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Process Improvement for Material Breakdown

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Process Improvement for Material Breakdown

Client: Cardinal Glass, Greenfield, Iowa

Problem Statement

Cell workers at Cardinal Glass are spending too much time and labor manually breaking down larger materials into smaller and more usable parts.

Objective(s)

Come up with a faster, more efficient way of breaking down foam blocks and sponge material into smaller sizes. With a more efficient process in place, Cardinal Glass could ultimately achieve a better production rate. If we are able to create an improved process for Cardinal Glass they will be able to allocate their workers to primary tasks and not secondary tasks.

Constraints

- Budget
- Timeline
- Materials
- Requirements - Must drastically reduce process time
- Criteria must be met

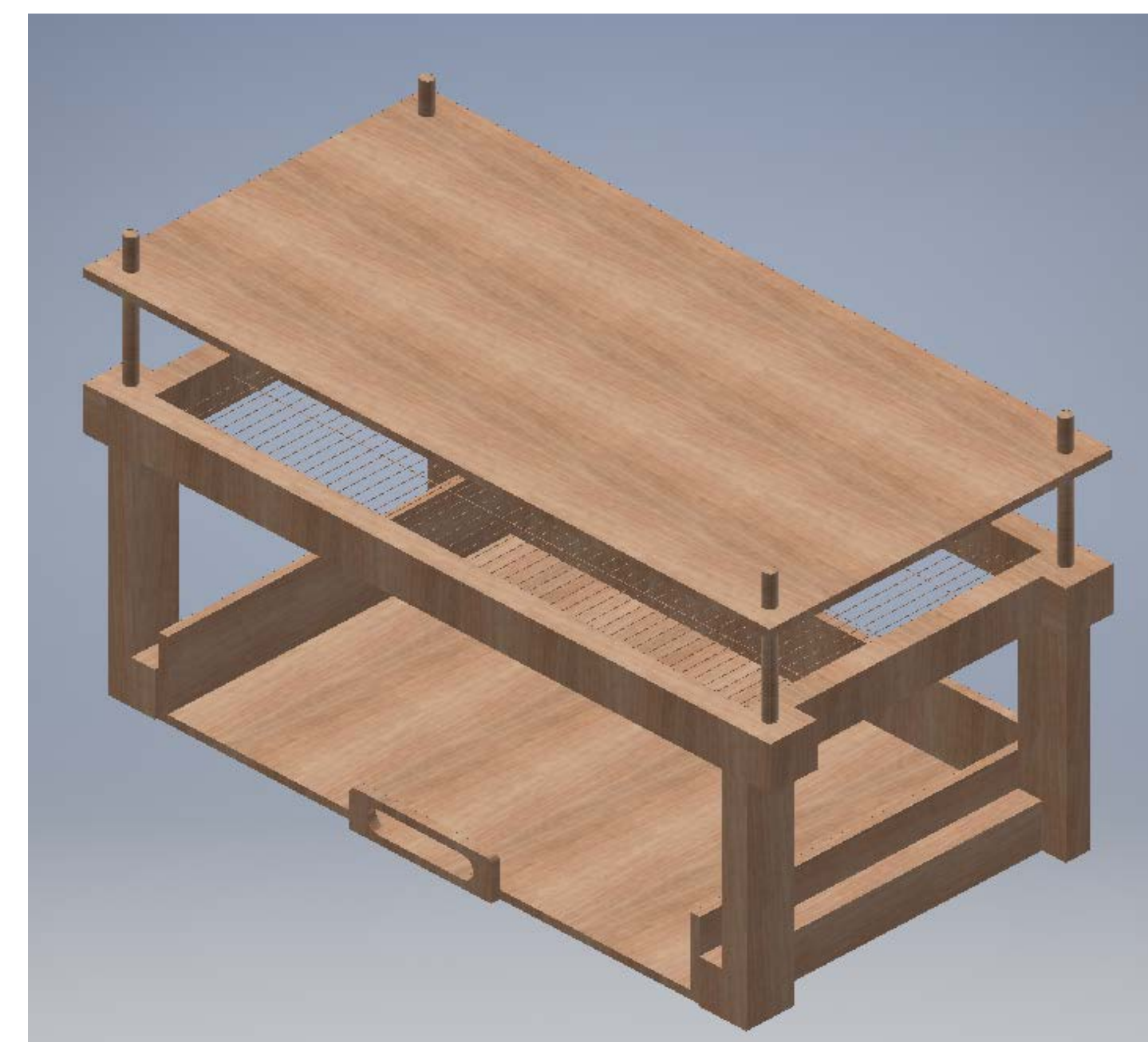
Scope

- Designing new cutting equipment that would save time
- Creating alternatives for each process
- Testing the alternatives to ensure maximum efficiency

Design Prototype

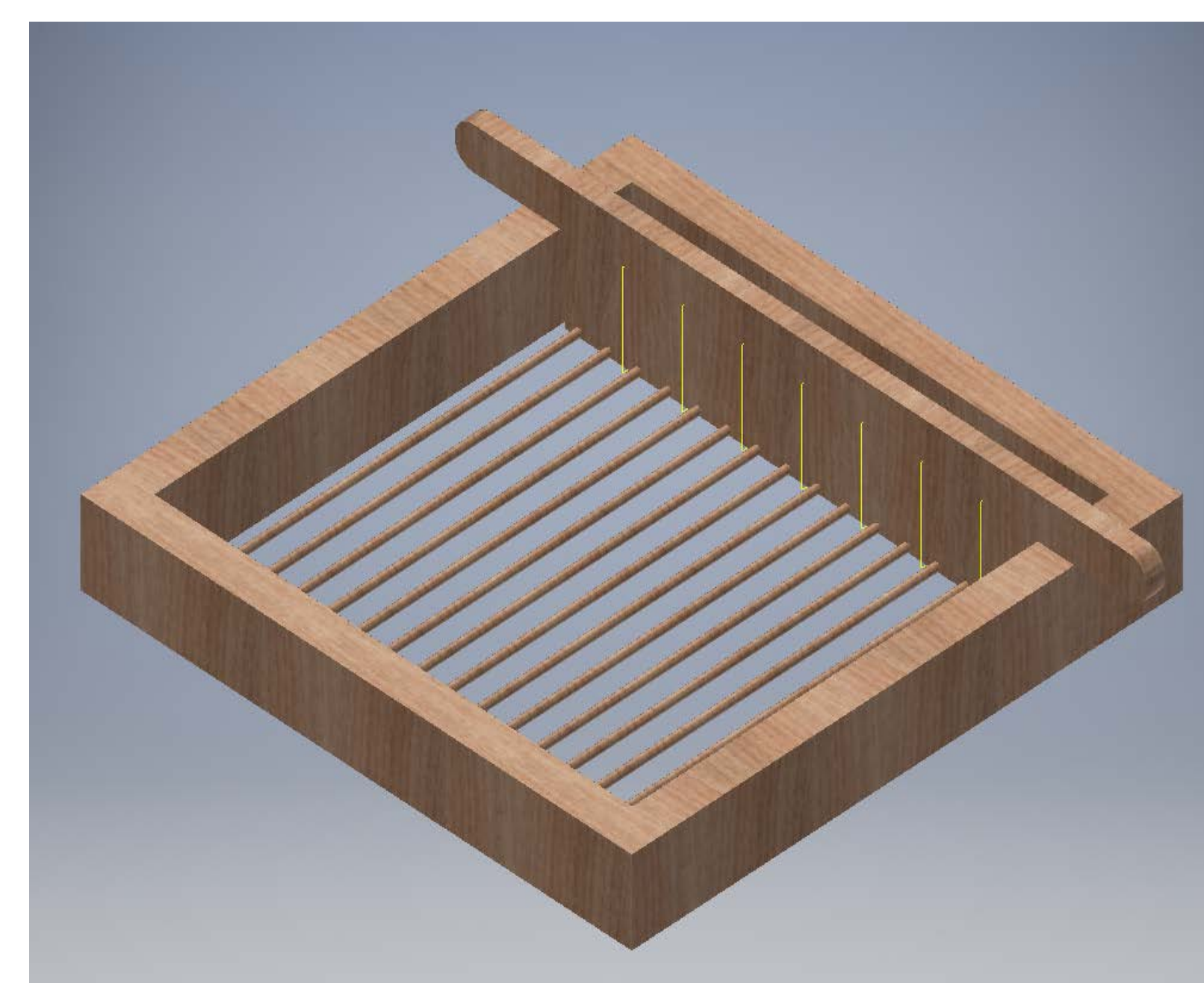
- Original process takes around eight hours to break down a single foam block.
- The material that is being broke down is crucial to the completion of primary tasks.

Foam Block Cutting Jig



- Made of hardwood
- Piano wire spaced out to cut final shape (6.5" x 3.25" x 1")
- Platform moves vertically to produce force on foam to cut
- Collection drawer

Sponge Material Cutting Jig



- Made of hardwood
- Applies downward pressure on material
- Cutter moves horizontally across frame
- The jig is rotated to complete final cut
- Interchangeable blades on cutter

Methods

- Design - We utilized Inventor and Solidworks to draft a design for our cutter
- Cost estimation - We used Grainger to estimate the cost of the material/products being used
- Site visit - We toured the facility to get a better picture of the processes

Proposed Solutions

- Foam Bun Cutting Jig
- Sponge Material Cutting Jig

Major Outcomes

- **Prioritized** a list of major tasks and deliverables including Final Report
- **Measures of success** (percent improvement, cost saved/year, cost per unit saved, etc.)

Benefit to Client

- Saves time and money for hourly employees
- Frees up salary workers to focus on primary duties