1. CLIENT BACKGROUND

The project the team was working within the Amazon Customer Fulfillment center. Amazon operates over 100 fulfillment centers all over the United States. These fulfillment centers are used to handle the logistics required to get a product from an online order to the customers doorstep. Given the high quantity of traffic to Amazon every day, efficiency is paramount in such centers. This nonstop operation provides the backbone for the convenience Amazon customers utilize every day. The scope of the project and the test bench being produced aimed to be applied to all fulfillment centers in the United States.

2. PROBLEM STATEMENT

Amazon facilities have no way for manufacturers to adequately test products. This results in many facilities relying on makeshift solutions that might not satisfy safety and ergonomic standards. Our project focuses on the development of a low-cost test bench that will be used to test newly received parts for Amazon’s robotic fulfillment centers. Building a proper test bench allows Amazon to have a standardized bench that can be used at all facilities which meets ergonomic, safety, power and technical requirements making maintenance consistent across the company.

3. TASK AND METHODS

3.1 Data Collection

Project focused primarily on utilizing preexisting schematics from international plants. Although there are no existing testing benches in United States based facilities, there are some similar models at Amazon’s international sites. The team was able to obtain various files to help visualize and constrain a possible model.

3.2 CAD

The team decided to utilize CAD in the design of the bench. It is easy to constrain a design within CAD software. Adjustments could easily be made as the requirements from the customer evolved as the project progressed. Perhaps the most important use of CAD, was the ability to use premade parts from McMaster-Carr. This was both for convenience as well as a customer requirement. Using premade parts made it so that the team could save time while also utilizing industry standard sizing.

3.3 IE Tools

Many IE tools were considered such as ergonomic design, economic study, process improvement, and quality control.

4. Discussion

- Test bench satisfies customer requirements
- Delivered 3 quality products to Amazon

Customer Benefits:
- In Process Quality Control
- Periodic technician training for common maintenance routines
- Standardized materials for widespread Test Bench rollout

5. RESULTS

5.1 CAD Layout Design

The photos above show multiple angles of the final CAD model of the maintenance testing bench. Main features include wheels for mobility, standing height, and space for tools.

5.2 Bill of Material

The Bill of Material provides a comprehensive list of all building material and parts that are used in construction of the testing bench as well as their associated cost. It also provides a direct link to the parts on McMaster-Carr.

6. Conclusion

- Test bench satisfies customer requirements
- Delivered 3 quality products to Amazon

Client Information
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