

DYNAFORM 5.6 Training Tutorial

Die Face Engineering




Engineering Technology Associates, Inc.

Tutorial IV

**Descriptions for Inner Fill, Symmetry, Outer Smooth,
Flat Binder and Unfold Flange, etc. by using Hood Inner.**

i. Create and Save Database

- a) Click  to create a new database.
- b) Click File menu and select **Save as**.
- c) Enter the file name: Hoodinner_(user name)_(date).df
- d) Click **Save** button to save the database.

ii. Import Part Geometry

- a) Click **DFE** (See Figure 1).
- b) Select **Preparation**.
- c) Click **IMPORT** button on **Define** page
- d) Select file location: .../Tutorial_HoodInner
- e) Select file: hood_inner.igs
- f) Click **Ok** to import part geometry.

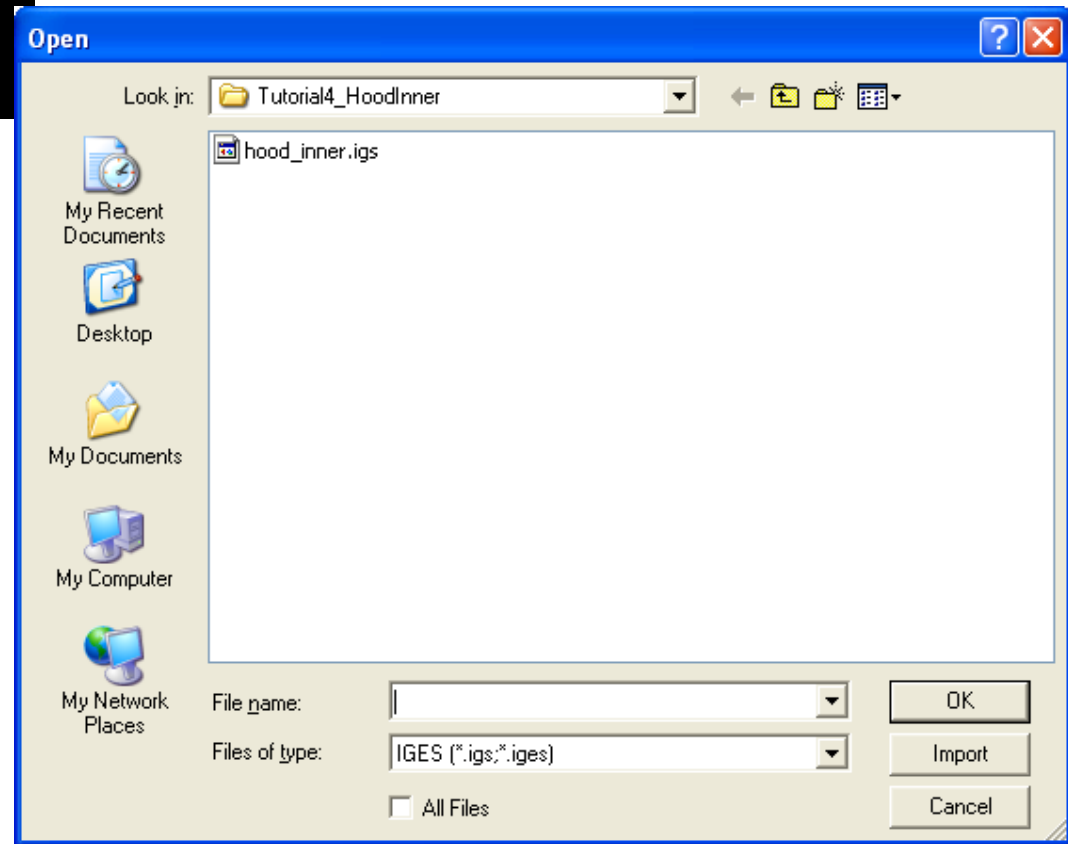
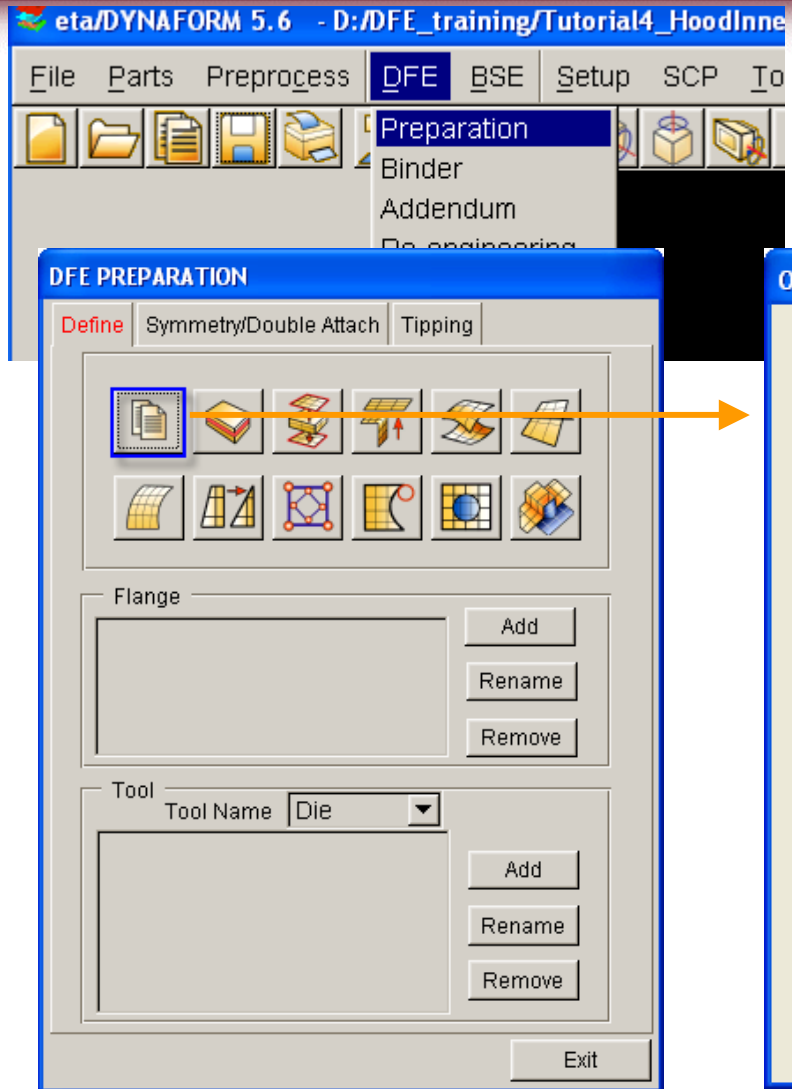


Figure 1

iii. Rename Part

- a) click **Parts**.
- b) Select **Edit** (See Figure 2).
- c) Double click the input box for **Name** to highlight the part name **C001V000**.
- d) Enter the new name "**HOODINN**".
- e) Click **Modify** after modification.
- f) Click **OK** to exit Edit Part dialog window.

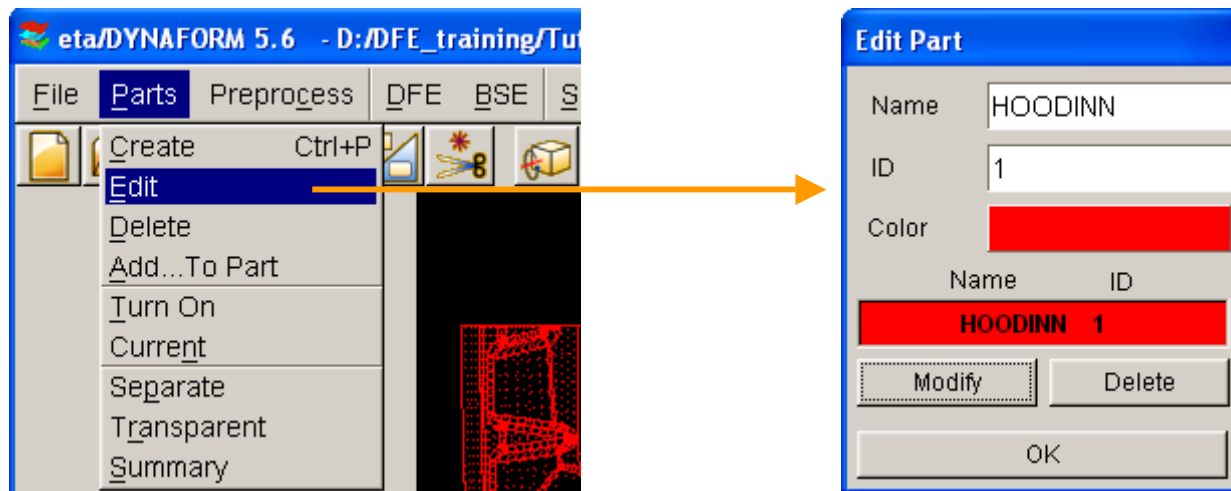

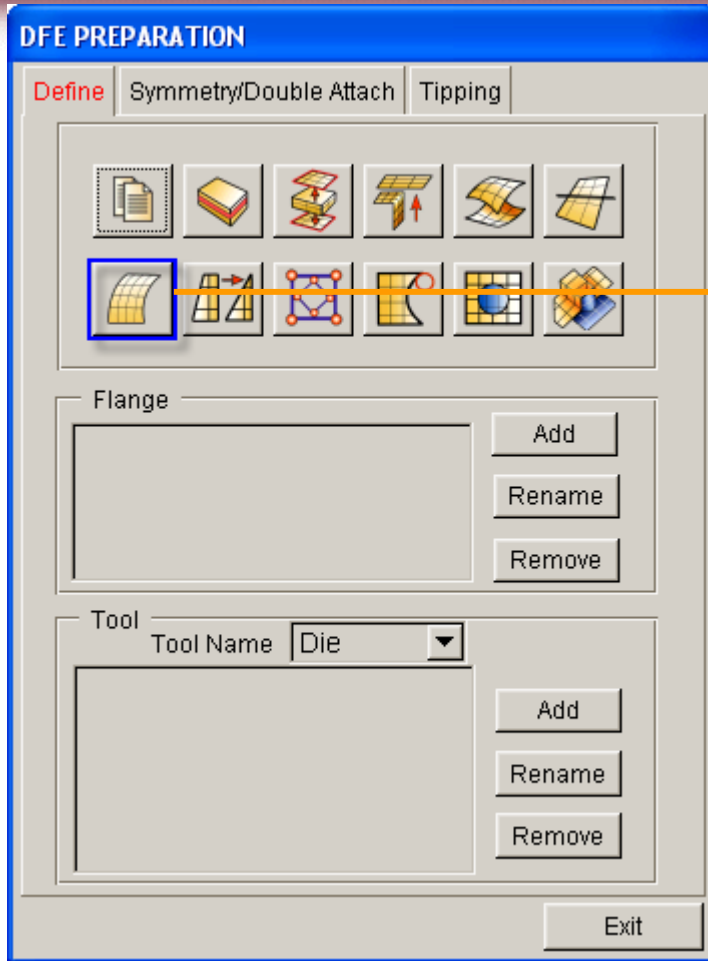


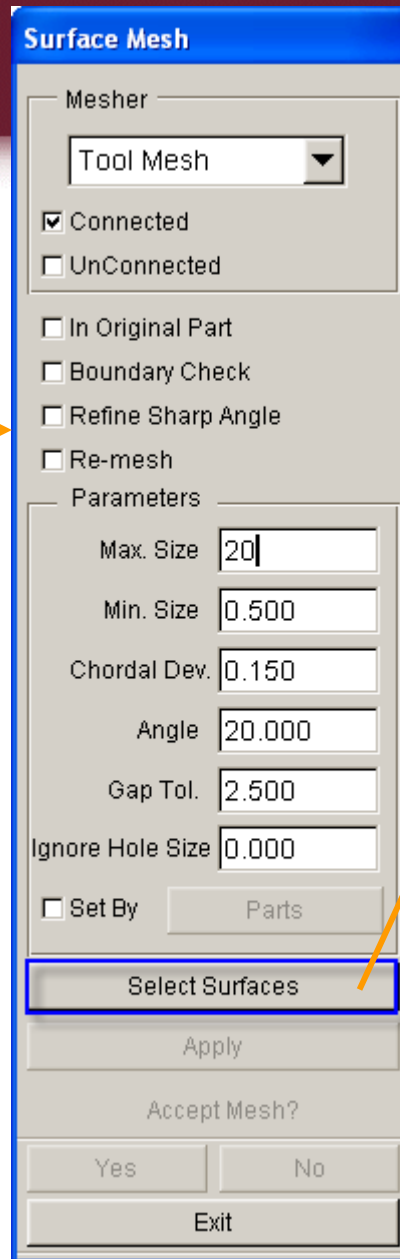
Figure 2

iv. Auto-mesh the Surface

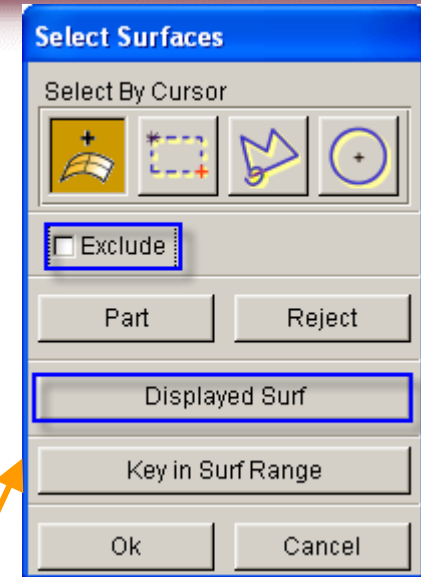
- a) Select **DFE→Preparation**.
- b) Click **Surface Mesh** (See Figure 3.a), and click **Select Surface** (See Figure 3.b) in the displayed **surface Mesh** window.
- c) Click **Displayed Surf.** button to select all the surfaces displayed on the screen (See Figure 3.c).
- d) Toggle on **Exclude** (See Figure 3.c).
- e) Select flange surfaces on the screen (because these surfaces cannot be formed during drawing) (See Figure 4.a).
- f) Click **OK** to confirm the selected surfaces.
- g) Return to **Surface Mesh** window.
- h) Key in the Max. Size: **20.00** (mm).
- i) Click **Apply** to mesh.
- j) Click **Yes** to accept mesh.
- k) Click **Exit** to dismiss the Surface Mesh dialog window.
- l) See Figure 4.b.
- m) Click  to save the database.



(a)

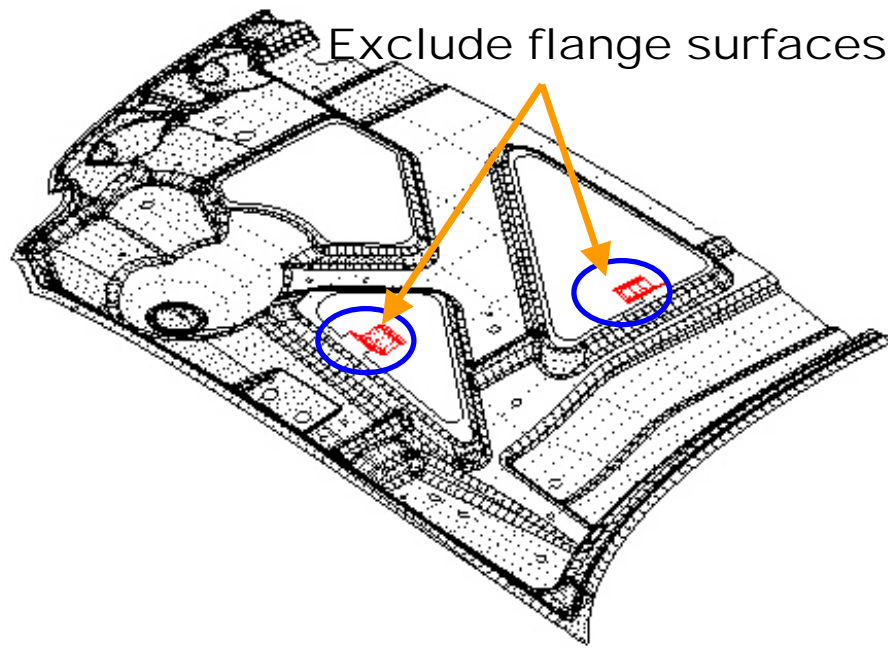


(b)

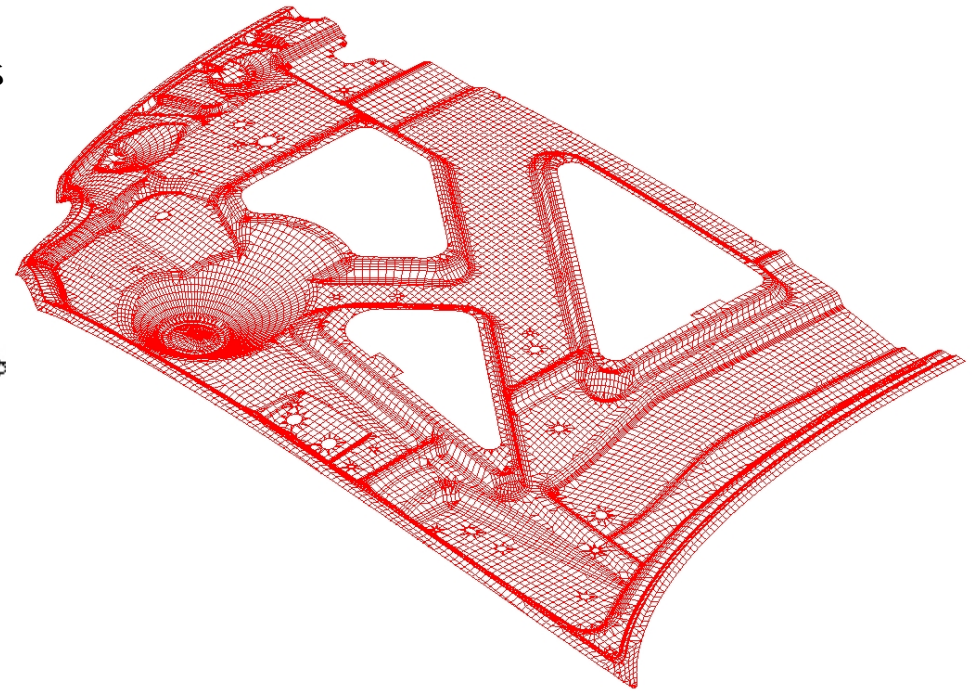


(c)

Figure 3



(a)

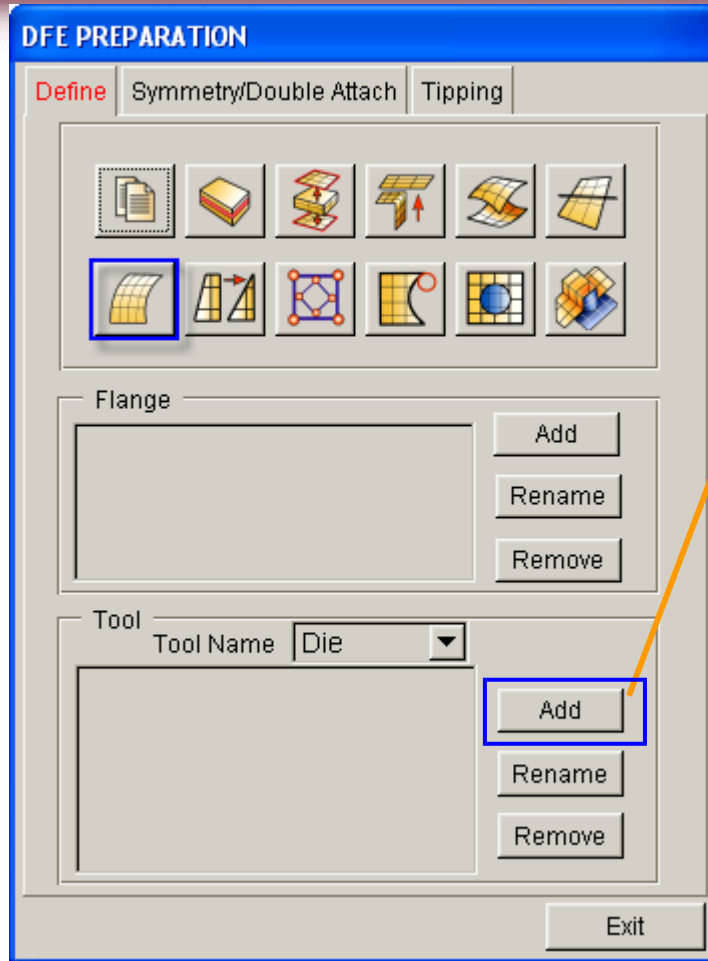


(b)

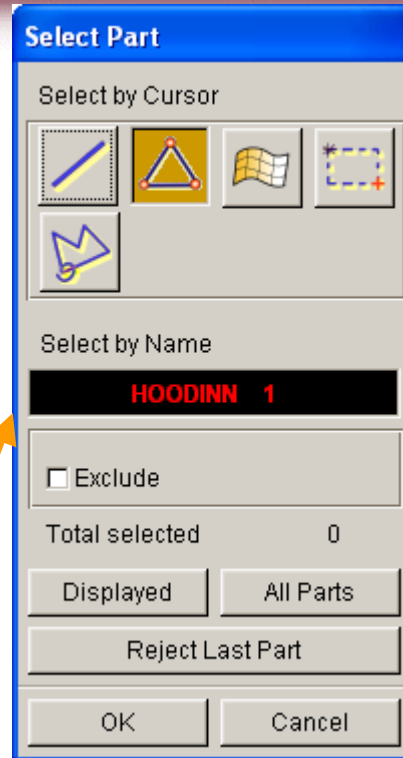
Figure 4

V. Define Tool

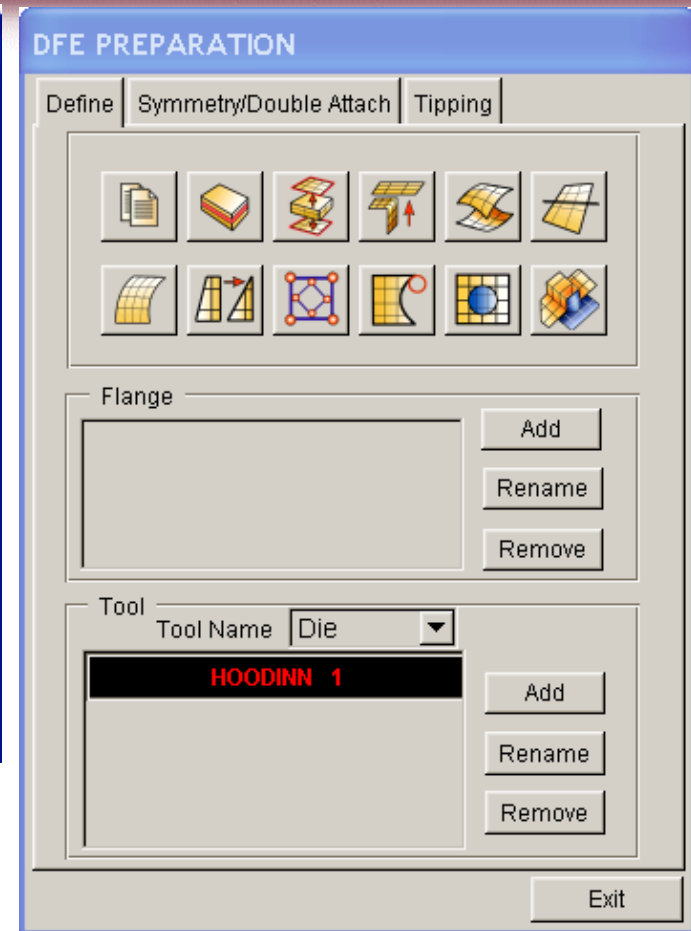
- a) Click on **Add** button at the right side of Tool on **Define** page. (Figure 5.a).
- b) Click on part name **Hoodinn** in the displayed Select Part window (Figure 5.b).
- c) The part is selected if **Hoodinn** turns to white in 3D view.
- d) Click **OK** to exit Select Part window.
- e) The **Hoodinn** is added to the Tool on Define page as the original part DIE for the future addendum design (Figure 5.c).
- f) Once DIE is defined, the letter color of Define will turn from red to black.
- g) Save the database.



(a)



(b)



(c)

Figure 5

vi. Define Symmetry

- a) Select **DFE** → **Preparation** → **Symmtry/Double Attach**.
- b) Select Symmetry: **Half Symmetry Input** (See Figure 6).
- c) Select **x-z plane** to define Symmetry Type.
- d) Click **Select Point(s)** to define symmetry plane
- e) Select a node as shown in Figure 7.a.
- f) Change the value of **Align Nodes** to 0.5, and click **Align Nodes**. Select **Yes** in the displayed window (See Figure 7.b).
- g) Click **Mirror Geometry**.
- h) Select the current part to execute symmetry operation.
- i) Click **OK** on the displayed window to mirror the other half of geometry.
- j) Click **Exit** to dismiss **Preparation** dialog window.
- k) Save the database.

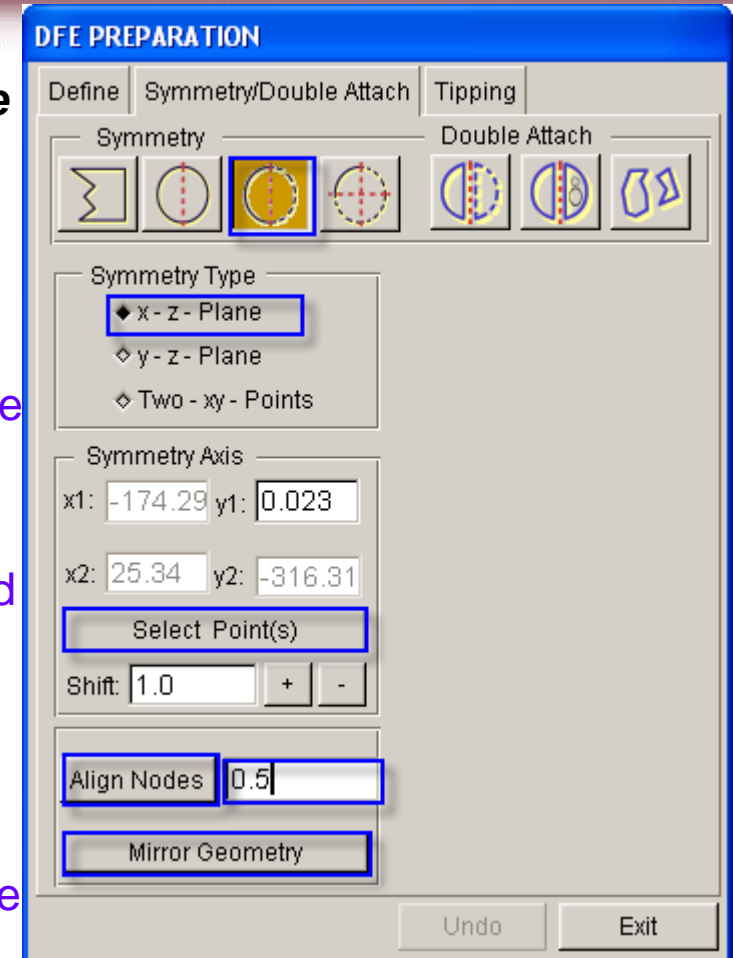


Figure 6

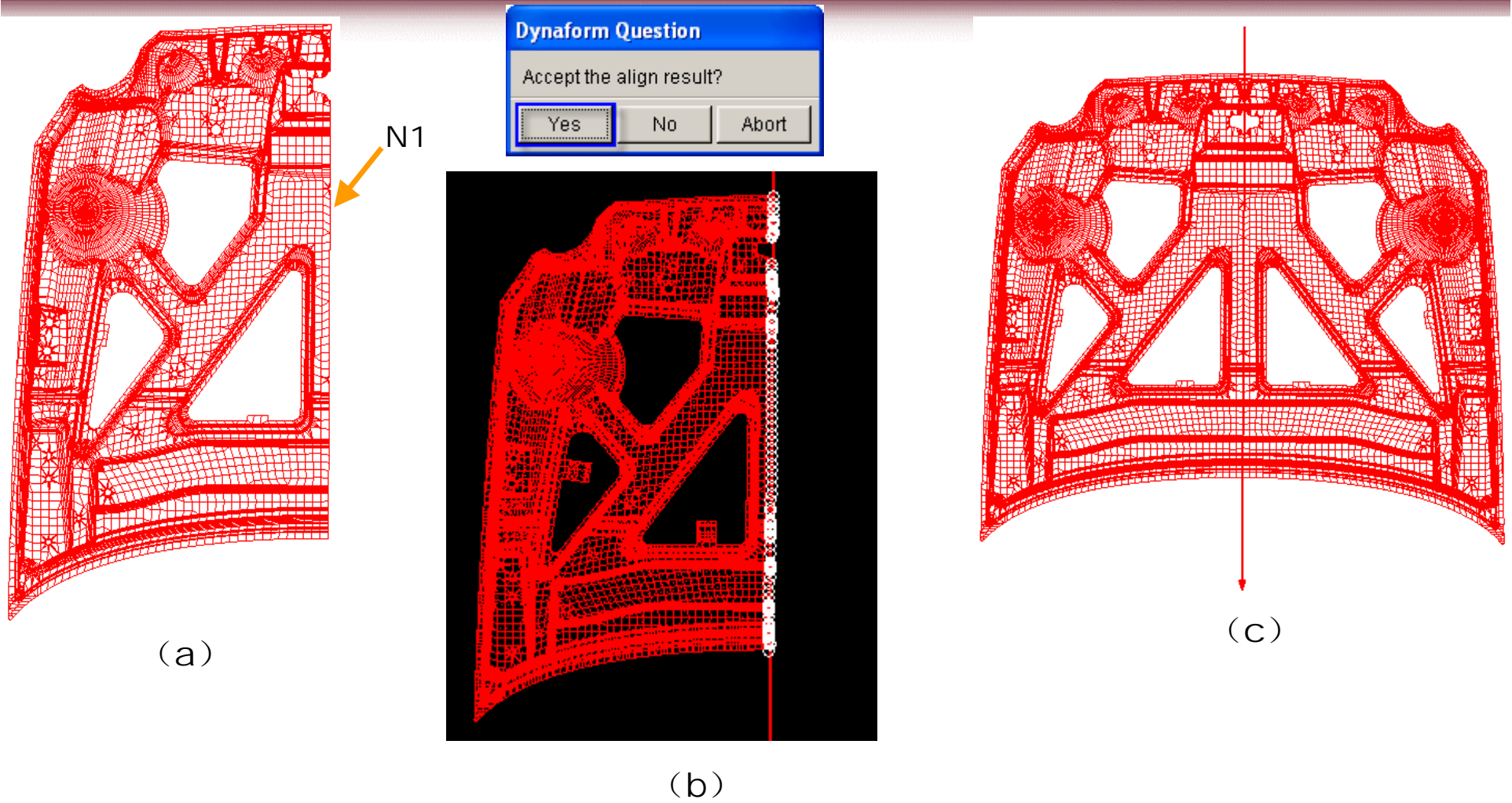

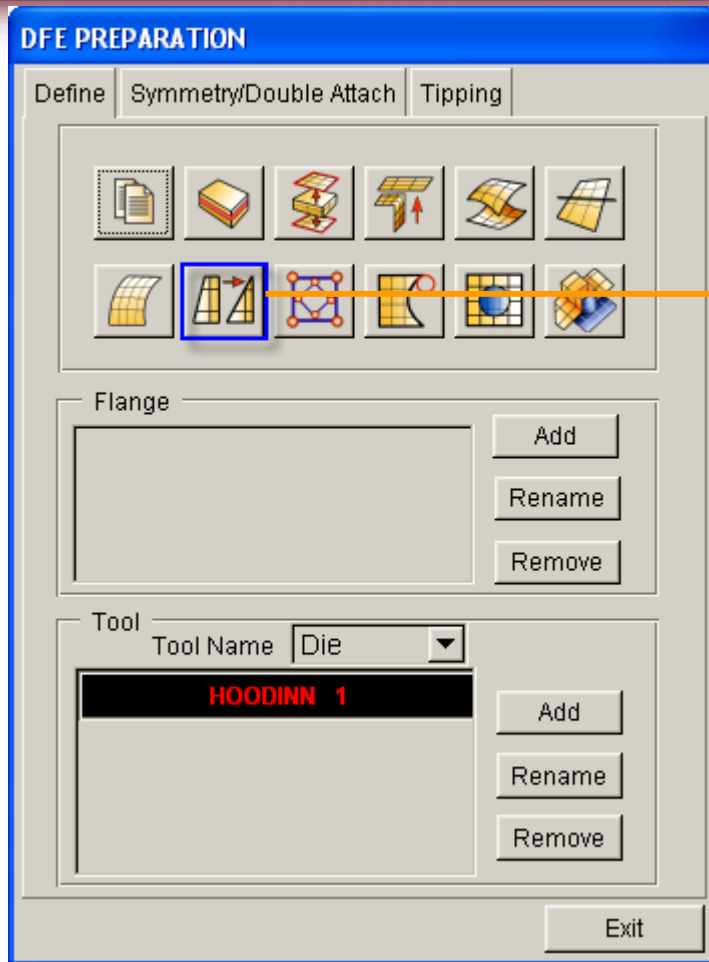


Figure 7

Vii. Check and Repair Mesh

- a) Select **DFE** → **Preparation** → **Model Check/Repair** (See Figure 8.a).
- b) Click **Boundary Display** icon (line one, column two) (See Figure 9).
- c) Click  (Clear highlight) button to remove the highlighted boundary lines.
- d) Click **Plate Normal** icon (line two, column two).
- e) Check the message prompt window to make sure that all element normal is consistent.
- f) Click **OK** to exit Model Check dialog window.



(a)



(b)

Figure 8

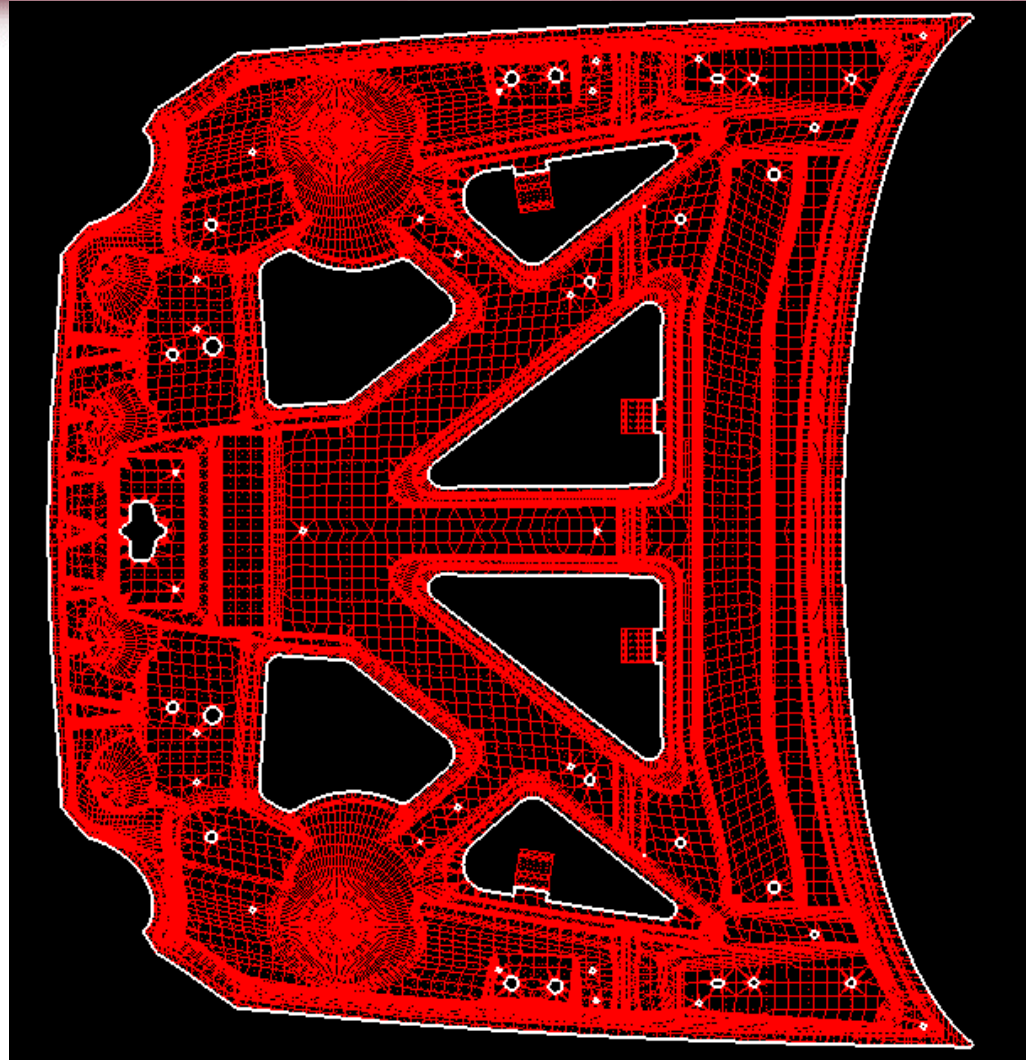
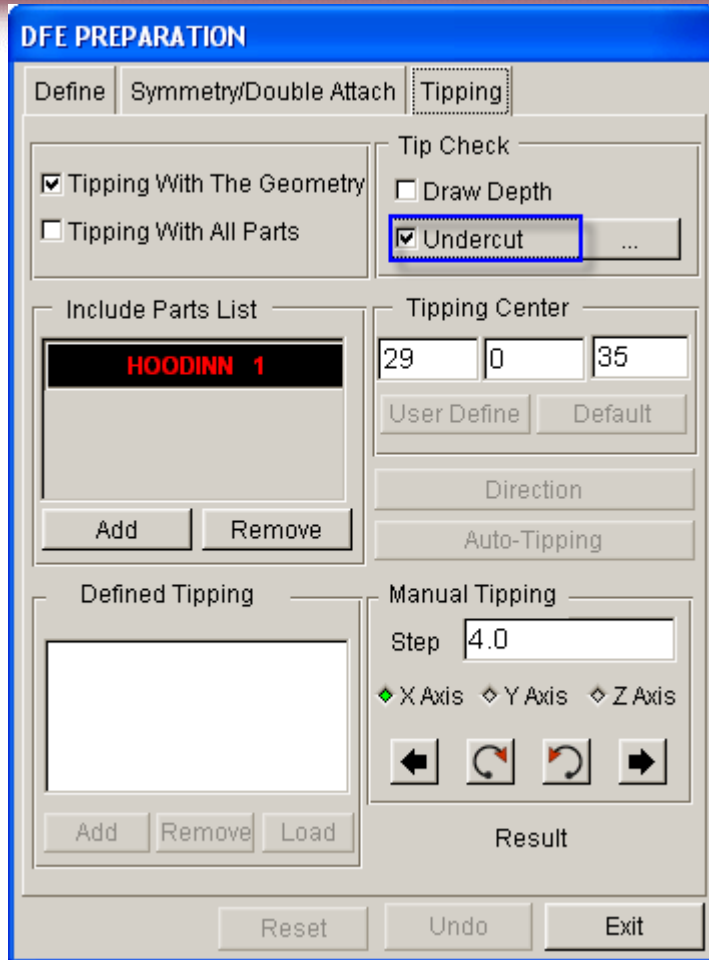


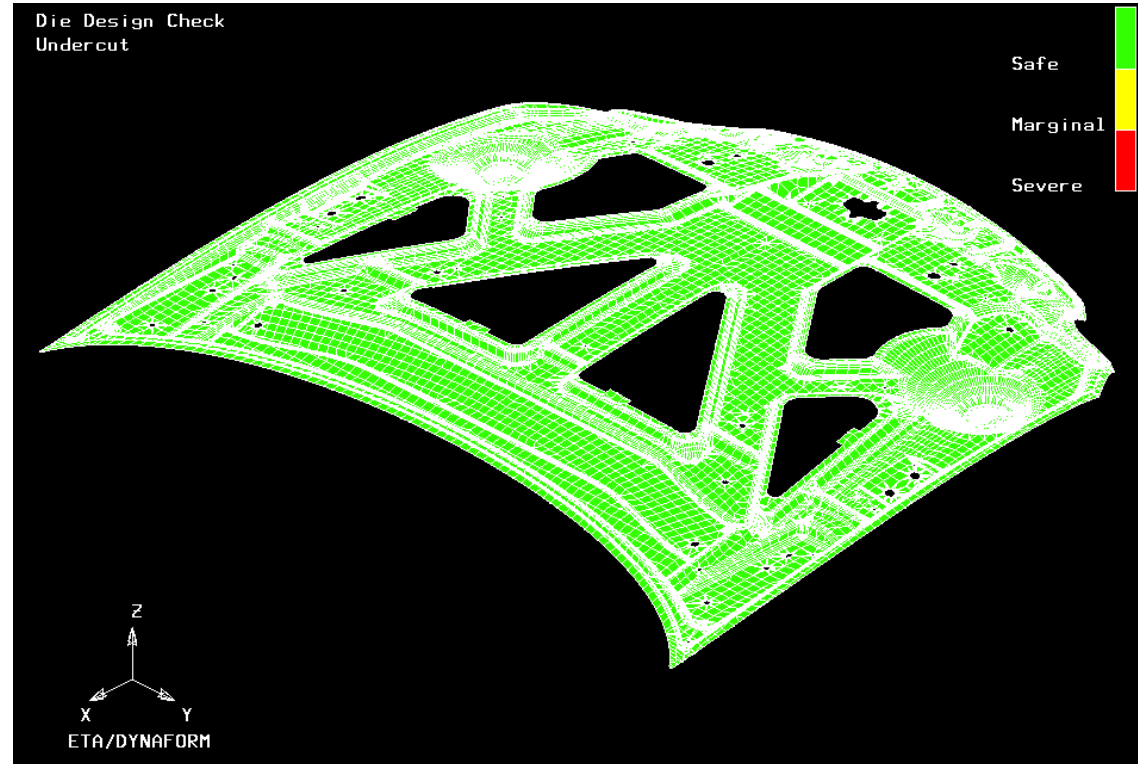
Figure 9

viii. Tipping

- a) Select **TIPPING** from **DFE / preparation**.
- b) Toggle on **Undercut** (See Figure 10.a).
- c) The parts are all green as shown in Figure 10.b, so the stamping directions do not need to be adjusted.
- d) Click **Exit** to dismiss Tipping dialog window.




(a)

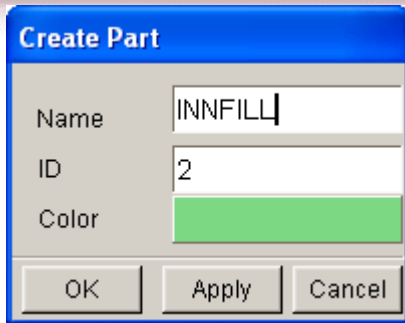


(b)

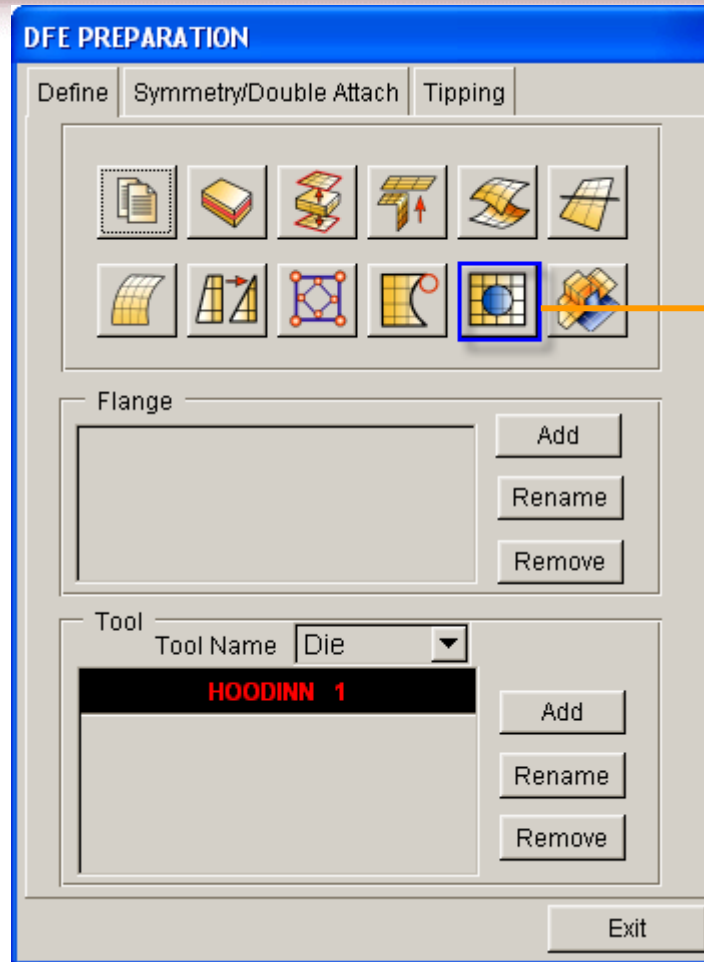
Figure 10

iX. Inner Fill

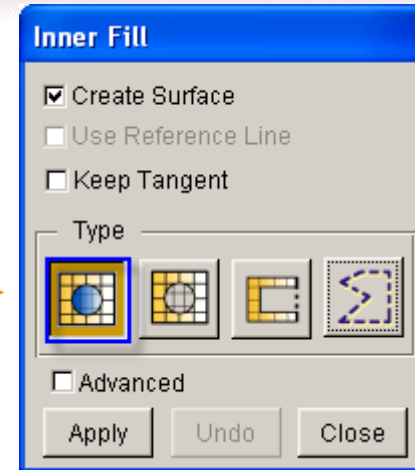
- a) Click **Part**.
- b) Select **Create**.
- c) Type in name: **INNFILL** (See Figure 11.a).
- d) Click **OK** to create new part. The **innfill** will be regarded as the current part automatically.
- e) Click **DFE Preparation**.
- f) Select **Define**.
- g) Select **INNER FILL** (See Figure 11.b).
- h) Select **Auto Fill** (See Figure 11.c) and click **apply** to confirm. Click on the middle mouse button to confirm the selected holes to be filled in the current view (Note: click on the left mouse button to remove the filled holes and the right mouse button to cancel all the holes). The inner holes will be filled automatically.
- i) Click **Close** to exit **INNER FILL** dialog window.
- j) Click  to display the top view.
- k) See Figure 12.



(a)

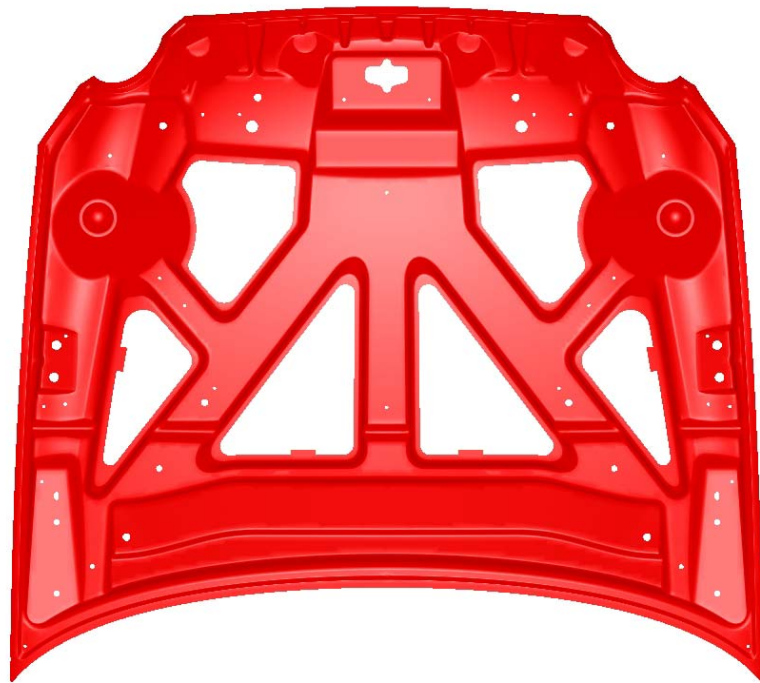


(b)

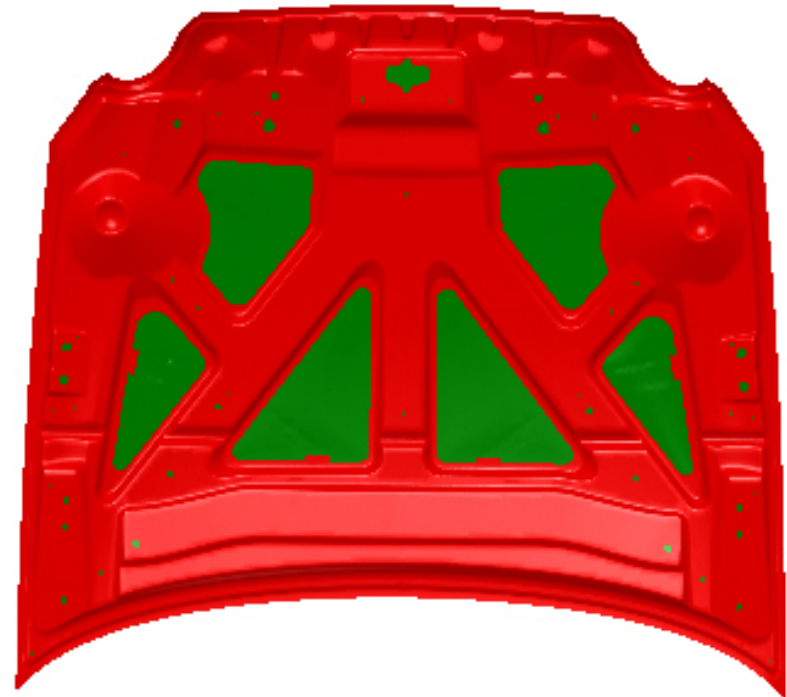


(c)

Figure 11



(a) Before Inner Fill

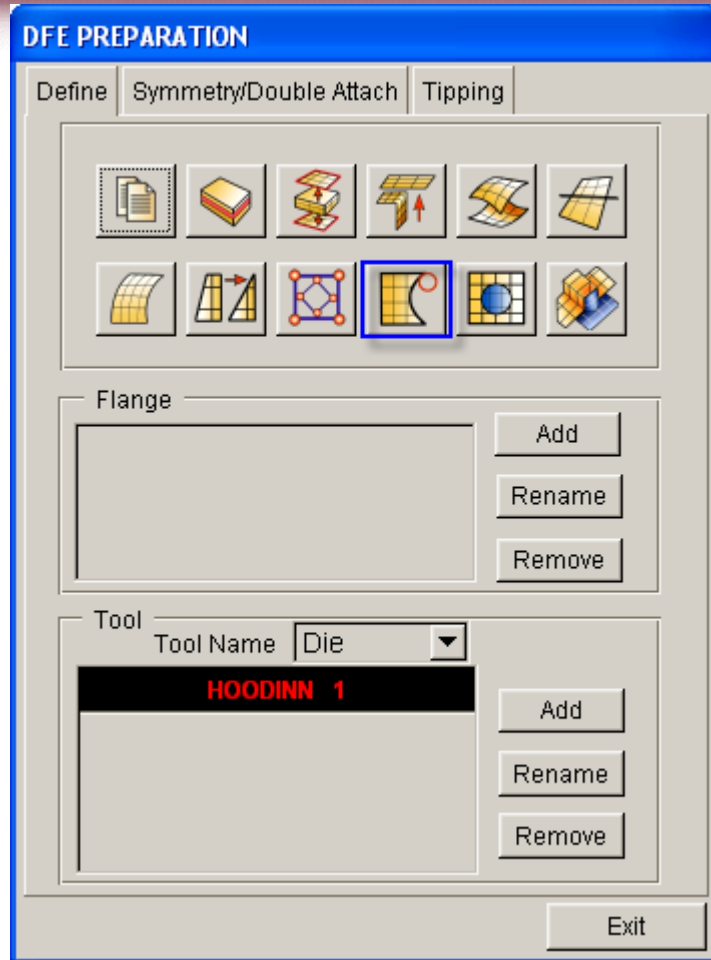


(b) After Inner Fill

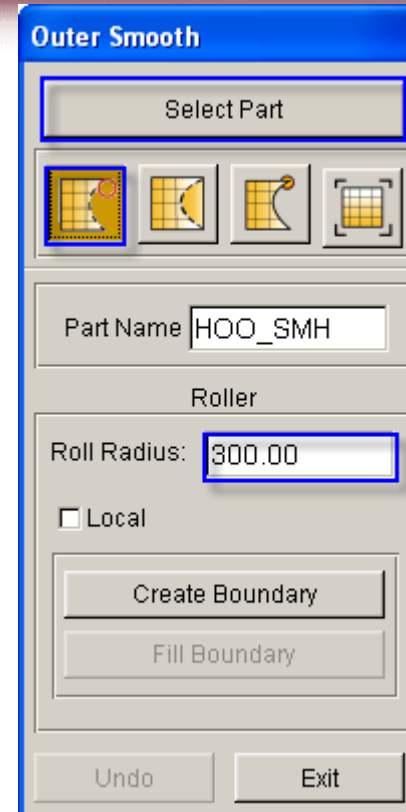
Figure 12

X. Outer Smooth

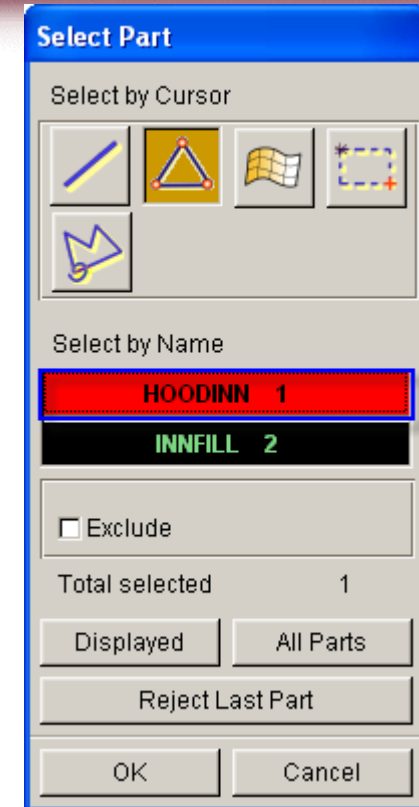
- a) Select **OUTER SMOOTH** (See Figure 13.a).
- b) Select the first button **Roller** (See Figure 13.b).
- c) Click **Select part** in the displayed window and select **hoodinn** (See Figure 13.c). Click **OK** to confirm the selection.
- d) Key in **Roll Radius: 300.00** (mm)
- e) Click **Create Boundary**.
- f) Click **Fill Boundary**.
- g) Click **Exit** to dismiss Outer Smooth dialog window.
- h) Repeat step vi to check and repair mesh.
- i) See Figure 14.



(a)

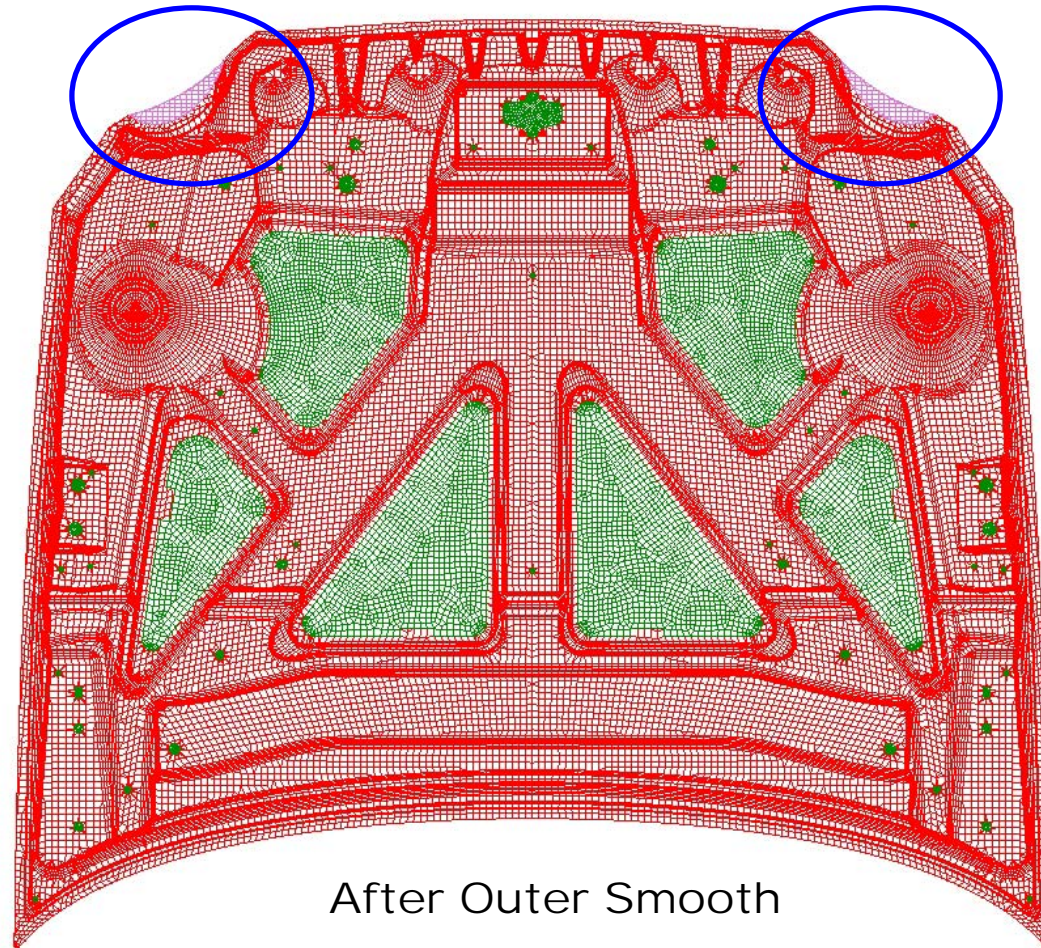


(b)



(c)

Figure 13

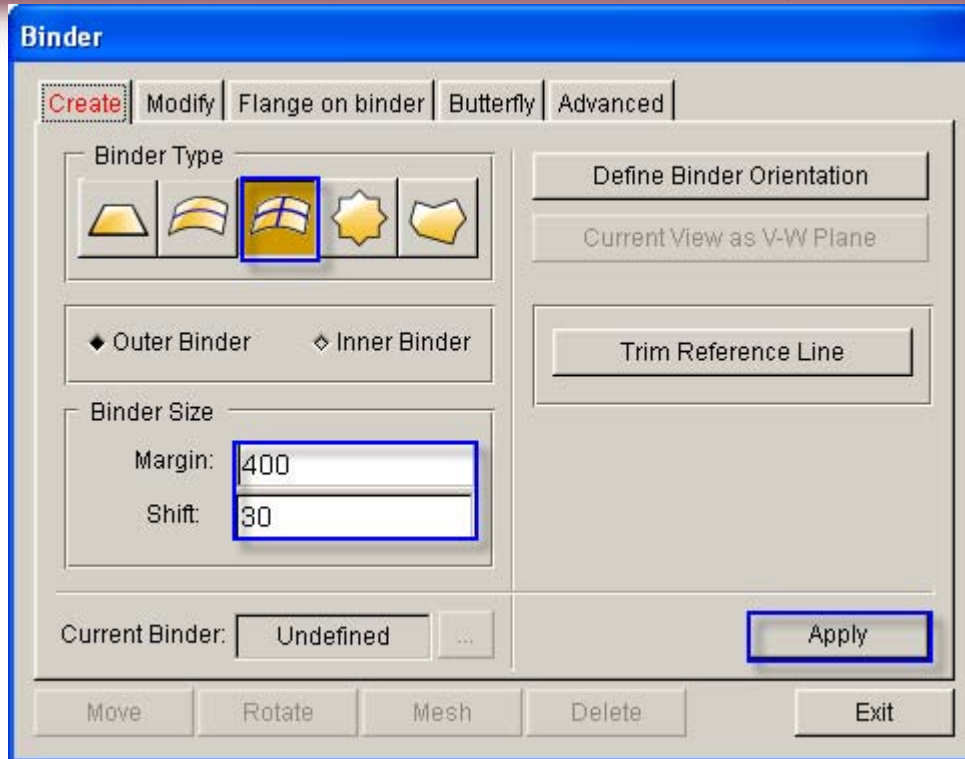


After Outer Smooth

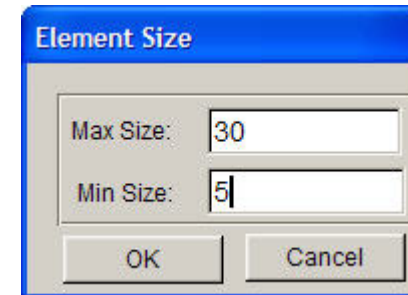
Figure 14

Xi. Create Binder

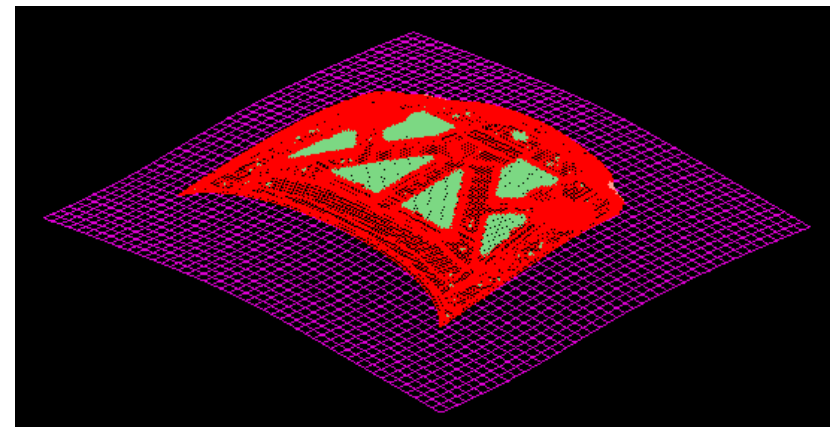
- a) Click **Binder** from **DFE** menu.
- b) Select Binder Type: **Two-line Binder** (See Figure 15.a).
- c) Key in **Binder Margin: 400.00** (mm).
- d) Key in **Shift: 30.00**(mm).
- e) Click **Apply** to create binder and the letter color of Create turns from red to black.
- f) Click **Mesh** to mesh the binder.
- g) Key in the Max. and Min. Size: **30.00** (mm), **5**(mm) (See Figure 15.b).
- h) Click **OK** to mesh the binder (See Figure 15.c).
- i) Click **Exit** to dismiss Binder dialog window.
- j) Save the database.



(a)



(b)

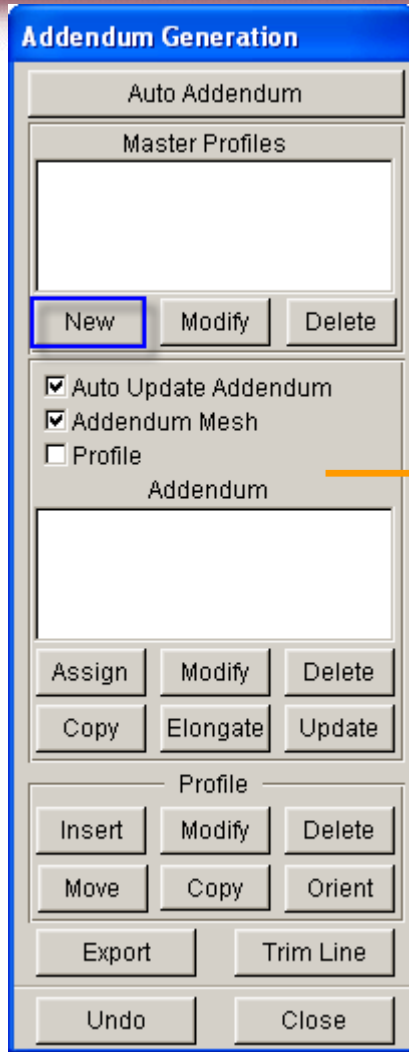


(c)

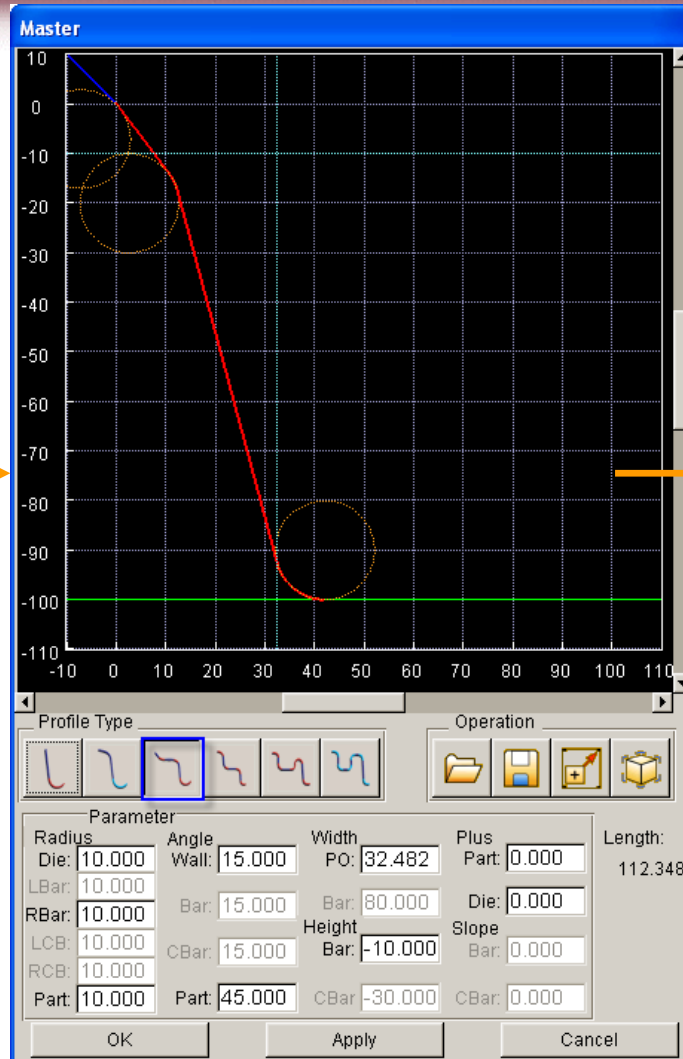
Figure 15

Xii. Create Master Profile

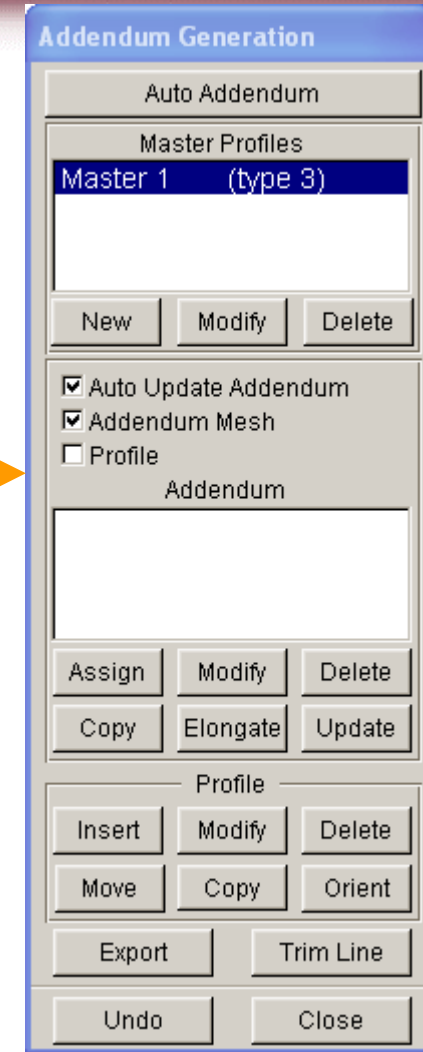
- a) Click **DFE**.
- b) Select **Addendum**.
- c) Select **New** in the displayed dialog window to create a new master profile (See Figure 16.a).
- d) Select Profile Type: **Profile Type 3** (See Figure 16.b).
- e) Click **Ok** to exit Master Profile dialog window (See Figure 16.c).



(a)



(b)

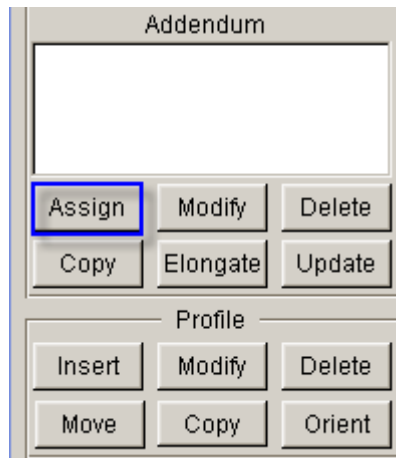


(c)

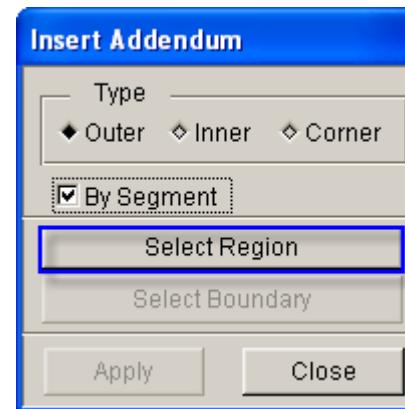
Figure 16

xiii. Create Addendum

- a) Click **Assign** button(Addendum) as shown in Figure 17.a.
- b) Select addendum Type: **Outer** (See Figure 17.b).
- c) Toggle on **By Segment**.
- d) Click **Select Region**, and select half boundary line of Hoodinner as addendum range (See Figure 18.a).
- e) Click **Yes** in the displayed dialog window to accept the selected region.
- f) Click **Apply** to generate addendum (See Figure 18.b).
- g) Click **Close** to exit Addendum dialog window.

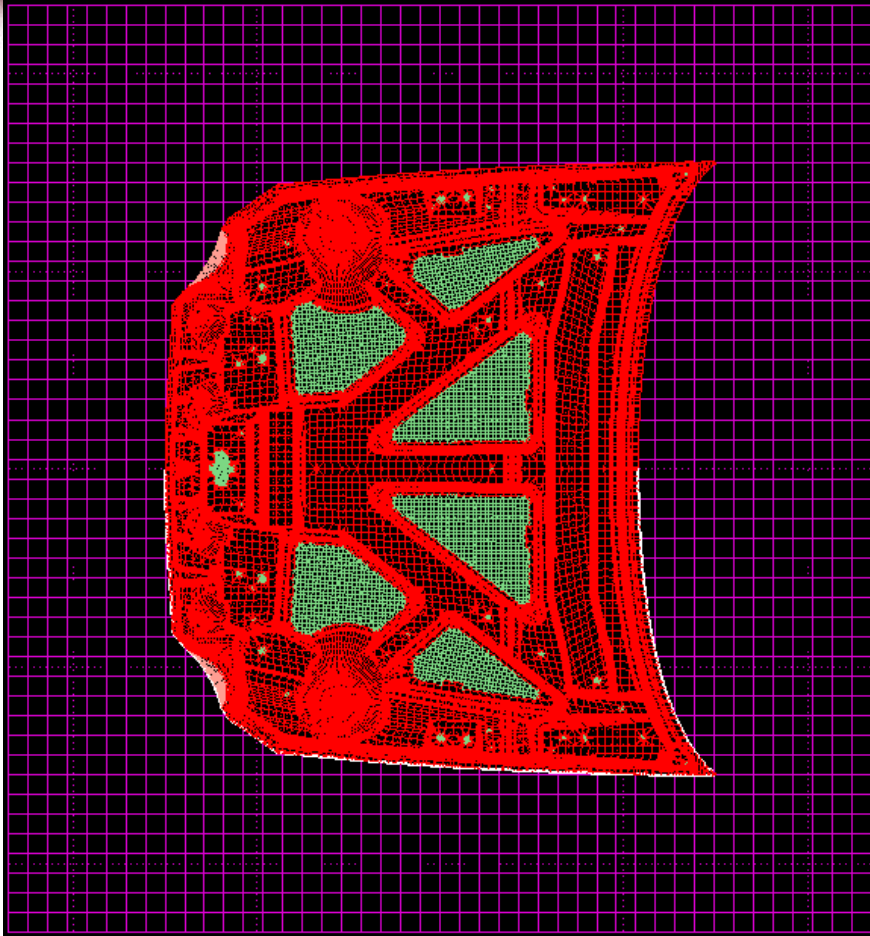


(a)

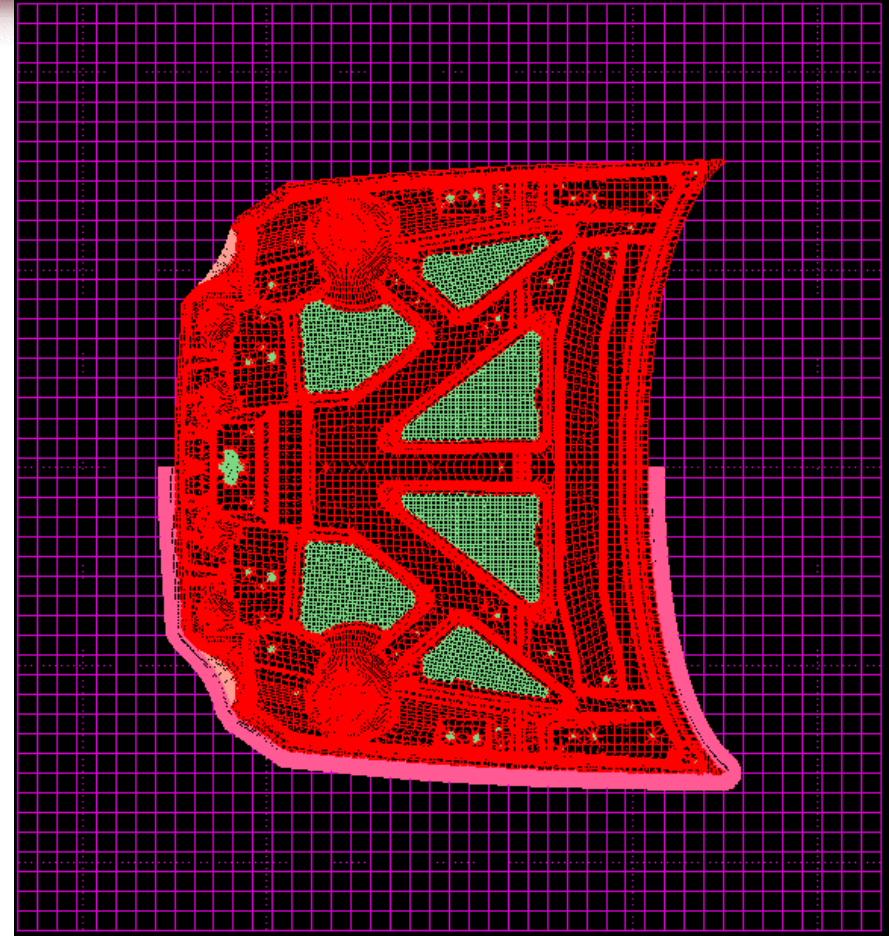


(b)

Figure 17



(a)

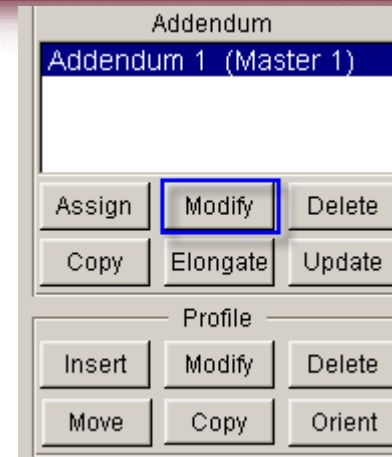


(b)

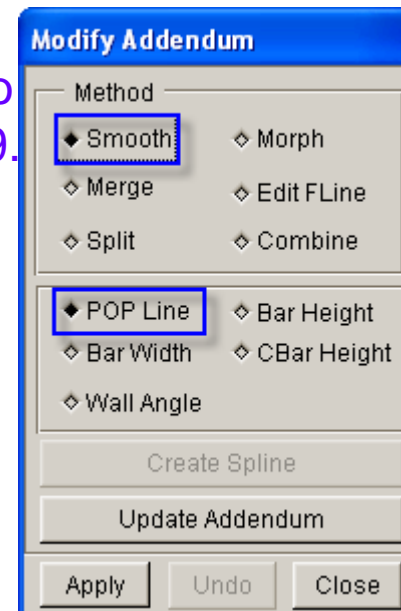
Figure 18

XIV. Smooth Addendum

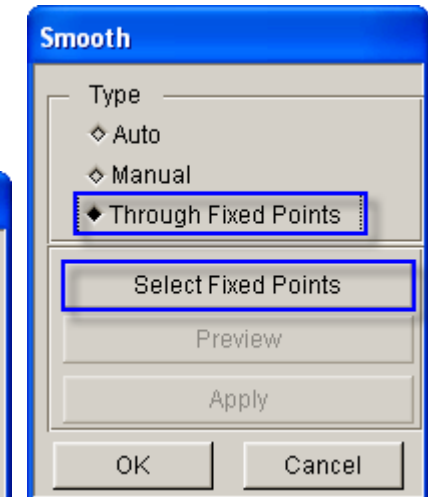
- a) Click the **Modify** icon under **Addendum** (See Figure 18.a).
- b) Select **Smooth** and **POP line** (See Figure 18.b).
- c) Click **Apply**.
- d) Select **Through Fixed Points** (See Figure 18.c).
- e) Use the rotation and zooming button to check the region as shown in Figure 19.
- f) Click **Select Fixed Points**, and select four nodes on addendum as shown in Figure 19.
- g) Click **Preview**.
- h) Click **Apply**.
- i) Click **OK**.
- j) Click Close to dismiss Smooth Addendum dialog window.



(a)



(b)



(c)

Figure 18

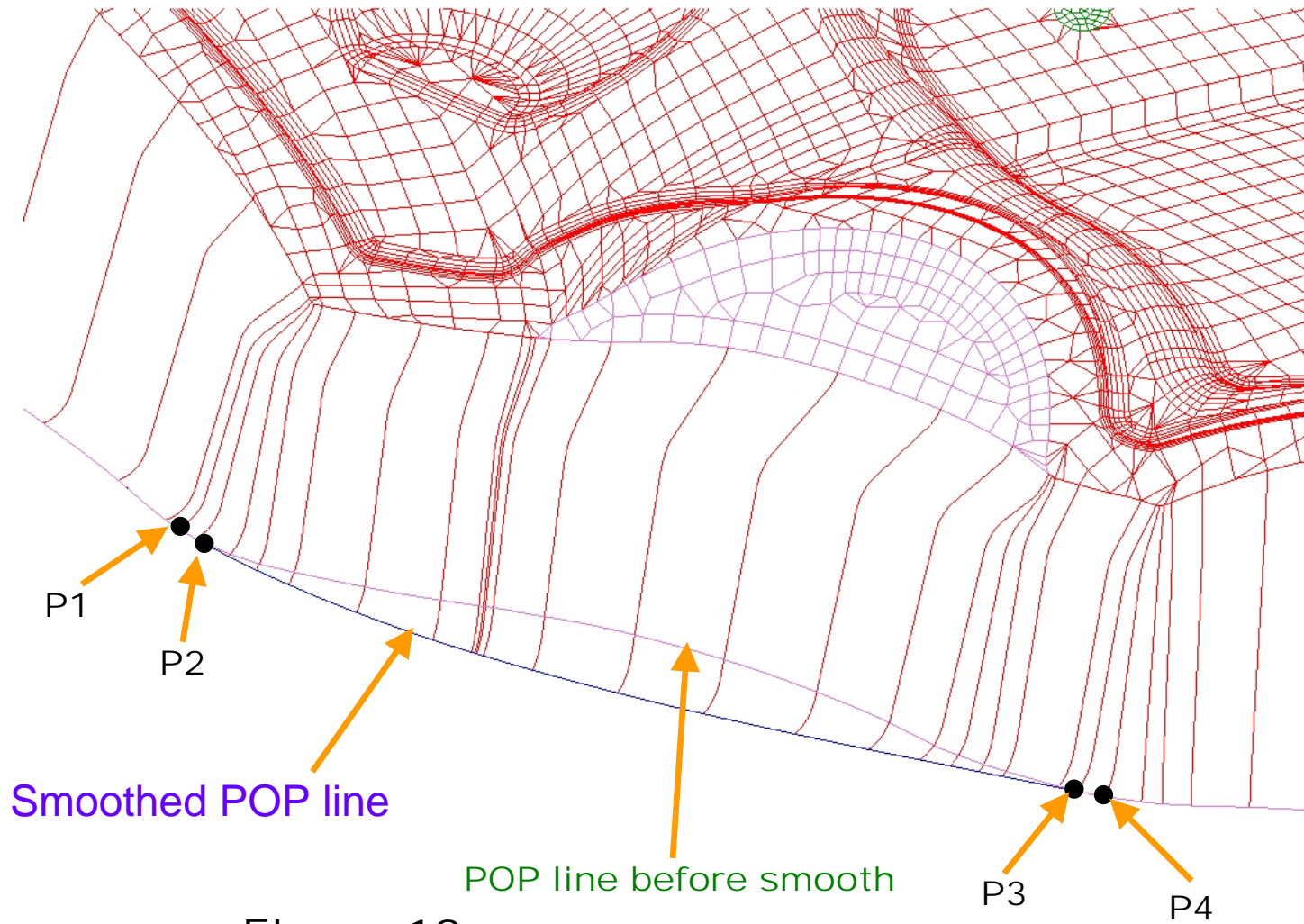
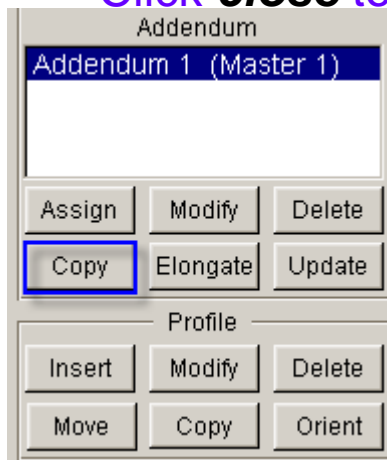


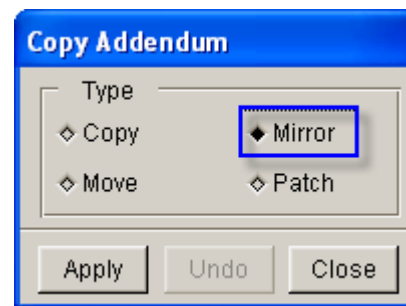
Figure 19

XIV. Mirror Addendum

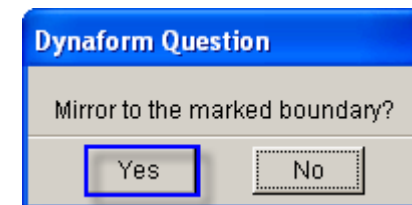
- a) Click **Copy** icon under **Addendum** (See Figure 20.a).
- b) Select **Mirror** in the displayed dialog window (See Figure 20.b).
- c) Click **Apply**.
- d) The addendum to be mirrored and the mirrored boundary will be highlighted automatically (See Figure 21.a).
- e) Select **Yes** in the displayed dialog window (See Figure 20.c).
- f) The other half of addendum will be mirrored automatically (See Figure 21.b).
- g) Click **close** to exit **Copy Addendum** dialog window.



(a)

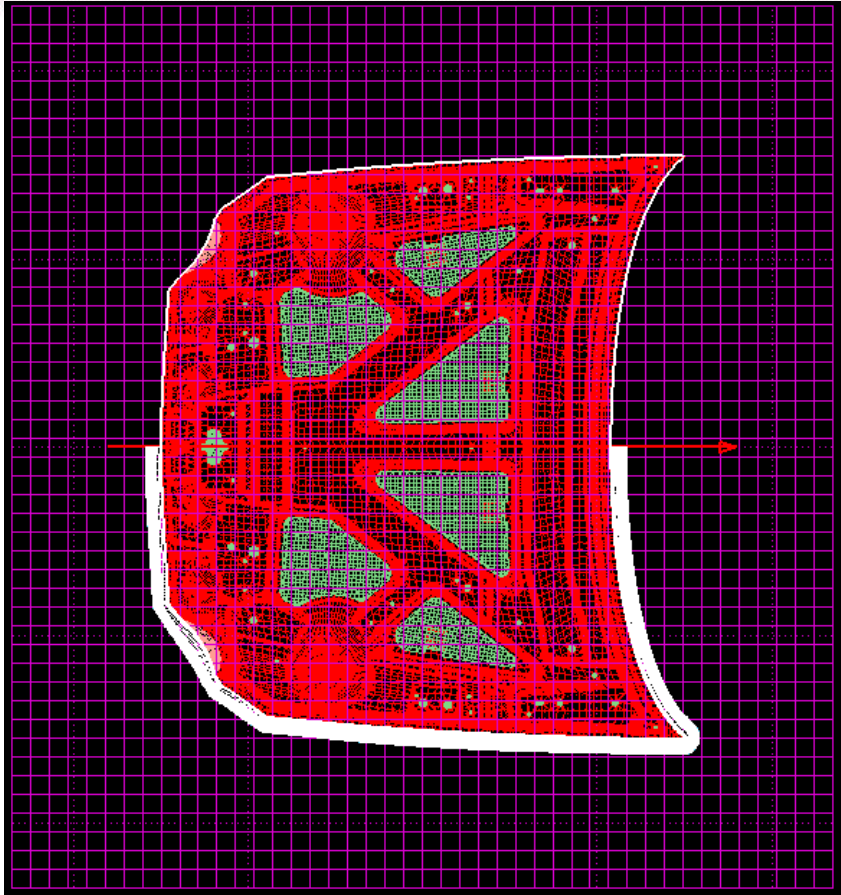


(b)

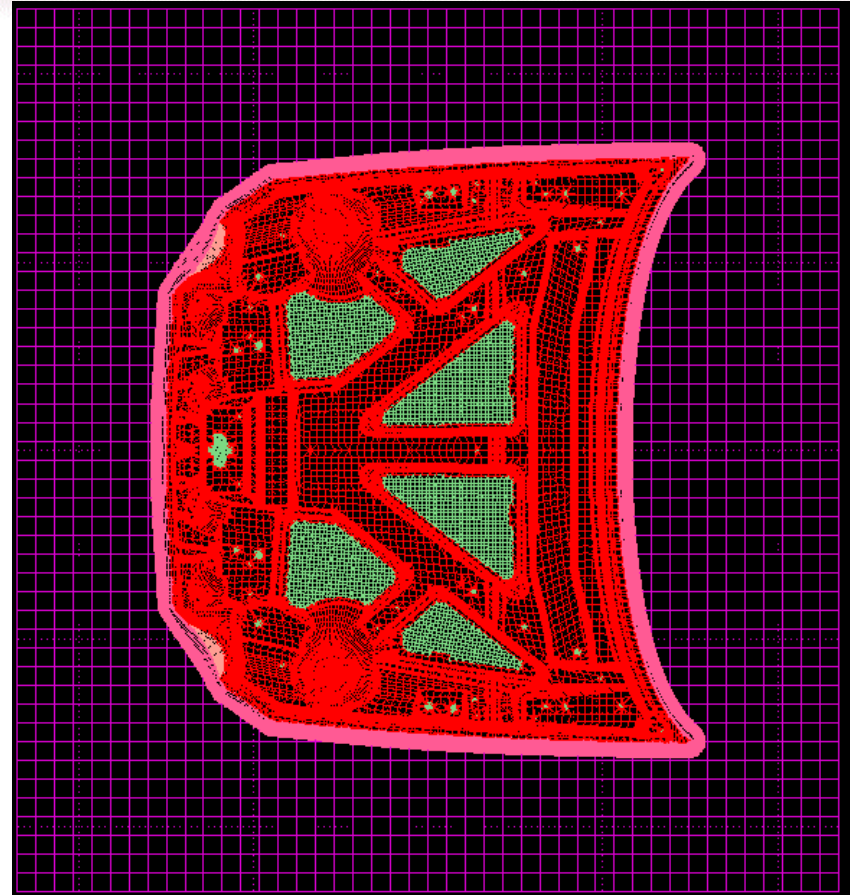


(c)

Figure 20



(a)



(b)

Figure 21

XV. Create Addendum Surface

- Click **Export** (See Figure 22.a).
- Select POP Line, Profile Line, Addendum Surface and click **Apply** to generate addendum surface automatically (See Figure 22.b).
- Click Close to exit and save the database.

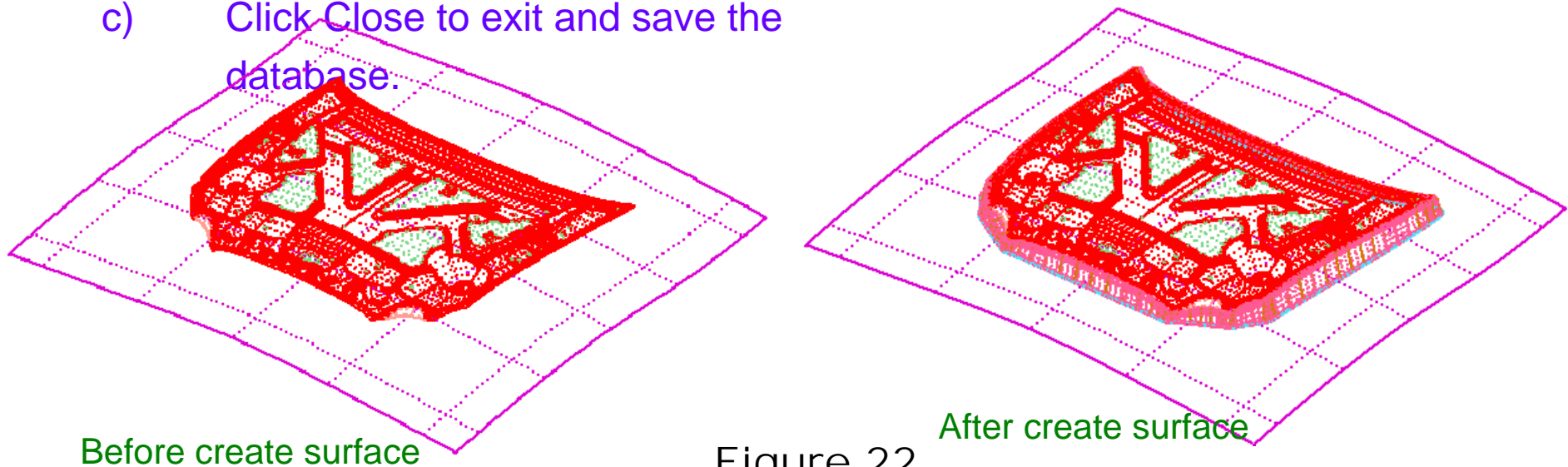
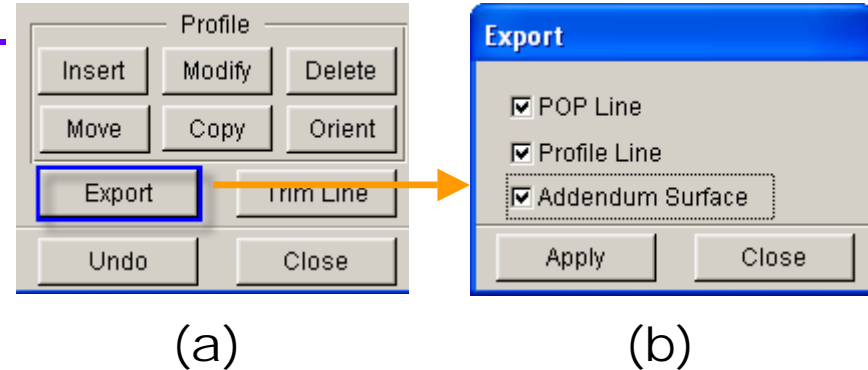


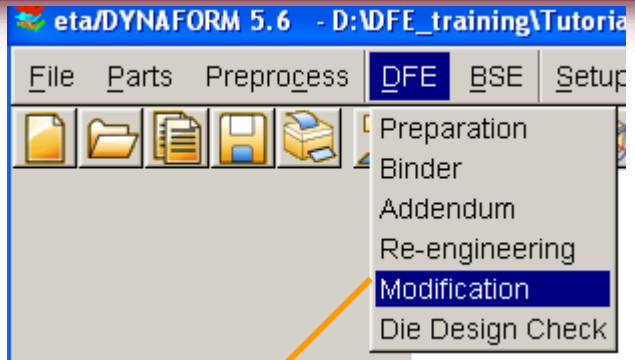


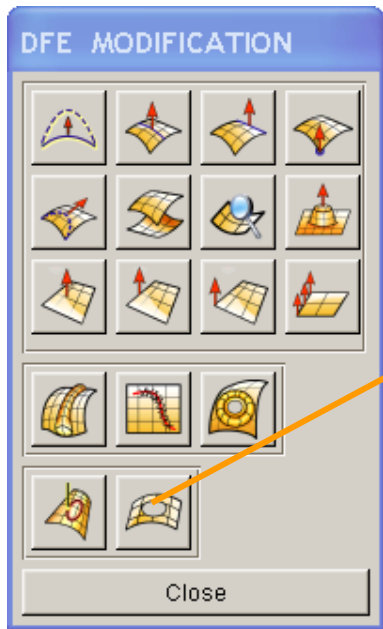
Figure 22

XVI. Binder Trim

- a) Click **DFE** → **Modification** (See Figure 23.a).
- b) Select **BINDER TRIM** (See Figure 23.b).
- c) Select Binder Type: **Outer**
- d) Toggle off **Surface**.
- e) Click **Select** (See Figure 23.c).
- f) Select Trim Line (See Figure 23.d).
- g) Click **Ok** to confirm.
- h) Click **Apply**.
- i) Click **Yes** to accept the displayed line.
- j) Click **Close** to exit Binder Trim dialog window.
- k) Click  to show the top view.
- l) Toggle off all the parts except **C_BINDER** (See Figure 23.e).
- m) Click **Close** to exit **MODIFICATION** dialog window.
- n) Toggle on **Surface**.
- o) Click  to save the database.



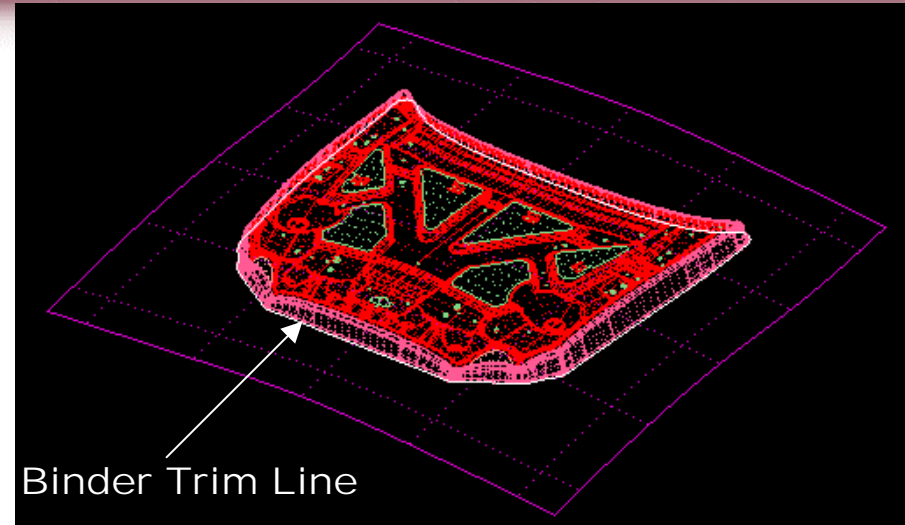
(a)



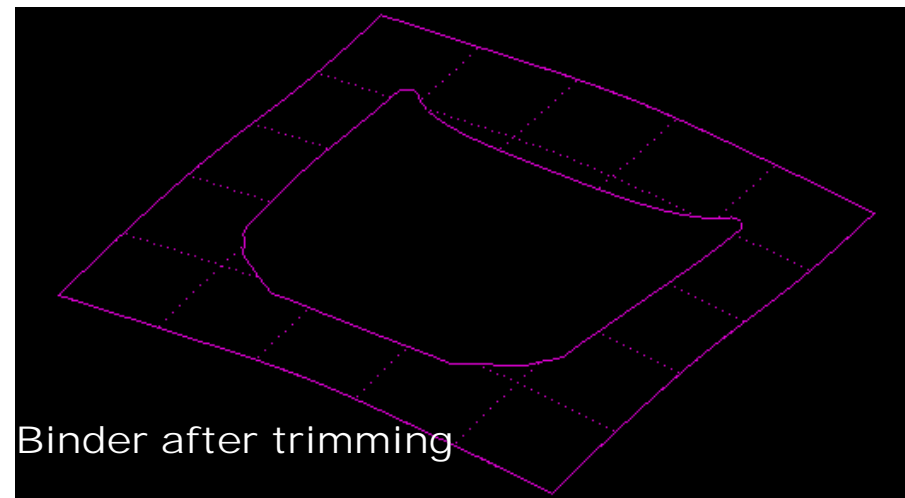
(b)



(c)



(d)



(e)

Figure 23

xvii. Unfold Flange and Create Trim Line

- a) Click **DFE**.
- b) Select **Preparation**.
- c) Select **Unfold Flange** (See Figure 24).
- d) Use rotation and zooming tools to check the region as shown in Figure 25.a.
- e) Select the flange surface to be unfolded as shown in Figure 25.a.
- f) Click **OK** to confirm.
- g) Select **Unfold to Surface** in the displayed window (See Figure 25.b).
- h) Select flange surfaces and click OK to confirm selection.
- i) The unfolded line is calculated automatically (See Figure 23.d). Click **No** to reject the adjustment (See Figure 25.c).
- j) The surface will be unfolded to the addendum automatically (See Figure 25.e) to generate trim line.
- k) Repeat (c) to (j) to unfold other flange surfaces.
- l) Click Exit to dismiss **DFE Preparation** dialog window.
- m) Save the database.

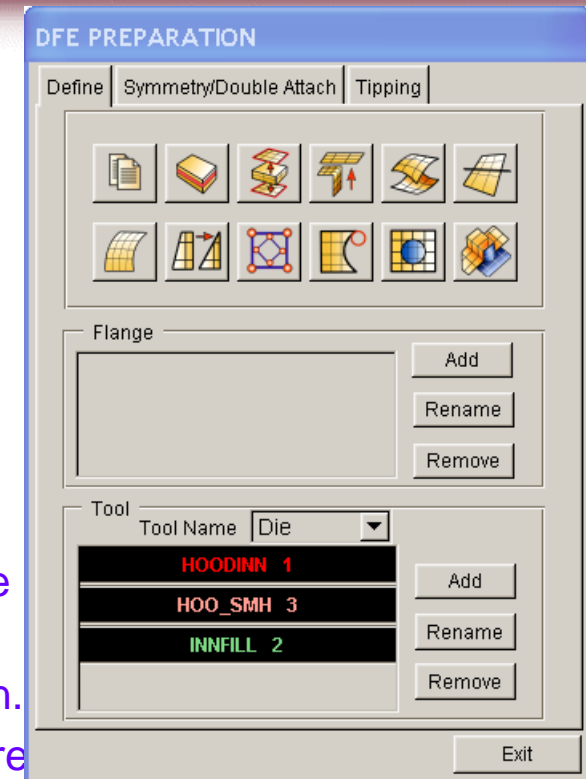
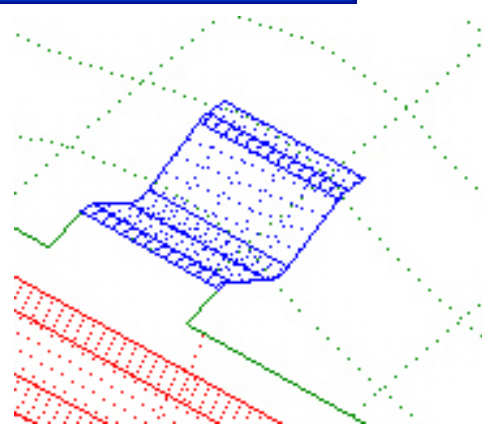
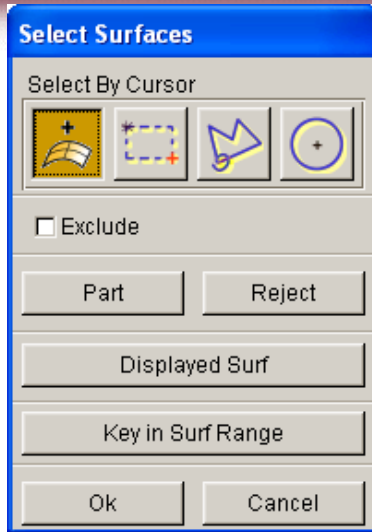
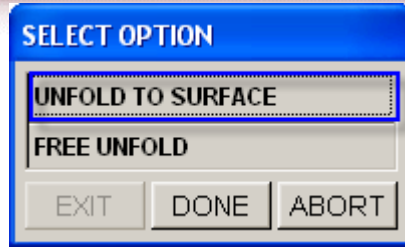


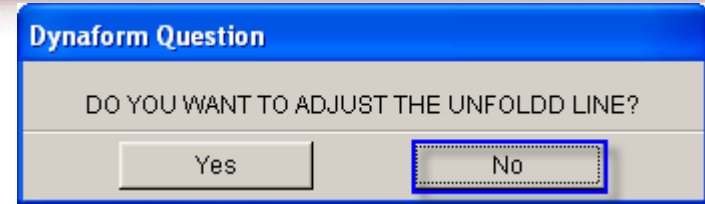
Figure 24



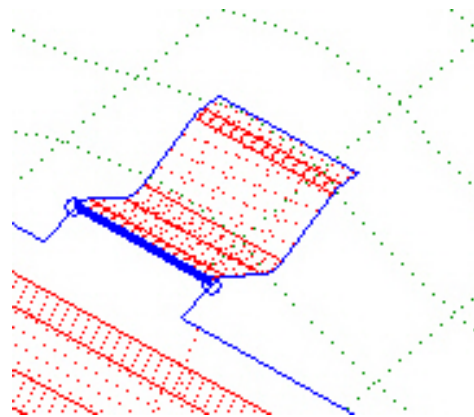
Select flange surfaces
(a)



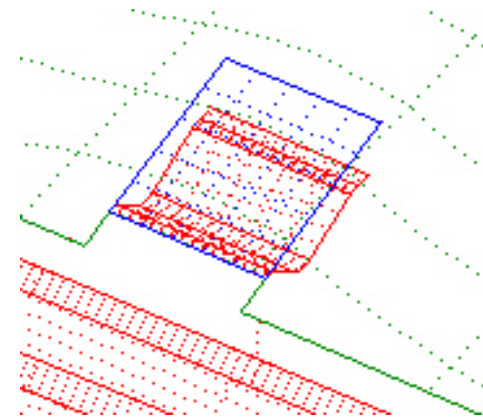
(b)



(c)



Calculate base line
(d)



Unfolded flange surface
(e)

Figure 25