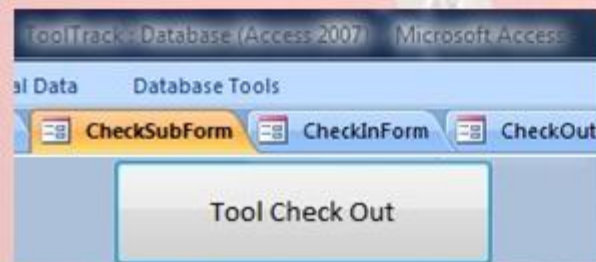


Design Team

- Investigated lighting system, tool tracking system, and drawer corrugations
- Researched competitor features

Results:

- Developed improved drawer corrugation design
- Decided on a barcode tracking system for tool tracking
 - RFID system not practical/too expensive
- Purchased USB plug-n-play barcode scanner for \$119
 - Functional, easy to use, relatively inexpensive
- Developed basic tool tracking software utilizing Microsoft Access



Testing Team

- Developed testing protocol, which had not been developed by previous semesters
- Tested two designs: **rack slide design** (picture on front of brochure) and **undercarriage design** (picture below, with load)
- Tested both designs at both 220 lbs loading and 440 lbs loading
- Note: the rack slide design only had the drawer locking mechanism on one side



Results:

- For the rack slide design, the 220 lbs setup failed after 680 cycles, and the 440 lbs setup failed after 1186 cycles, both due to significant deformation to the rack slides.
- For the undercarriage design, the 220 lbs setup completed 20,000 cycles, but had significant damage to one bearing wheel.
- The 440 lbs setup for the undercarriage design failed after 2445 cycles, with significant damage to two bearing wheels.

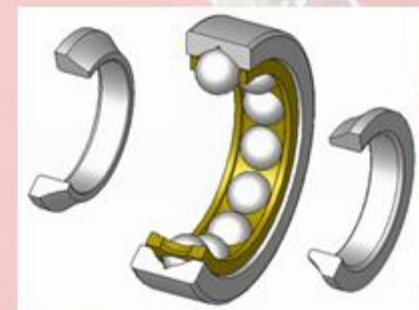
Recommendations

From the Design Team:

- Pursue barcode tracking system for tool tracking
 - Investigate laser etched barcodes and compatible scanners
- Improve existing software design for tool tracking, using Microsoft Access as a database
 - Review customer needs for tool tracking implementation
- Investigate LED strip lighting
- Continue to research competitor features

From the Testing Team:

- If more rack slides should be tested, the locking mechanism must be on both sides of the cabinet
 - Locks on only one side results in torsion damage to the slides
 - Also, investigate stronger, but affordable, rack slides
- Improve bearing wheels to get better results from undercarriage design
 - Investigate stronger wheels based on load calculations



Abstract

The goal of this project was to assist Versatility Tool Works with the design and testing of an industrial strength tool cabinet. Currently, no tool cabinet exists on the market that holds very large amounts of weight *and* has a long lifespan. Desirable features would also be investigated, such as lighting and a tool tracking system. Tools frequently get misplaced on the job, and a tracking system would greatly assist in mitigating this problem.

Last semester, recommendations were made to have the drawer locking mechanism placed on both sides of the drawer (instead of one side), to add an "L" bracket below the undercarriage slides for reinforcement, and to develop a tool tracking system.

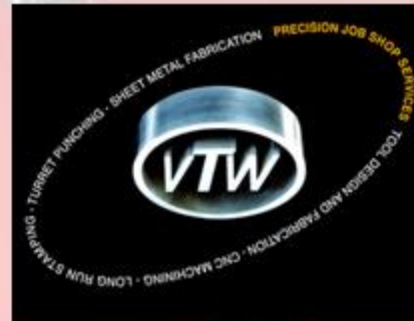
This semester, these recommendations were considered, implemented, and improved upon to get closer to VTW's goals. New ideas and recommendations were also developed for next semester's team. Details can be seen in this brochure.

About Versatility Tool Works

Versatility Tool Works, aka VTW, is located in Alsip, Illinois. The company was established in 1972 as a tool and die operation. VTW has since diversified their product line to include sheet metal fabrications, roll formed products, stamping tools, precision machined components, and most recently, custom made tool cabinets.

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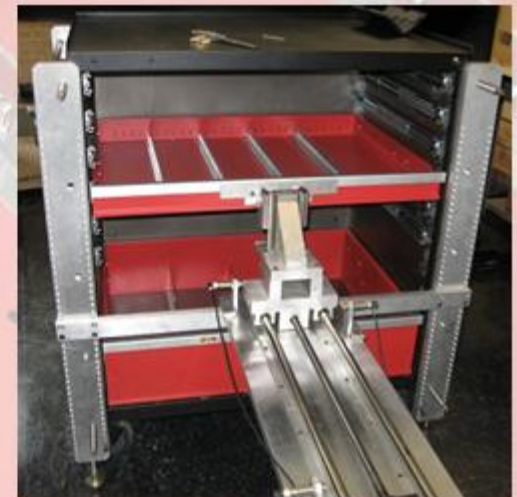
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Design and Global Market Analysis of a Tool Cabinet



Sponsored by Versatility Tool Works