SAND2015-2322PE

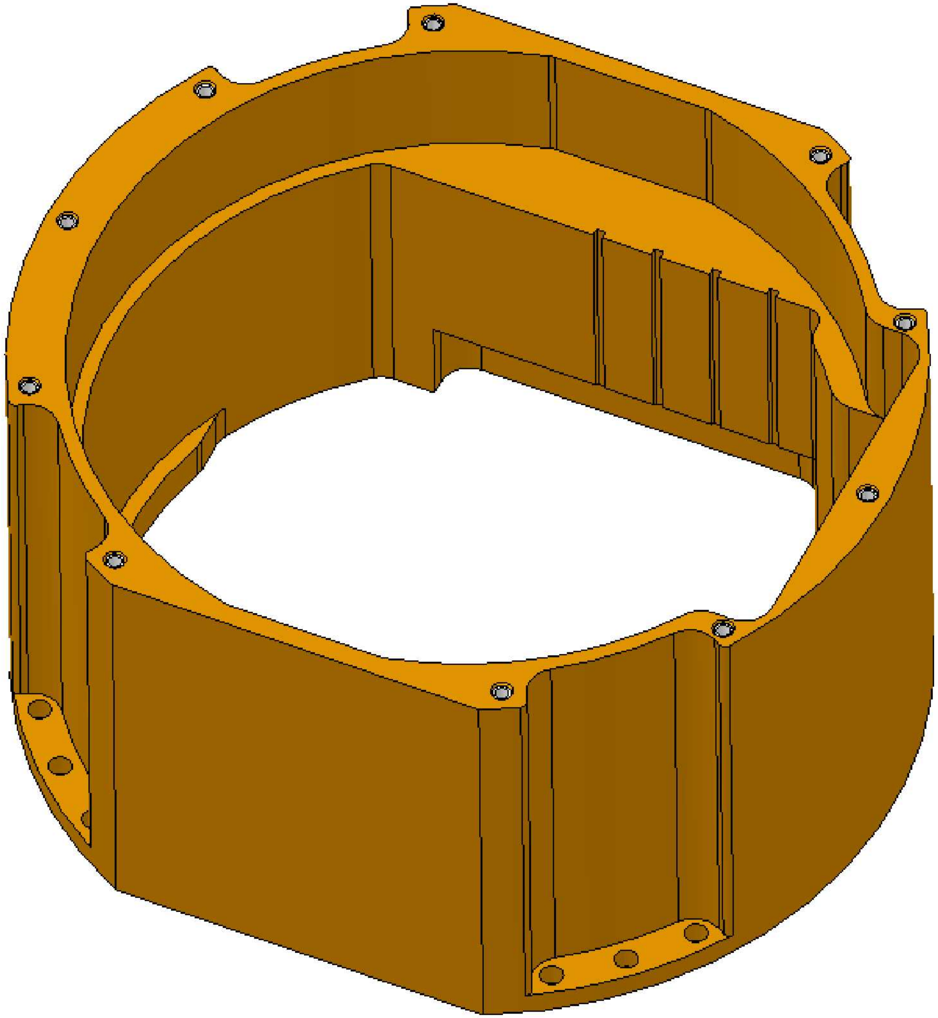
Description of Electronics Housing for LENS Deposition

March 20, 2015

Sandia
National
Laboratories

Electronics Housing - Top

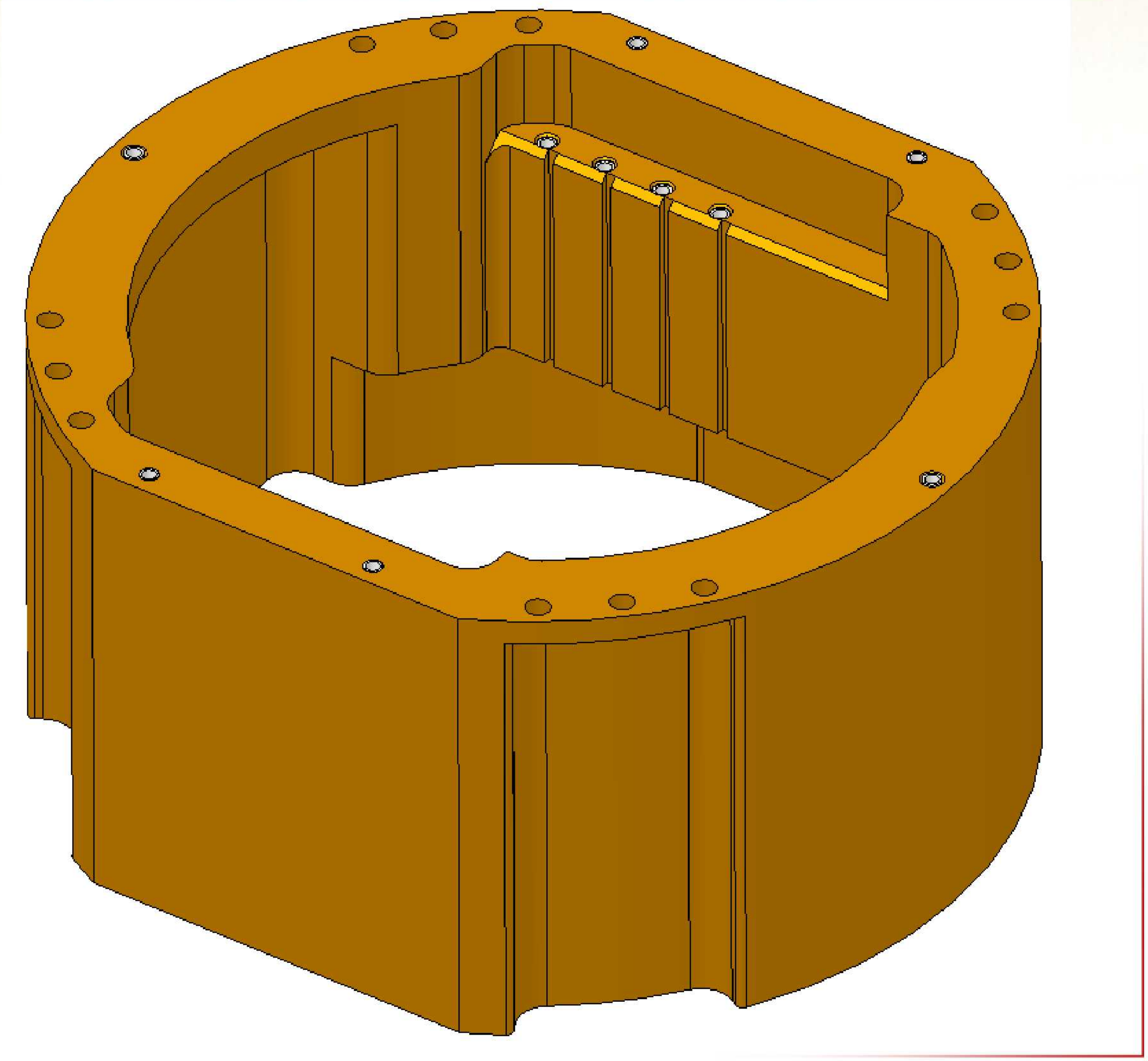
The electronics housing holds electronics boards/cards. Typically the housing is costly and manufacturing-intense.



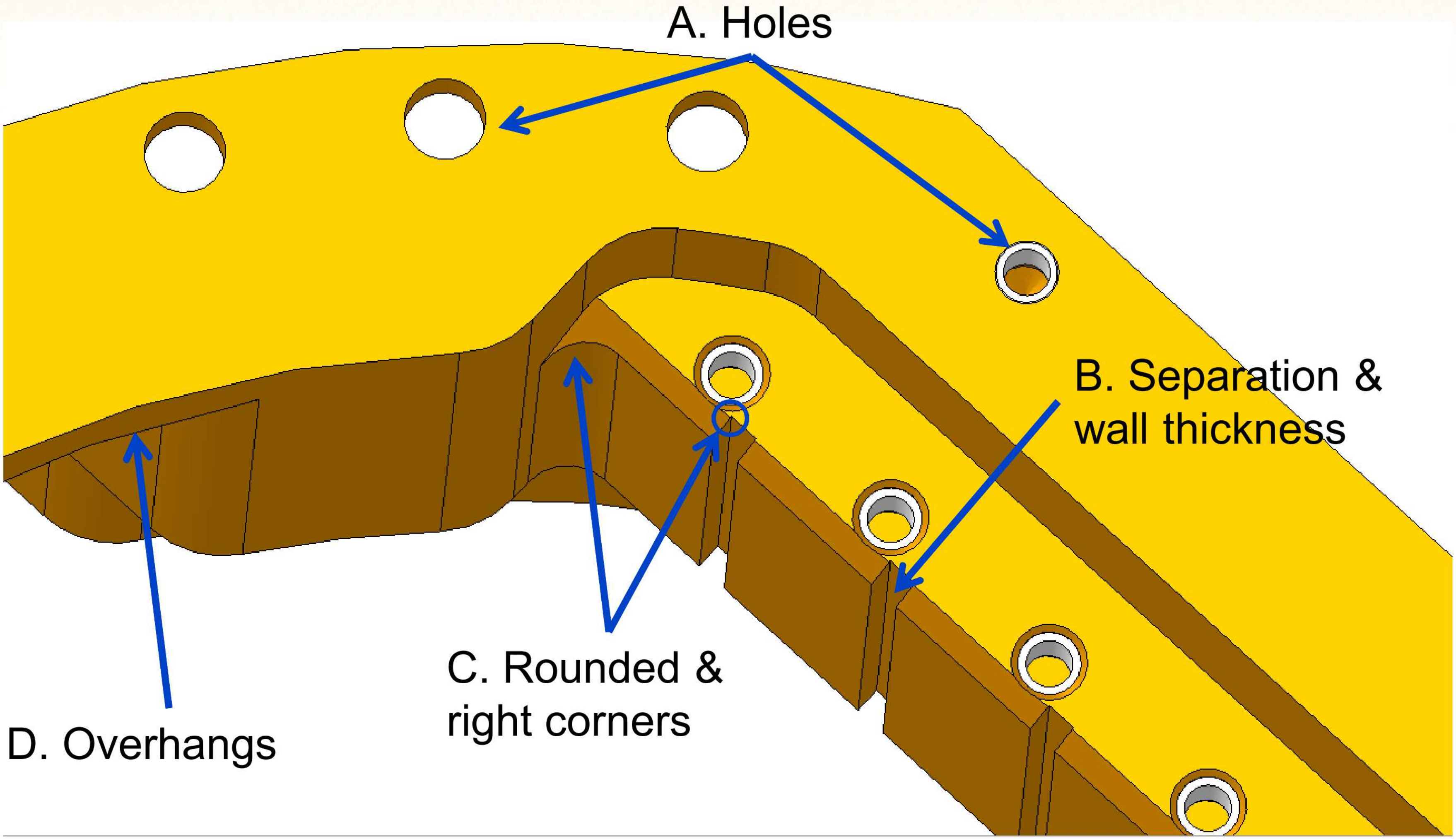
Electronics Housing - Bottom

Geometric challenges specific to metal deposition need to be identified and addressed by:

- Improving AM process
- Modifying the design



Geometric Challenges



A. Holes

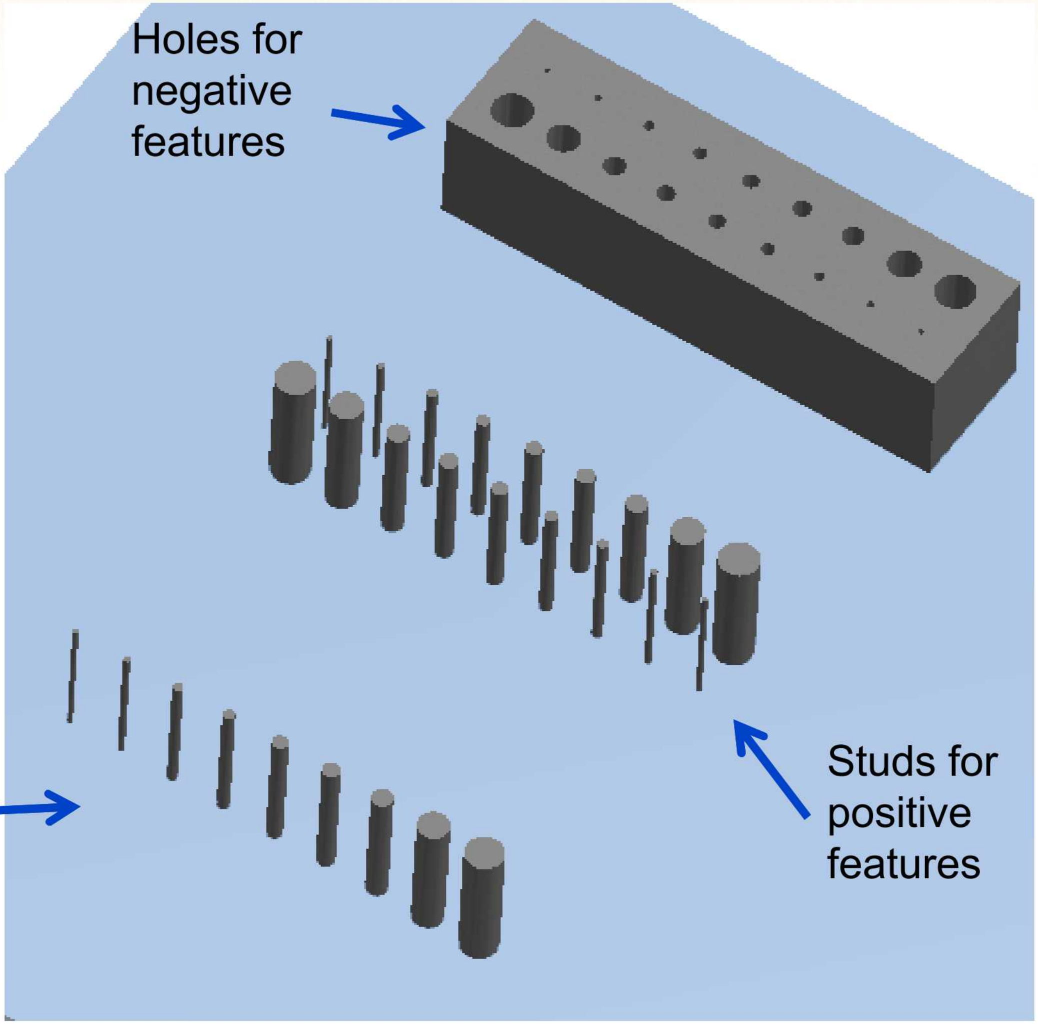
B. Separation & wall thickness

C. Rounded & right corners

D. Overhangs

Part A: Holes

- **Metrics:**
  - Center accuracy
  - Concentricity
  - Cylindricity
  - Surface roughness



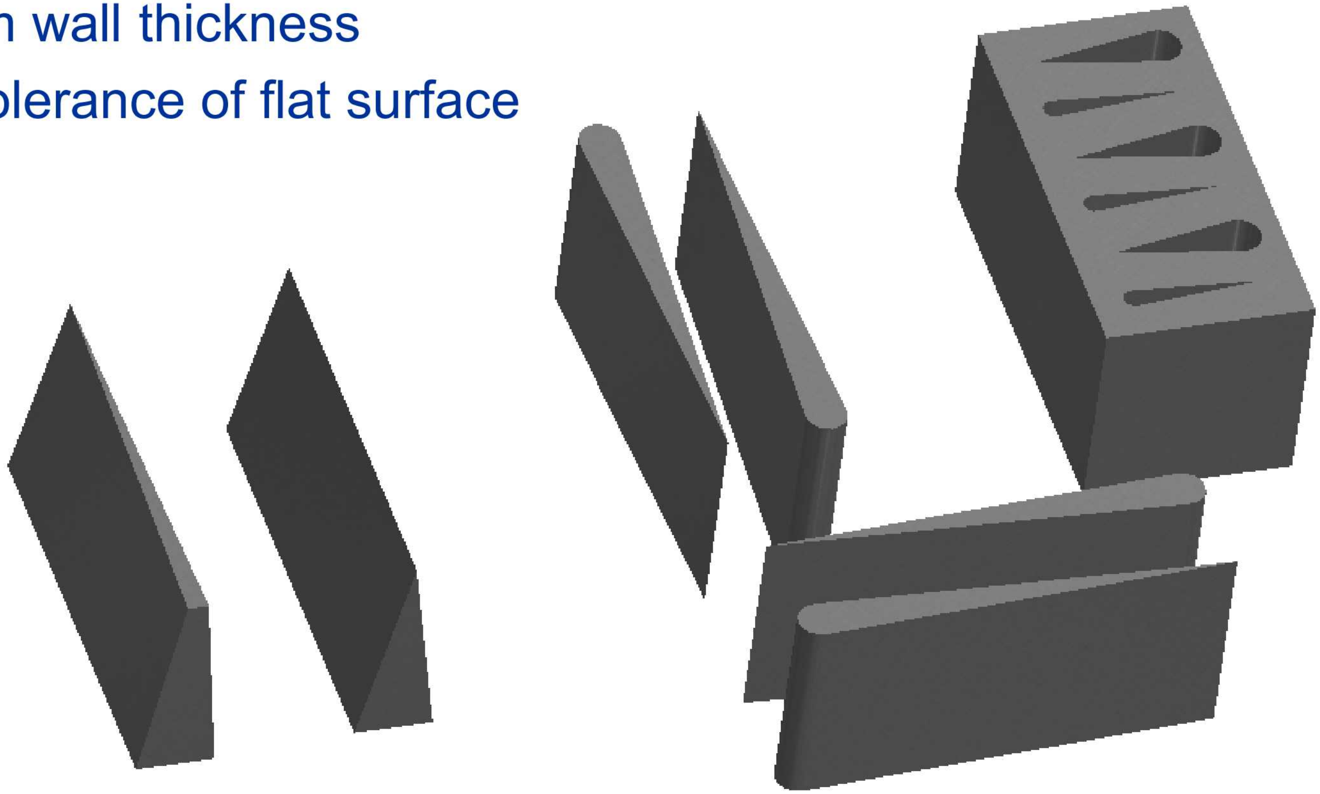
Holes for negative features

Studs for close fit check

Studs for positive features

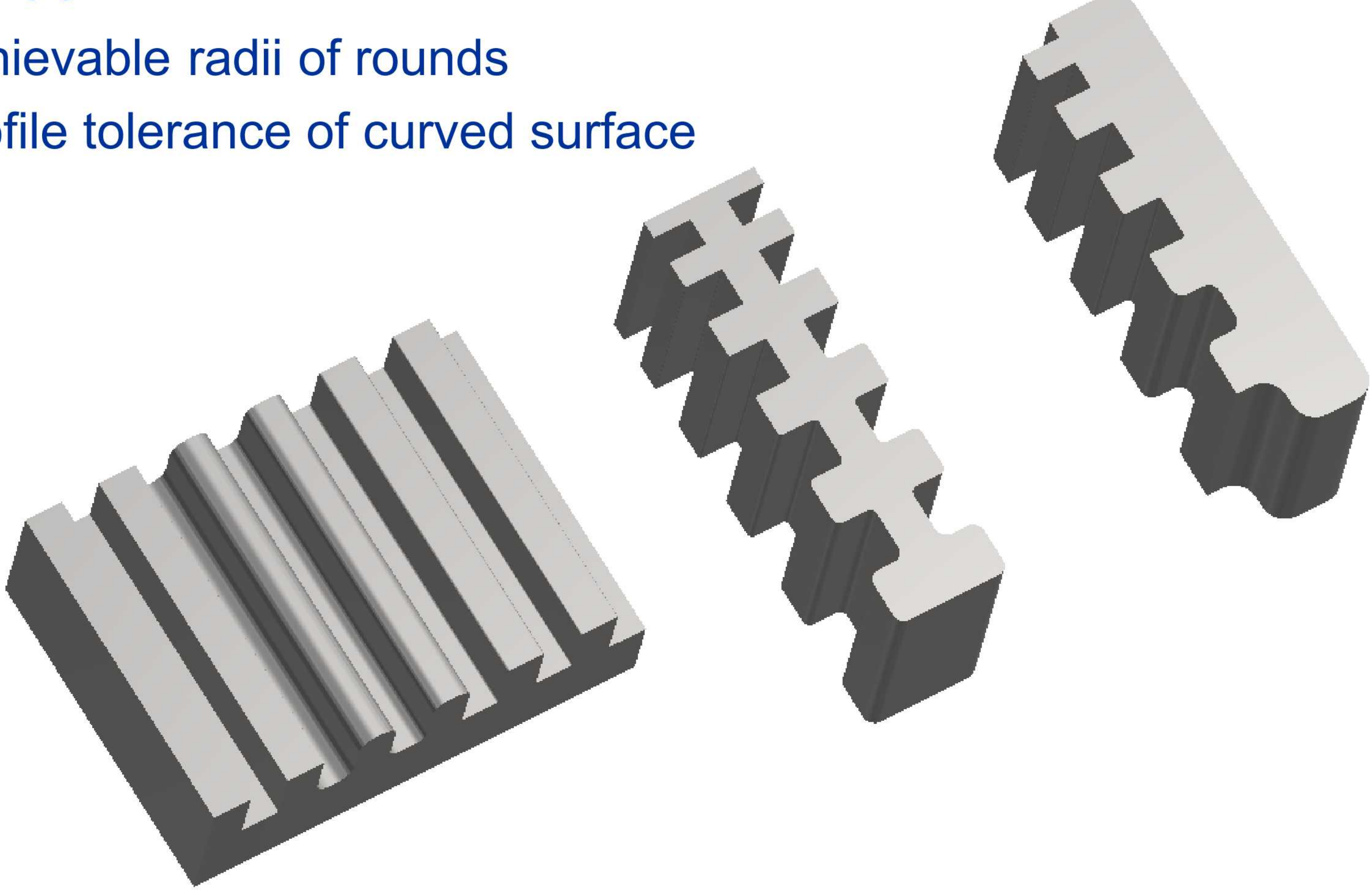
Part B: Wall Thickness

- **Metrics:**
  - Minimum separation distance
  - Minimum wall thickness
  - Profile tolerance of flat surface



Part C: Rounded & Right Corners

- **Metrics:**
  - Achievable radii of rounds
  - Profile tolerance of curved surface



Part D: Overhangs

- **Metrics:**
  - Maximum overhang angle w.r.t. vertical

Material Property Requirements

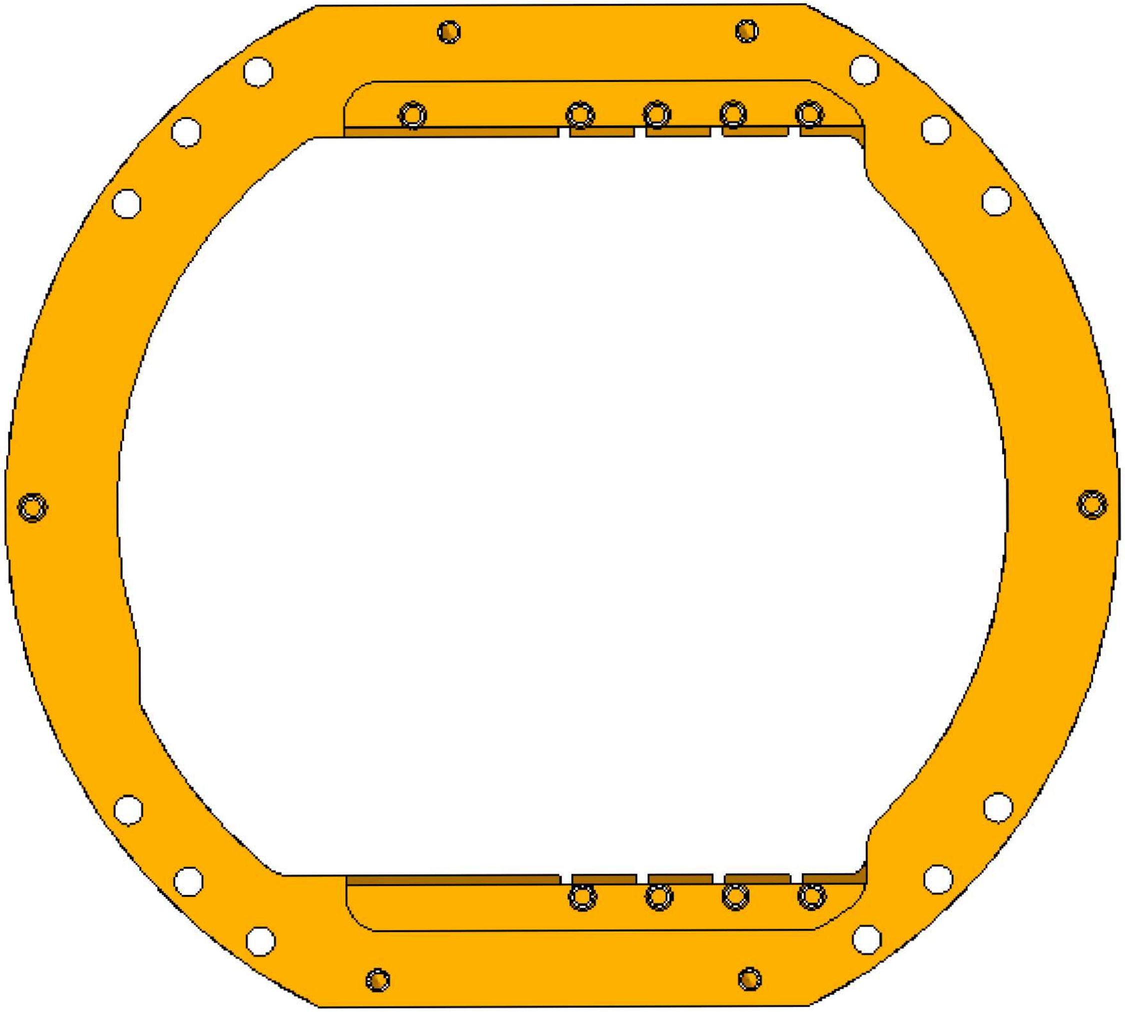
Material Property Requirements:

1. Mass properties (i.e. 11.54 ± 0.05 lbs)
2. Stiffness/elasticity

End

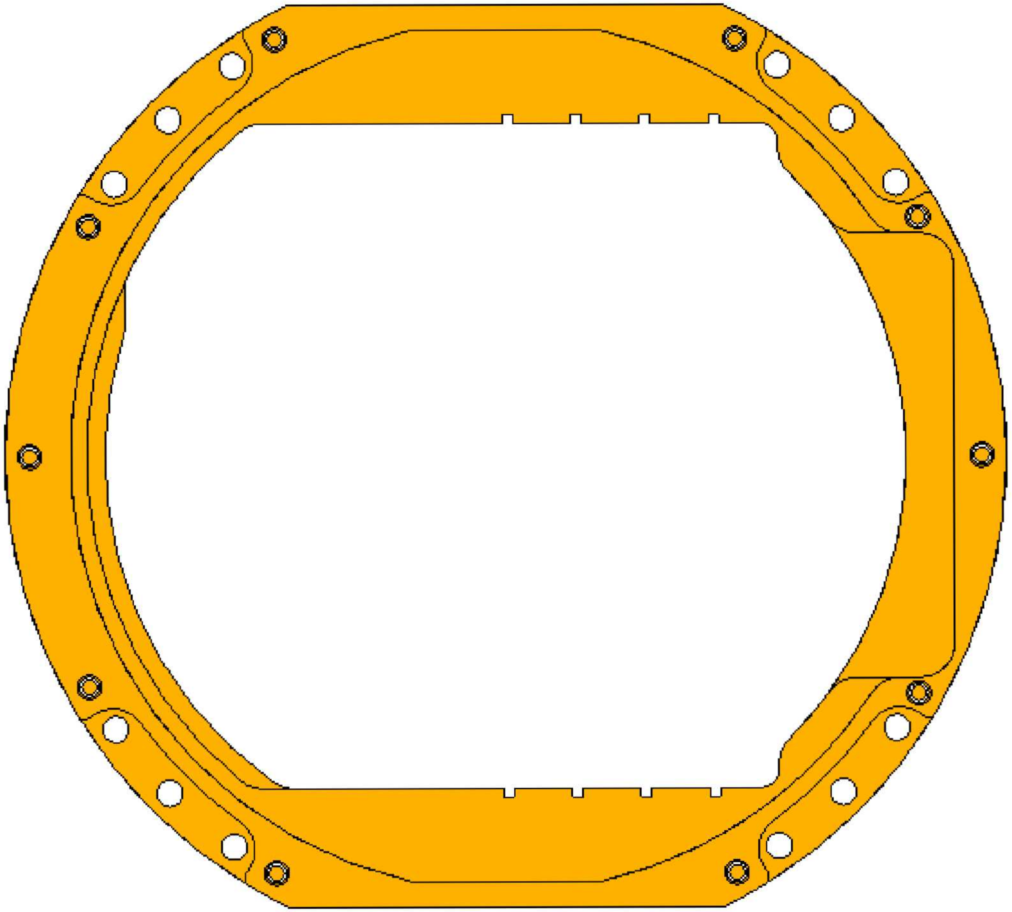
END

Electronics Housing - bottom



Sandia National Laboratories

Electronics Housing - top



Sandia
National
Laboratories