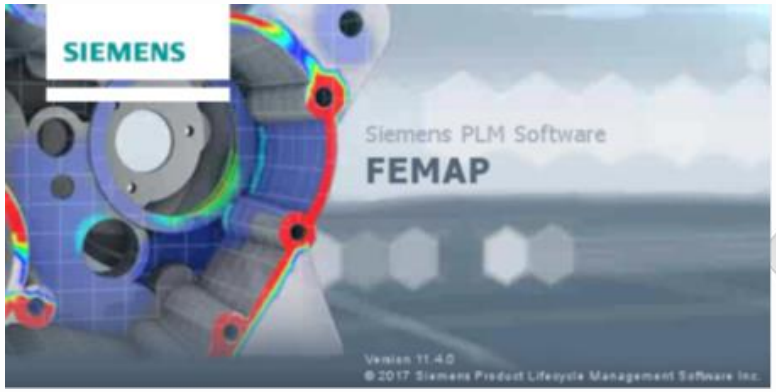
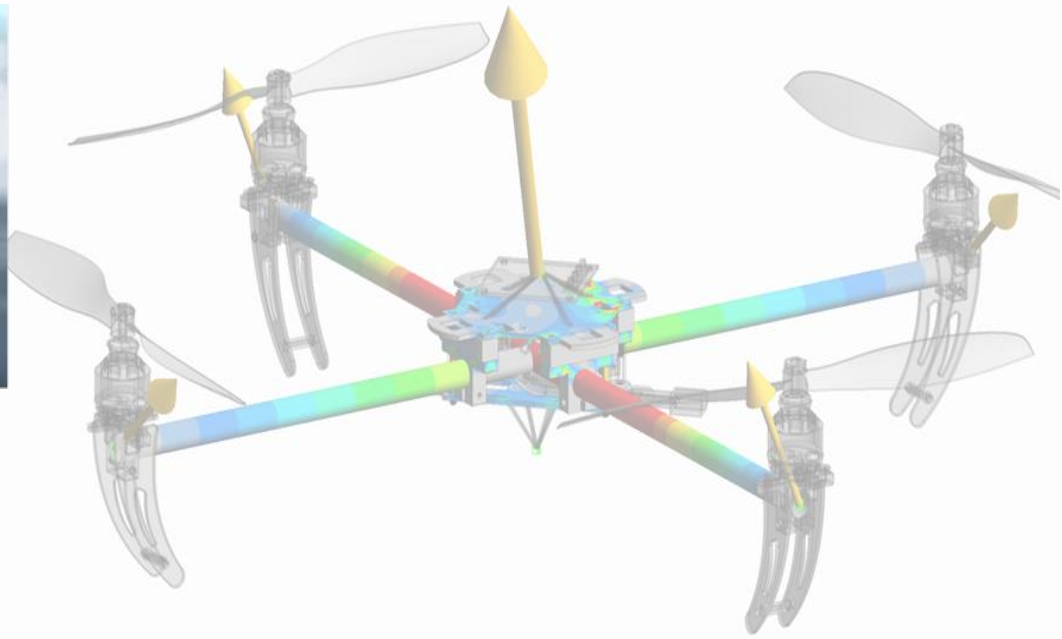




FEMAP v11.4 Tips and Tricks (10 Best Things)

A Seminar for FEMAP and NX Nastran Users

George Laird, PhD, PE - Principal Mechanical Engineer

Adrian Jensen, PE - Senior Staff Mechanical Engineer

Our Services

Software licenses: FEMAP, LS-DYNA, Fibersim, NX CAD-CAM

Experienced technical support and ongoing training

We would welcome your business

Upcoming Training

FEMAP training: October 9 - 13, 2017

FEMAP API course available as an on-demand online course

LS-DYNA training: May 14-18, 2018

Support Review:

"Adrian and Applied CAx consistently get back to me within a few hours with helpful tips or insights. Engineers know that you can't extend a deadline because your FEA support was late in getting back to you. This is why I truly appreciate the level of support Applied CAx provides... They are an excellent resource and I'm glad to have their support."

Allen Foulstone
Senior Systems Engineer
Stratolaunch Systems

Interested in becoming a client or training?

Please contact us
(503) 962-0287
Erik.Barber@AppliedCAx.com

Applied CAx
We do this every day

Finite Element Analysis Predictive Engineering

TABLE OF CONTENTS

1. WHY WE ARE HERE

Congratulations – Taking time out from your schedule to sharpen up your skill sets is always a good thing.

2. OBJECTIVE

What we consider our most important and useful FEMAP capabilities and share with our colleagues our knowledge in building accurate FEA models. We aim to provide a high-level overview but also a path forward for deeper learning.

3. WHAT ABOUT FEMAP V11.4 AND NX NASTRAN V11.0.1?

The FEMAP v11.4.0 release reminds us about this saying: What is the difference between a scientist and an engineer? A scientist quests for the new and novel while an engineer looks for the tried and true. Why? An engineer must have something that will work and not break.

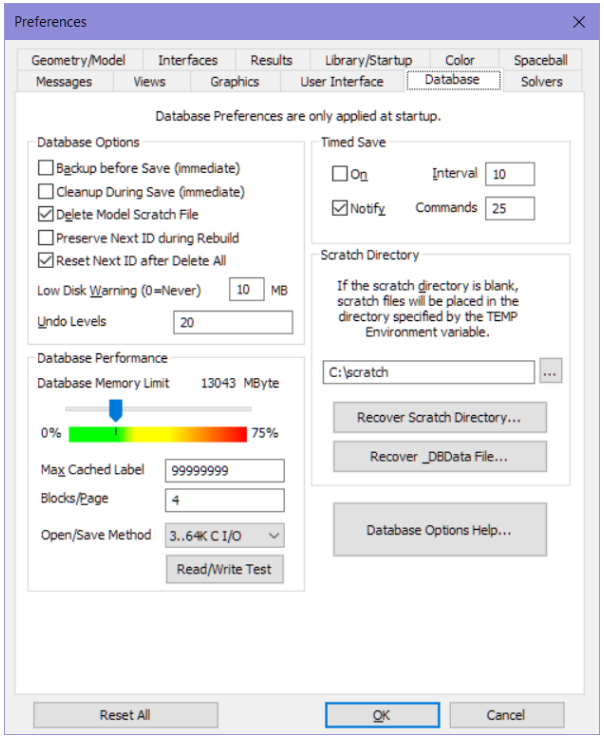
The current release represents about six months of work by the development team. It is not flashy and represents subtle quality improvements in robustness and speed. We truly feel that this is the Engineers' release.

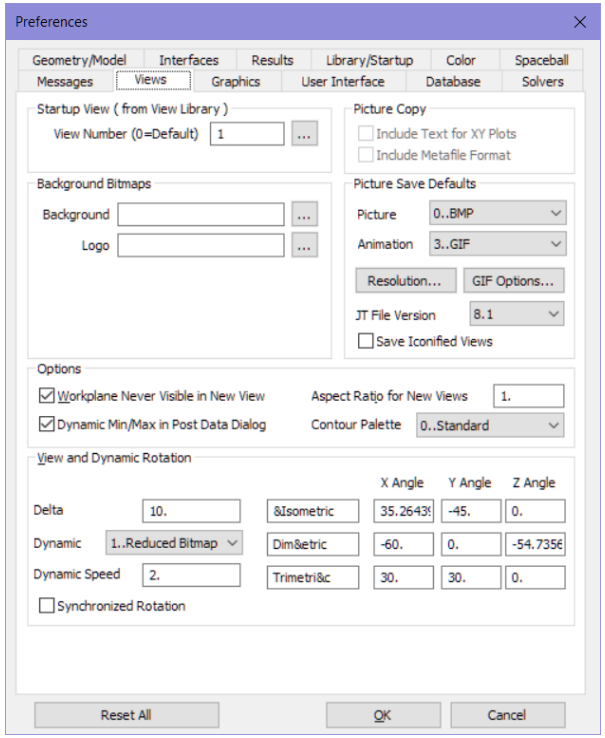
4. TOP TEN THINGS WE LOVE ABOUT FEMAP

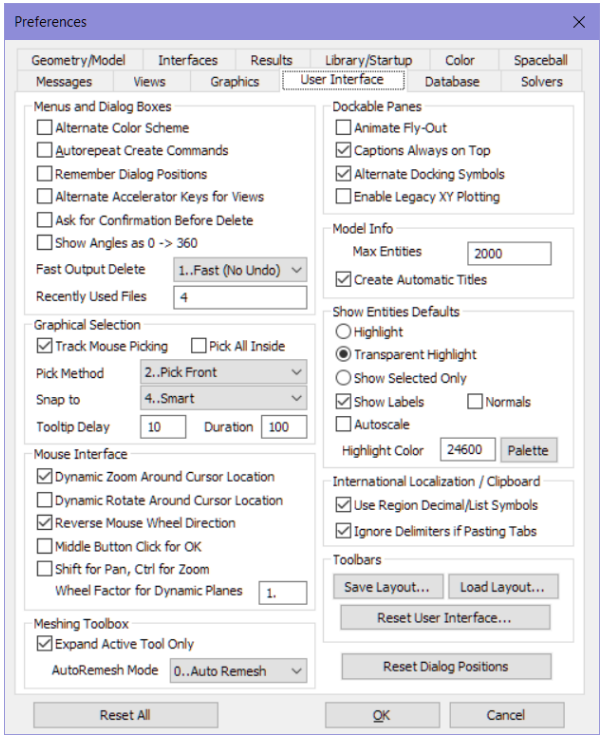
1. Undo: Let's talk FEMAP Preferences
2. Geometry Manipulation: From manifold to non-manifold surfaces
3. Meshing Toolbox: The quest toward the perfect quad
4. Visualization: Ctrl-Q and Draw and Erase (Toolbar)
5. Selector Entity: On the fly control of your model and stress visualization
6. Free Body Diagram (FBD): What every simulation engineer truly loves
7. Panes, Toolbars and Views: The joys of creating a custom work environment in hues
8. FEMAP's Help: So much goodness – so little time
9. Application Programming Interface (API): Just amazingly practical innovation (API)
10. Undo: We have to give it double-billing

4.1 UNDO: LET'S TALK FEMAP PREFERENCES

Undo at 20	Resolution at 4x	Pick Front







Scratch to C:\scratch

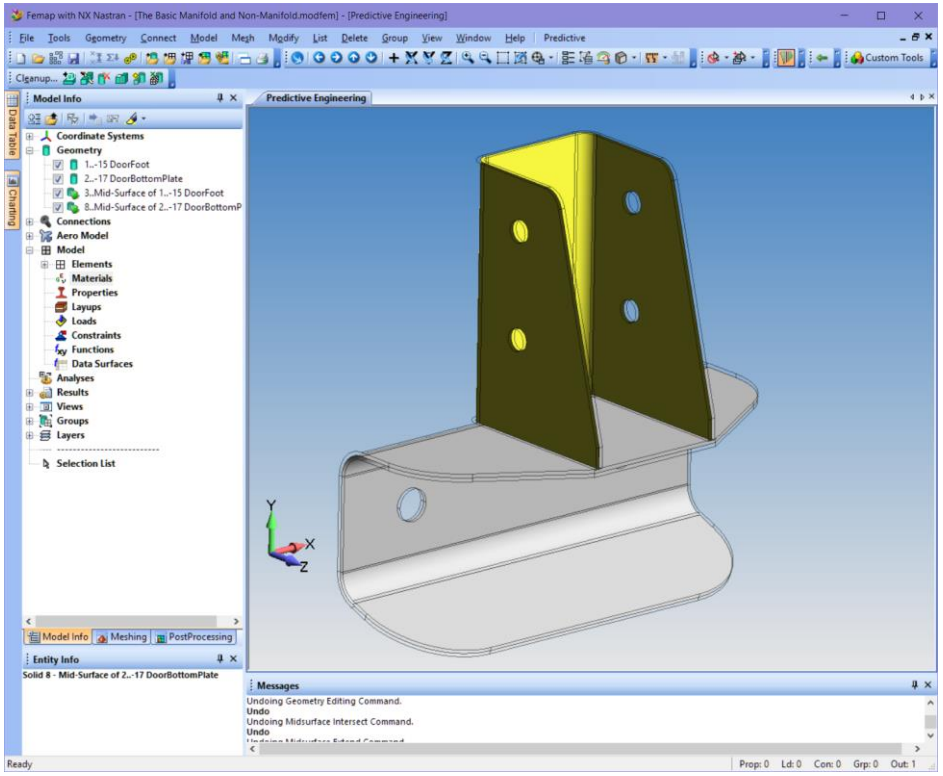
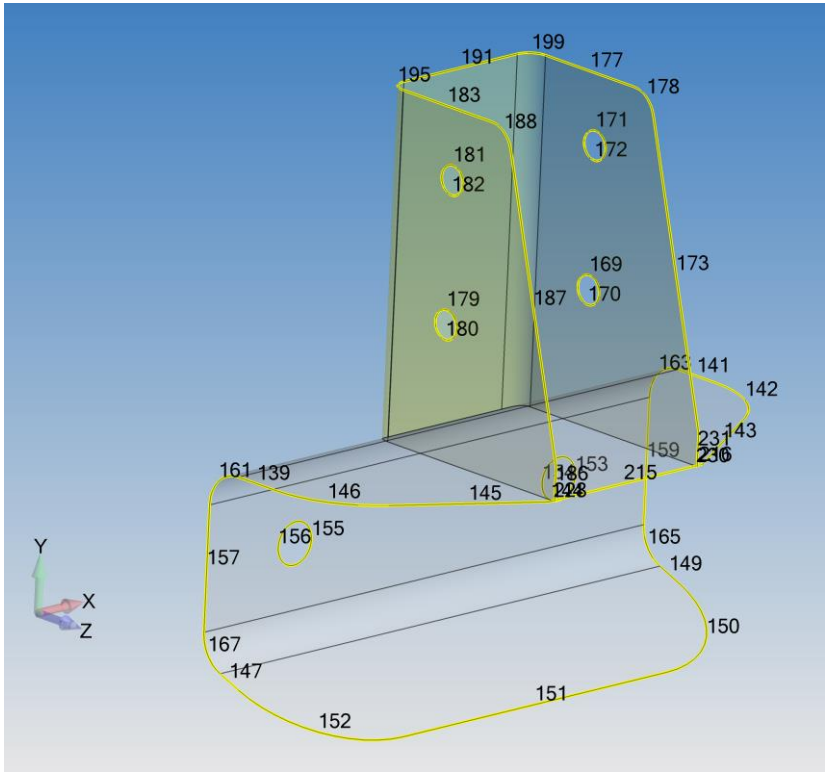
View Number to predefined view

Turn off Ask for Confirmation
Turn off Autorepeat
Dynamic Zoom Around Cursor Location

4.2 Geometry Manipulation: From Manifold to Non-Manifold Surfaces

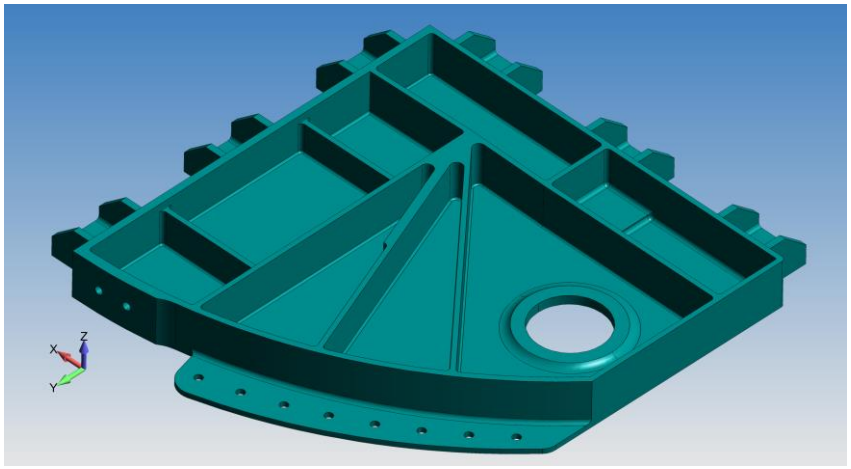
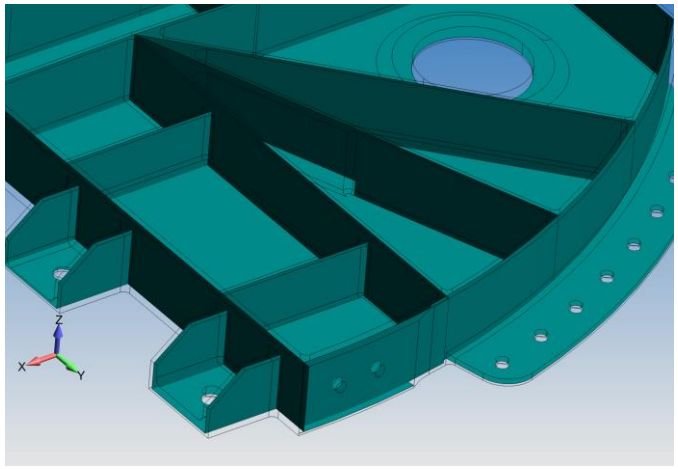
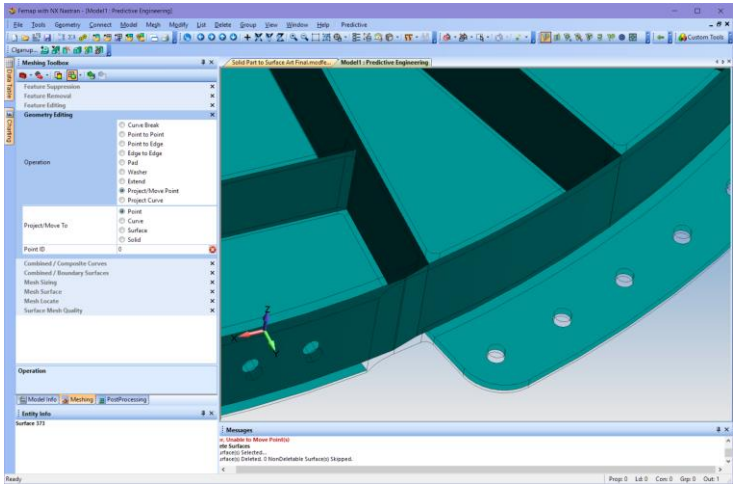
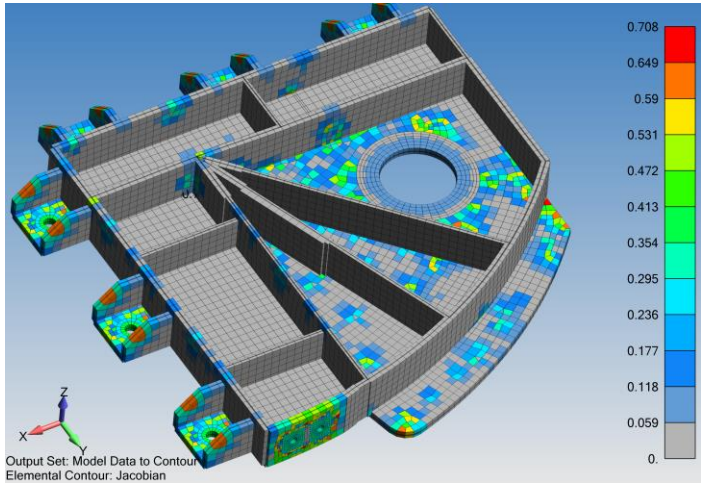
4.2.1 The Basics

These were the breakout geometry operations in FEMAP that brought forth the ability to create clean quad meshes from tangled collections of surfaces.

Manifold	Non-Manifold
	

4.2.2 The Advanced

One can do some flashy things and FEMAP should not be underestimated.

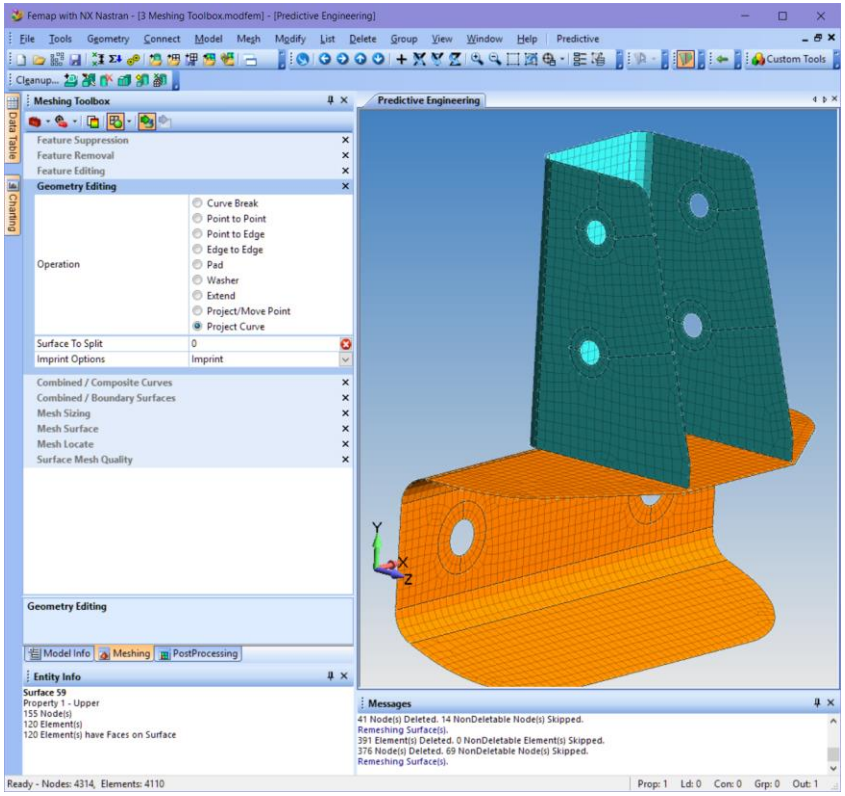
Import Parasolid File	Midsurface at 0.1
	
	

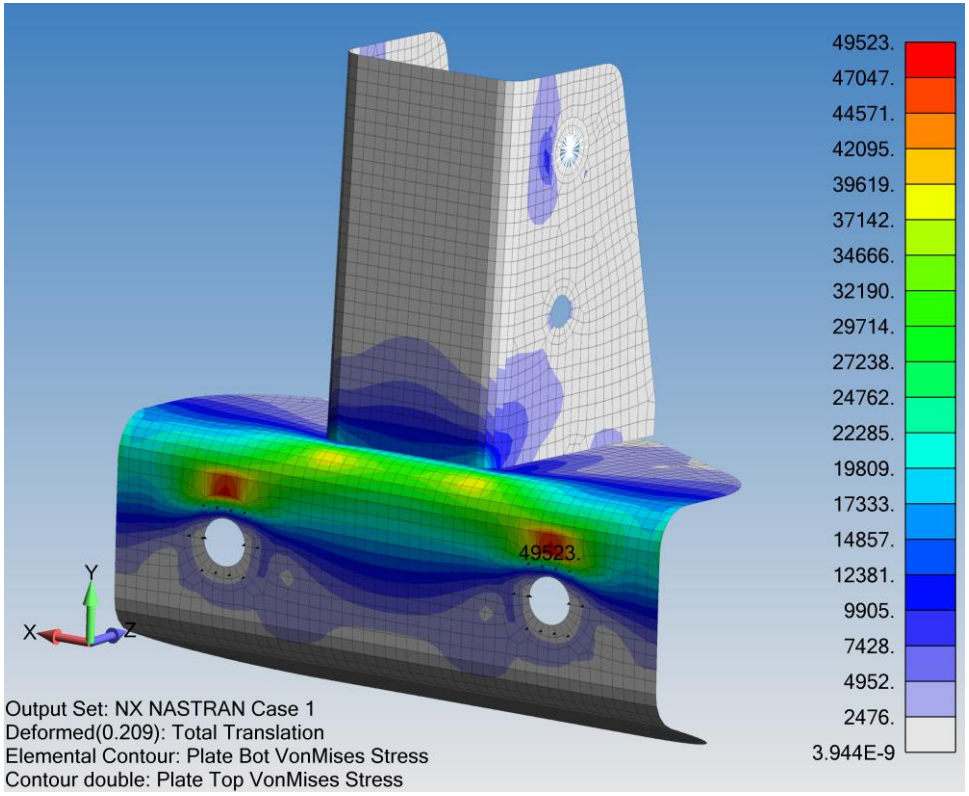
The complete process: Predictive Engineering Technical Seminar - Surface Modeling and Plate Meshing - FEMAP v11.2.1.pdf

4.3 MESHING TOOLBOX: THE QUEST TOWARD THE PERFECT QUAD

The meshing toolbox is fundamental in our pursuit of the perfect quad mesh.

Meshing Toolbox	RBE (MPC) / Weld / API

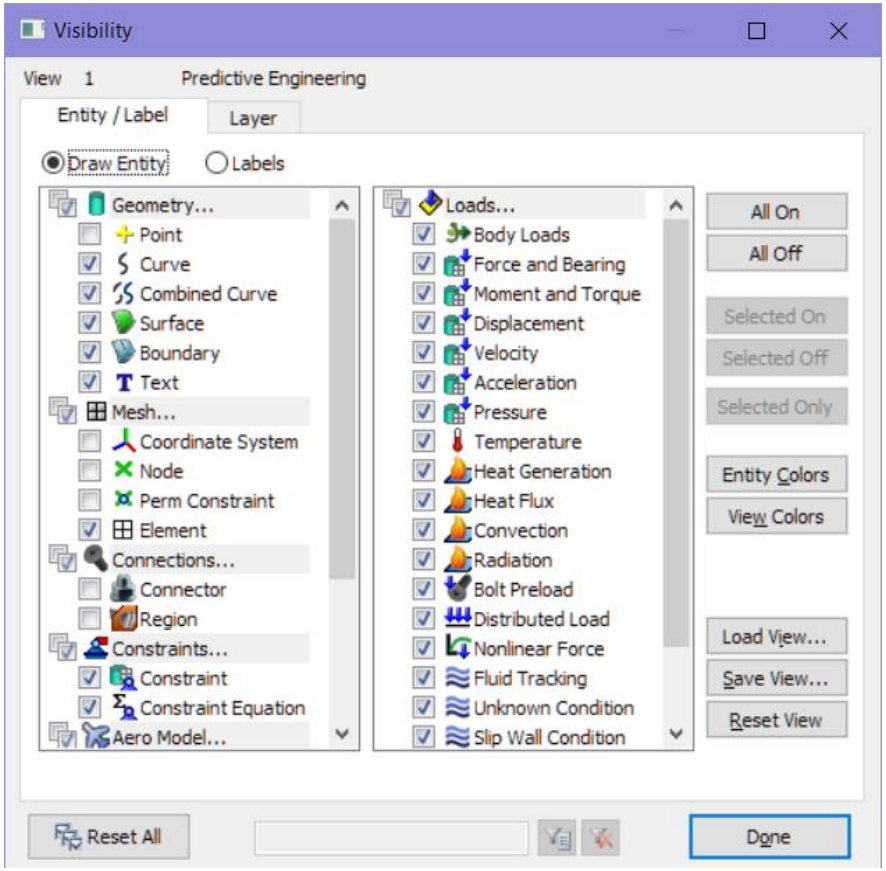




At AppliedCAx.com: Surface Modeling and Plate Meshing v11.2.1 and Surface Modeling,

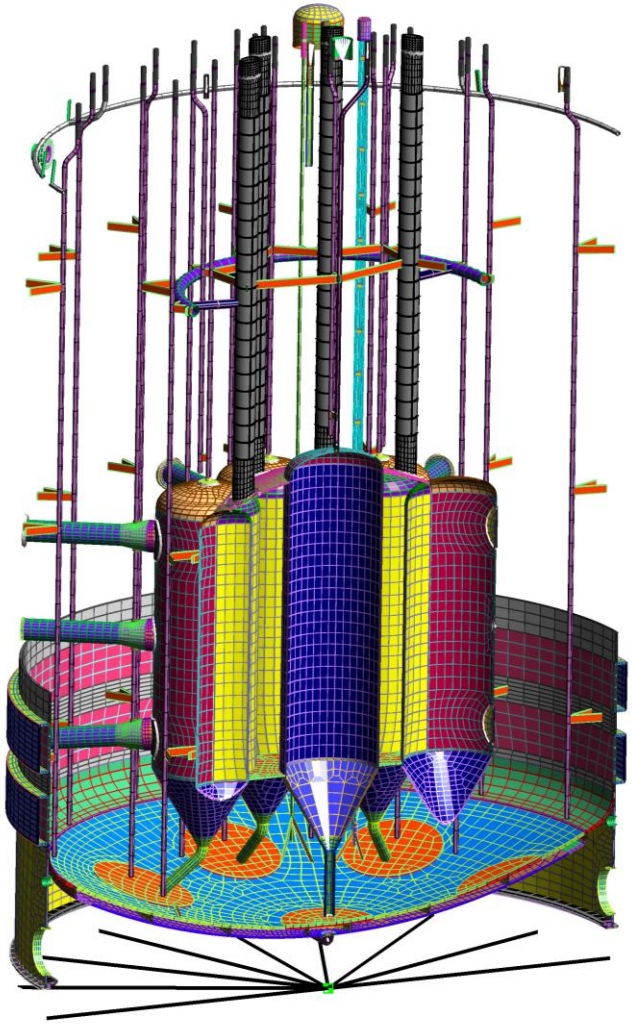
4.4 VISUALIZATION: CTRL-Q AND DRAW AND ERASE (TOOLBAR)

CTRL-Q	Draw / Erase

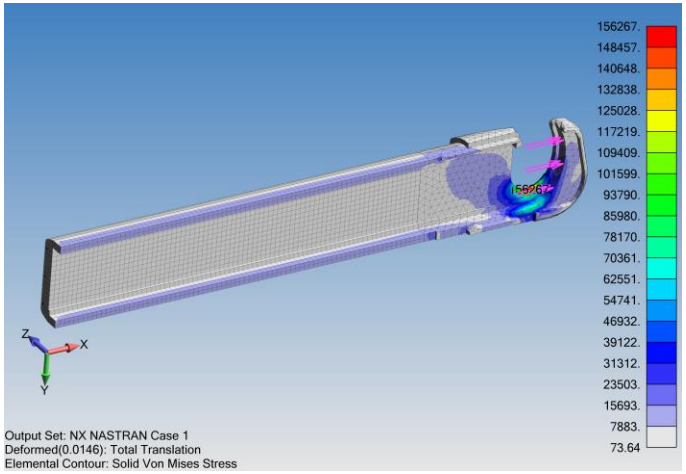


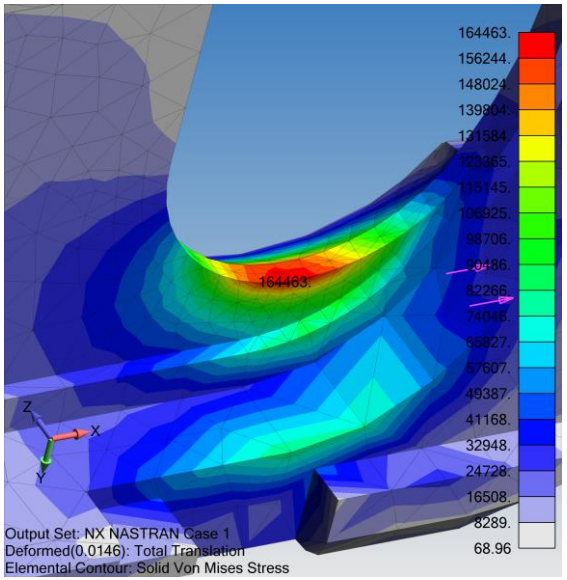
4.5 Selector Entity: On the fly control of your model and Stress Visualization

Quick Interrogation



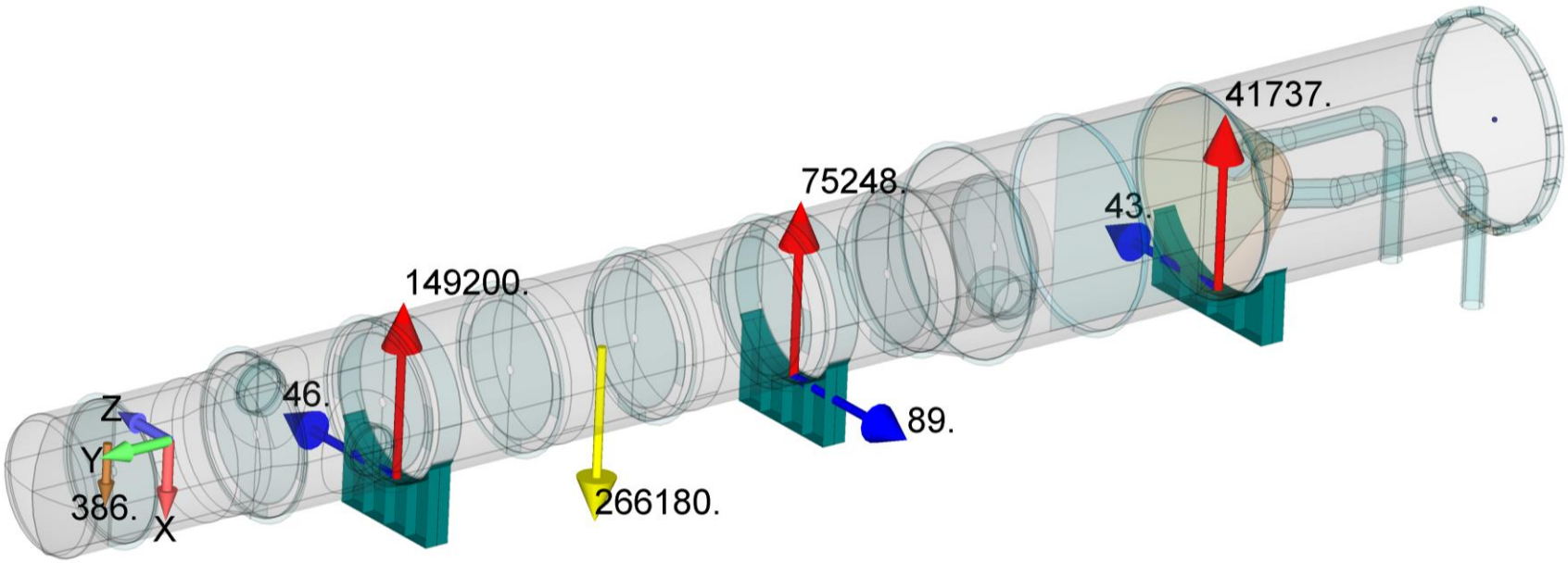
Stress Convergence Checking





4.6 Free Body Diagram (FBD): What every simulation engineer truly loves

FBD – A Vital Step Toward Model Verification and Engineering Documentation



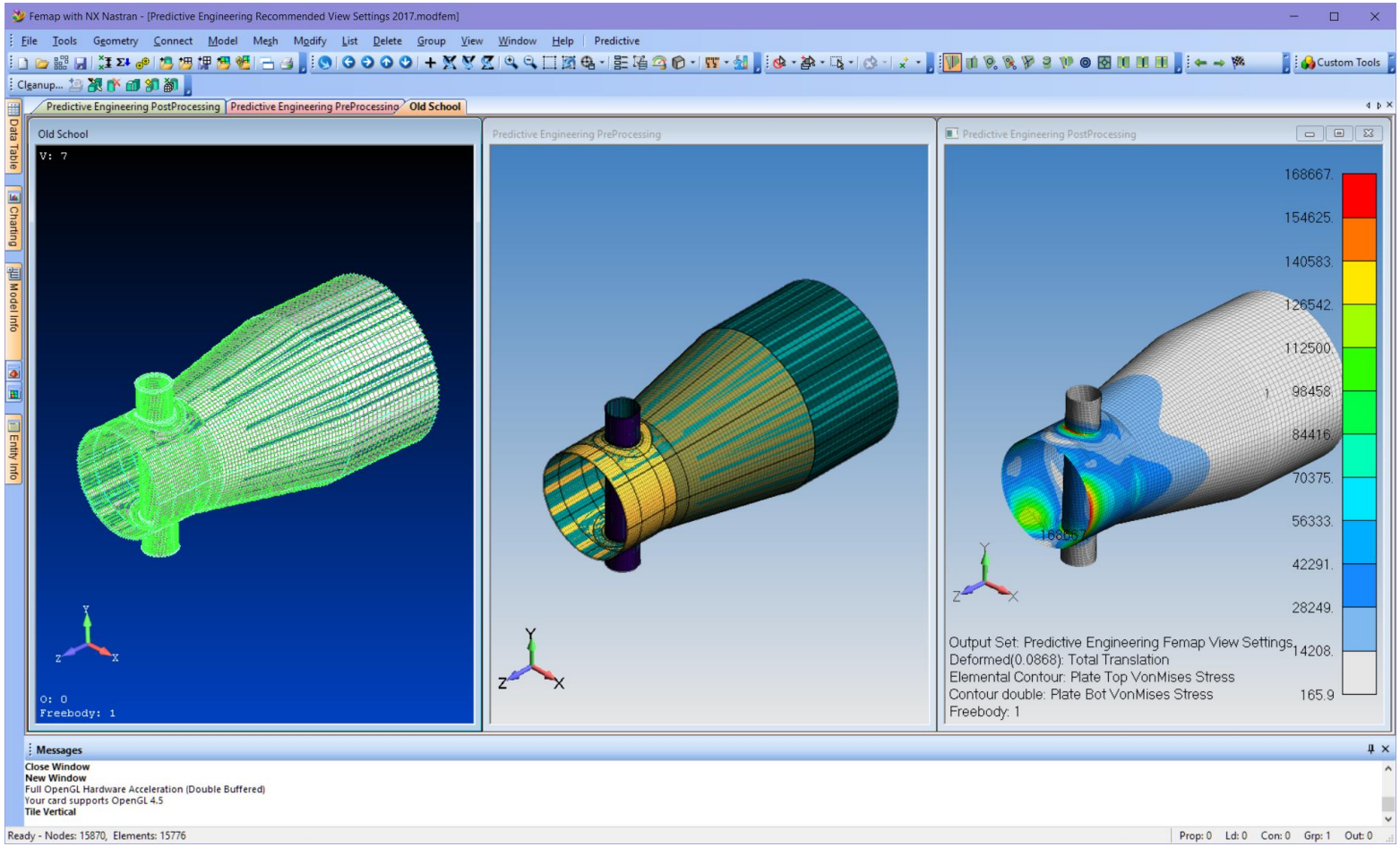
Output Set: Hydrostatic Test
Freebodies: Weight, Saddle B4, Saddle B1, Saddle S2

At AppliedCAx.com: Femap v10.3 and NX Nastran v8.0 – Update Seminar

4.7 Panes, Toolbars and Views: The joys of creating a custom work environment in hues

We do spend a bit of time with managing our work space.

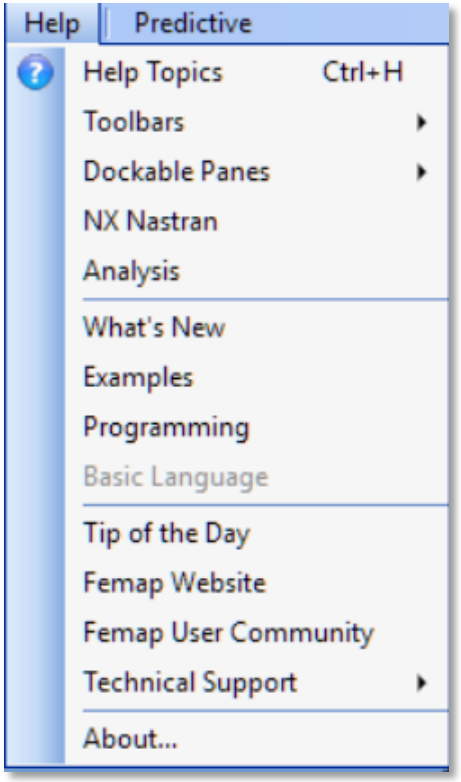
Graphic Presentation

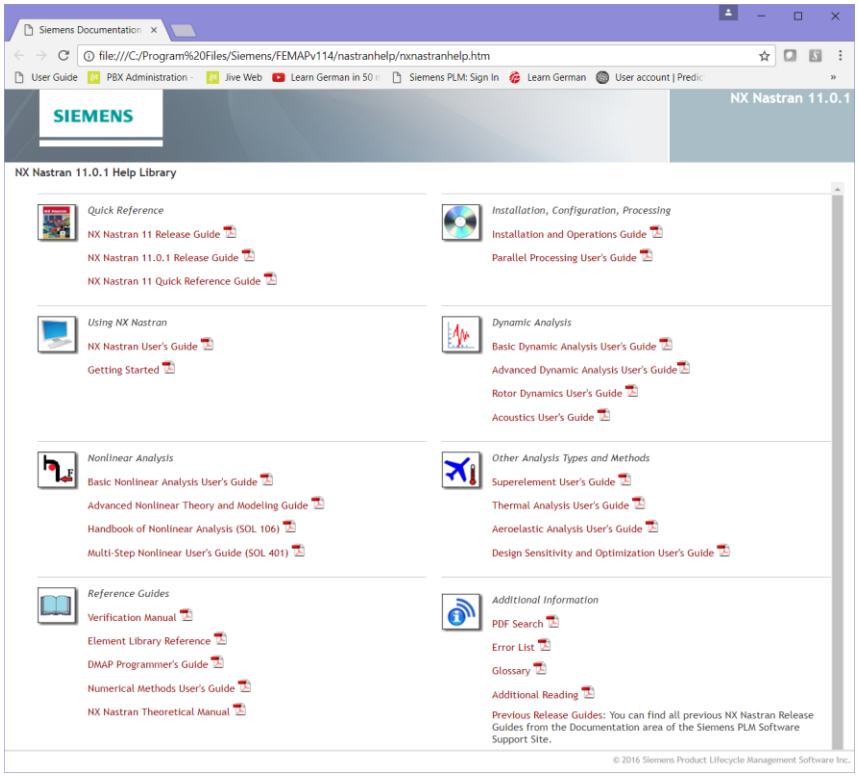


4.8 FEMAP's Help: So much goodness – so little time

Don't forget that FEMAP's help includes the NX Nastran manuals and there are also FEMAP PDF's.

The Start	The Research

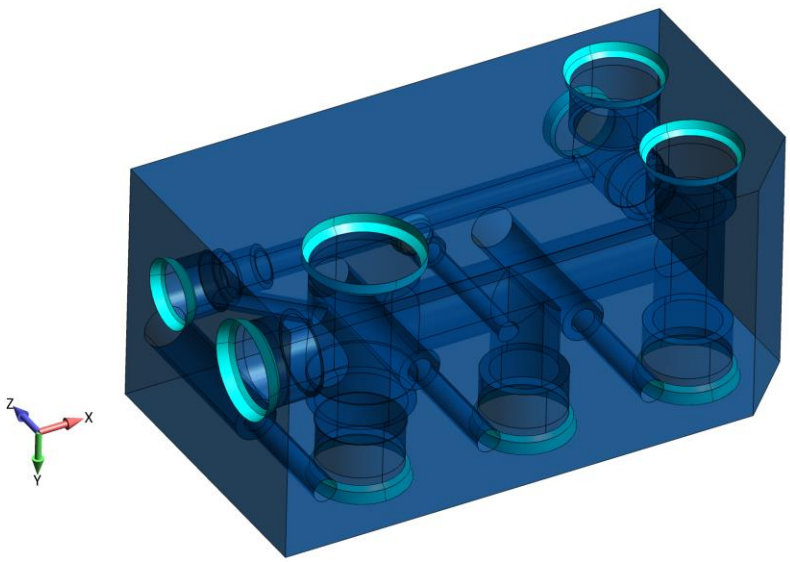




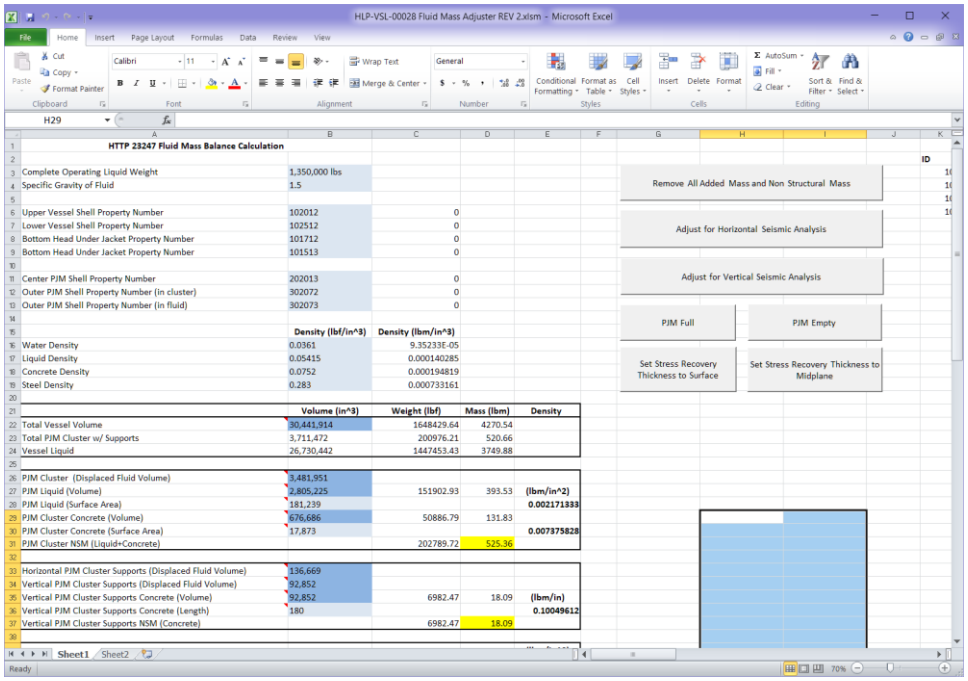
4.9 Application Programming Interface (API): Just amazingly practical innovation (API)

Over the years, we have saved our clients hundreds of thousands of dollars using FEMAP's API to expedite project work.

Unique Load Applications



Driving FEMAP via Excel

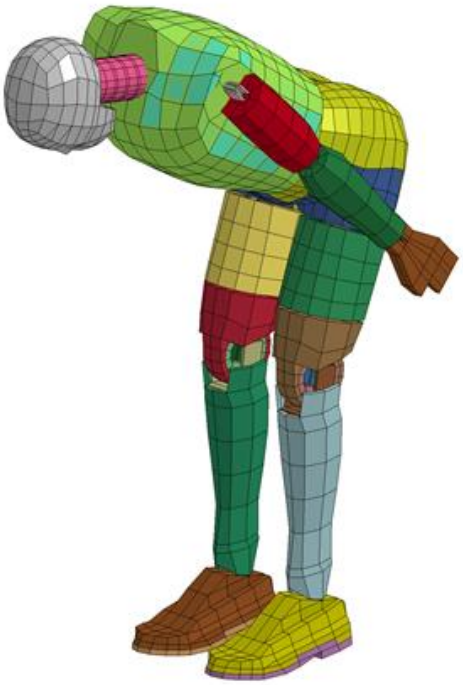


4.10 UNDO: WE HAVE TO GIVE IT DOUBLE-BILLING

But what the heck – you most likely have already seen enough and you already know how useful undo is to your daily work.

5. AND NOW A WORD FROM OUR SPONSORS

Thank You



Predictive Engineering is located in Portland, OR

PredictiveEngineering.com