

Project 2.3.5 Container Design

Introduction

In this project you will apply skills and knowledge related to the engineering design process, CAD modeling, CAM, and safe CNC milling. You will design and manufacture a container base and lid using the constraints in these instructions.

Equipment

- Inventor software with CAM plugin
- CNC milling center
- RenShape 450
- Engineering notebook

Procedure

1. Develop multiple ideas for a container with a lid. Each design idea should include a purpose for the container.
2. Conduct research as needed to determine any information required for your design.
3. Select a design to fully develop. Use a decision matrix to aid in making this decision.
4. Specify all of the dimensions of the container and lid. Use the attached drawings as a guide.
5. Select tooling for each of the features of your design.
6. Model the container and lid in Inventor. Create multiview drawings and assembly drawings.
7. Develop tool paths in EdgeCAM.
8. Machine the container and lid.
9. Prepare a technical report that details how to make your product, including all necessary drawings.

Constraints

1. The container and lid must be manufactured from a single piece of REN 450 measuring 3x3x2.
2. The lid must have a clearance fit of no less than 0.005 inches.
3. The lid must be secured so that it remains on the container except when lifted off.
4. Minimize machining time.
5. The lid top must have contours on the XZ or YZ plane.
6. Your design must be able to be secured in a vise for machining.
7. You may not use a tool smaller than 1/8" in diameter except for the engraver.
8. The engraver may only be used for engraving.

