

Drew Lacy, Ryan Robinson, Korbyn Jones, Robert Leija, Jose Guerrero

Faculty Contact : Dr. Austin Talley

Background

Problem Statement:

To create a mold design process simple enough for any student to come in and make an appealing personal design in under an hour

Customer Requirements:

- Simple and Repeatable
- Process time under an hour
- Easy mold release

Machining

Mold Design: Our design accounts for shrinkage, flashing, ease of removal and repeatability.

Mold Manufacturing: Mold cavities are cut out of aluminum using the HAAS CNC VF2 and aluminum sheets using the Water Jet



Recycling Efforts

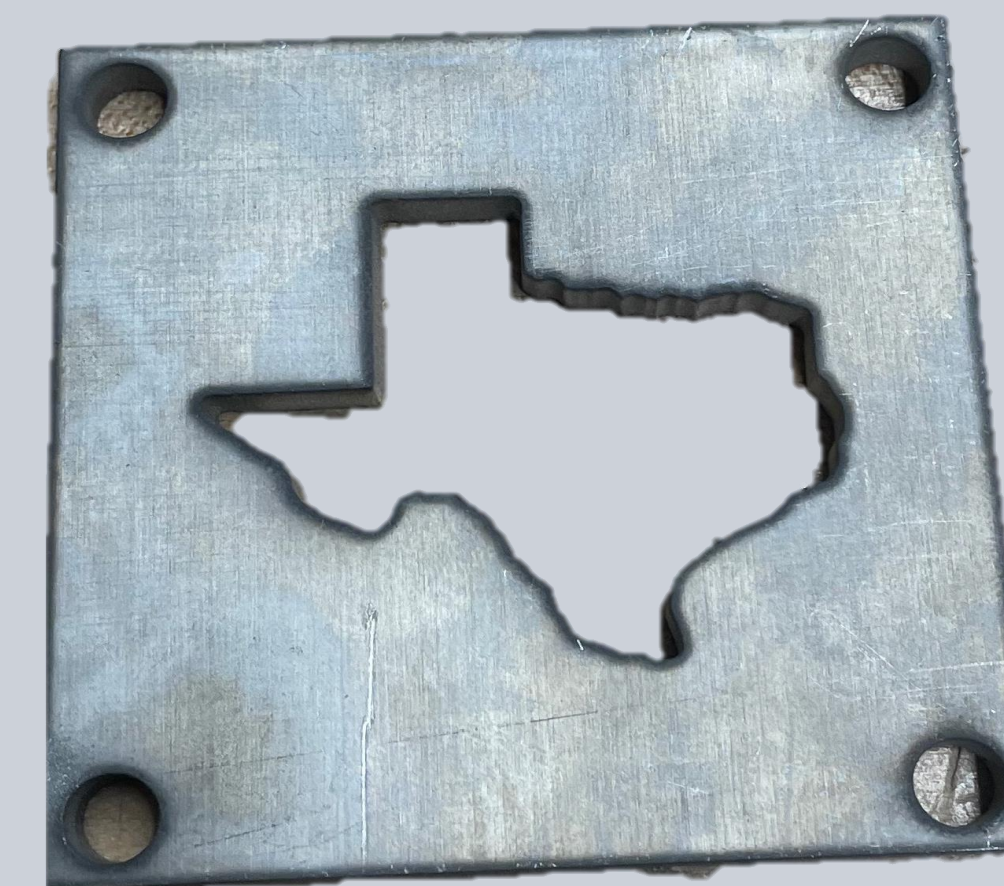
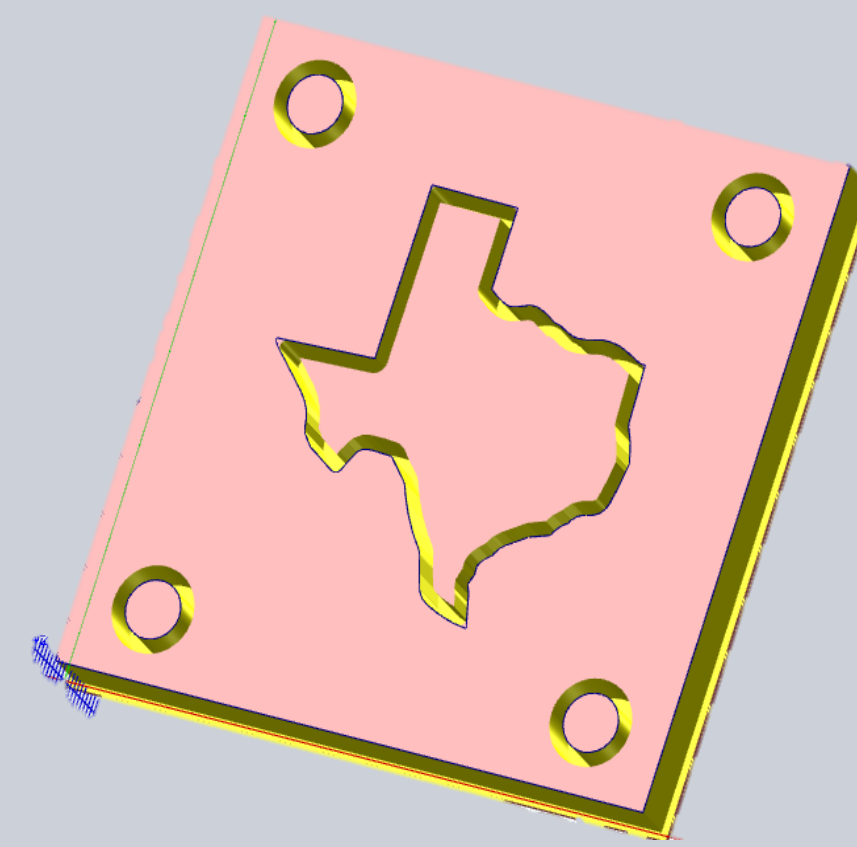
High Density Polyethylene (HDPE) HDPE is the most widely used plastic today. HDPE is consisted of milk jugs, shampoo bottles, detergent etc. We plan to reuse these items and make useful products from them.



Designs

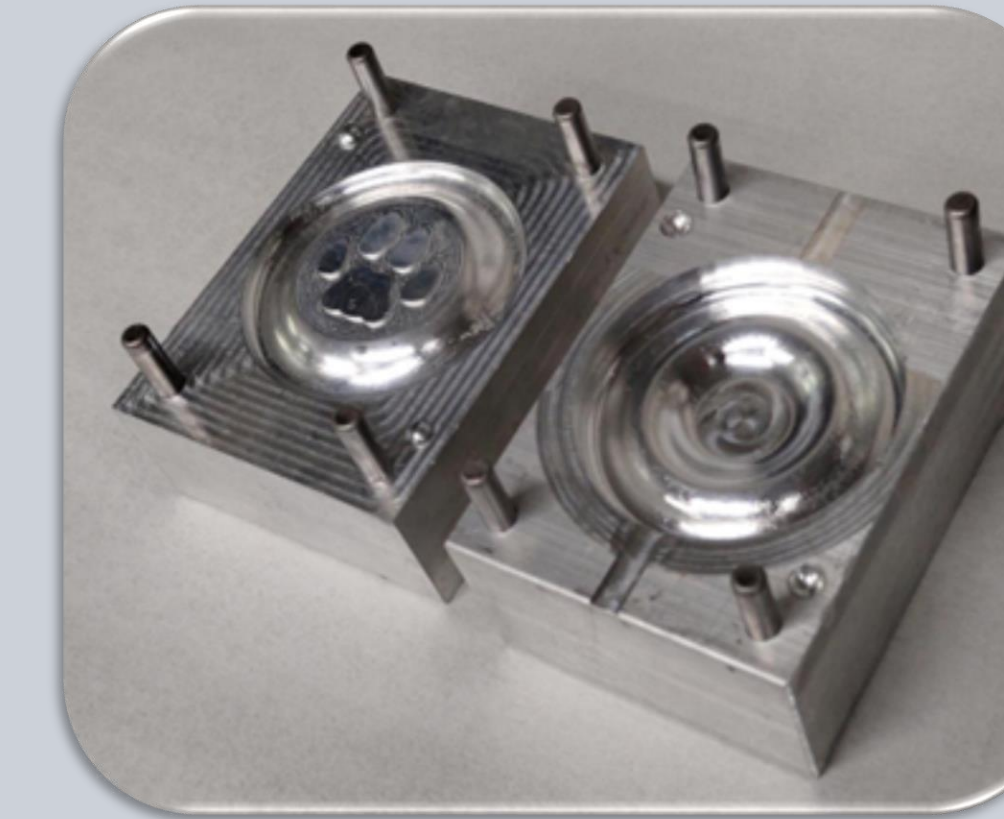
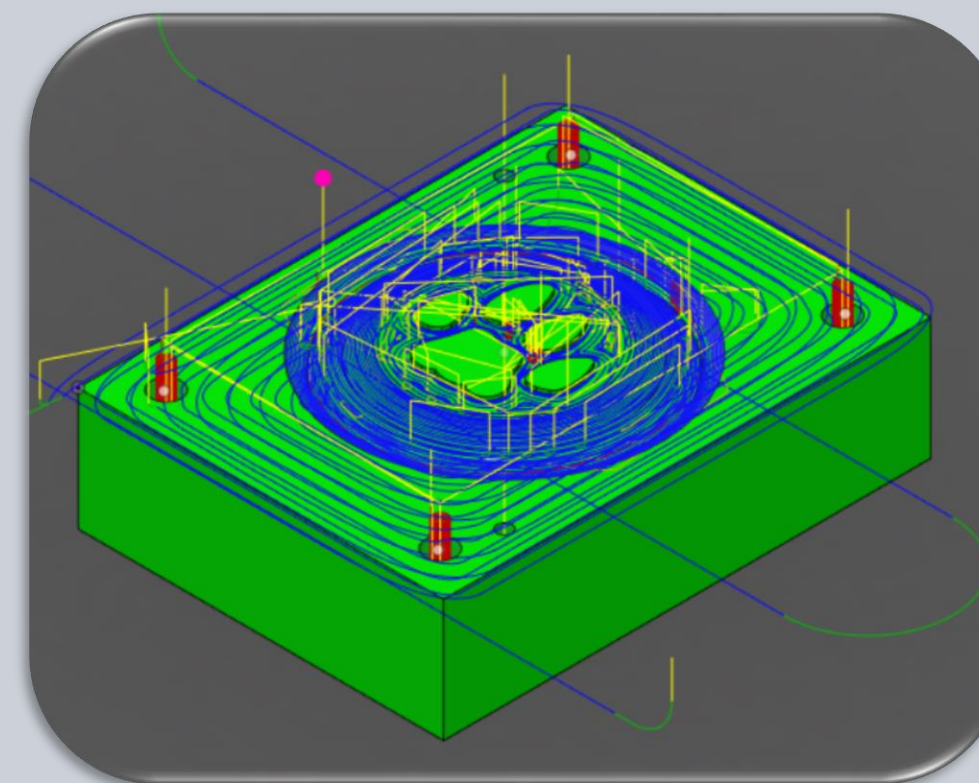
5 Individual Mold Designs

Water Jet Texas Keychain



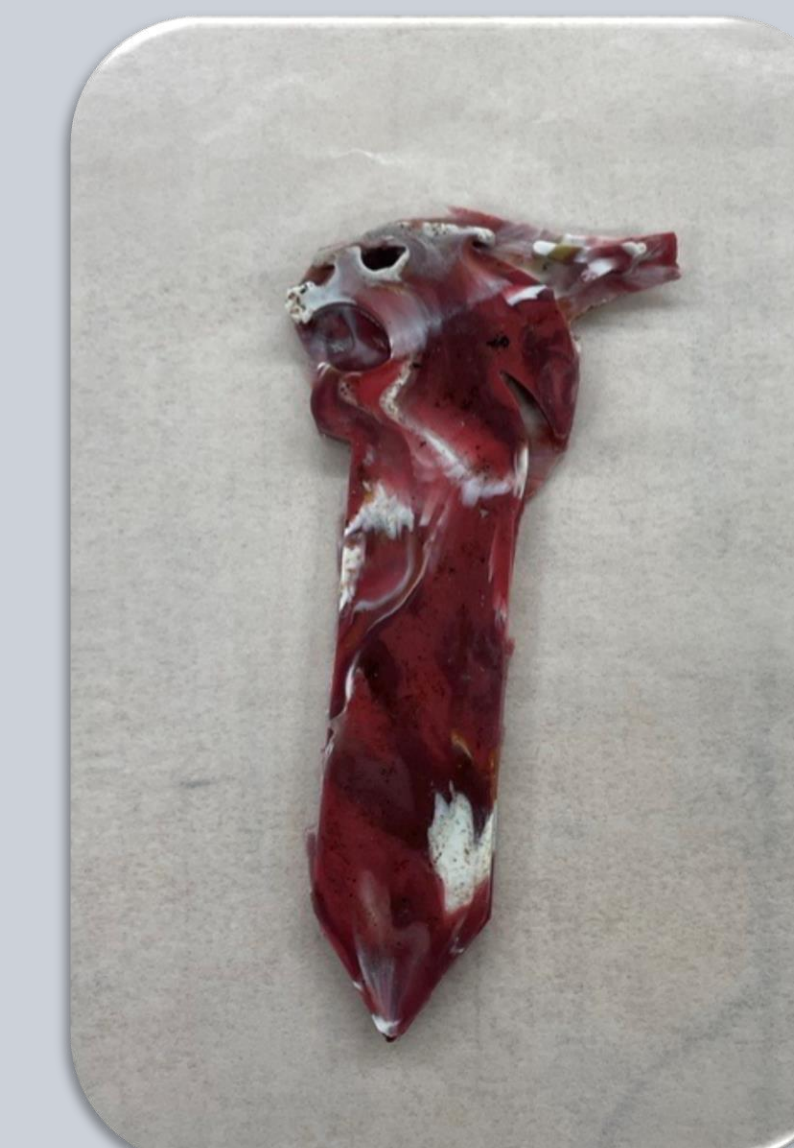
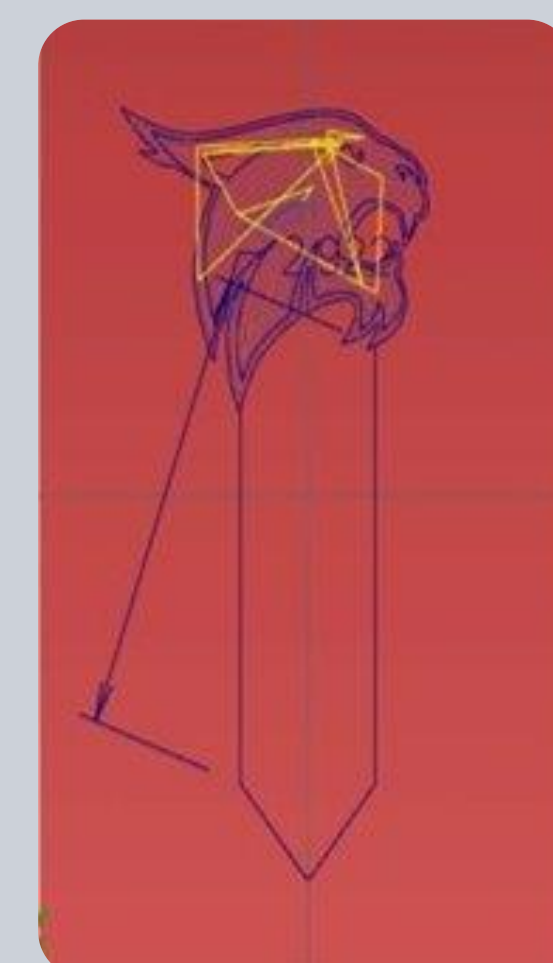
- Water Jet Mold Design
- Excess Material Channels
- 4 Pre-cut Pin Holes
- Panhandle Keychain Hole

Mini Frisbee



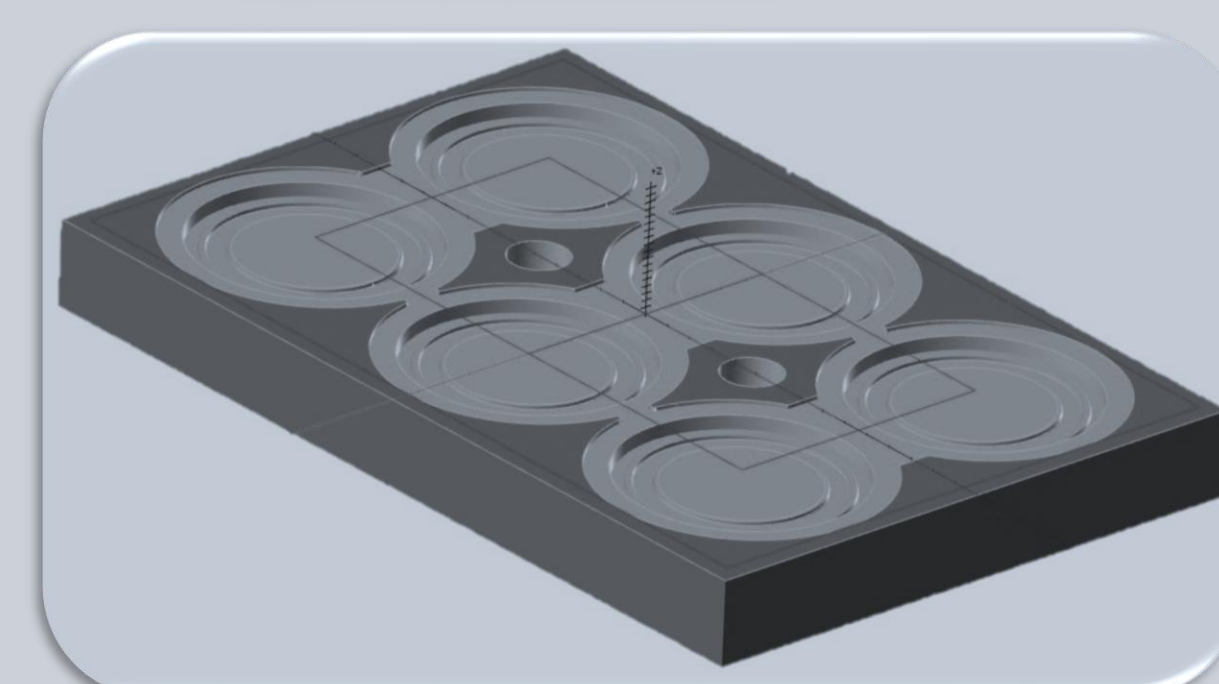
- Offset Mold Design
- Excess Material Channels
- Flashing Ring
- Flies Up to 60 Feet

Bobcat Bookmark



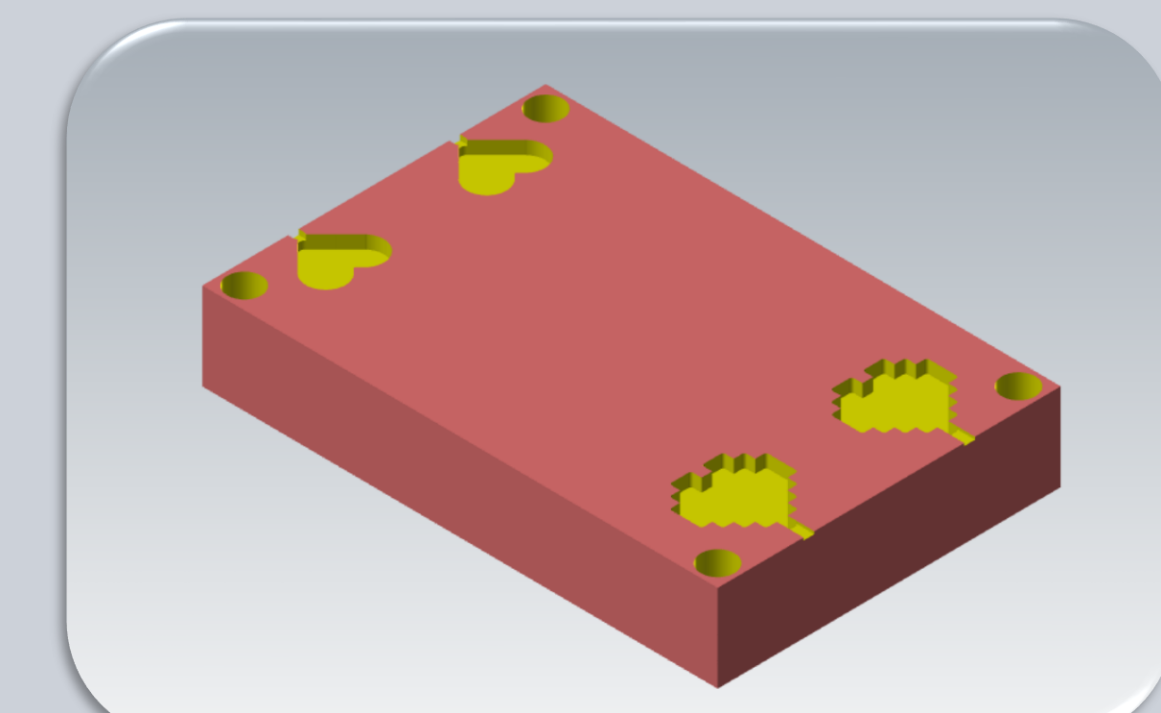
- 2 Locating Pins
- Small Amounts of Plastic Used
- Rapid Process
- Define Details

Player Chip



- Cone Shaped Alignment Pins
- Thicker Mold for Heat Retention
- Flashing Ring
- Creates up to 6 chips

Earrings



- Multiple Designs for Earrings
- Design for batch processing
- Surface Finish Prioritized

Melt Process

- Place mold cavities into preheated 450 F oven for 15-20 min
- Measure out desired plastic and place onto Preheated grill press until melted
- Place melted plastic into the old cavity
- Press down and compress top piece of mold
- Release top piece and separate mold from the block

TOTAL MELT TIME: Approx. ~ 35 min

Failures



Carbon build up



Mold alignment



Splitting