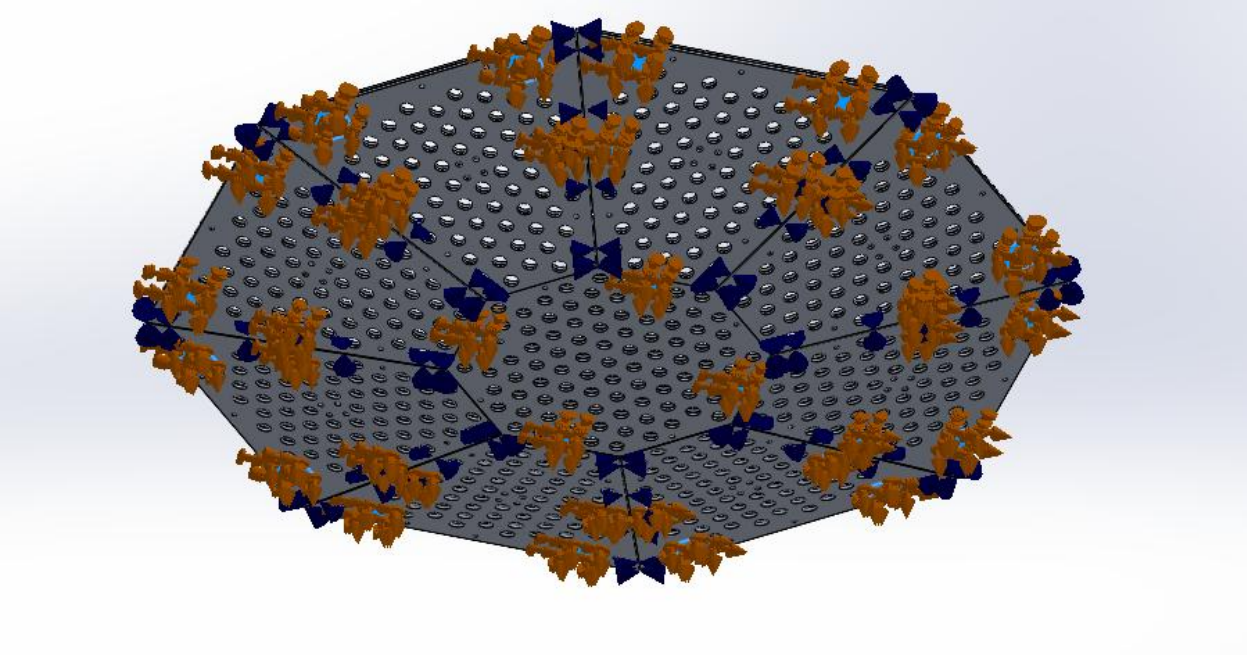
Structural Analysis of Omni Frame Summary

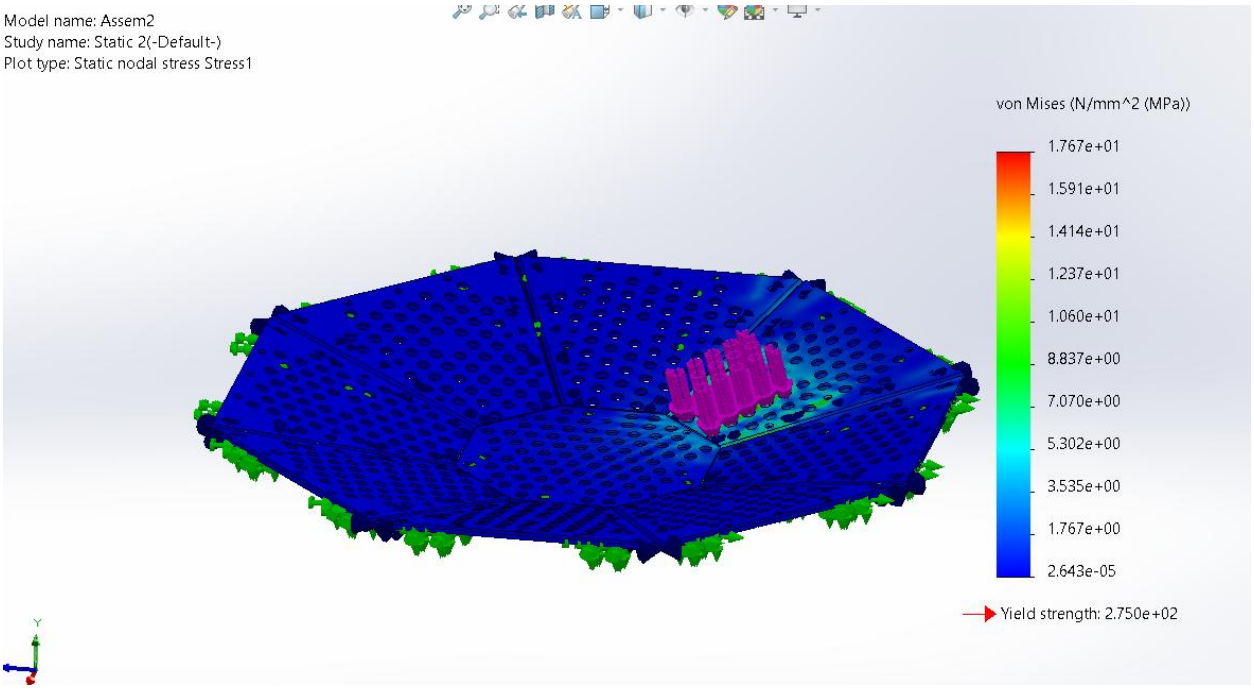
Aluminum 6061 T6 Yield Strength 275 MPA – Can garner any result less than this can withhold the stress seen in the scenario.

Total Load is 250 lbs – Placed in worst case scenario which is in between supports. Load is placed on area that is approximate to the ball of foot / entire foot

Set-up – This frame is held up by t-slot supports but to save computational time / complexity, I used split lines to place where the supports would be and put a fix constraint on them. Then in between the angled plates there is a gap, so I used a component interaction -bonded between every plate to simulate the weld.



This simulation represents a person putting the ball of their foot on the slanted side



This simulation represents a person putting their entire foot on both the flat and slanted part. Load is also increased to 600lbs running adds a factor of around 2 to a person's weight.