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Virtual Design Review 1
Team 504: Corning

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Team Members

Ahmari Avin
Computational Engineer

Brightson Bazile
Systems Engineer

Michael Rodriguez Capera
Manufacturing Engineer

Daniel Mack
Design Engineer

Craig Yox
Materials Engineer

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Sponsors and Advisors

CORNING

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Jeffery Roche
Heavy Duty Project Manager

Trent Brush
Project Leader

Shayne McConomy, Ph.D.
Professor/Sponsor

Christian Hubicki, Ph.D.
Project Advisor

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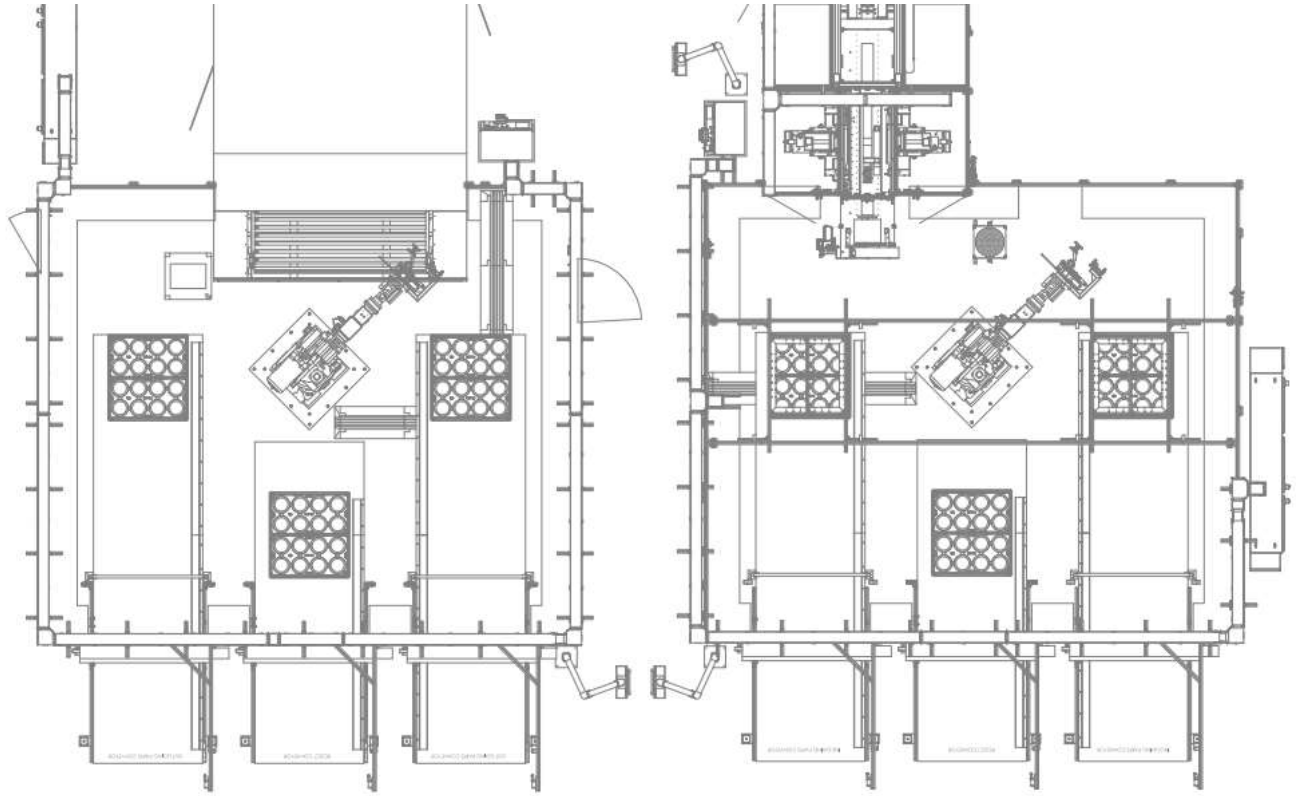
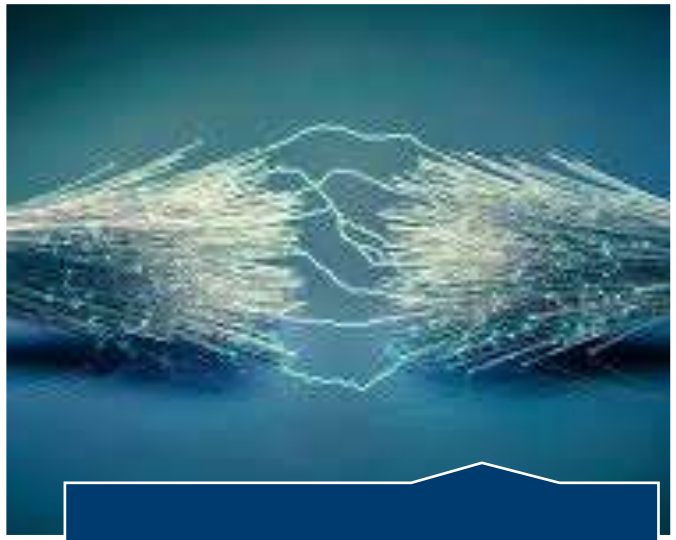
Objective

The objective of this project is to design an automated device to assist in Corning's current palletization and depalletization process through the placement and removal of pallet toppers and embedded foam layer.



Background

Hubble telescope



Fiber optic cable

Diesel Particulate Filter

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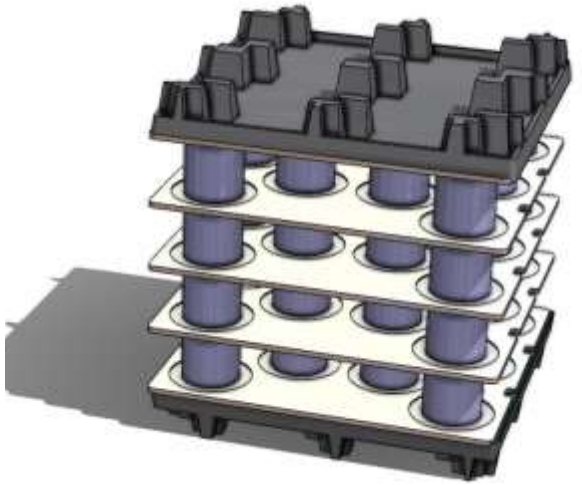
Project Summary

Pallet Topper with foam

Ceramic Cylinder Stacked on pallet.



Complete Assembly with Topper

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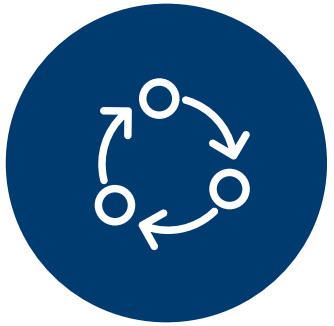
Key Goals

Sizing Constraints

Safety Measures

Automation



Placement/Removal

Markets

Primary

- Corning and Team Sponsor.
- Diesel particulate filter manufactures

Secondary

- John Deere (Agricultural)
- Kroger (Super Market)
- SSI Schaefer
- Ford (Auto)

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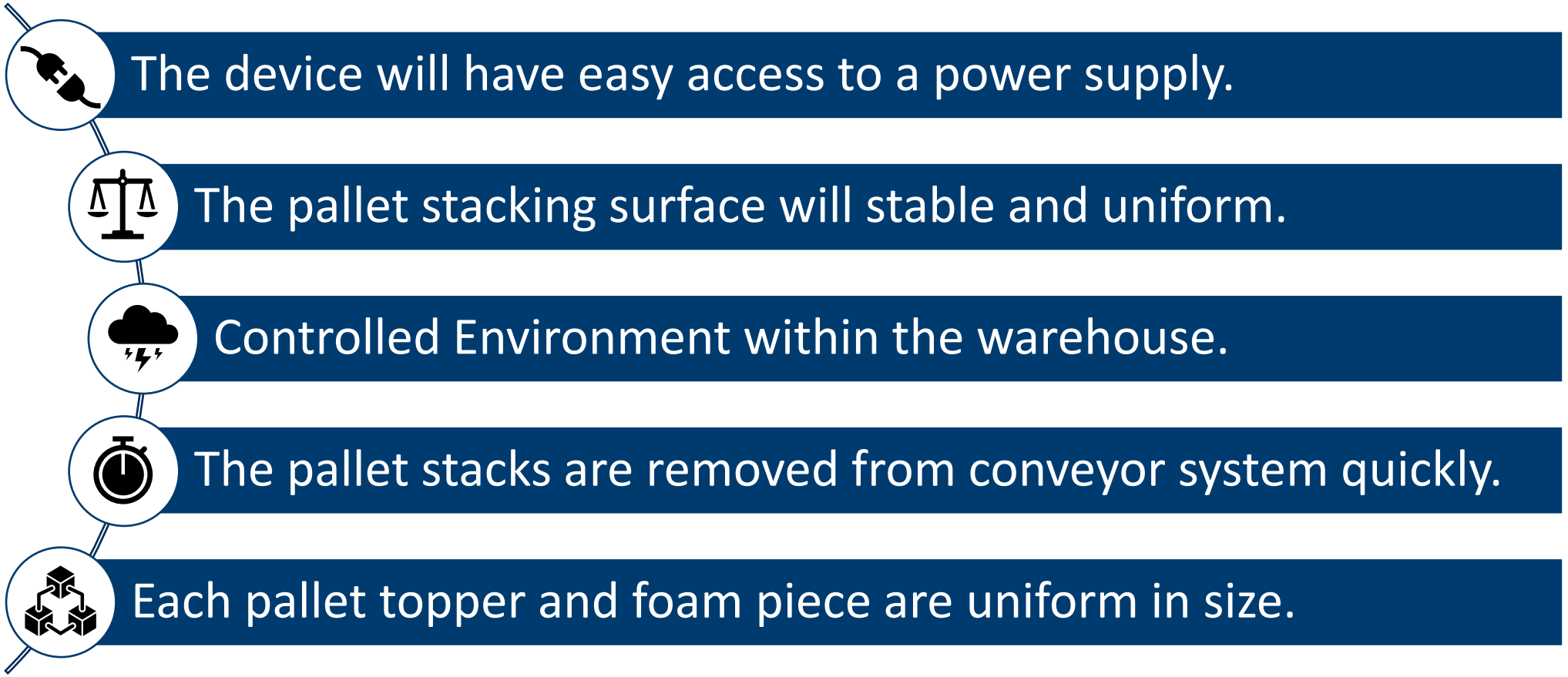
Assumptions



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Stakeholders

Stakeholder	Investors	Decision Makers	Advisors	Receivers
Dr. McConomy			✓	✓
T.A.'s			✓	
Dr. Hubicki			✓	✓
Corning		✓	✓	✓
Team 504		✓		
OSHA				✓
Secondary Market				✓

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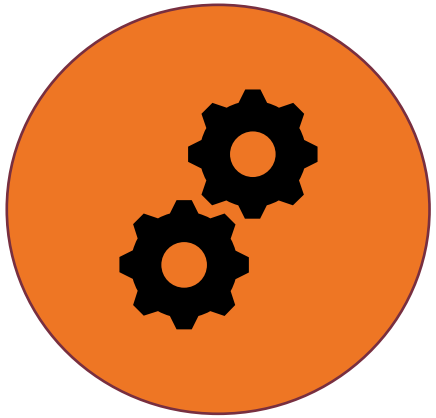
Customer Needs

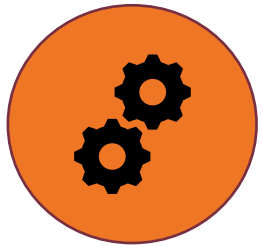


Efficiency Synthesis

Spatial Constraints

Physical Constraints

Efficiency/Synthesis



Needs:

- Improve current palletization/depalletization process
- Communicate with Corning's current system
- Read differing heights of pallets

Spatial Constraints

Needs:

- Fit within the current or adjusted cell
- Stagnation area
- Operates without interfering with current robots

Physical Constraints

Needs:

- Matches speed of employee efforts
- Ability to lift the weight of the pallet topper
- Move pallet toppers and foam layers without damage

Functional Decomposition

- Currently in Progress of being completed

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Future Work

- Targets and Metrics
- Concept Generation and Selection
- Risk Assessment
- Bill of Materials
- Prototype and Modeling