



## Adapting Procedures for Non-Technical Use

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### Abstract

The overall purpose of this project is to create a process for designing and manufacturing a chassis (Mechanical Enclosure) for Hiller Measurements. As the Industrial Optimization sub-team, we focused on ways to optimize and fully document the process. The goal was to create procedures for utilizing 3-D generative design and printing software that most adults would be able to follow. Outside TCU students with little to no engineering background were brought in to test our procedures.

### Background

Hiller Measurements designs, manufactures, and supports mission-critical test systems, assemblies, and instrumentation. They want a process that their employees could follow that goes from design to print with little to no experience. We have developed three procedures detailing the different steps within the process. These procedures include: creating generative structures using Autodesk Fusion 360 Generative Design, using Chitobox's slicer software to print a part, and using the Elegoo Saturn wash and cure station to process the parts for use.

### Major Difficulties/ Learning Opportunities:

- Turnaround from learning procedures to writing documentation for said procedure in only a few weeks
- Non-engineering students had no previous experience with 3D design software/printing software
- Fusion 360 would occasionally have errors outside the control of the participant that needed troubleshooting
- Participants had a much easier time following video walkthroughs vs solely written procedure

### Working Process of Creating Procedures



Procedures were created for both 3-D printing and Generative Design Procedures. Generative Design can be used to allow the computer to generate designs based on criteria that the user selects. These procedures were created from a non-technical use standpoint. The goal was to make simple-to-use procedures that any adult could follow.