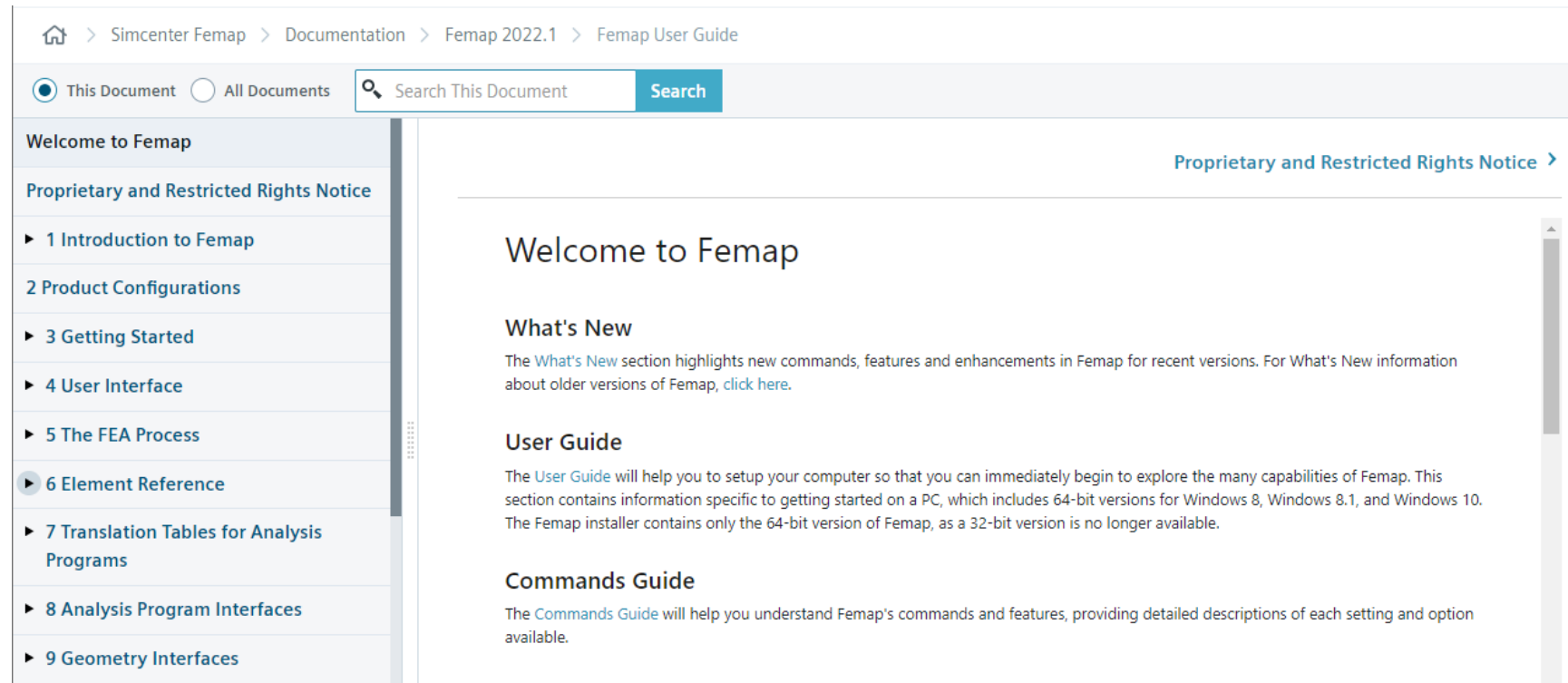
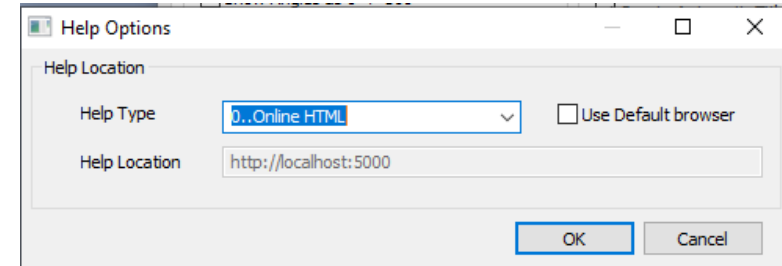
Find functionality in Preview Analysis Input File dialog box to search previewed input for text



Modern Online Help System

- HTML help (implemented v2022.1, improved v2022.2)
- Femap can access help on Siemens Support Center
- Can also be installed locally or on a network server
- Fully searchable
- Browser bookmarks
- Still in legacy format

- API manual
- Custom Tools
- VisQ
- More Resources (PDFs)



Solver Support

Solver Support – Nastran Solvers – Aeroelastic Response

Support for Aeroelastic Response (SOL 146)

- Added three new analysis types:
 - 31..Aeroelastic Frequency Response
 - 32..Aeroelastic Transient Response
 - 33..Aeroelastic Random Response
- NASTRAN Dynamic Analysis dialog box is available in all three analysis types to specify options for Modal Transient and Modal Frequency Response
- New options added to NASTRAN Aerodynamic Data dialog box for all three analysis types:
 - Mach Number (MACH)
 - Dynamic Pressure (Q)
 - Gust Load (GUSTAERO)

NASTRAN Aerodynamic Data (AEROx, MKAEROx)

Aerodynamic Physical Data

Aerodynamic CSys 0..Global Rectangular

Velocity 0.

Ref Length 0.

Ref Density 0.

Symmetry

Symmetry ☐ XZ ☐ XY

No Symmetry ☒ ☒

Anti Symmetry ☐ ☐

Mach Number - Frequency Table

Mach Number Func 0..None

Dynamics Options

Number of Modes 0 ☐ Zero Modes Val(FZERO) 1.E-4

Lowest Freq (Hz) 0. ☐ As Structural (KDAMP)

Highest Freq (Hz) 0. ☐ PARAM OPPHIPA

Mach Number (MACH) 0.

Dynamic Pressure (Q) 0.

Gust Load (GUSTAERO) 1..Do Not Comp

Prev... Next... OK Cancel

Solver Support – Nastran Solvers – Aeroelastic Response

Support for Aeroelastic Response (SOL 146)

- Ability to enter Power Spectral Density Factors using Gust PSD Input added to NASTRAN Power Spectral Density Factors (SOL 146) dialog box for Aeroelastic Random Response
- Loads (Aerodynamic) drop-down added to Boundary Conditions dialog box which allows separate loads for the mechanical and aerodynamic portions of the model
- An Aerodynamic Vertical Gust Load can now be specified as a Body Load in any Load Set which can be specified using this drop-down

NASTRAN Power Spectral Density Factors (SOL146)

Correlation Table

Global =>Global

Excited Subcase: Global
Load Set: 3..Set3
Applied Subcase: Global
Load Set: 3..Set3

☐ Tabular PSD Input ☒ Gust PSD Input

Edit Correlation Table

Table ID	Factor	Gust PSD Model
0	1. x	0..von Karman

Turbulence Factor: 0.
Gust RMS Velocity: 0.

Apply

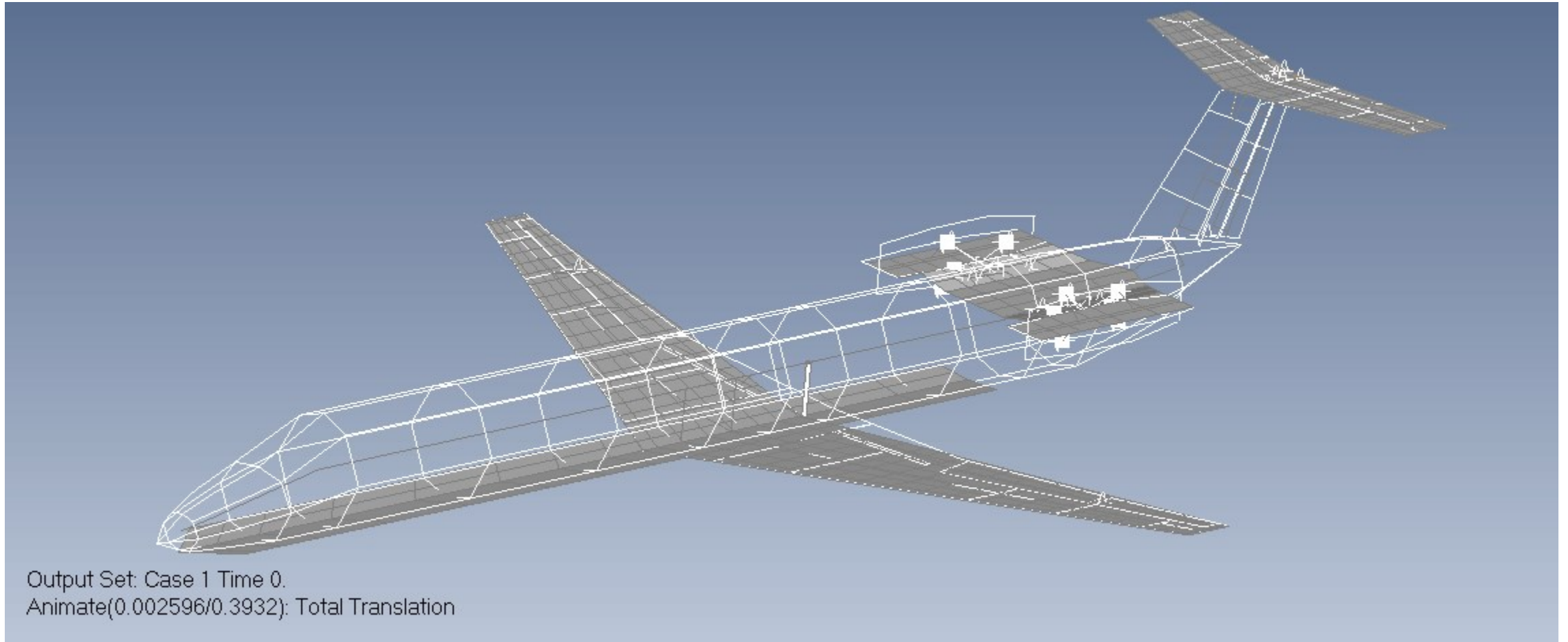
Autocorrelation Function Time Lag

Lag Intervals: 0 Starting Lag: 0. Max Lag: 0.

Prev... Next... OK Cancel

Solver Support – Nastran Solvers – Aeroelastic Response

Animation of Aeroelastic Transient Response with Gust Load of System-Level Model



Solver Support – ANSYS

Added read and write support for ANSYS MPC184 Joint Elements, including options for SECDATA, SECJ, TB, SECLOCK, and SECSTOP.

API

API

- For Laminate Updates (Ply Material and Layup Objects):
 - Added Ply Material, along with applicable Properties and Methods, to allow programmatic access to new Ply Material entity added for 2022.2
 - Added OnOff, vOnOff, and IncludeOffPlys Properties to the Layup Object. Also, updated thickness, vthickness, angle, vangle, matID, vmatID, globalply, vglobalply, failuretheory, and vfailuretheory to work with updated Layup Manager dialog box. Finally, added AddPlyMaterialPly, AddLayupPly, AddMatchedPlys, GetPlyInfo, GetAllPlyDefinition, MaterialsUsed, GlobalPlysUsed, and PlyMaterialsUsed Methods to the Layup Object.
- For Nastran SOL 146 Support
 - Added NasAeronPARAMgustaero, NasAerodPARAMmach, and NasAerodPARAMq to Analysis Manager Object. Also, added IsGust, GetCorrelateGust, and PutCorrelateGust methods to the Analysis Manager Object
 - Added BodyGustOn, BodyGustWG, BodyGustX0, BodyGustVelocityOpt, BodyGustVelocity, BodyGustAppliedNode, and BodyGustFunction to the Load Set Object.

API

- For Nastran Elemental Monitor Points:
 - Added NasMonitorElemEnabled to Analysis Manager Object
 - Added NasCaseMonitorElemEnabled to Analysis Case Object
 - Added AddManualContribution, GetElemContributions, SetManualContributions, ClearElemContributions, GetAtIndex, and SetAtIndex to Monitor Point Object.
- For OEM Customers:
 - Added GetAllArray, GetAllAttrArray, PutAllArray, and PutAllAttrArray to the Curve Object
 - Added GetAllArray, GetAllAttrArray, PutAllArray, and PutAllAttrArray to the Surface Object
 - Added GetAllArray and PutAllArray to the Material Object.
 - Added GetAllArray, GetFlagArray, PutAllArray, and Put FlagArray to the Property Object
 - Added SetOpenGLTransformationSpace, GetOpenGLTransformationSpace, CollectorContourLegendText, and CollectorAddTextContourLegendLocations to User Defined Graphics Object.