

## Conclusions

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The design team has taken the tool cabinet to the next level. With more time, there are endless possibilities to push this project even further.

The testing team was able to successfully evaluate three separate designs. Each design resulted in important design changes at the point of failure, bringing the design closer to the goal of 20,000 cycles.

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## Contact

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# IPRO 341

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## **Design and Global Market Analysis of a Tool Cabinet**



Sponsored by:  
Versatility Tool Works

## Introduction



Versatility Tool Works, referred to as VTW, is a

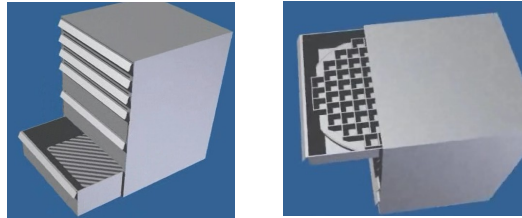
small metal and manufacturing company based right outside of Chicago in Alsip, IL. Recently, VTW started manufacturing tool boxes for an industrial environment. Illinois Institute of Technology was contacted for help. The man power in this area of the company is lacking. Therefore, IIT will be helpful in the innovation and testing of this new product.

### Objective

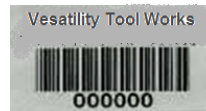
- \* To build and design a modern, functional, and longstanding tool cabinet
- \* Test and evaluate current and new designs
- \* Drawer can withstand a load of 550 lbs
- \* Successfully run 20,000 cycles before failure of the guides
- \* Determine an effective tracking system that would organize and locate components

## Design Team

- \* Development of features for a “New Age” tool cabinet
- \* Detachable and rotating cabinet



- \* Lights in the drawers
- \* New tracking system involving aluminum bar-coding of the components

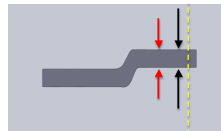


## Testing Team

- \* Tested three design variations, each including slight yet significant changes.
- \* Modifications include geometry, testing parameters, and additional support.
- \* Maintain contact with project sponsor to stay up to date and coordinate design changes.

## Major design changes

- \* The schematic representation of drawer slide explains one of the major design modifications. Current configuration places the roller bearing at black arrow. The removal of material (yellow line) places the point of



material (yellow line) places the point of contact at the red arrow, greatly reducing the moment on the drawer slide.

- \* Also attached reinforcing angle brackets below drawer guides, preventing plastic deformation of guide.



## Recommendations

- \* Strengthen and stiffen sliding frame through thickening of hardware
- \* Introduce hardened material to reduce wear
- \* Begin subsequent testing with all new components
- \* Locking mechanism added to both sides
- \* For the tracking system, fully develop program with Lab View, so components can be logged into a computer