New Paltz
STATE UNIVERSITY OF NEW YORK

Division of Engineering Programs
EGG 408_01 Senior Design Project I - Fall 2018

Mueller Phipps International - End of Arm Tooling (EOAT)

Members: George Dagis (CE), NAME OMITTED (ME), NAME OMITTED (ME), NAME OMITTED (ME), NAME OMITTED (ME)

Advisor: Dr. Wang
Co-Advisor: Professor Otis

September 24, 2018

Project Description

- Design an attachment a robotic arm to pick up wax moldings.
- The tool should pick up a multitude of different shaped objects.
- It must fit the multi-tool hook up of the robot that MPI uses.

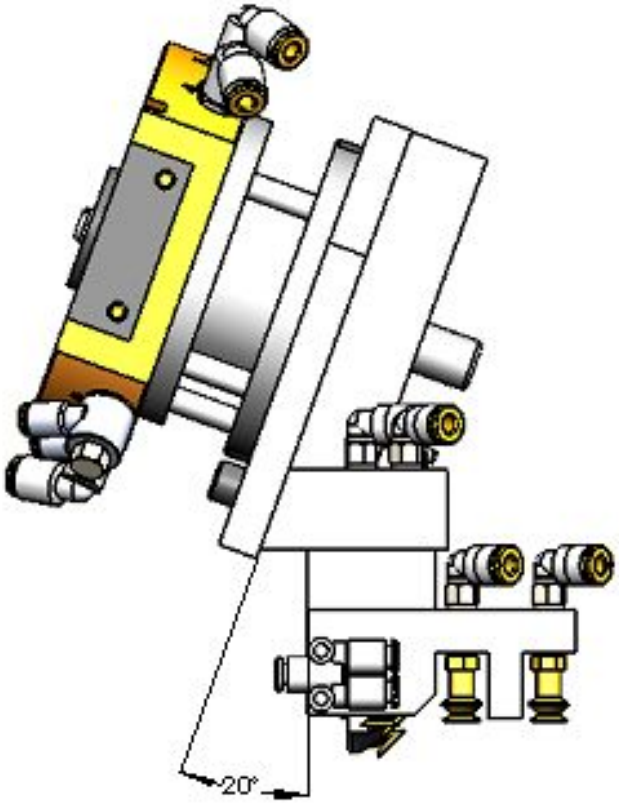

Figure 1: End of Arm Tooling Example

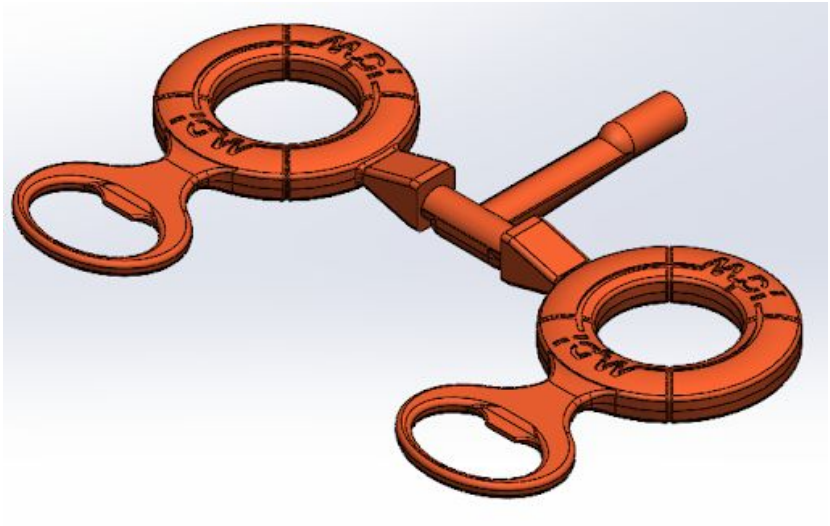

Figure 2: Example Wax Part

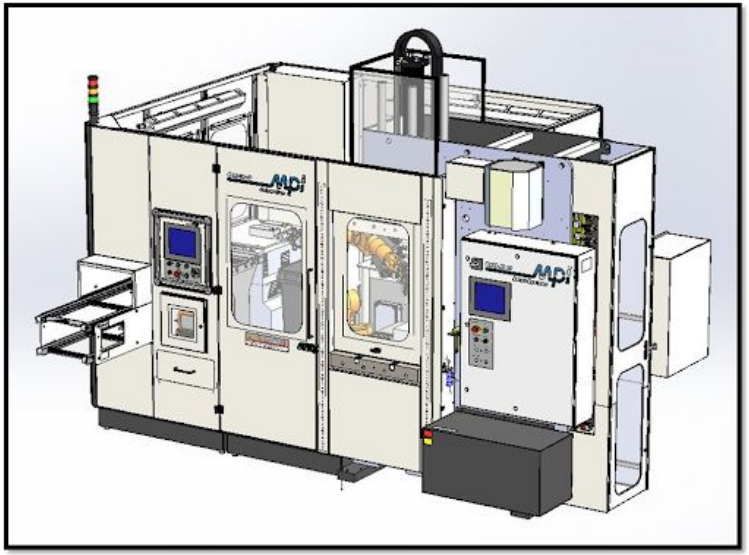

Figure 3: Automated Cell

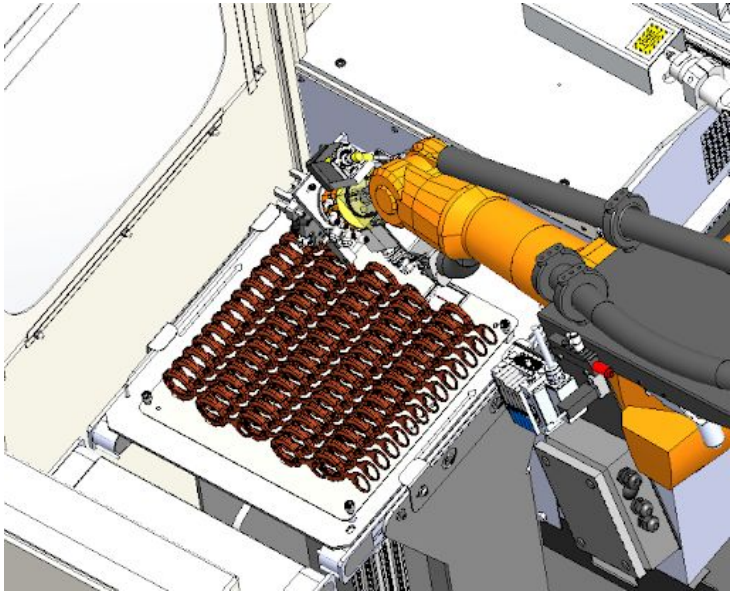

Figure 4: Robotic Arm Transferring Sample to Tray

Project Need

- MPI currently uses a different attachment for each part.
- Attachments cost up to $15,000 per unit.
- A multipurpose gripper would greatly reduce this cost factor.

Known Specifications & Constraints

- Range of geometry / size of objects
  - (40mm to 200mm wide)
- EOAT cannot damage object
- Objects are made from wax (soft)
- Temperature of wax varies

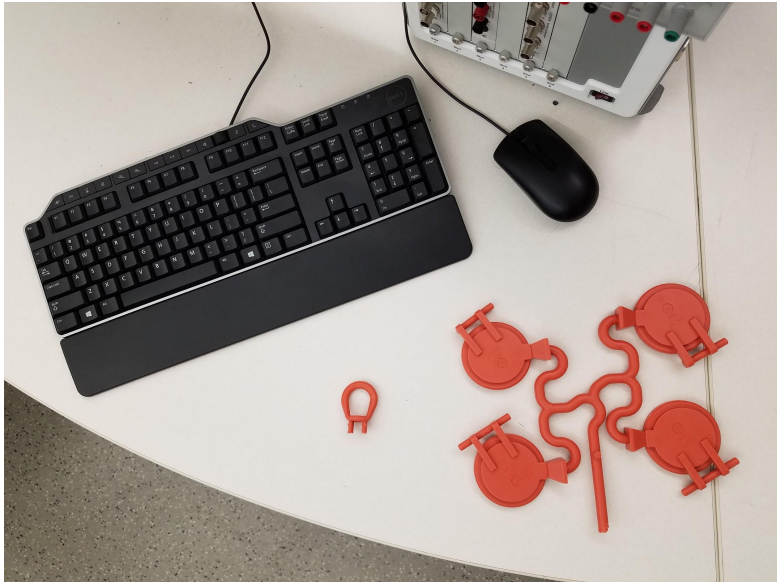

Figure 5: Minimum and Maximum Sized Objects

Preliminary Plan

- Fall 2018 - Demonstration of feasibility
  - Proof of proper sensor functionality
  - Successfully pick up a simple wax object without deformation
  - To be completed by Senior Design Expo December 2019
- Spring 2019 - Working prototype
  - Complex range of motion to pick up complex objects
  - On-site demo
  - Presentation paper about findings
  - To be completed by Senior Design Expo May 2019

Roles & Responsibilities

Team Member	**Role / Responsibility**
	CAD / *Materials Testing* / *Sensors*
George Dagis	Programming / Sensors
	Project Management / Documentation / *Kinematic Analysis*
	Materials Testing / *CAD* / *Programming*
	Kinematics Analysis / *Documentation*

*Main Responsibility / *Auxiliary Responsibility*

Communications Plan

- Team Meetings
  - Mondays class time, Tuesdays 3:15 - 6:30
- Advisor Meetings
  - Dr. Wang - Thursdays 11:30 - 12:00
  - Professor Otis - Thursdays 12:30 - 1:00
- MPI Meetings
  - Thursdays 11:30 - 12:00 (conference call with Dr. Wang & Aaron Phipps)
  - Company visits as necessary (testing)

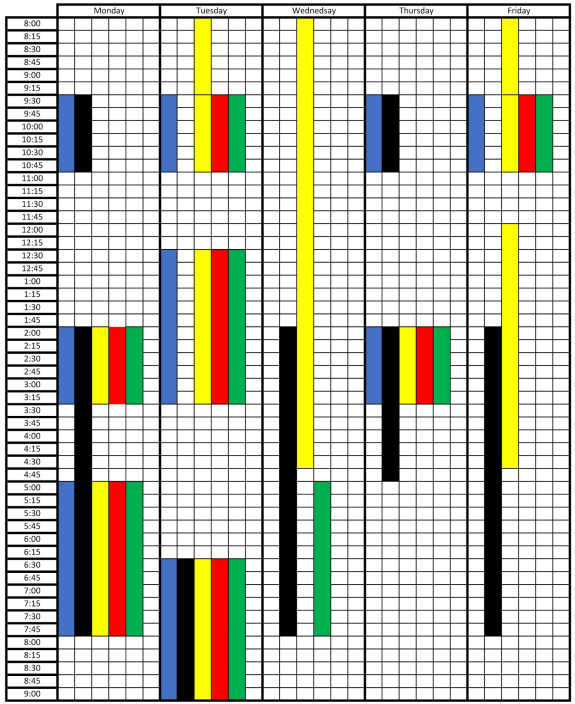

Figure 6: Schedule of Team Members

Summary

- Building a multipurpose gripper for MPI.
- Help them save time and money.
- Hope to learn a lot

Thank you very much for your attention!

Are there any questions?