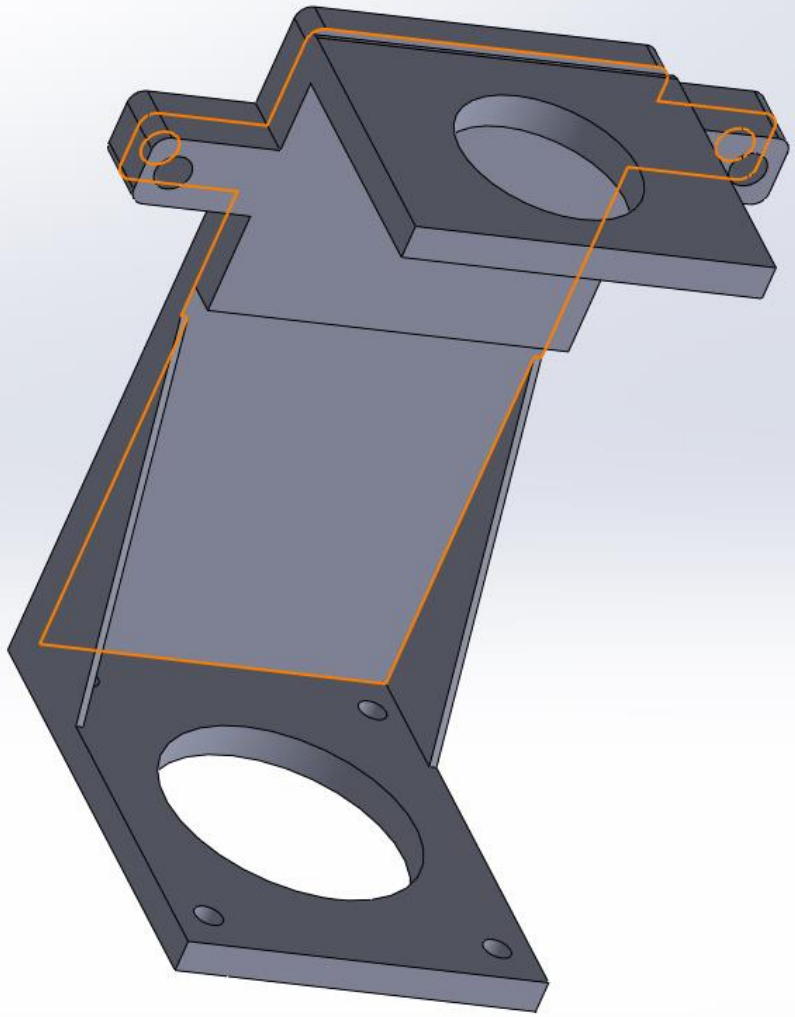
Concept O2 sensor stand for Powder metal 3D printer

Challenges to overcome

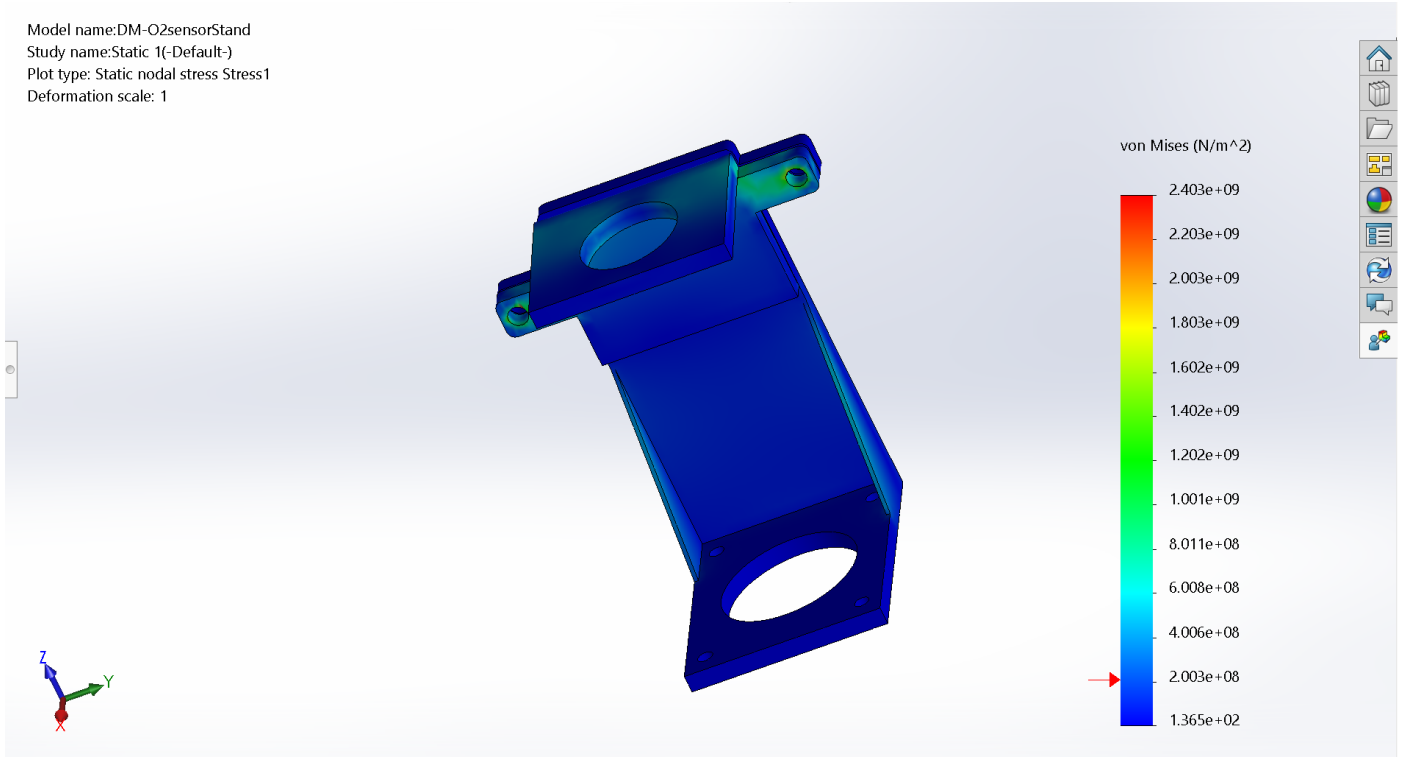
- Had to be machined right behind print head
- About 30 cm above from the surface
- Should hold the ntron O2 sensor
- Obtain accurate reading of 0.2% o2 of vacuum chamber when inerted

Design concept

- Bracket made from aluminum for ease of machining and at a height of 30cm from the surface oof the 3D printer



FEA


Model name:DM-O2sensorStand
Study name:Static 1(-Default-)
Plot type: Static nodal stress Stress1
Deformation scale: 1
von Mises (N/m^2)
2.403e+09
2.203e+09
2.003e+09
1.803e+09
1.602e+09
1.402e+09
1.202e+09
1.001e+09
8.011e+08
6.008e+08
4.006e+08
2.003e+08
1.365e+02
Z
Y
X

- Programmed CNC lathe for machining
- Used GibbsCam for G code
- Final result of O2 % inside the vacuum chamber was 0.2