

Project Description

NLE is developing a 40 mm smart projectile, and our team is tasked with developing and designing a way to mass produce this product.

Background

NL Enterprises, LLC (NLE) has developed proprietary, less-lethal projectile technology. It is a programmable projectile that carries a payload and releases the payload at specified distances or times. The NL projectile is not activated until the trigger is pulled and the projectile is energized as it travels down the launcher, protecting the user from accidental discharge during transportation and loading.

Process

- Injection molding for the 40mm housing and plug
- Coil is manually assembled.



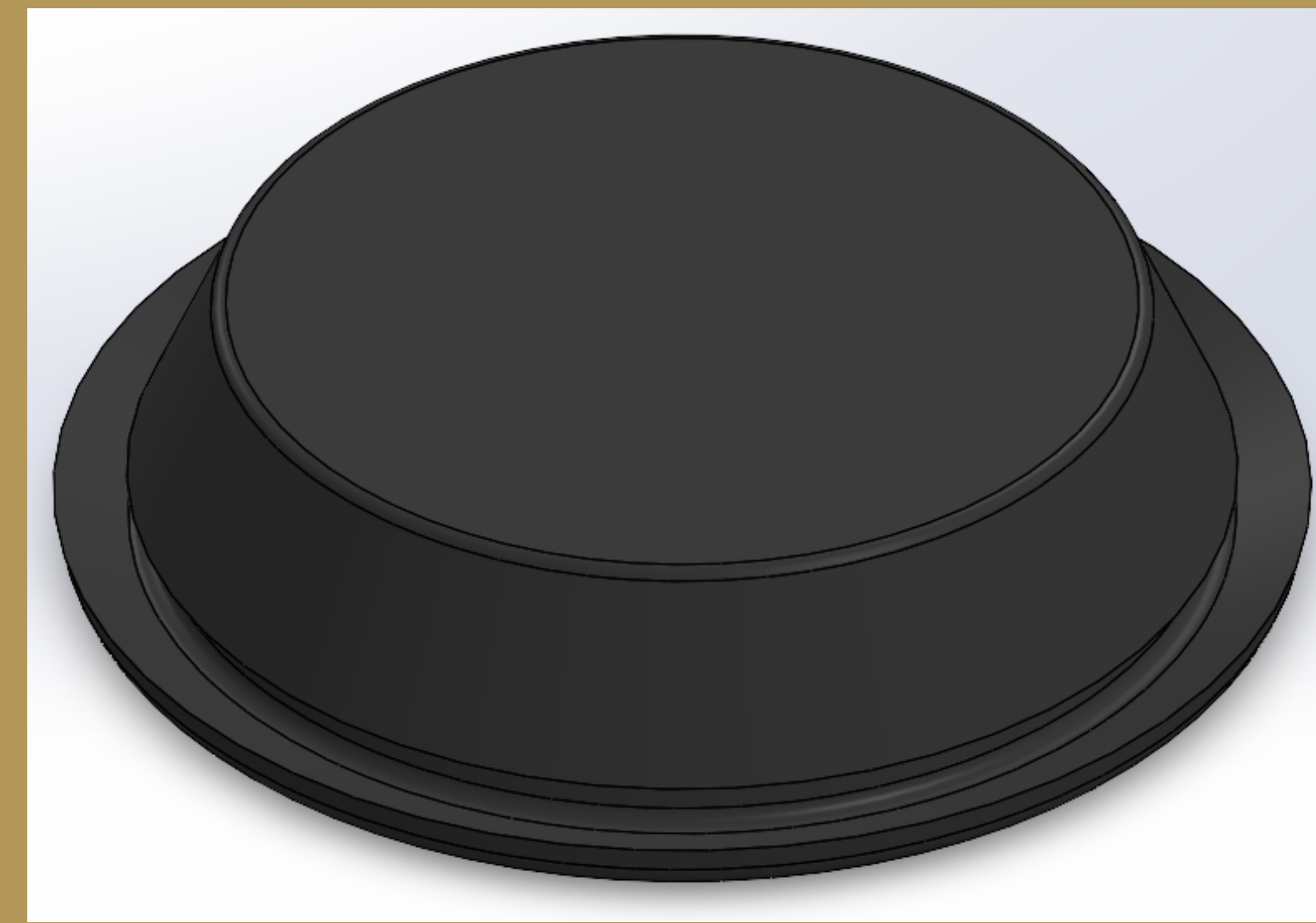
Mini Jector #55

Specifications & Mechanics

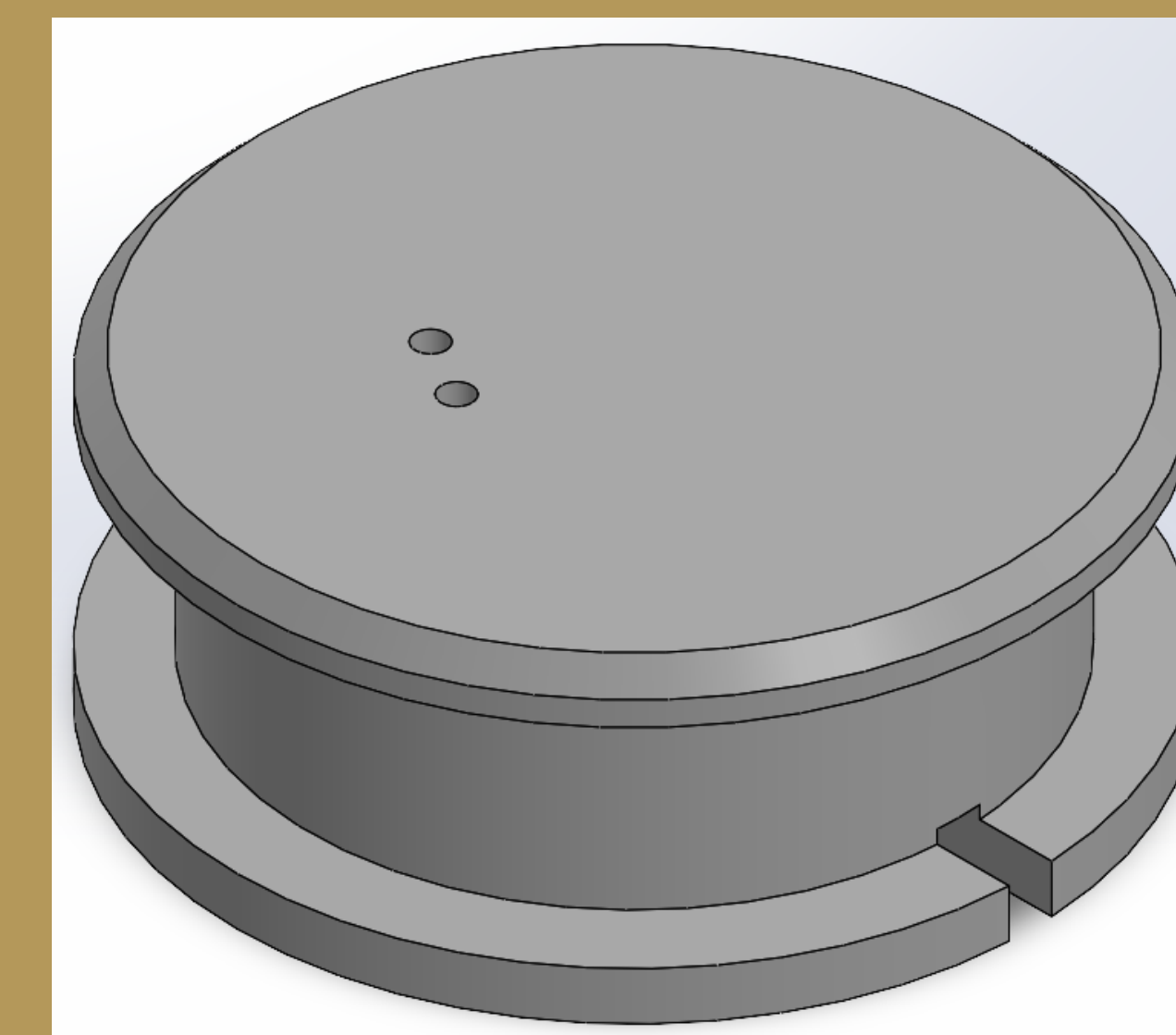
- Produce 100 housings.
 - Housing material is ABS plastic
- Produce 150 plugs.
 - Plug material is 98A TPU (rubber)
- Produce 100 coils.
 - Coil material is ABS with copper wiring



Housing

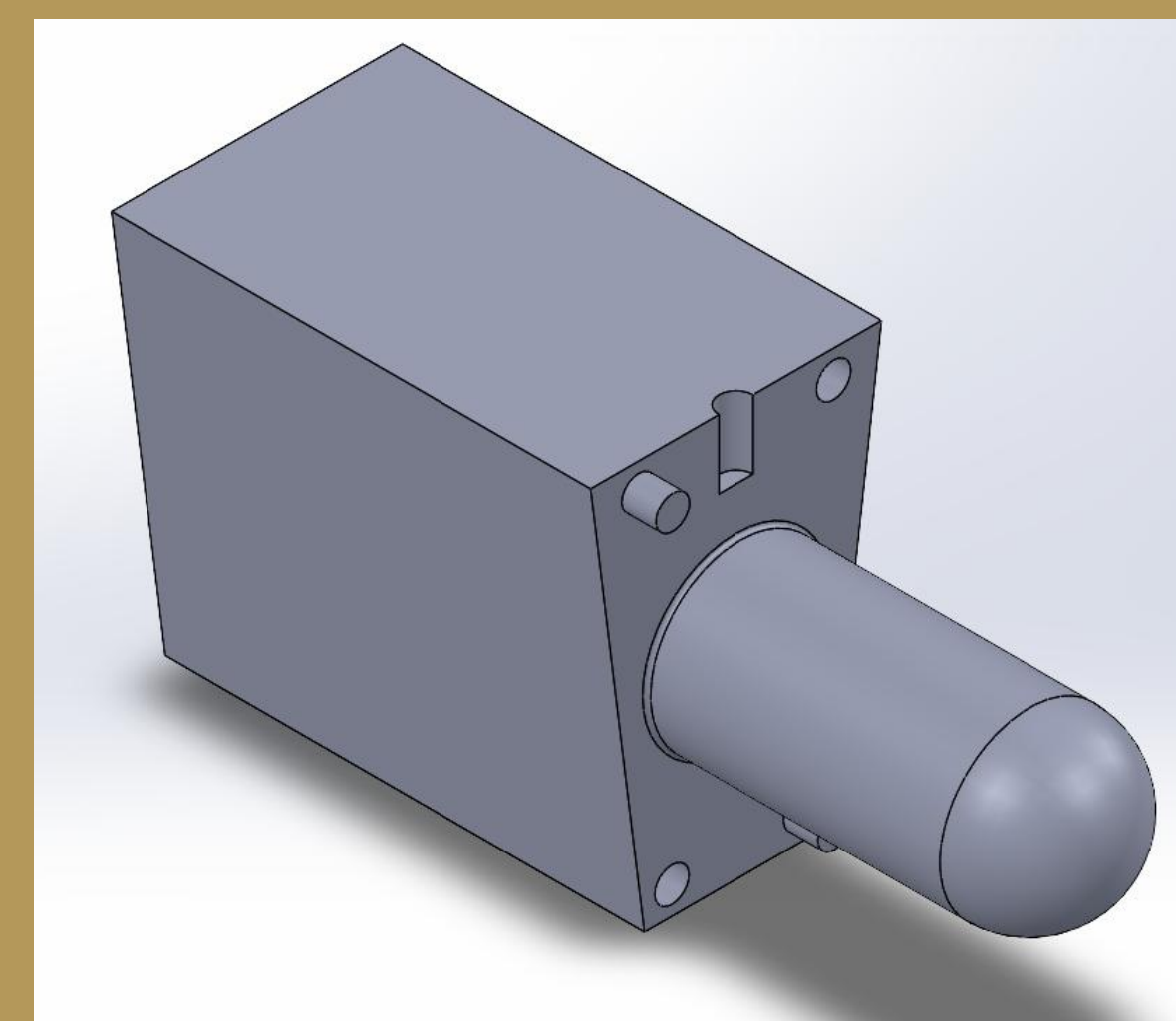


Plug

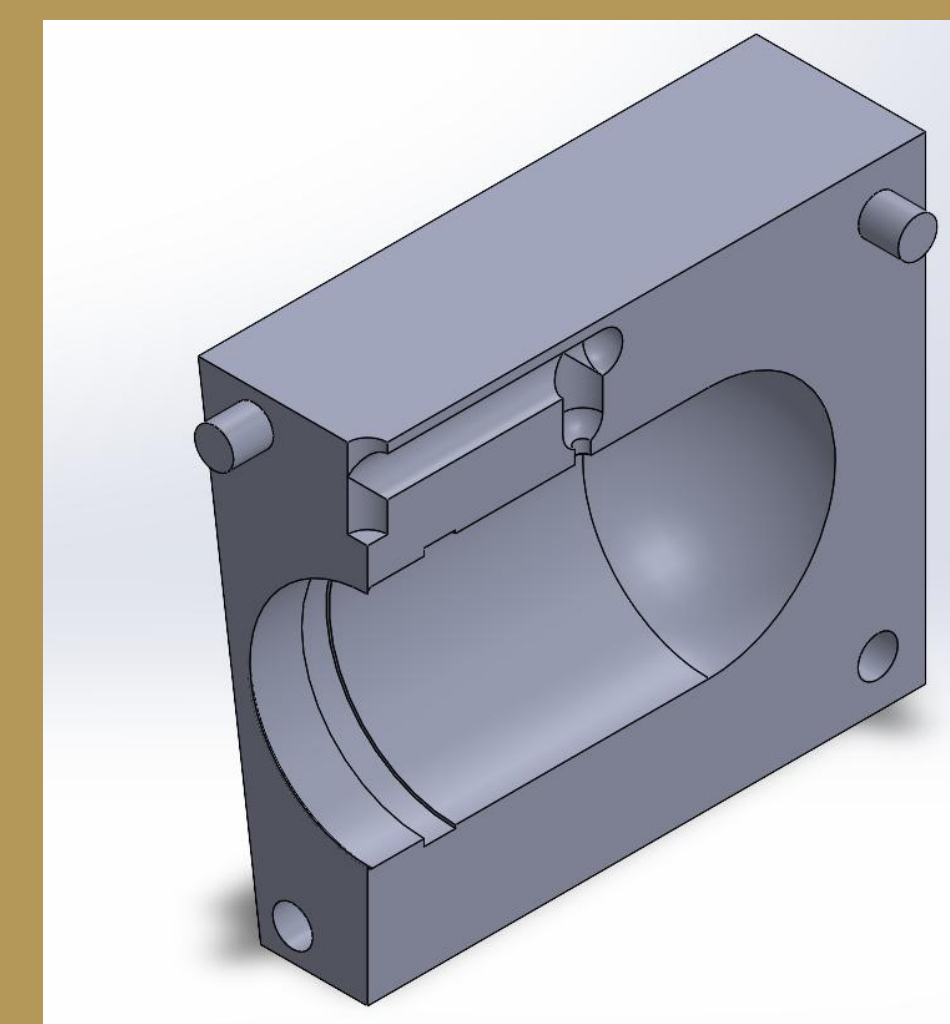


Coil

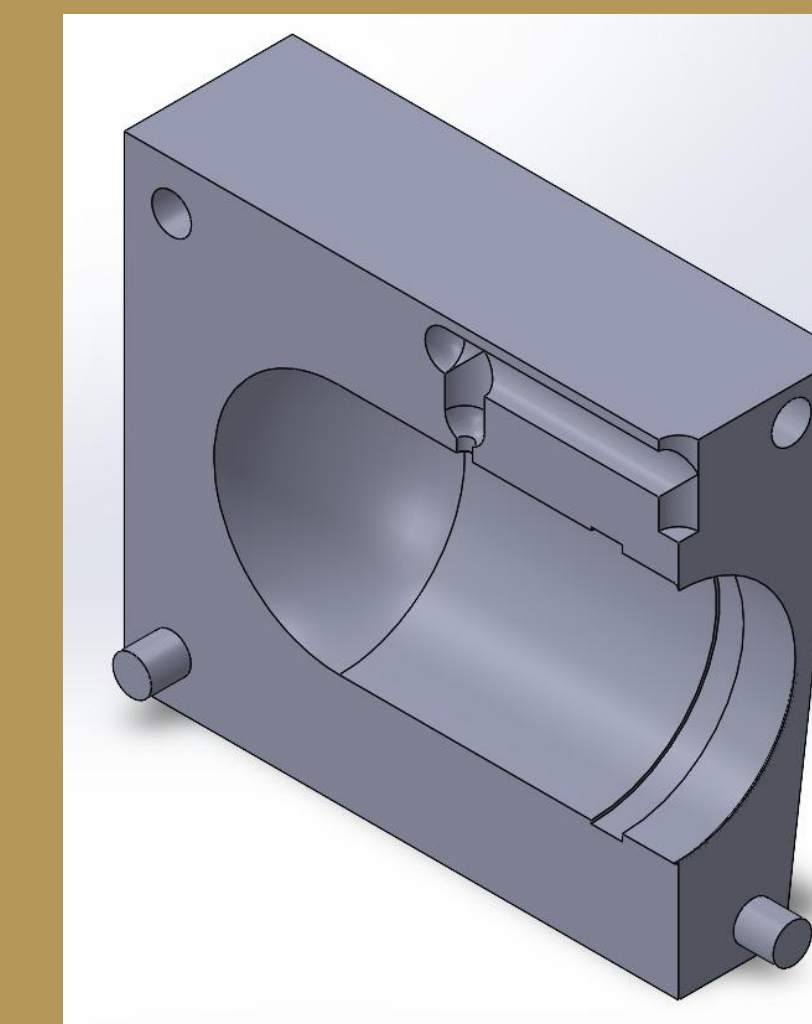
Process & Design



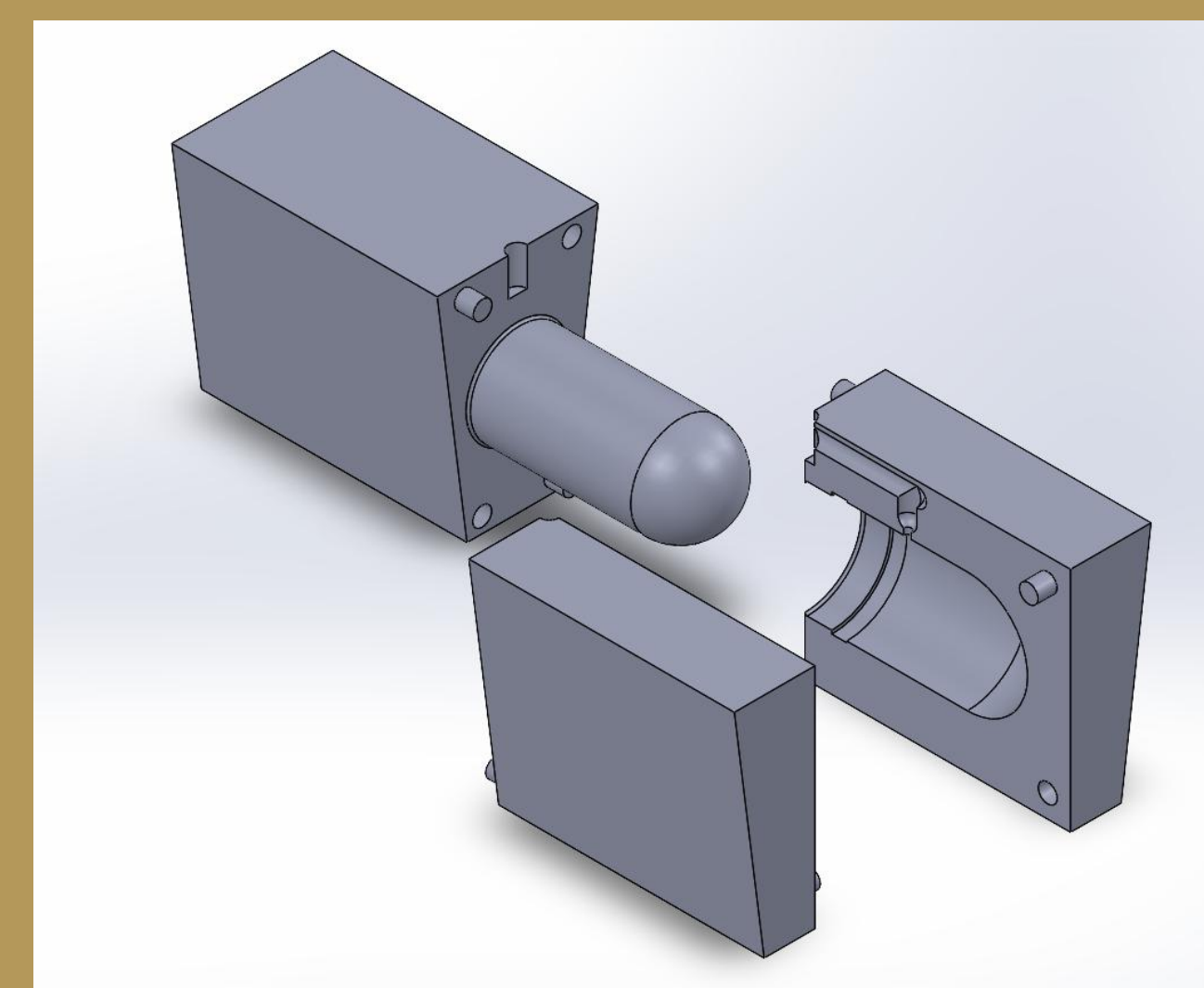
Back of housing mold



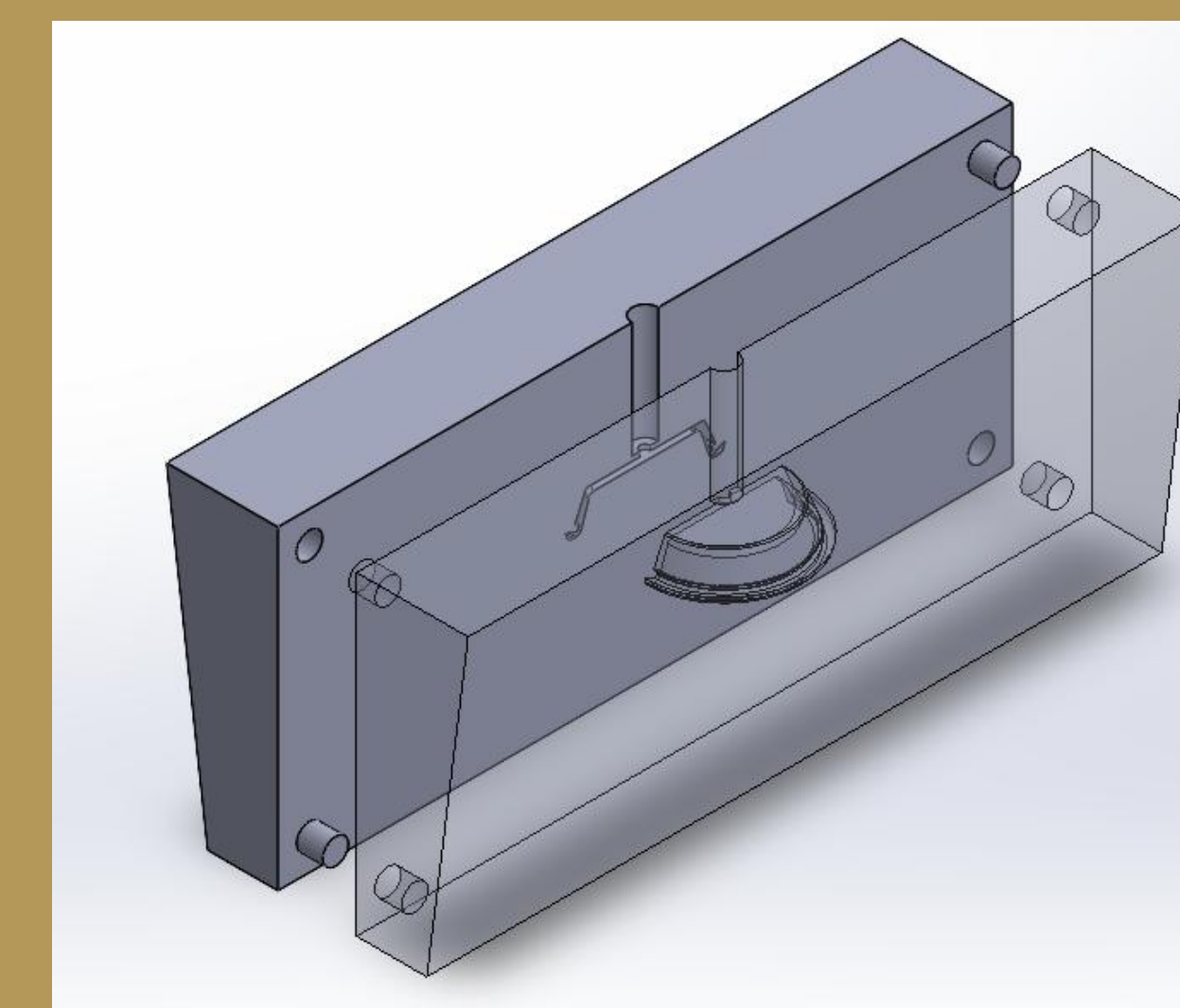
Left side of housing mold



Right side of housing mold



Mold Assembly for Housing



Mold Assembly for Plug

Future Steps

- Integration process:
 - Smoothly merge mechanical components together with the electrical components
- Injection molding:
 - Create mechanical components by efficiently using an injection molding machine
- Key Priorities:
 - Updating molds/models when needed
 - Find an efficient way to assemble 50 units per day.
 - Thorough testing
- End Goal:
 - Be able to deliver an efficient complete manufacturing process

Meet the Team



Acknowledgements

Sponsor: Adam Laubach
 Instructor: Dr. James Davidson
 Mfg Engineering Team:
 • Wyatt Fischer
 • Luis Elvira
 • Zach Homan
 Technical Advisor: Thomas Fenn