



# Fusion™

3D CAD Modeler + Nastran FEA

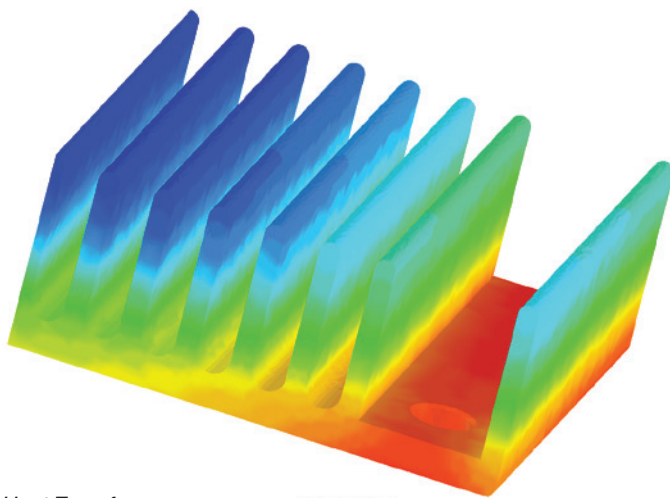


## 1. Thermal Stress

- Nodal temperatures can be found in a thermal analysis and used in a structural analysis to determine stress and deflection

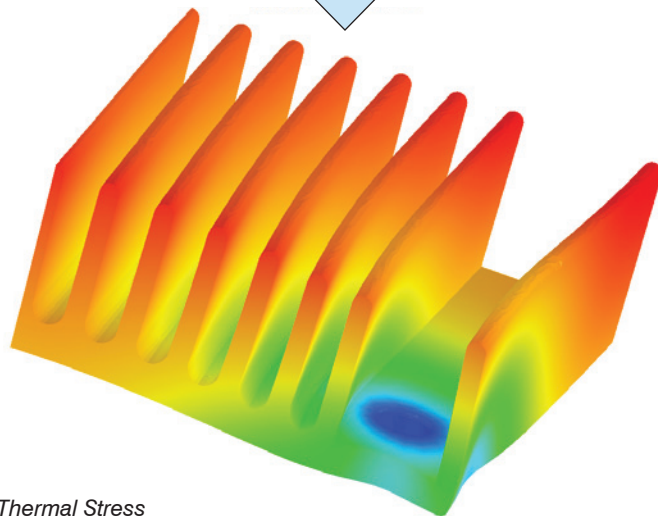
## 2. Nonlinear Transient Response

- Nonlinearities (contact, material, large displacement) can all be captured in the time domain
- Enhanced user control of nonlinear parameters



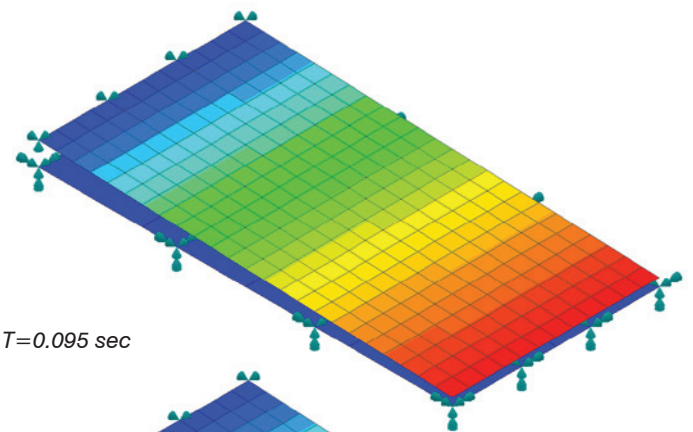
Heat Transfer

OUTPUT SET: SUBCASE 1  
CONTOUR: TEMPERATURE

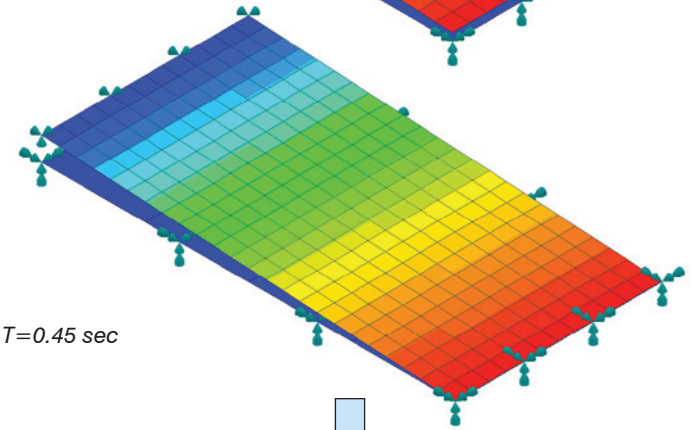


Thermal Stress

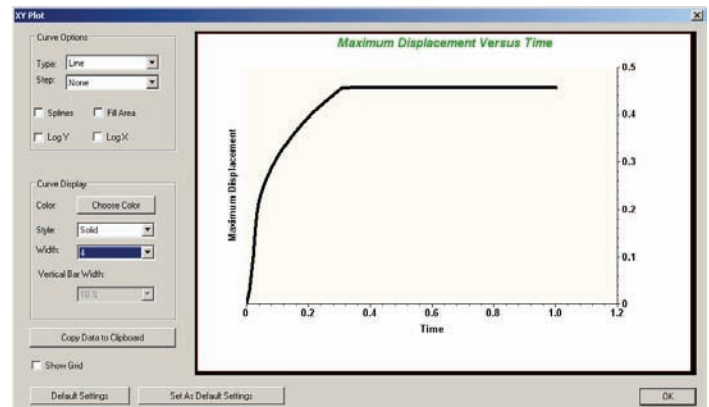
OUTPUT SET: SUBCASE 1  
DEFORMED TOTAL: (R2D=0, PRX=0.000274577)  
CONTOUR: DISPLACEMENT (TOTAL)



T=0.095 sec



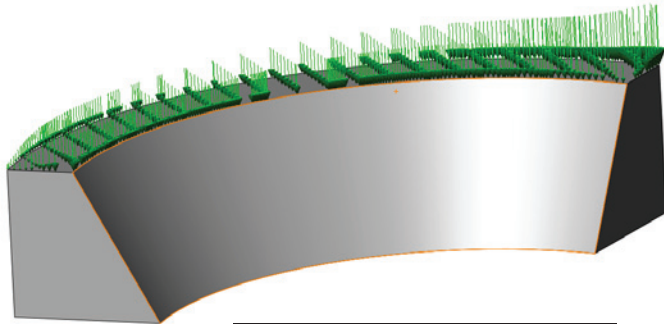
T=0.45 sec



# NEi Fusion™ 2.1 New Features

## 3. Variable Loading

- Loads can now be varied using a surface definition detailing how the surface is scaled in space



**Variable Load Definition**

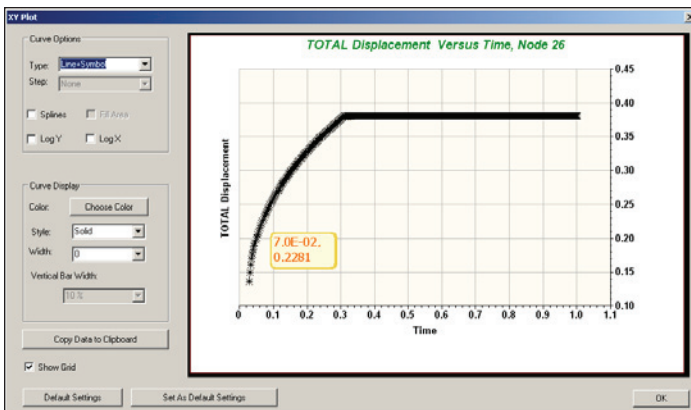
Selected Entities:

Add

X	Y	Z	Scalar
32.663501	30.480000	70.047104	1.000000
41.479976	30.480000	59.540038	6.000000
41.479976	30.480000	-59.540038	3.000000
32.663501	30.480000	-70.047104	10.000000

## 4. XY Plot Enhancements

- Logarithmic axis options (x and y)
- Hover over data point display



## 5. Beam / Bar Enhancements

- Beam element cross-section visualization
- Interactive cross-section definition
- Combined shell and beam meshing
- Cross-section display for shell elements

**Cross Section Definition**

Shape: I  Tapered Beam

End A End B

DIM1 (in): 5.000000

DIM2 (in): 2.000000

DIM3 (in): 2.000000

DIM4 (in): 0.250000

DIM5 (in): 0.250000

DIM6 (in): 0.250000

Properties:

Area (in<sup>2</sup>): 2.125000

Izz (in<sup>4</sup>): 7.544271

Iyy (in<sup>4</sup>): 0.339193

Izy (in<sup>4</sup>): -0.000000

J (in<sup>4</sup>): 0.045733

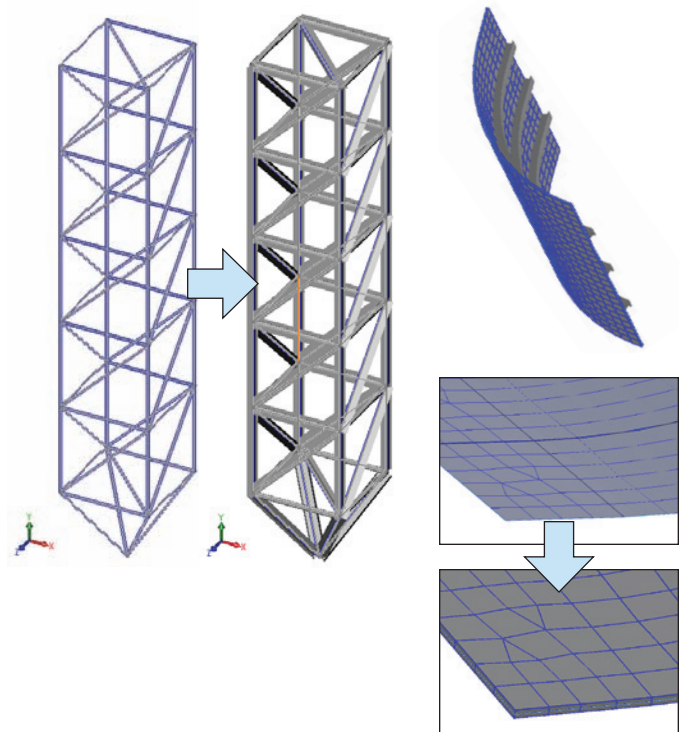
Shear factor in Z: 0.424171

Shear factor in Y: 0.543575

Shear center offset in Z (in): 0.000000

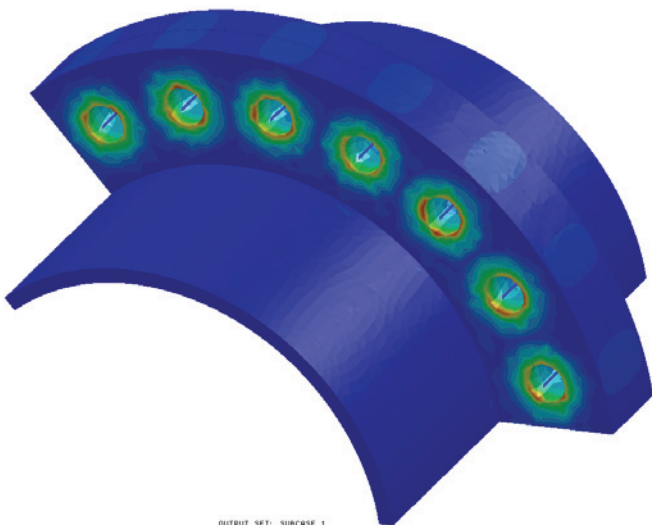
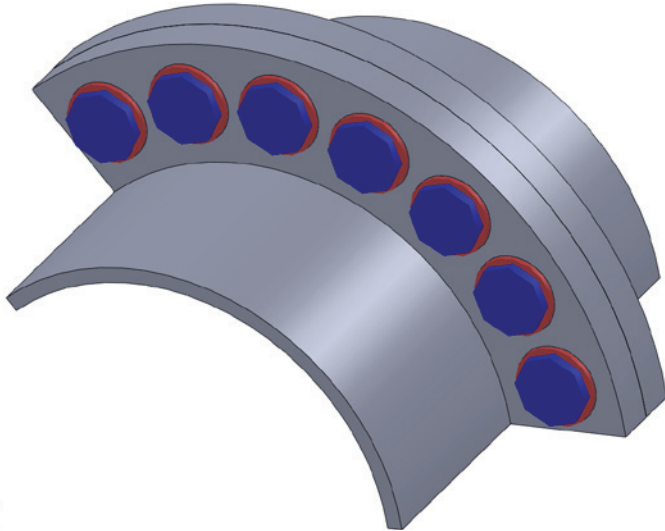
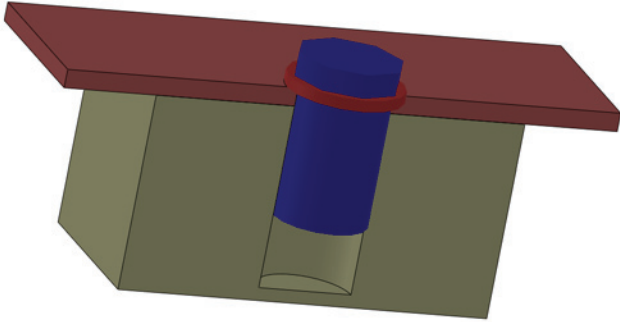
Shear center offset in Y (in): 0.000000

Draw End A Draw End B Load... Save... OK Cancel



## 6. Automated Bolted Joints

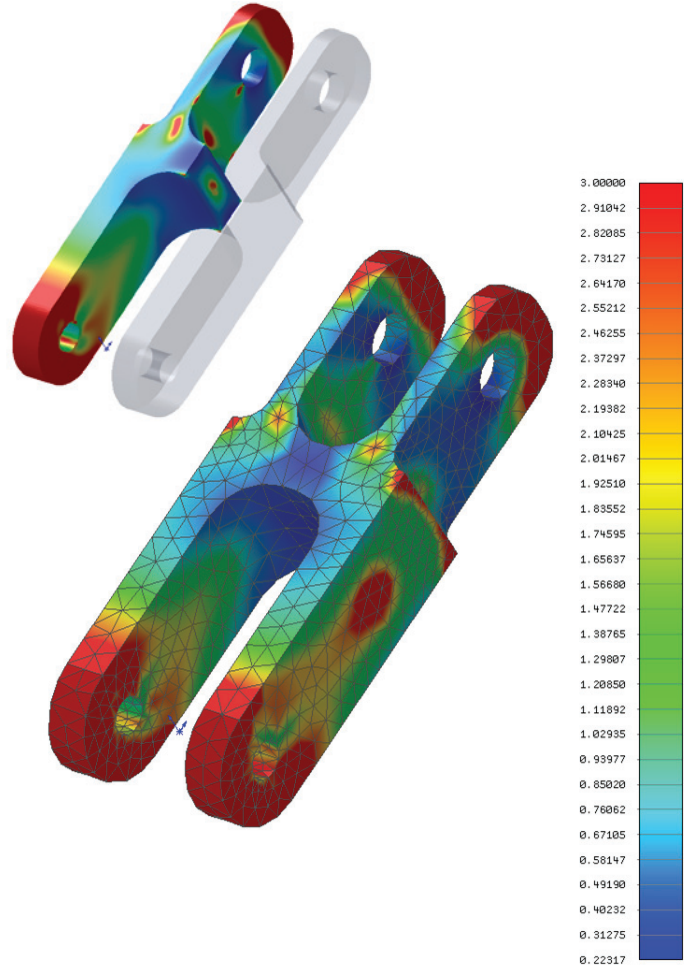
- Bolts and cap screw joints can be automatically created by selecting appropriate geometry
- Washers, custom materials, and preload can all be added



OUTPUT SET: SIMCASE 1  
DEFORMED TOTAL: (MIN=-1.24039E-6, MAX=8.70478E-6)  
CONTOUR: SOLID VON MISES

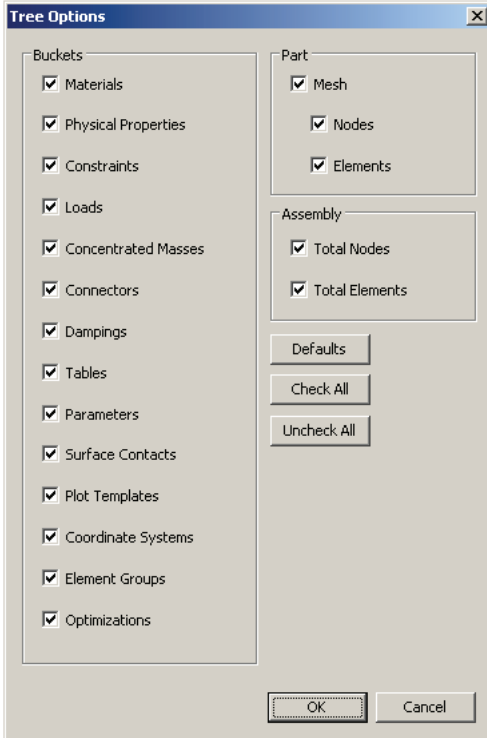
## 7. Failure Theories

- Factor of safety contour plots based upon **Von Mises** and **Maximum Principal** stress theories can be created



## 8. Tree Simplification Enhancement

- Items can be removed from the analysis tree that may not be used, or to simplify the tree view for maneuverability



## 9. Multi-Surface Contact Surface Selection

- Multiple surfaces can now be selected for easy surface contact definition across multiple surfaces



### NEi Software

5555 Garden Grove Blvd., Ste 300  
Westminster, CA 92683-1886  
United States

Phone: +1 (714) 899-1220  
Fax: +1 (714) 899-1369  
E-mail: [info@neissoftware.com](mailto:info@neissoftware.com)  
Website: [www.NEiSoftware.com](http://www.NEiSoftware.com)

