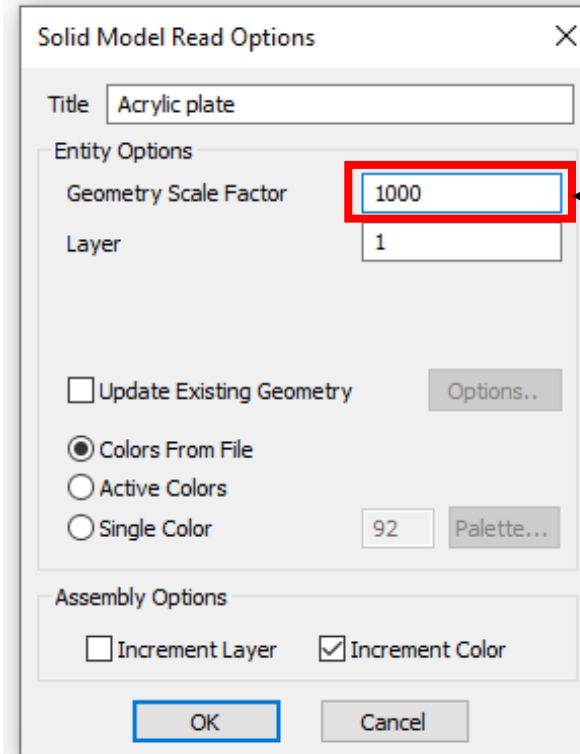
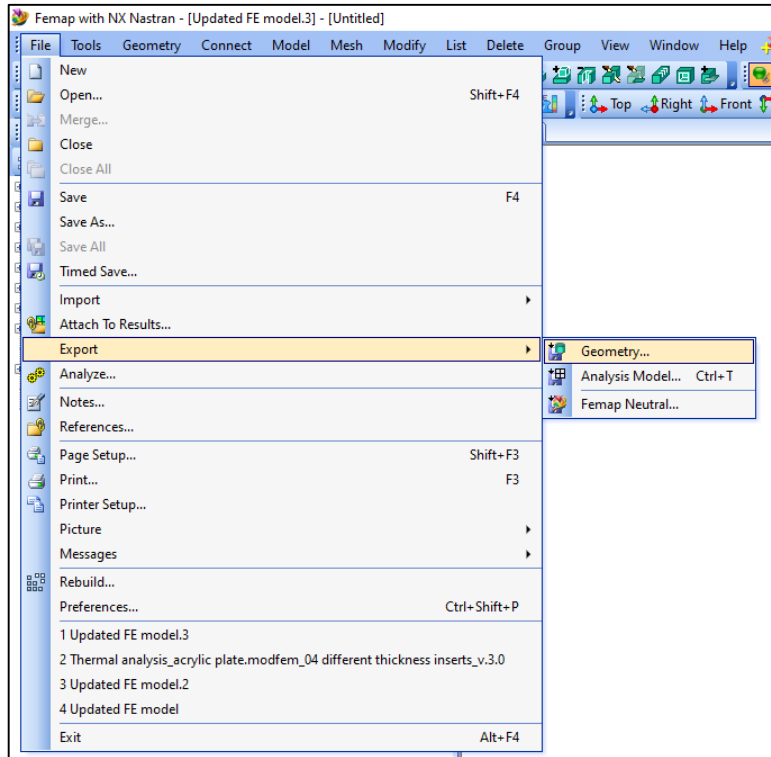


Thermal analysis

Step by step guide

1. Import geometry:

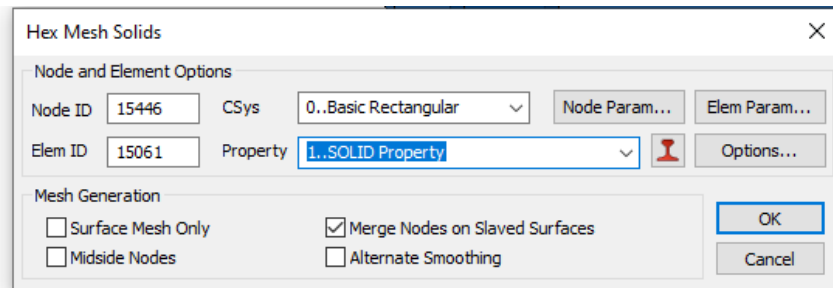
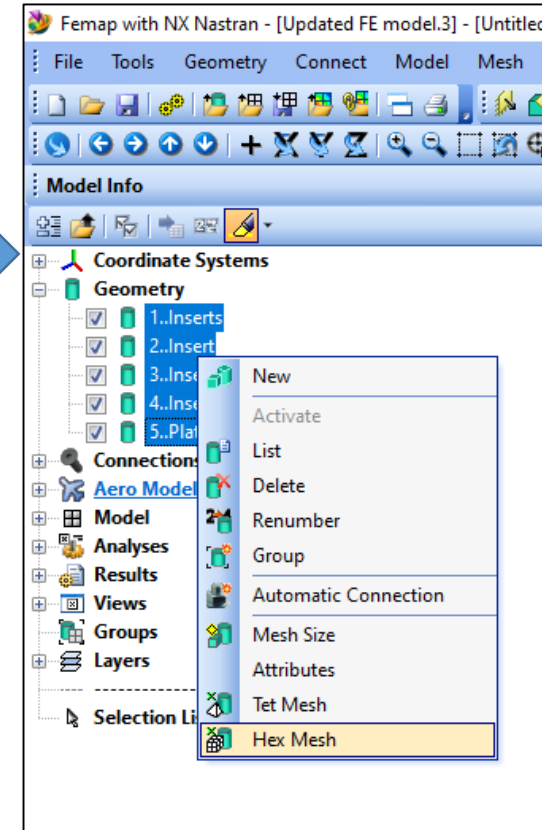
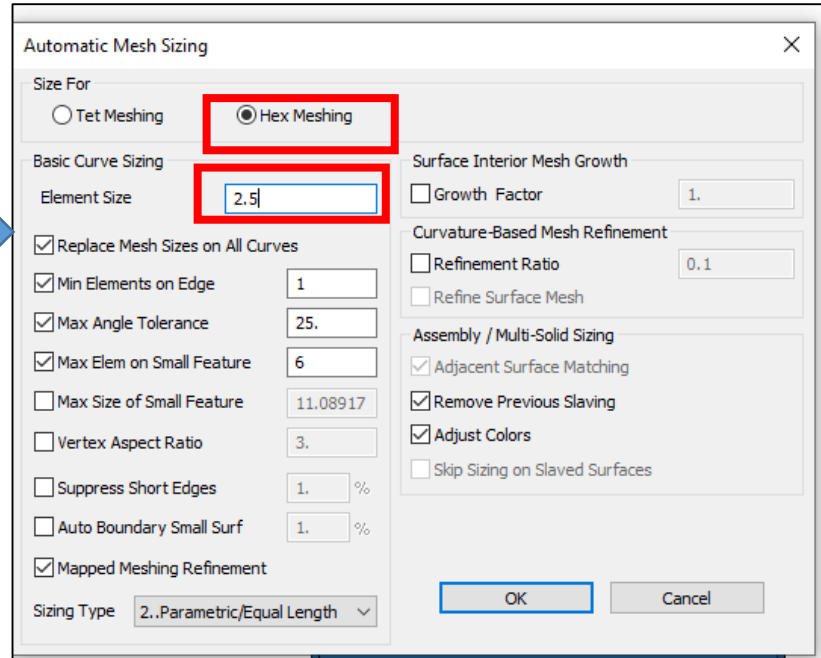
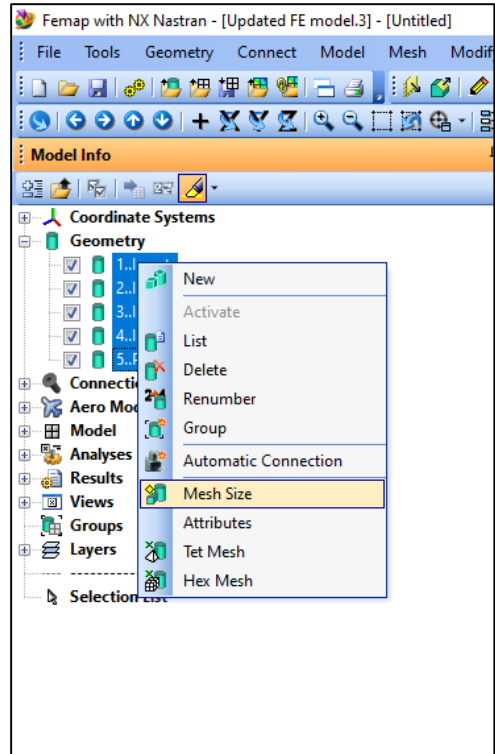
Make the 3D model of the plate in solid edge and export as parasolid or step file. Import to Femap



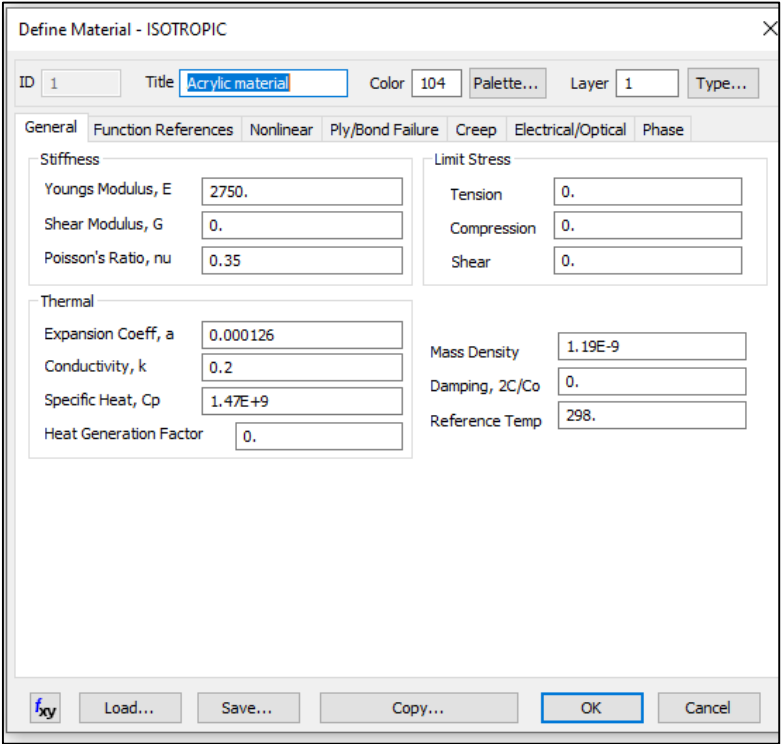
For mm put 1000

2. Meshing:

Hex mesh is used to meshed the plates and inserts because hex mesh provide accurate results.

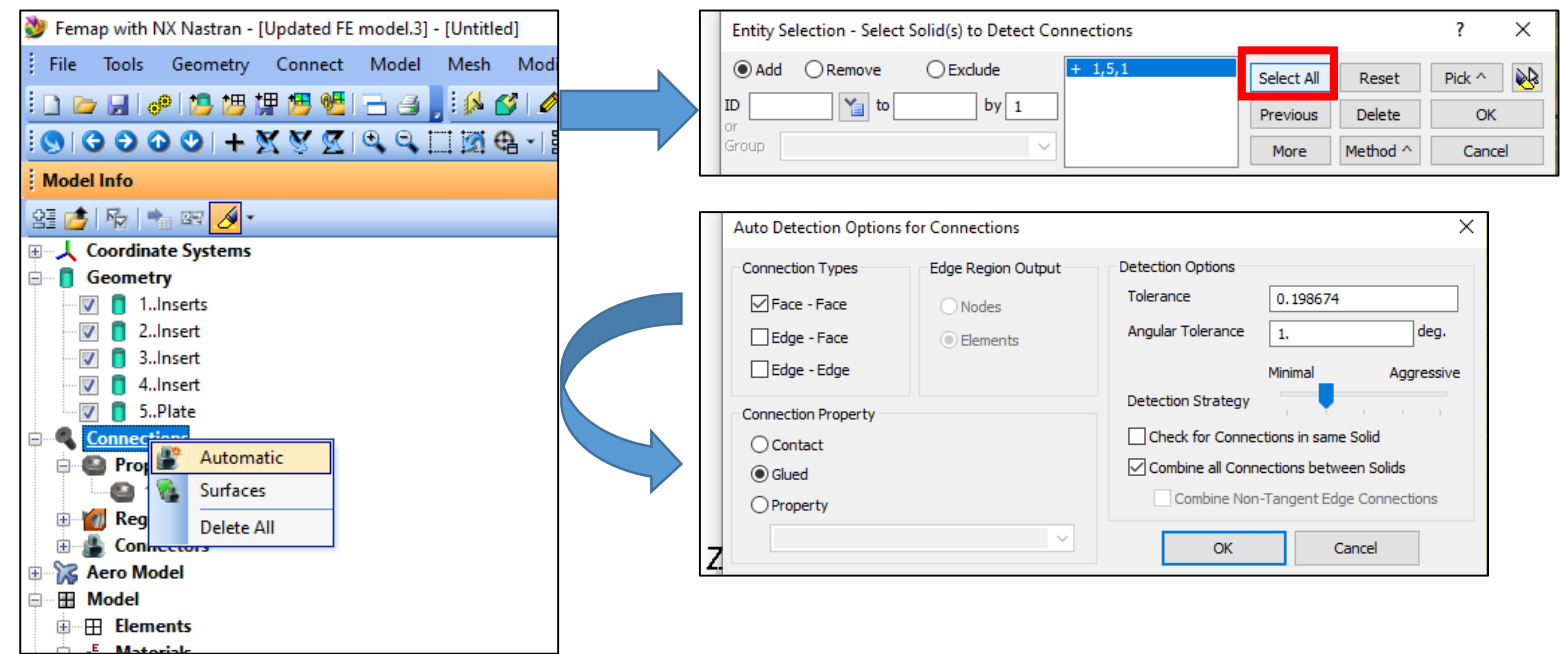


3. Define material:



4. Glue connection:

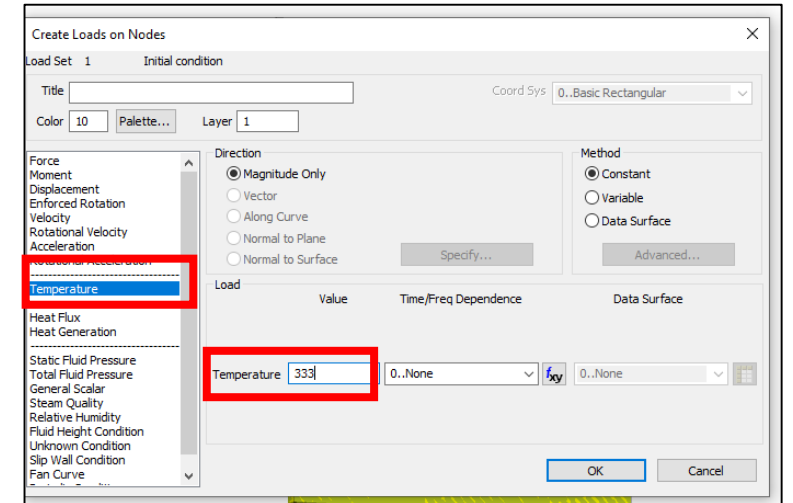
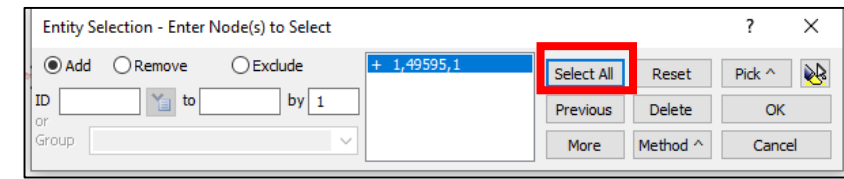
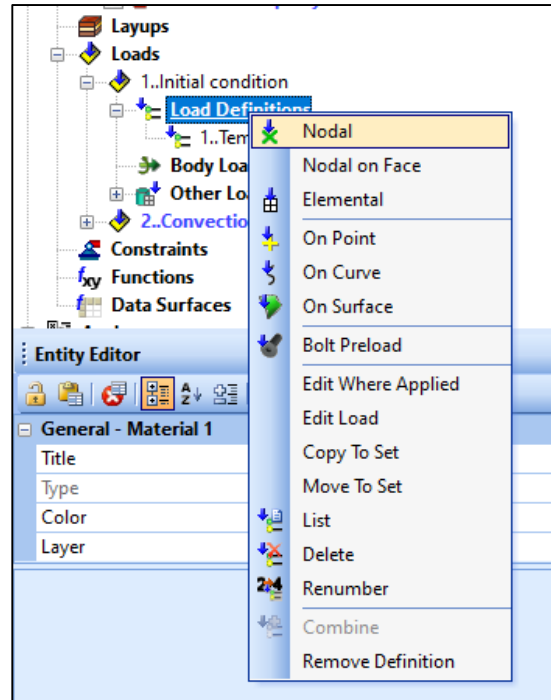
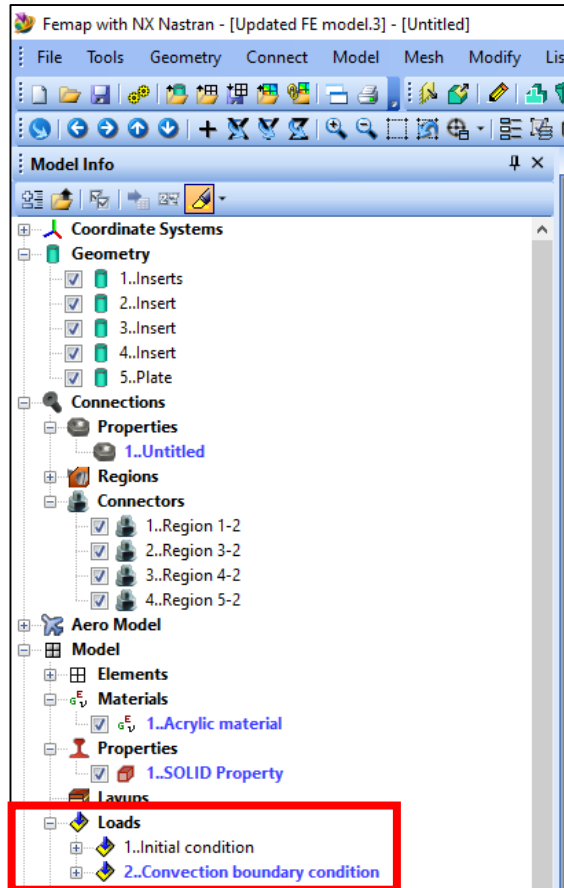
Glue property defined to make connections between the inserts and plate



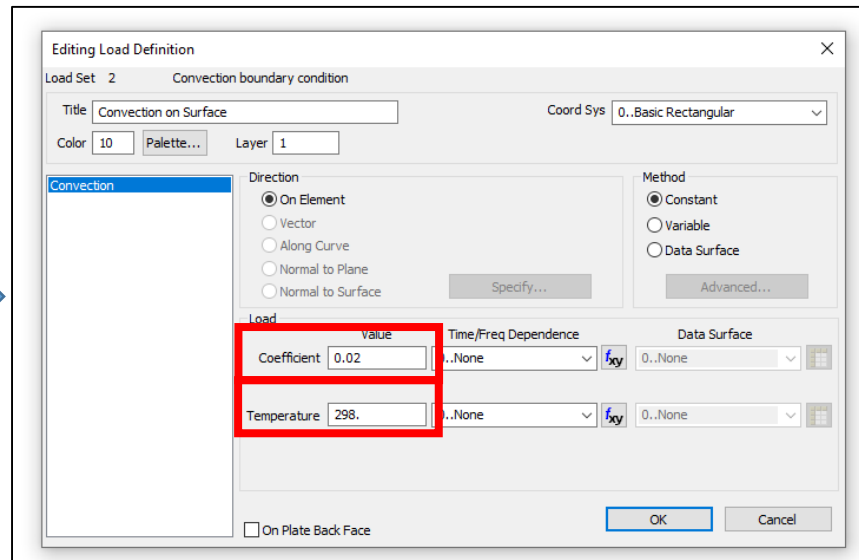
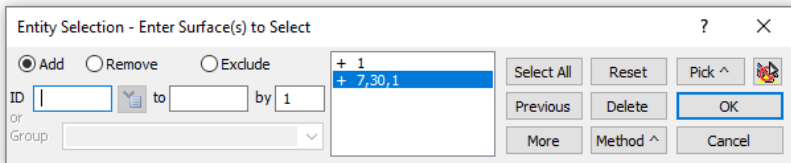
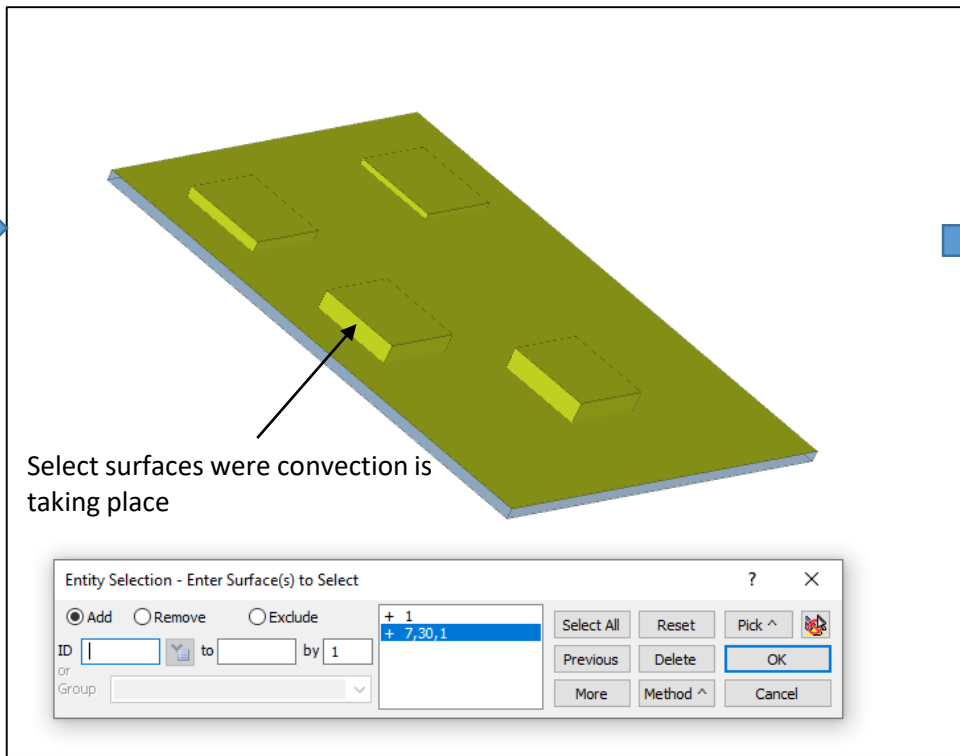
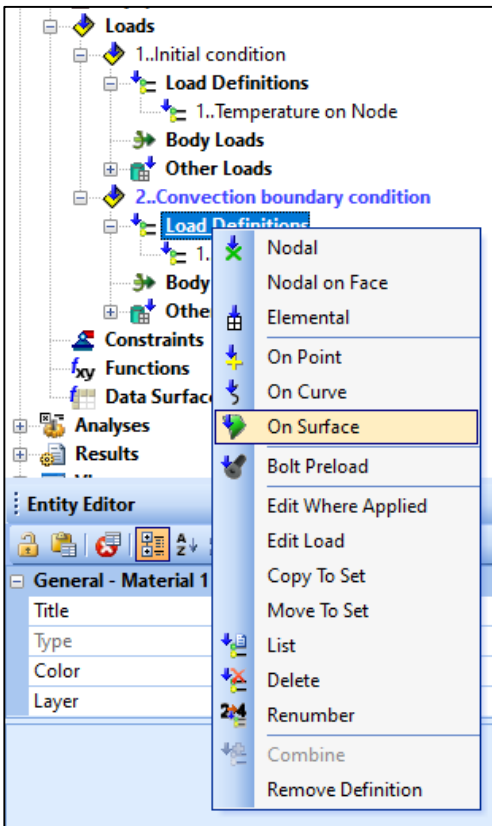
5. Load:

Two load set are defined for convectional analysis

Initial condition

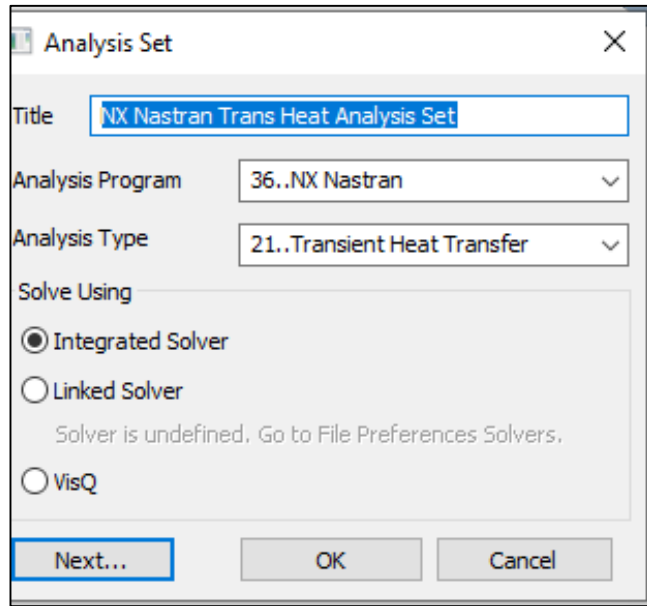


Convection boundary condition



6. Setup analysis:

Keep the default values in all windows in the analysis setup except the following windows



Analysis Set

Title: NX Nastran Trans Heat Analysis Set

Analysis Program: 36..NX Nastran

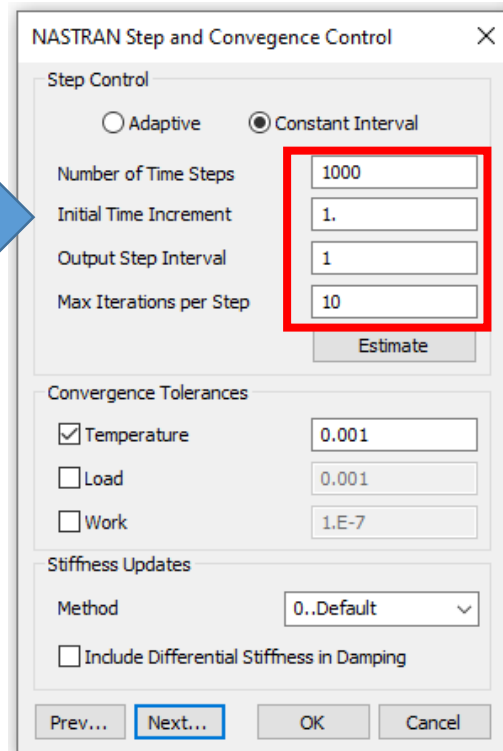
Analysis Type: 21..Transient Heat Transfer

Solve Using:

- ☒ Integrated Solver
- ☐ Linked Solver
- ☐ VisQ

Solver is undefined. Go to File Preferences Solvers.

Next... OK Cancel



NASTRAN Step and Convergence Control

Step Control

☐ Adaptive ☒ Constant Interval

Number of Time Steps: 1000

Initial Time Increment: 1.

Output Step Interval: 1

Max Iterations per Step: 10

Estimate

Convergence Tolerances

☒ Temperature: 0.001

☐ Load: 0.001

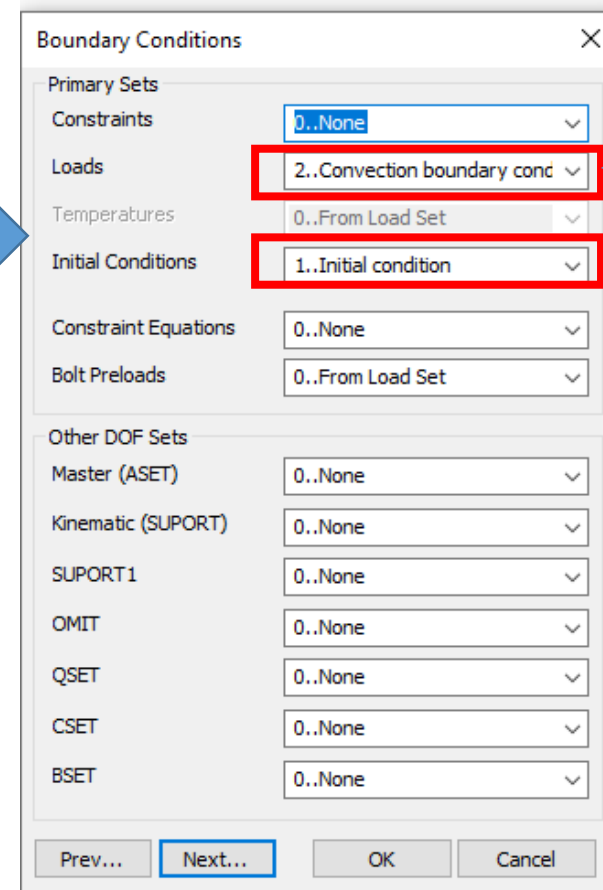
☐ Work: 1.E-7

Stiffness Updates

Method: 0..Default

☐ Include Differential Stiffness in Damping

Prev... Next... OK Cancel



Boundary Conditions

Primary Sets

Constraints: 0..None

Loads: 2..Convection boundary cond

Temperatures: 0..From Load Set

Initial Conditions: 1..Initial condition

Constraint Equations: 0..None

Bolt Preloads: 0..From Load Set

Other DOF Sets

Master (ASET): 0..None

Kinematic (SUPPORT): 0..None

SUPPORT1: 0..None

OMIT: 0..None

QSET: 0..None

CSET: 0..None

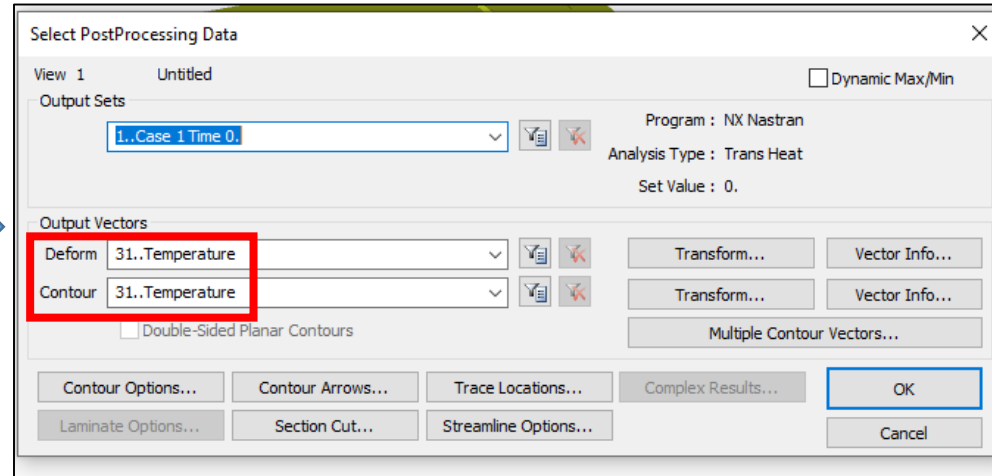
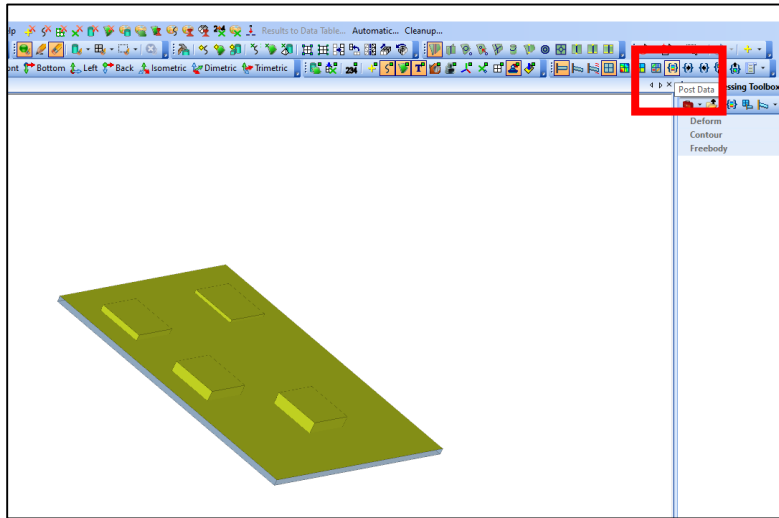
BSET: 0..None

Prev... Next... OK Cancel

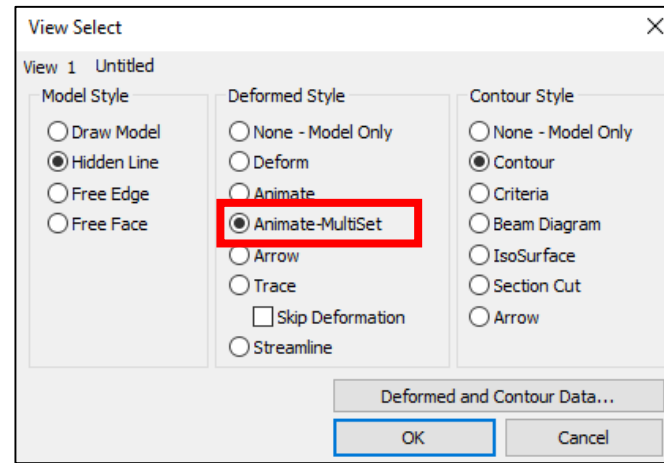
Put the load case in relevant box

7. Postprocess:

Animation of the temperature.



Press F5 to get the
view select windnow



8. Data table:

Extract temp on nodes of the plain surface of the plate.

Activate data table

Send Results to Data Table

Report Style

Output Sets ☒ in Rows ☐ in Columns

Output Vectors ☒ in Rows ☐ in Columns

Nodes/Elements ☐ in Rows ☒ in Columns

☐ Alternate Column Order

In Coordinate System (Nodal Output Only)

1..Basic Cylindrical

OK Cancel

Results to Add to Data Table

Model - Updated FE model.3

Output Sets

Output Vectors

From Output Set 1001..Case 1001 Time 1000.

Quick Filter 0..None - Ignore

Entity Selection - Select Node(s) to Report

☒ Add ☐ Remove ☐ Exclude

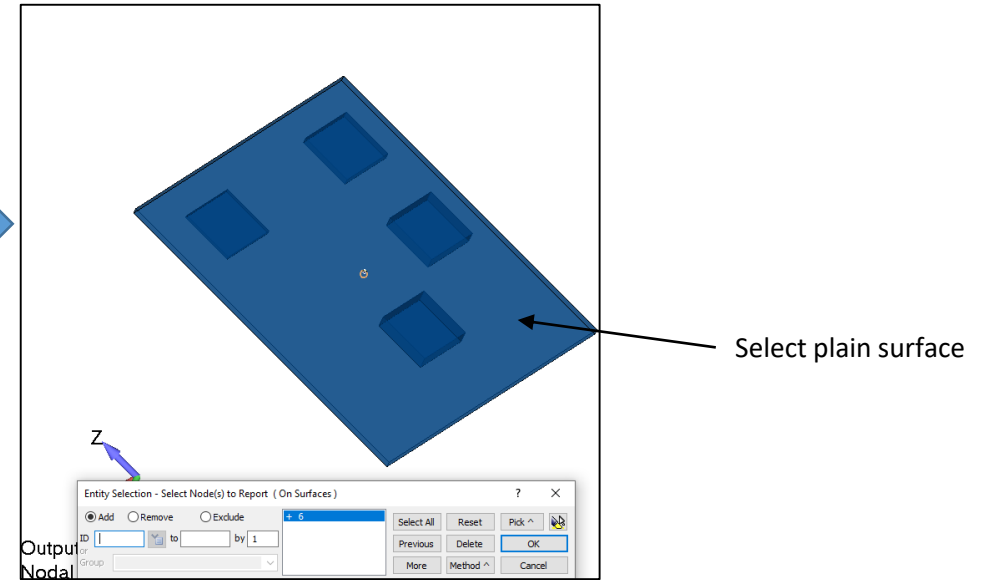
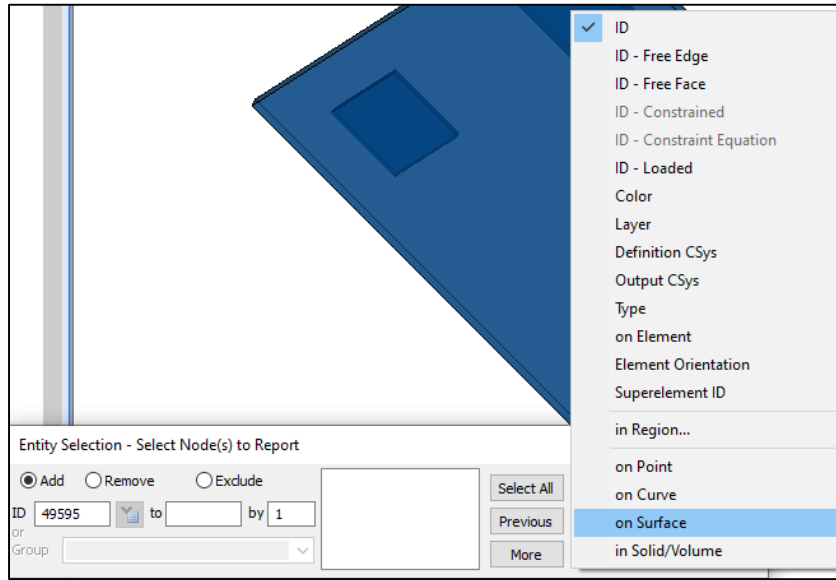
ID 49595 to by 1

Group

Select All Reset Pick ^

Previous Delete OK

More Method ^ Cancel



Set ID	Set Value	Set Title	Vector
1	0.	Case 1 Time 0.	31
2	1.	Case 2 Time 1.	31
3	2.	Case 3 Time 2.	31
4	3.	Case 4 Time 3.	31
5	4.	Case 5 Time 4.	31
6	5.	Case 6 Time 5.	31
7	6.	Case 7 Time 6.	31
8	7.	Case 8 Time 7.	31
9	8.	Case 9 Time 8.	31
10	9.	Case 10 Time 9.	31
11	10.	Case 11 Time 10.	31
12	11.	Case 12 Time 11.	31
13	12.	Case 13 Time 12.	31
14	13.	Case 14 Time 13.	31
15	14.	Case 15 Time 14.	31
16	15.	Case 16 Time 15.	31
17	16.	Case 17 Time 16.	31
18	17.	Case 18 Time 17.	31
19	18.	Case 19 Time 18.	31
20	19.	Case 20 Time 19.	31
21	20.	Case 21 Time 20.	31

Copy temperature
from here and past
in the spread sheet

If you have any question please feel free to ask