

Problem Statement

During the production of Jeld-Wen's exterior fiberglass doors there is a byproduct of fiberglass cutouts in assorted sizes filled with insulating foam. The goal of this project was to devise a solution to reduce the quantity of these panels being sent to a landfill by no less than half.



Requirements

- Cut the number of panels going to the landfill in half
- Excess panels must not be burned
- Must be disposed of in an environmentally friendly manner
- Remove panels from factory floor space
- Cannot have a negative profit

Concepts

- Website with list of design examples and assemblies
 - Clasp designs were to be used on the website to assemble the various examples
- Narrowed list of designs down to five and went with the highest scoring one
- Instead of building a website, the team contacted Habitat for Humanity
 - Habitat for Humanity plans to use these panels directly from Jeld-Wen for building projects

Final Design

- The final design for repurposing the fiberglass panels was to build an affordable and easy-to-install cubicle.

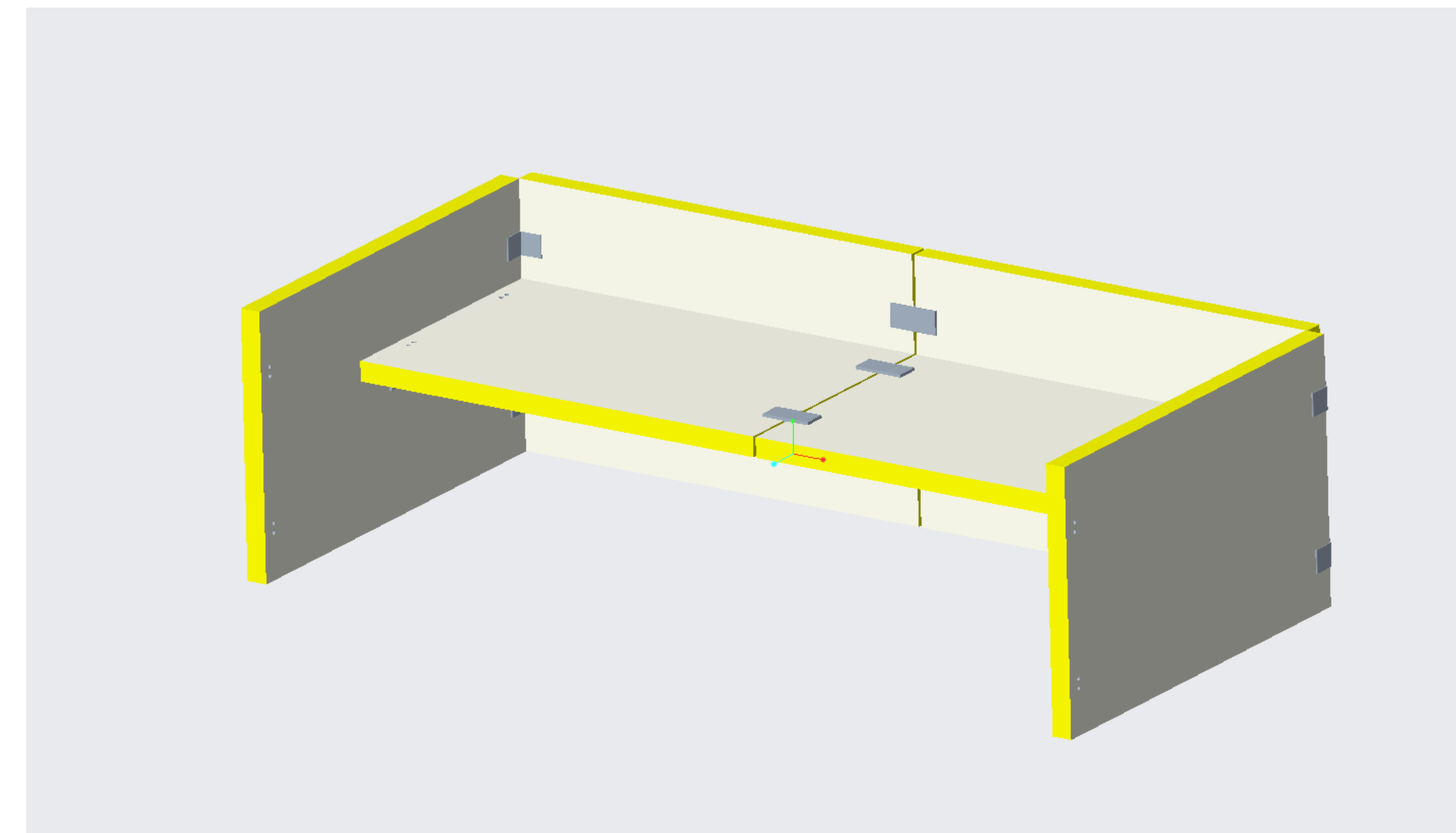


Figure 1:
Final Design of Cubicle

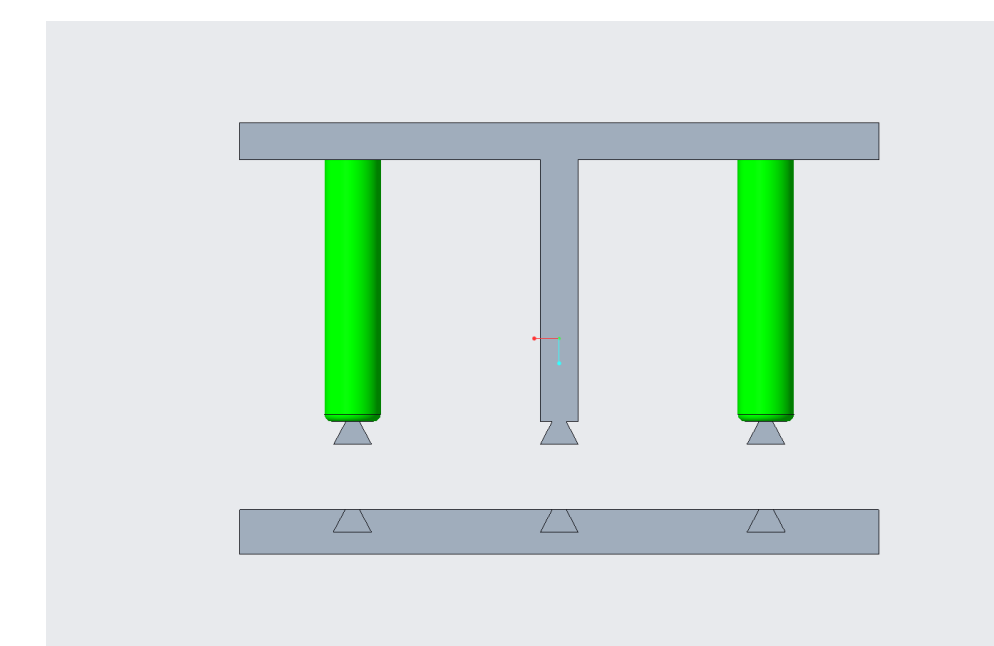


Figure 2:
Flat Wall Connector

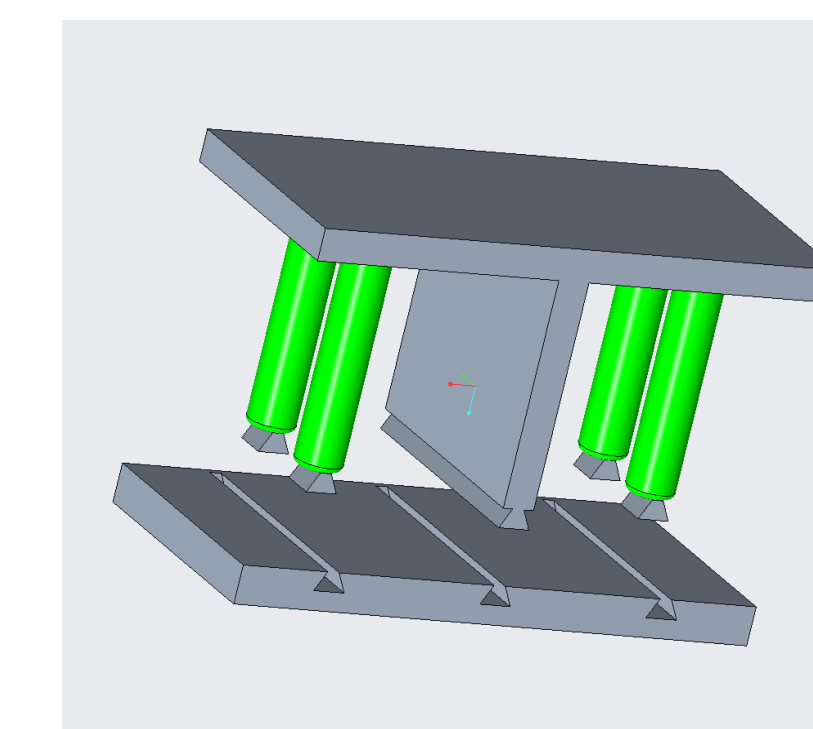


Figure 3:
Flat Wall Connector

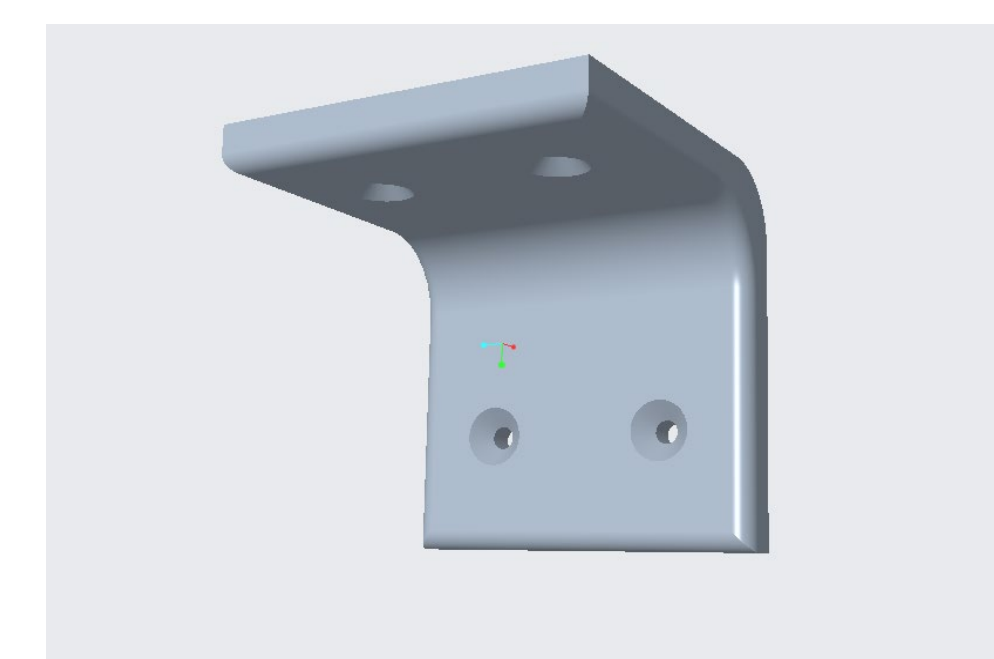


Figure 4:
Desk Support Bracket

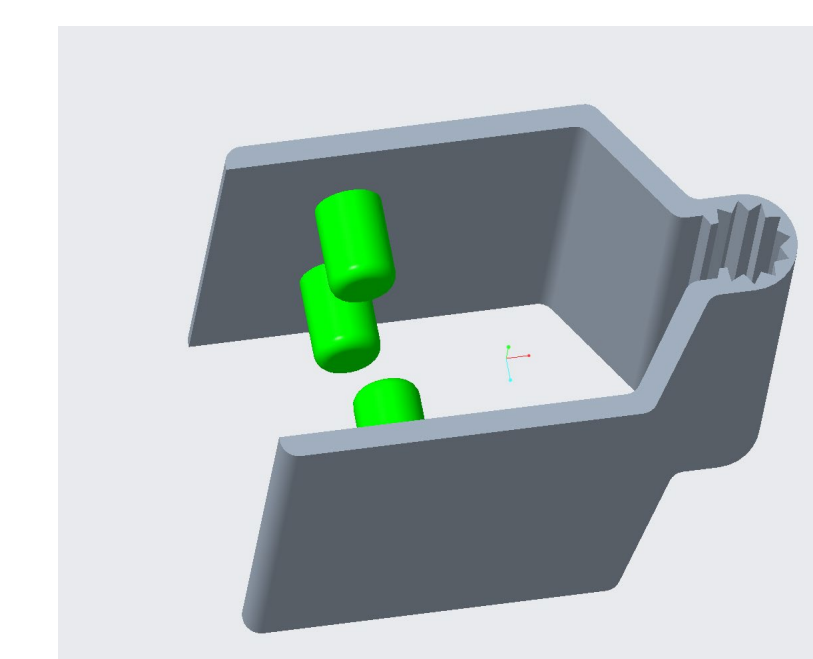


Figure 5:
Corner Connector



Figure 6:
Corner Pin

Results

- The team succeeded in initiating contact between Jeld-Wen and Habitat for Humanity
 - This was believed to be the best option to use to meet the project requirement of quantity reduction
 - The panels will be used as building materials rather than disposed of in a landfill
 - It will largely decrease the quantity of panels remaining on the shop floor
 - The panels will not be burned
 - There will be no negative profit



Summary

- There is direct communication between Habitat for Humanity and Jeld-Wen so further deliveries and donations can be handled between them
- The final clasp drawings and designs have been shared with Jeld-Wen to use at their discretion

Team & Acknowledgements

Team 24:

- Amie Emery – Mechanical Engineering
- Jackson Dietzel – Engineering Technology
- Cole Melton - Engineering Technology

Sponsor:

- Ryan Kalanish from Jeld-Wen – Process Engineer

Mentor:

- Dr. Andy Ritenour