

NORTHERN  
ARIZONA  
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# Portable Sanitization Chamber

## Progress Report

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# OVERVIEW

- Introduction
- Design Modifications
- Ongoing Tasks
  - H<sub>2</sub>O<sub>2</sub> Testing
  - UVGI Testing
  - Chamber Door Sealant
  - Control System Integration
- Project Plan



# INTRODUCTION

- W.L. Gore
- Portable Sanitization Chamber
- Decrease bioburden levels of *Bacillus atrophaeus*
- \$3,000 budget

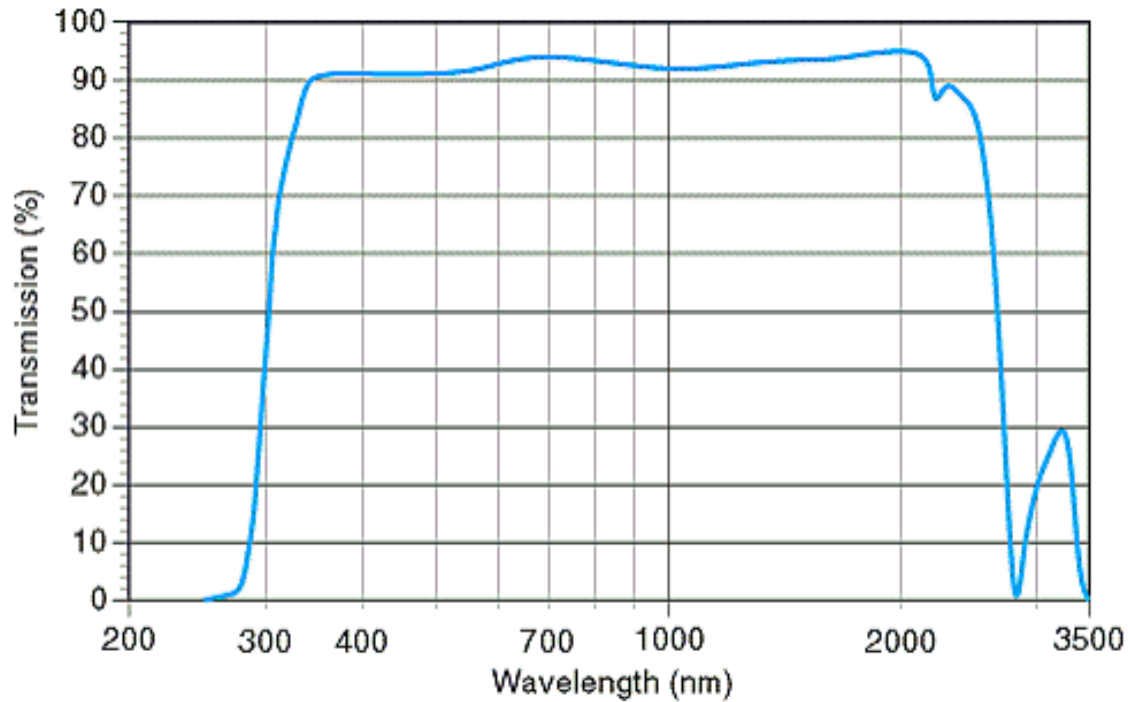


# DESIGN MODIFICATIONS

- Chamber shape remodeled
- Bulb specification changed
- Transmissive sheets removed



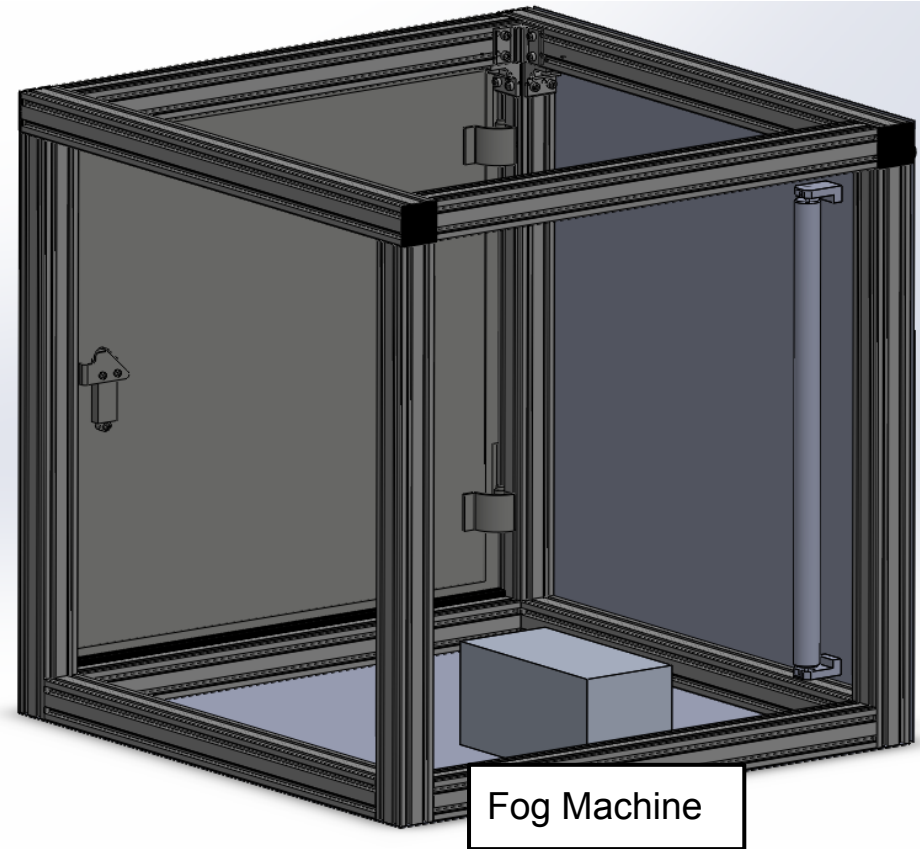
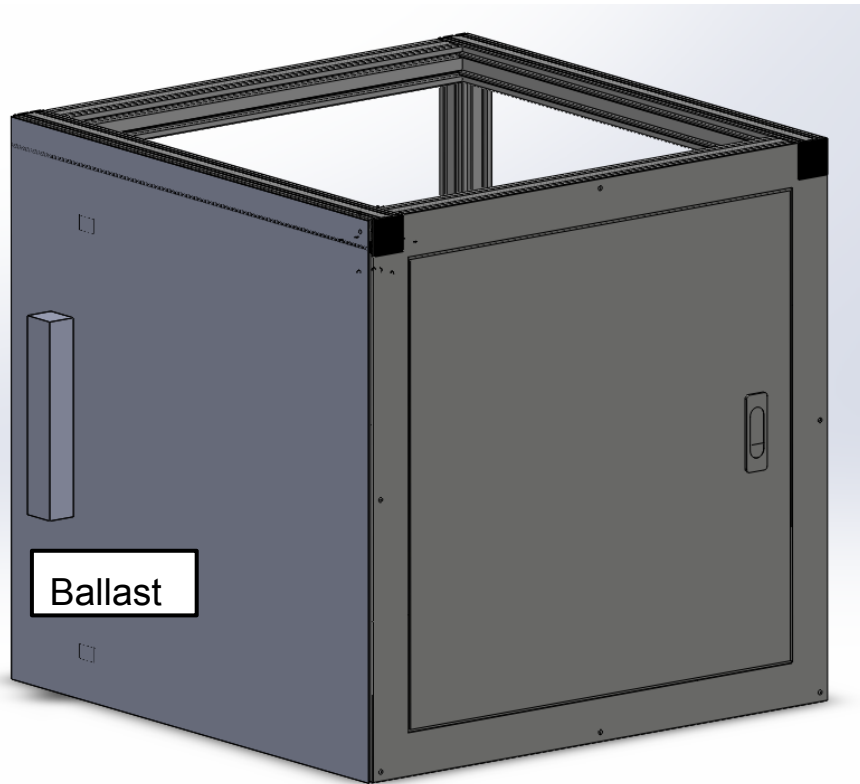
# Transmission of Pyrex



escoproducts.com

# DESIGN MODIFICATIONS (CONT.)

3D representation of current final design



# Ongoing Tasks

- Hydrogen peroxide prototype and testing
- UVGI prototype and testing
- Chamber door sealant
- Control system integration



# Hydrogen Peroxide Prototype and Testing

- High and low sensitivity  $\text{H}_2\text{O}_2$  strips
- Clear container acts as chamber
- Different concentrations of  $\text{H}_2\text{O}_2$



# UVGI Prototype and Testing

- Bulb intensity measurements
- Bulb covering compatibility with  $\text{H}_2\text{O}_2$

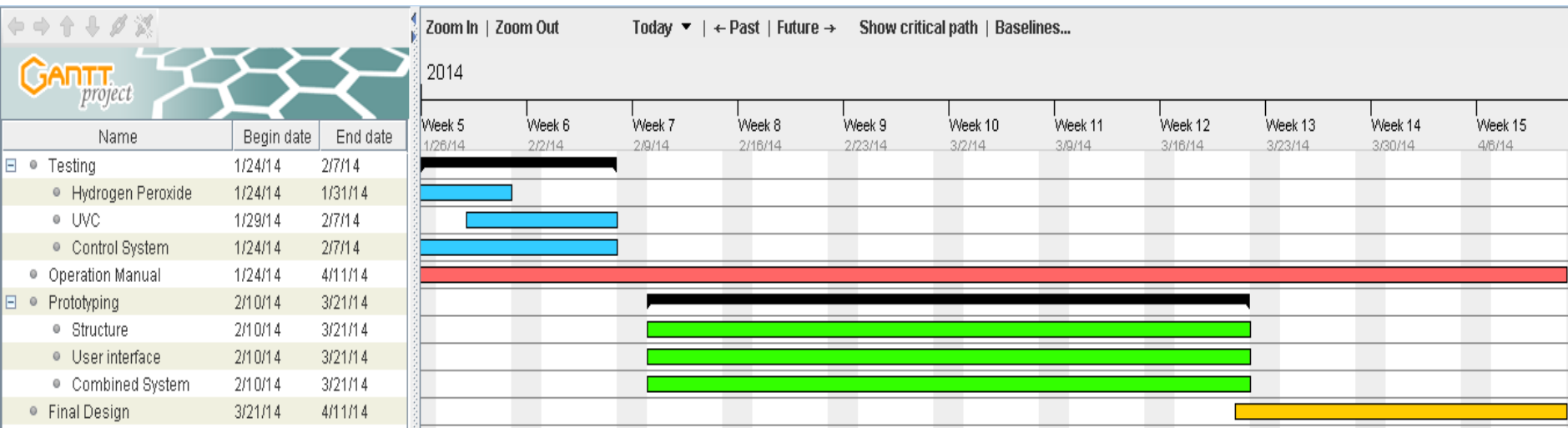
# Chamber Sealant

- Misumi Sealing Covers and Panel Spacers
  - o 0.01 µg/g leakage
  - o EPDM synthetic black rubber
    - -40°F - 120°F operating temp
    - Good (minimal corrosion) with up to 30% liquid H<sub>2</sub>O<sub>2</sub>
  - o RoHS compliant
  - o Estimated cost of \$300
  - o Allows for easy maintenance

# Control System Integration

- Allocated two team members
- Programmable Logic Controller (PLC) allows for automated process
- Type of PLC necessary
- Hardwiring components to PLC

# Project Plan



# Conclusion

The new design will simplify the construction of the entire chamber and reduces the cost to manufacture the chamber and the components.

# References

Esco Products, *Pyrex*<sup>®</sup> (*Corning 7740*), date accessed Jan. 2014. [http://alexis.jtl.net.com/~escoprod/escoproducts.com/html/pyrex\\_r\\_.html](http://alexis.jtl.net.com/~escoprod/escoproducts.com/html/pyrex_r_.html)

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