TUTORIAL VIDEO 06

06 Mesh editing: elements (combine, split, fill, normals)

Edit a mesh element by element: combine two triangles into a better quad, split, delete and fill, move one node to clear a sliver, and make the shell normals of a whole area face the same way.

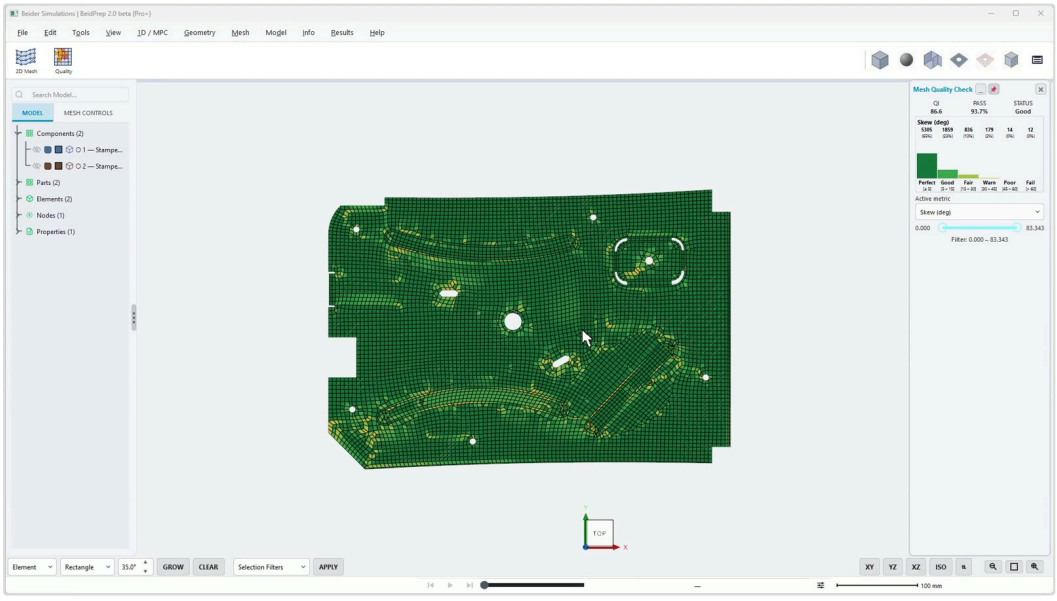
Tutorial files	folder `06_Mesh_editing_elements` — open `sheet_08.beid` first
Video	Watch video 06 on YouTube
Download files	Download the tutorial files (97 MB)

1 Opening

video 0:00

This video fixes poor elements on the same sheet-metal bracket, with the element tools.

You will see what combine and split can and cannot do, then delete and fill a poor patch, and check the result.



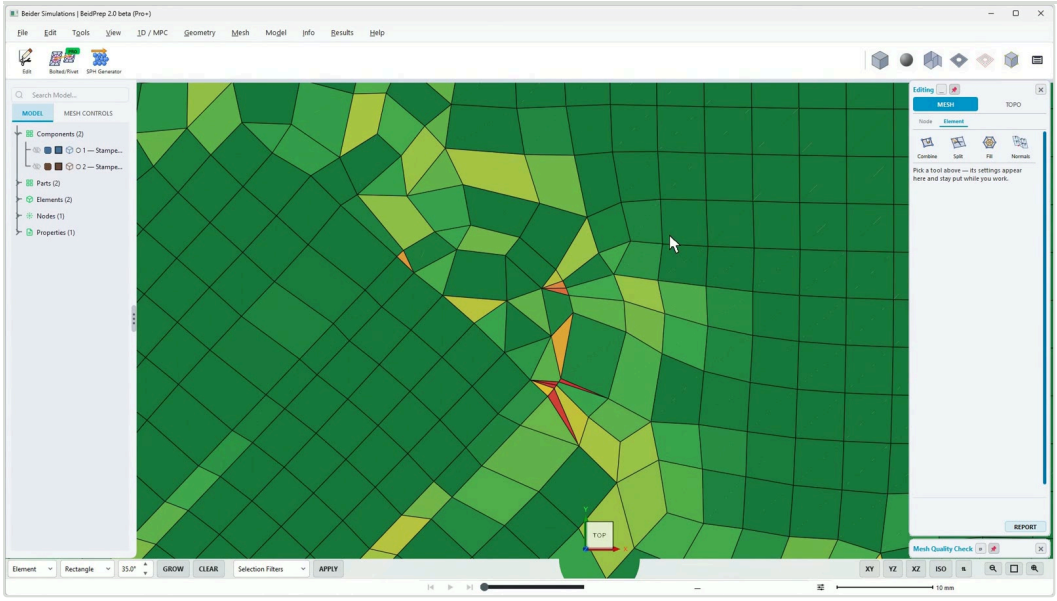
The screen at 0:12 in the video.

2 Element group

video 0:12

1. Open the Model menu, click Edit, and choose Element.

   Here, at the end of the diagonal rib, the red elements fail the limits.



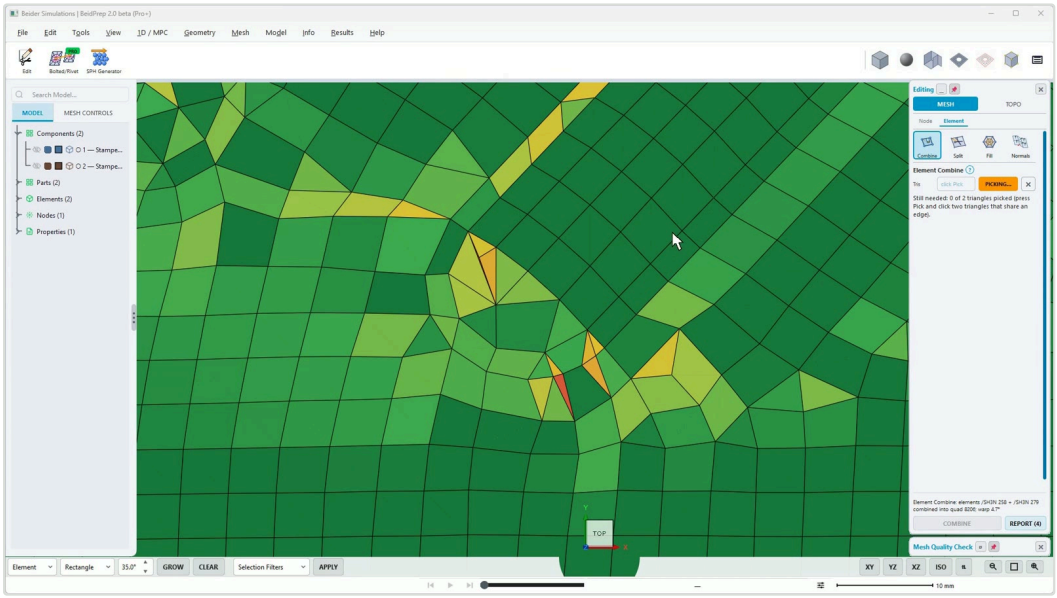
The screen at 0:22 in the video.

3 Combine

video 0:23

Combine joins two triangles into one quad.

Here two yellow triangles become one green quad: its skew drops from almost forty degrees to nine.



The screen at 0:36 in the video.

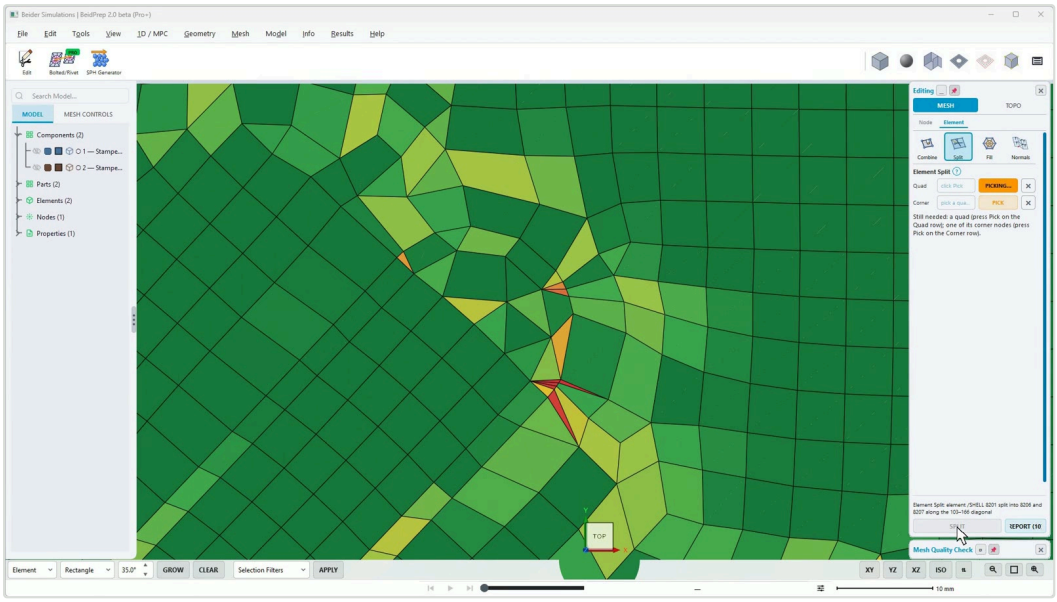
4 Split

video 0:42

Split cuts a quad into two triangles, along the diagonal from a corner you pick.

On this poor quad either diagonal leaves a sliver, so splitting it does not help.

Control Z takes it back.



The screen at 0:52 in the video.

5 Delete, Fill

video 1:00

Where several poor elements sit together, it is quicker to delete them and fill the hole.

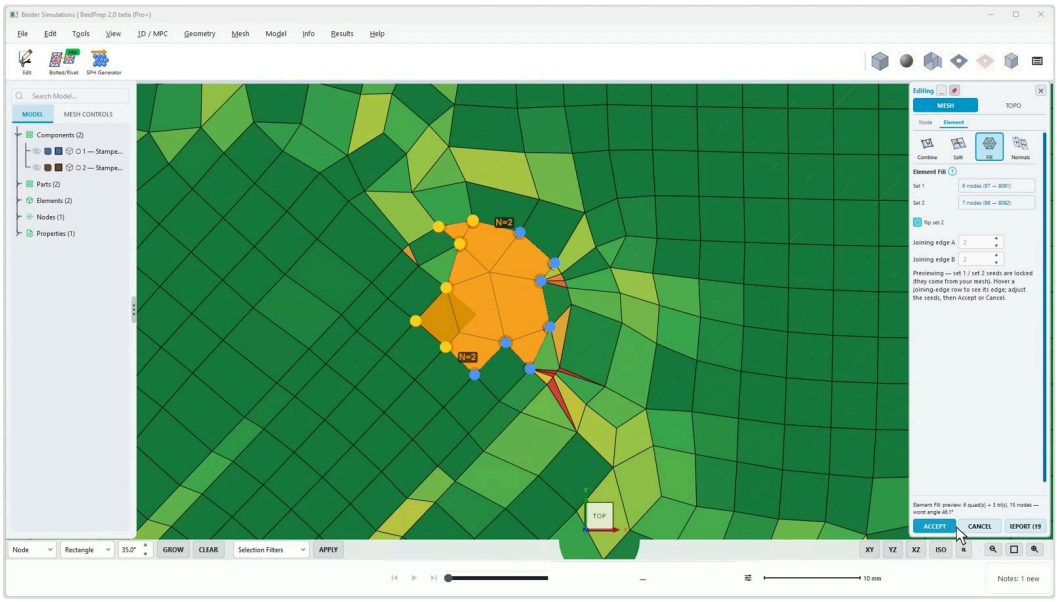
1. Drag a rectangle around them, then right click, and choose Delete.

Fill closes the hole with new elements, between two runs of nodes on its border, which are kept exactly.

Pick the two runs, set the element size to five, and Preview shows the new elements.

Accept adds them.

In the video: **5** in Elem size.



The screen at 1:25 in the video.

6 Check, The last one

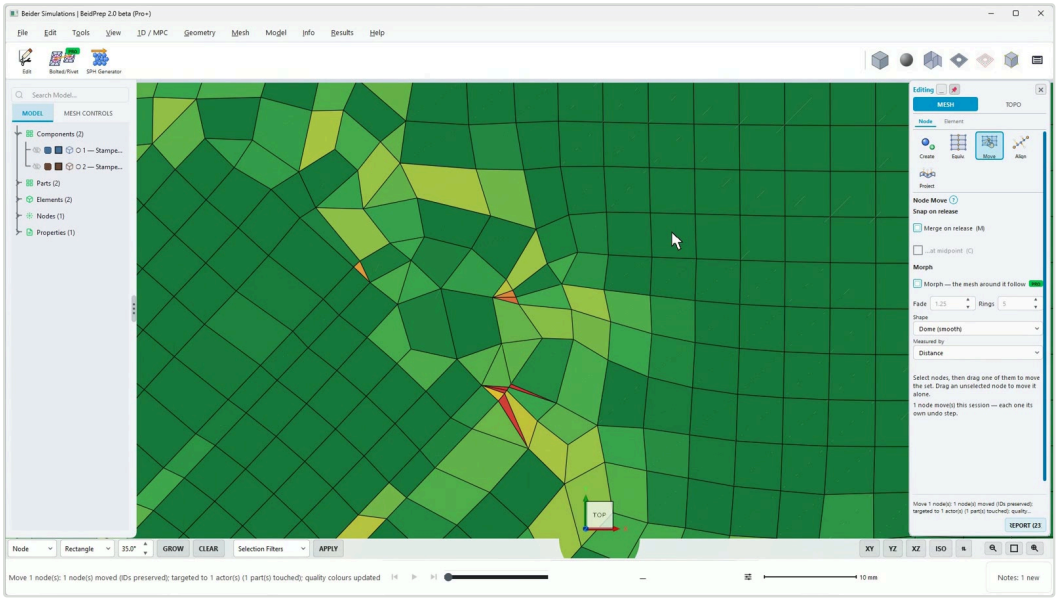
video 1:28

The new elements share every node on the border, so the mesh stays connected.

The check finds no failing element among the new ones.

This orange sliver beside the patch needs only one node moved.

1. With Move on the Node tab, drag it about three millimetres, and the sliver turns green.



The screen at 1:47 in the video.

7 Normals, Close

video 1:50

Normals turns the shell normals of a connected area to face the same way as an element you pick.

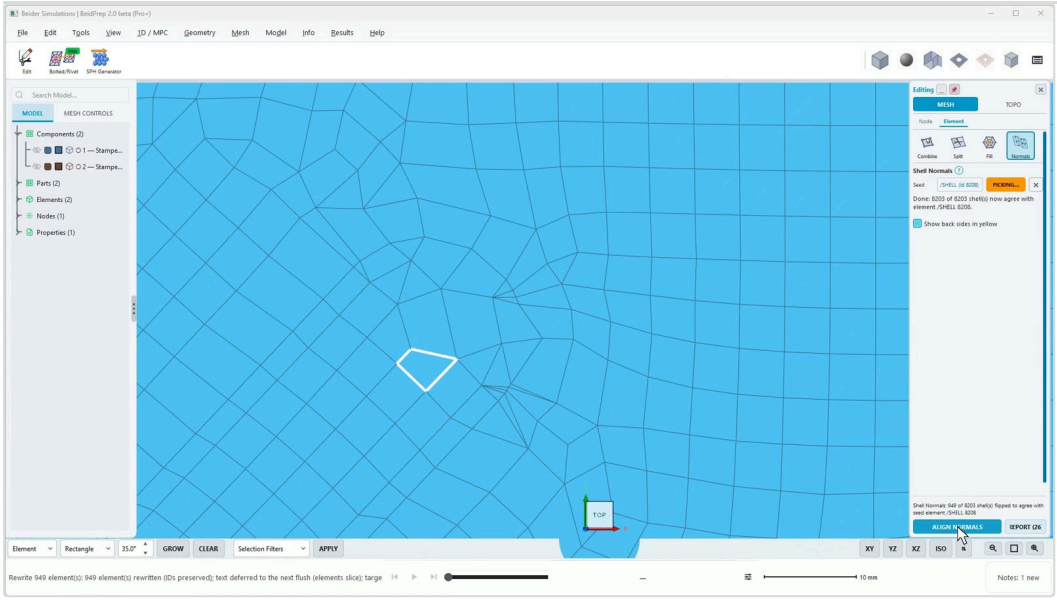
While the panel is open, a shell seen from its back is drawn yellow.

Here hundreds of the shells face the other way.

Align Normals turns them all to agree with the one you picked.

The yellow patches now show the part colour: the whole area faces the same way.

Every element edit is one step on the undo list: Control Z takes it back.



The screen at 2:06 in the video.

Steps and pictures are taken from tutorial video 06. Every picture is a frame of the video.