**Problem:**

**Mechanical:**
- Casting chaplets is only a semi-automated process, which wastes both manpower and time.
- It’s impossible to make the disks face the same way with the system that is currently in place.
- Different sized disks mean the feed mechanism needs to be flexible.

**Database:**
- Tools are kept track of with an outdated paper and pencil system.
- The company has no way of predicting when they will need to order new parts.

**Objective:**

**Mechanical:**
- Identify methods, materials, and systems that can be used to automate a semi-automatic sorting and placement operation for casting chaplets.
- Build a deliverable prototype.

**Database:**
- Develop a comprehensive electronic tool management system that will keep track of the location of Smith & Richardson’s tools.
- Find a way to easily transfer information from the paper tool system into the database.
- Create a program that will help predict tool-wear life for the purpose of preventative maintenance.

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**Methodology:**

**Mechanical:**
- **Group:**
  - Daniel Chiu – Aero/Mech
  - Joseph Cicero – Mechanical
  - Ross Hill – Mechanical
  - Woong-Kyo Lee – Aerospace
  - Ran Xu – Mechanical
- Researched methods to align disks
- Individually developed designs for various stages of the problem:
  - Disk orientation
  - Equal diversion of the disks to the two plates.
  - Track system
- Final designs were constructed using acrylic sheets cut using a table saw and the laser cutter in MSI.

**Database:**
- **Group:**
  - Jonathan Perry – Mechanical
  - John Powers – Computer Science
  - Ben Sanborn – Psychology
  - Meagan Sarratt – Psychology
  - Robert Williams – Electrical
- Extensive research was conducted in the area of tool management programs.
- Attempted to make changes to the company’s program, but this was determined to be unfeasible.
- Designed a “tagalong” program to their tool management system that can keep track of tool-wear life.
- Researched data input systems and determined that OCR would be the easiest method.