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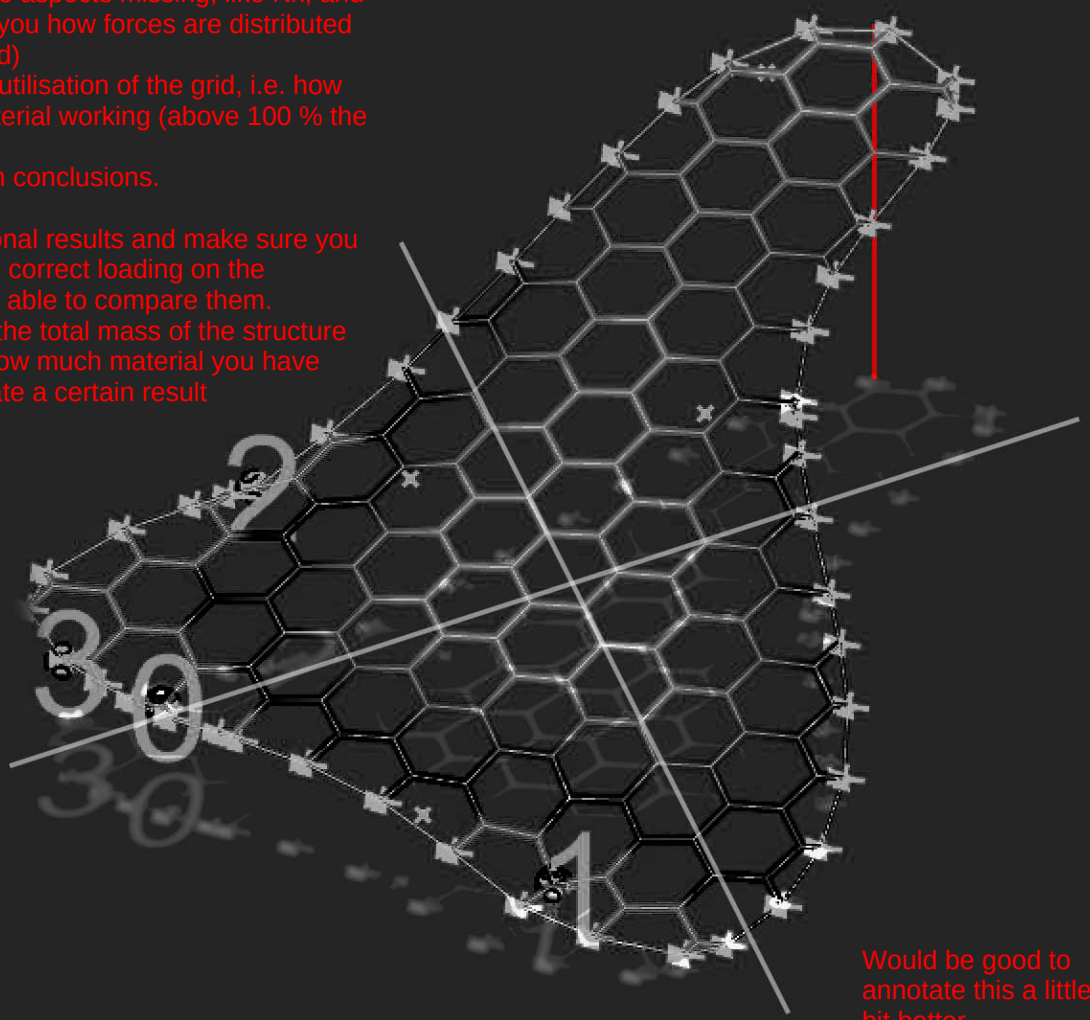
Data Informed Structures
Lina Salamanca- Luis Bonilla

COMPLETE TO PASS
Well presented document.
There are some aspects missing, like Nx, and Myy (to show you how forces are distributed through the grid)
Also show the utilisation of the grid, i.e. how hard is the material working (above 100 % the material fails)
Make your own conclusions.

Add the additional results and make sure you have made the correct loading on the elements to be able to compare them.
Also compare the total mass of the structure so you know how much material you have used to generate a certain result



Would be good to annotate this a little bit better

General Diagram of the mesh. Direccion, of the initial grid, height, suports

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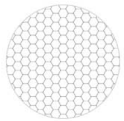
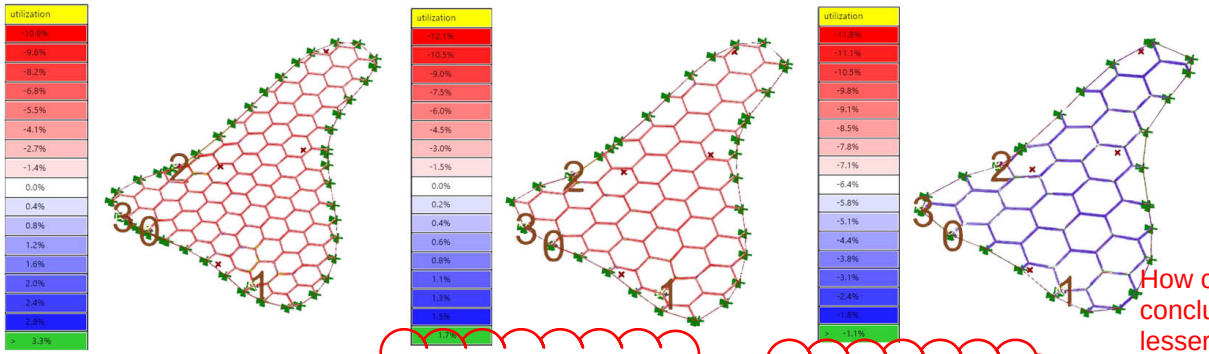
Type of grid: Hexagonal

Displacement: 0,006509- 007261- 009347
Density: 15%- 20%- 25%
Cross section: 20- 20





Displacement: 0,007261
Density: 15%

Displacement: 0,009347
Density: 20%

Displacement: 0,006509
Density: 25%

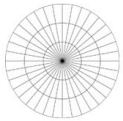
Very well laid out pages.

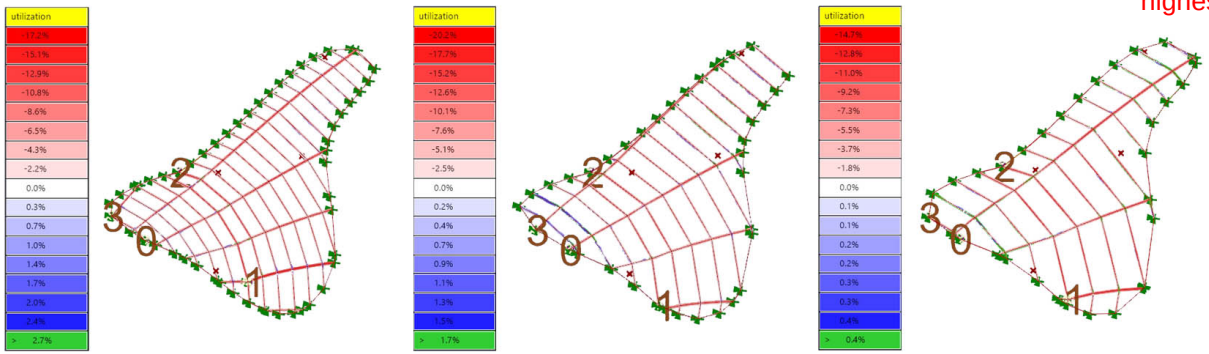
Missing:
Which load did you apply. did you distribute the forces of the area over the total length of the elements?

How can you conclude that the lesser dense has the lowest deflections, and the middle one the highest???

Type of grid: Radial

Displacement: 0,009306- 0,009529- 0,010379
Density: 15%- 20%- 25%
Cross section: 20- 20





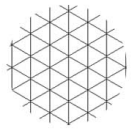
Displacement: 0,009306
Density: 15%

Displacement: 0,009529
Density: 20%

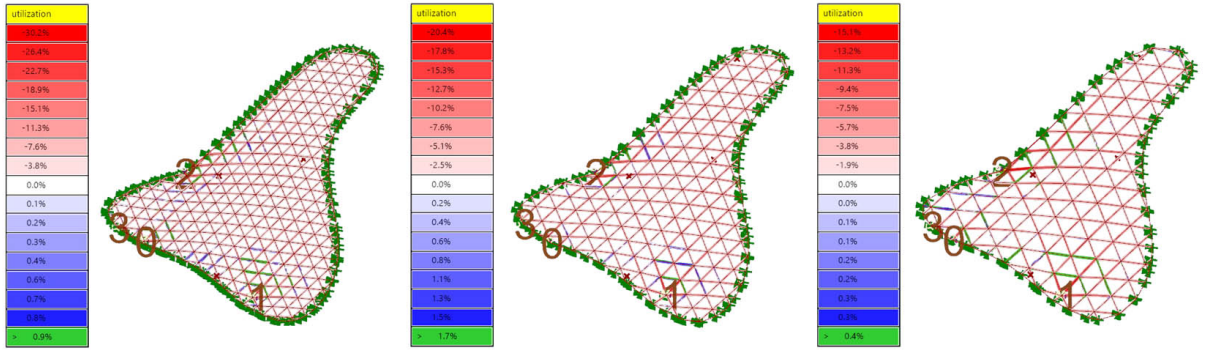
Displacement: 0,010379
Density: 25%

Type of grid: Triangular

Displacement: 0,006508- 0,006611- 0,005815
Density: 15%- 20%- 25%
Cross section: 20- 20



How can we compare the grids to one another?



Displacement: 0,006508
Density: 15%

Displacement: 0,006611
Density: 20%

Displacement: 0,005815
Density: 25%

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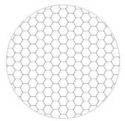
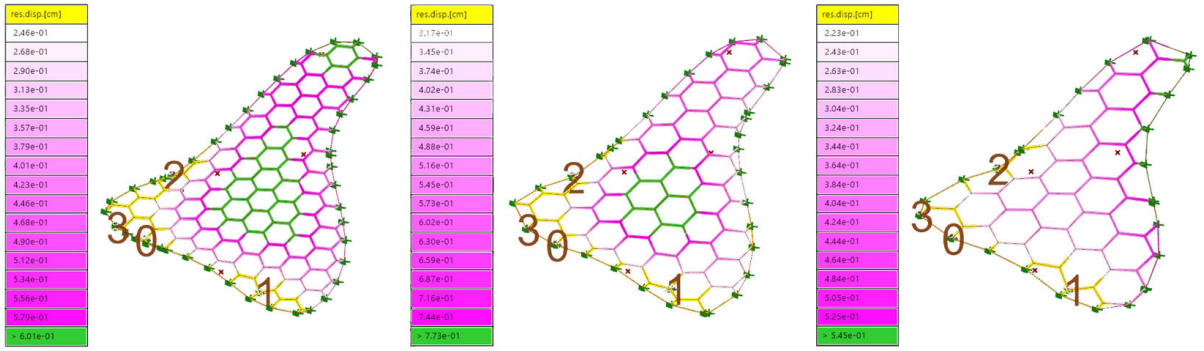
Is the behaviour the same when we change the density, and would we expect this?

Type of grid: Hexagonal

Displacement: 0,006509- 007261- 009347
Density: 15%- 20%- 25%
Cross section: 20- 20





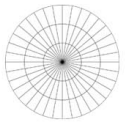
Displacement: 0,007261
Density: 15%

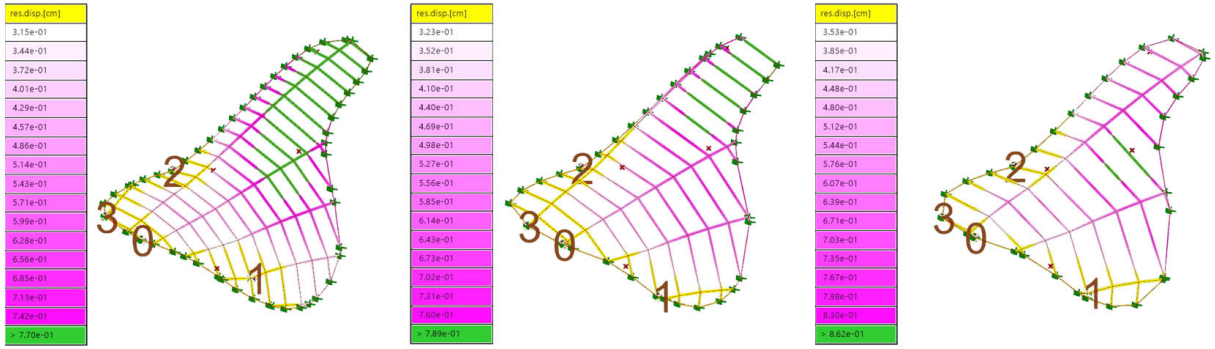
Displacement: 0,009347
Density: 20%

Displacement: 0,006509
Density: 25%

Type of grid: Radial

Displacement: 0,009306- 0,009529- 0,010379
Density: 15%- 20%- 25%
Cross section: 20- 20





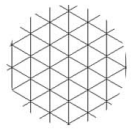
Displacement: 0,009306
Density: 15%

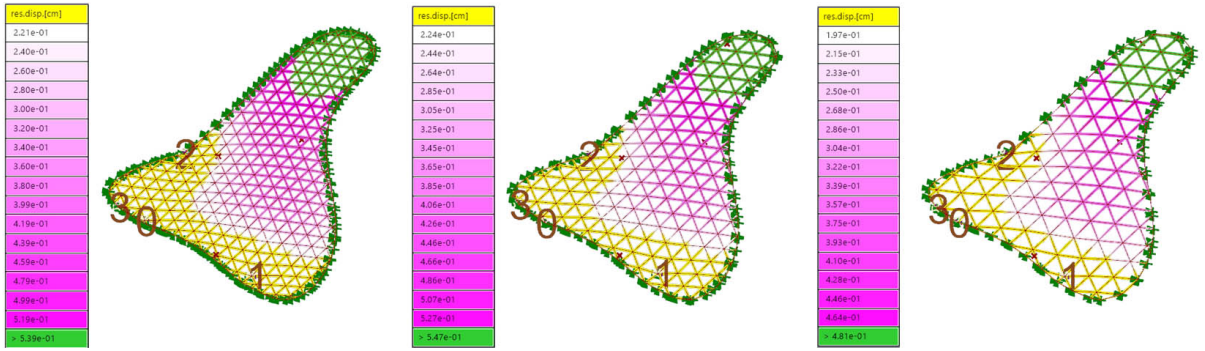
Displacement: 0,009529
Density: 20%

Displacement: 0,010379
Density: 25%

Type of grid: Triangular

Displacement: 0,006508- 0,006611- 0,005815
Density: 15%- 20%- 25%
Cross section: 20- 20





I am not sure why this page is useful?

Displacement: 0,006508
Density: 15%

Displacement: 0,006611
Density: 20%

Displacement: 0,005815
Density: 25%

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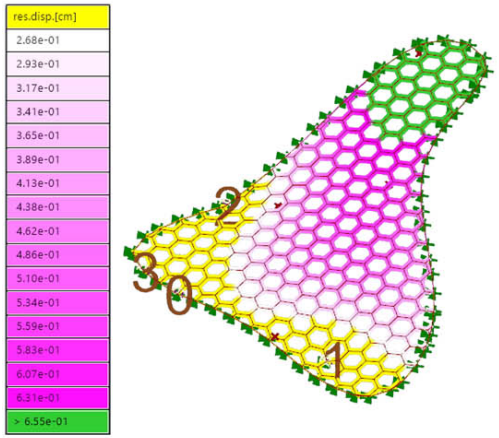
Improvment:

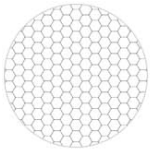
Increasing the size of the cros section and the density in three different meshes, we obtain variations in the Displacement value. We can see that the triangular structure is more stable, rigid and less prone to deformation. Uneven surfaces also with regular meshes affect the operation and the arrival onto supports, since not all vertices coincide with the perimeter.

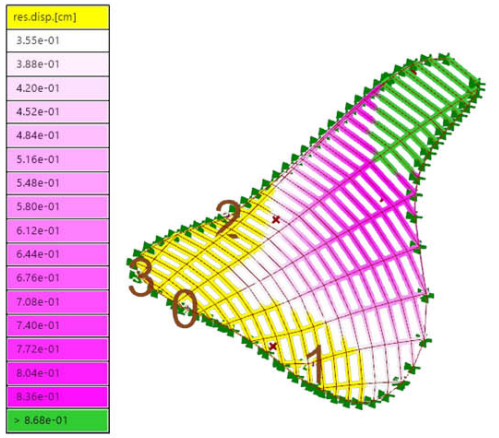


Displacement: 0,007261
Density: 15%

Type of grid: Hexagonal

Displacement: 0,007919
Density: 10%
Cross section: 35- 35



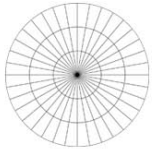


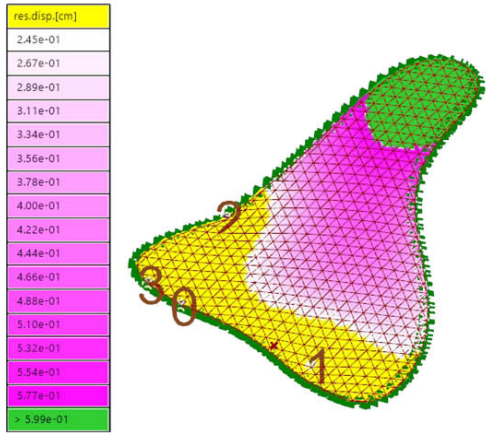
Displacement: 0,009347
Density: 20%

worst

Type of grid: Radial

Displacement: 0,010491
Density: 10%
Cross section: 35- 35





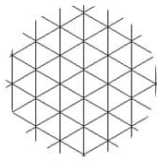
Displacement: 0,006509
Density: 25%

But much denser?
and heavier?

equal

Type of grid: Triangular

Displacement: 0,007234
Density: 10%
Cross section: 35- 35



Make your own conclusions.