



Automated UV-C Disinfecting Oven

Created by LUV Engineering

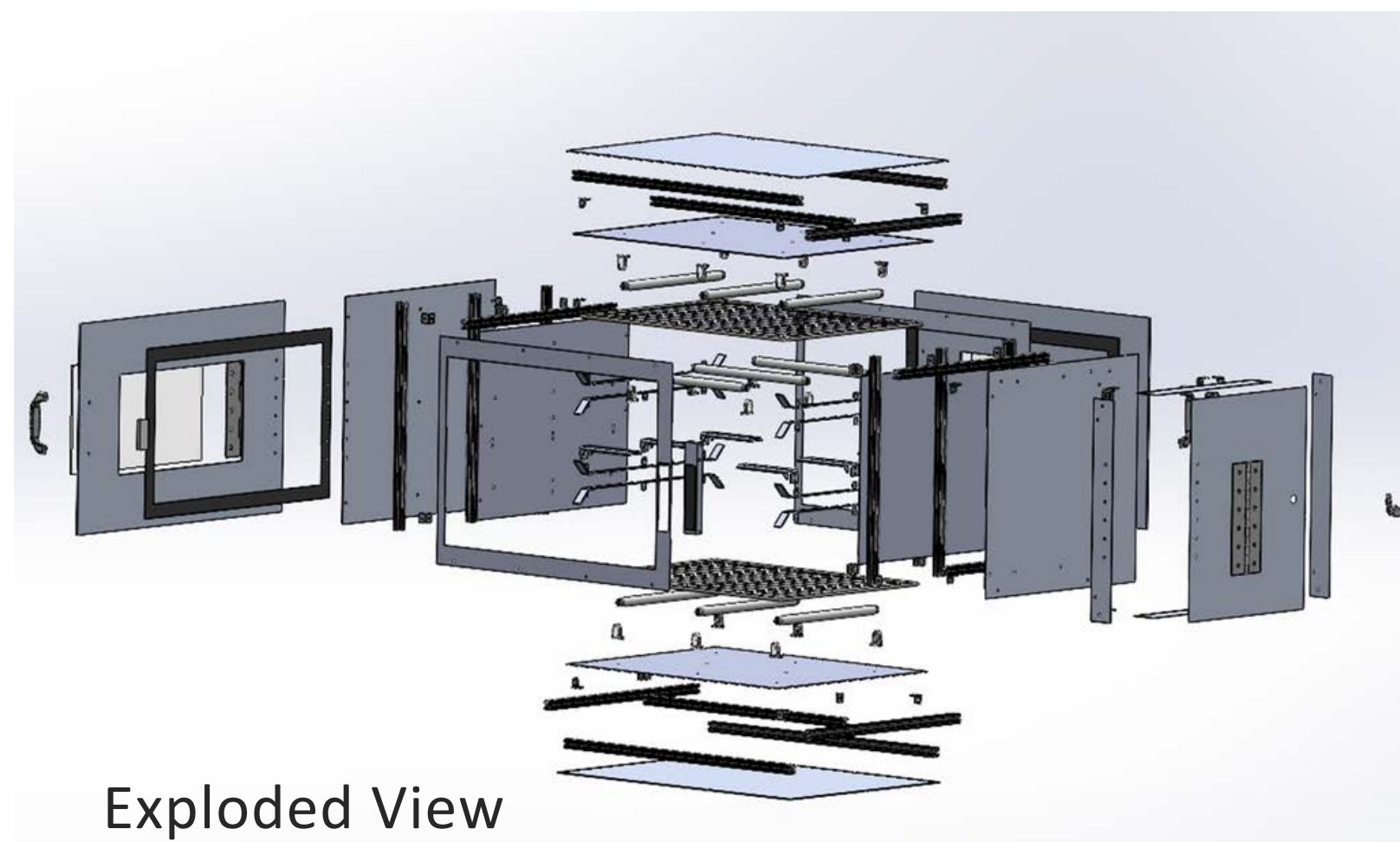
Sponsored by MASIMO



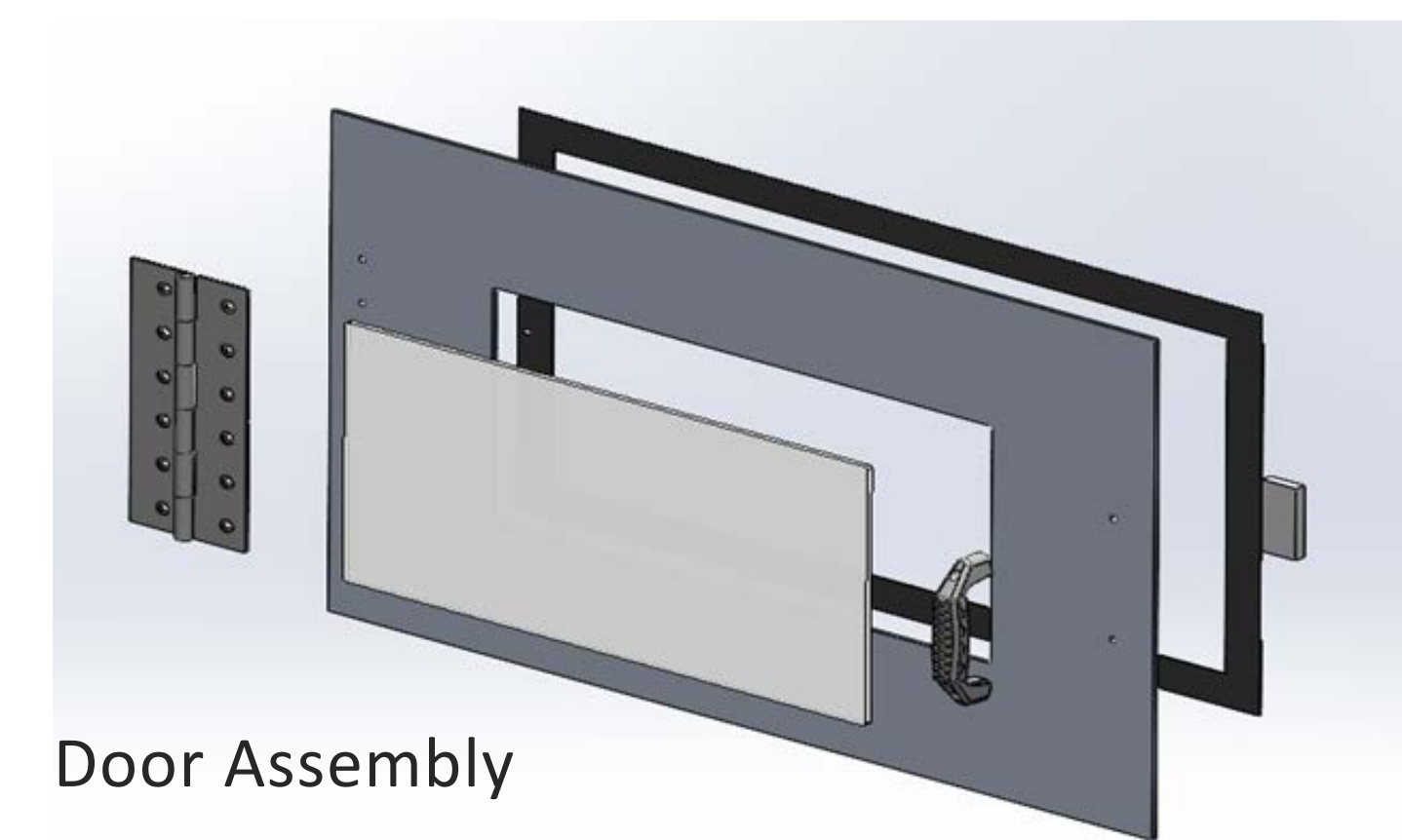
PROJECT DESCRIPTION

Team LUV Engineering has collaborated with Masimo engineers to design, document, and fabricate a system that emits UV-C light to all sides of various bagged and packaged medical objects for a known and controlled amount of time. Masimo uses UV-C light to disinfect finished medical products in a factory-line environment. This project aims to improve the UV-C disinfecting process that is currently used at Masimo by maximizing throughput and enhancing operational safety.

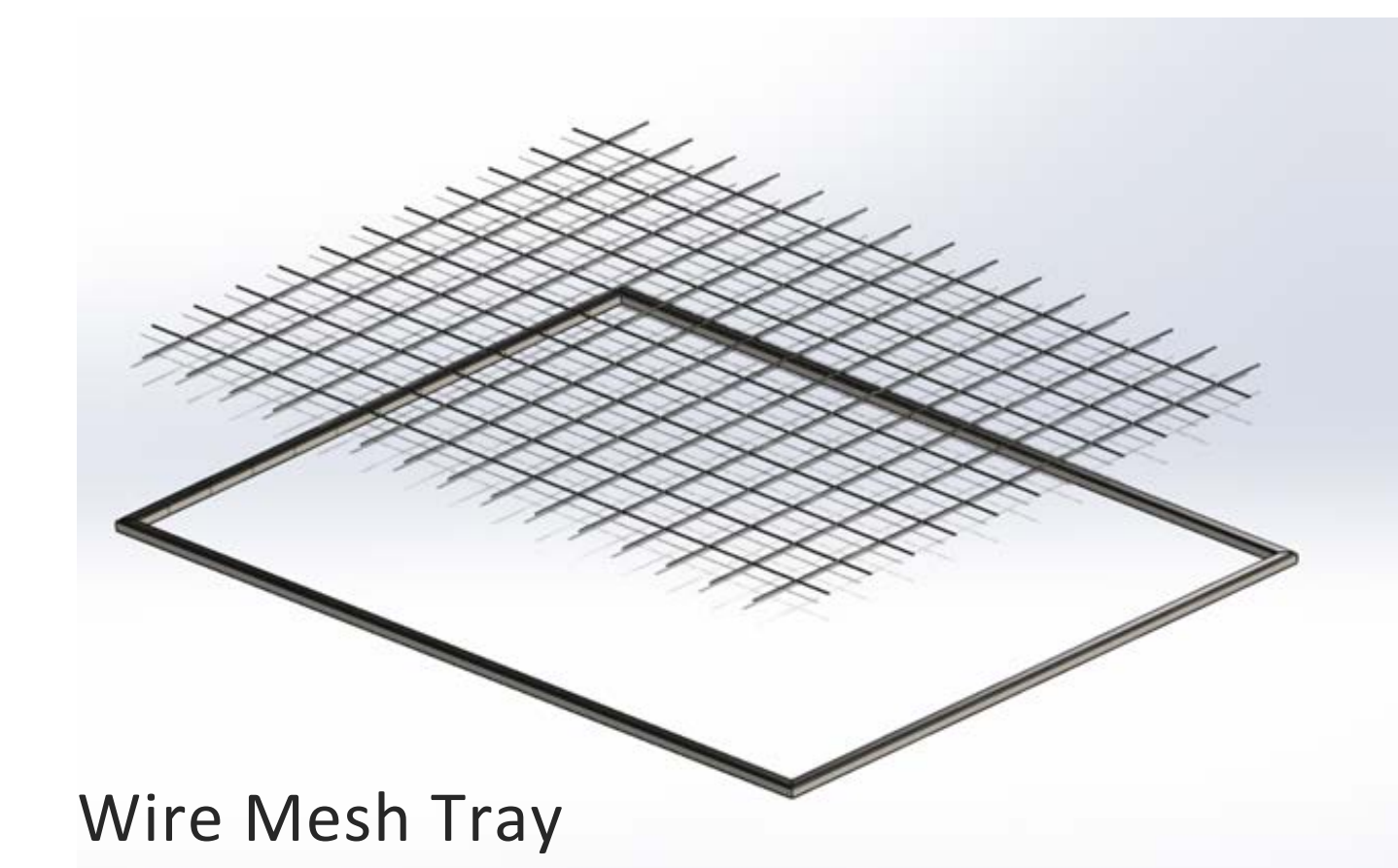
CAD MODELS



Exploded View

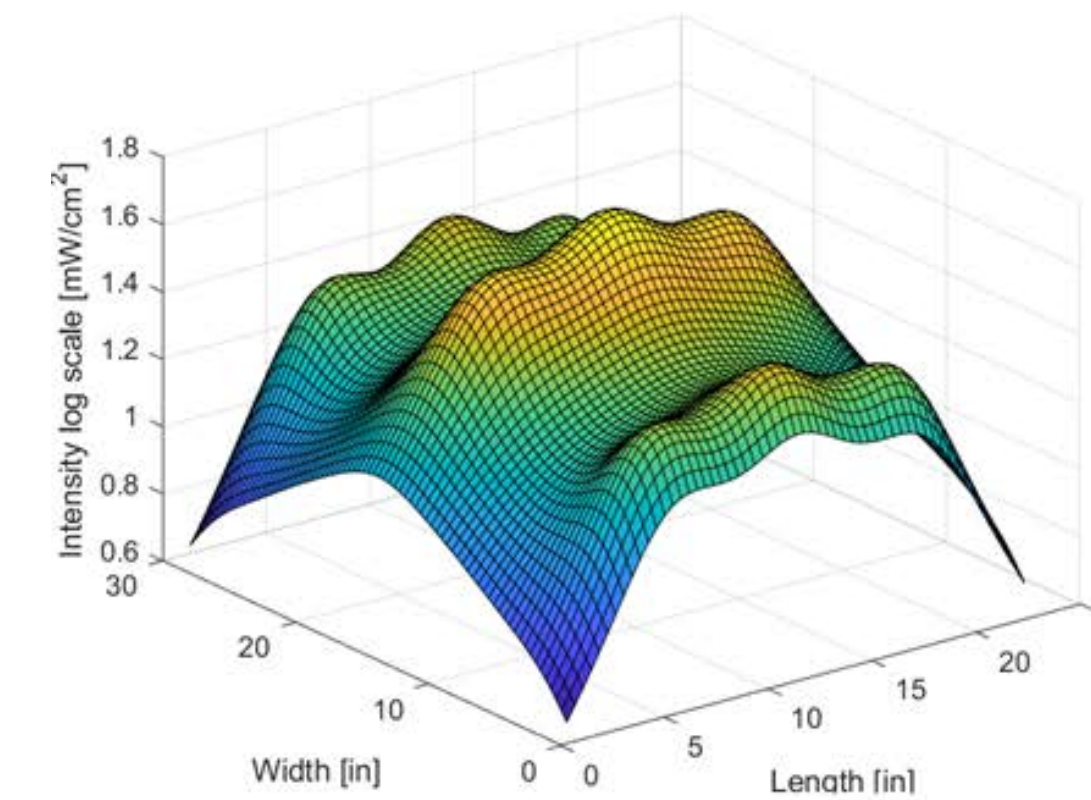
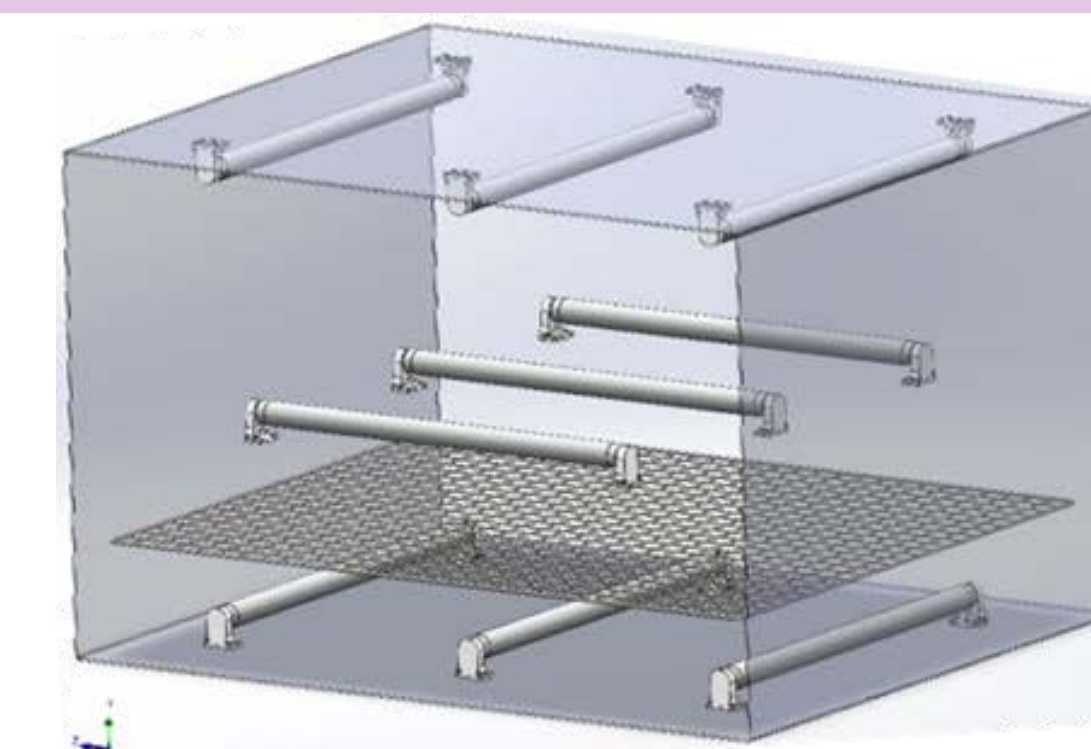


Door Assembly

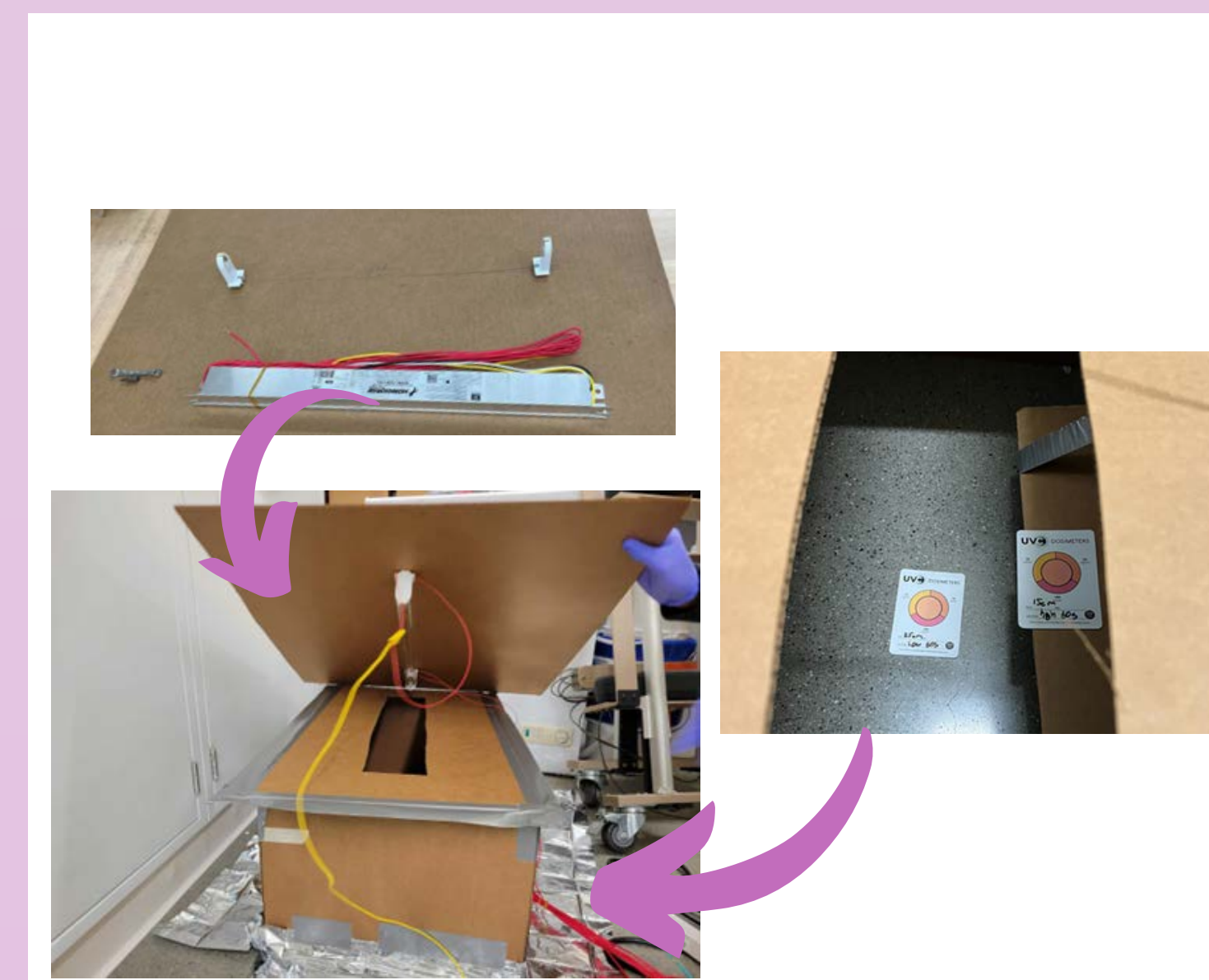


Wire Mesh Tray

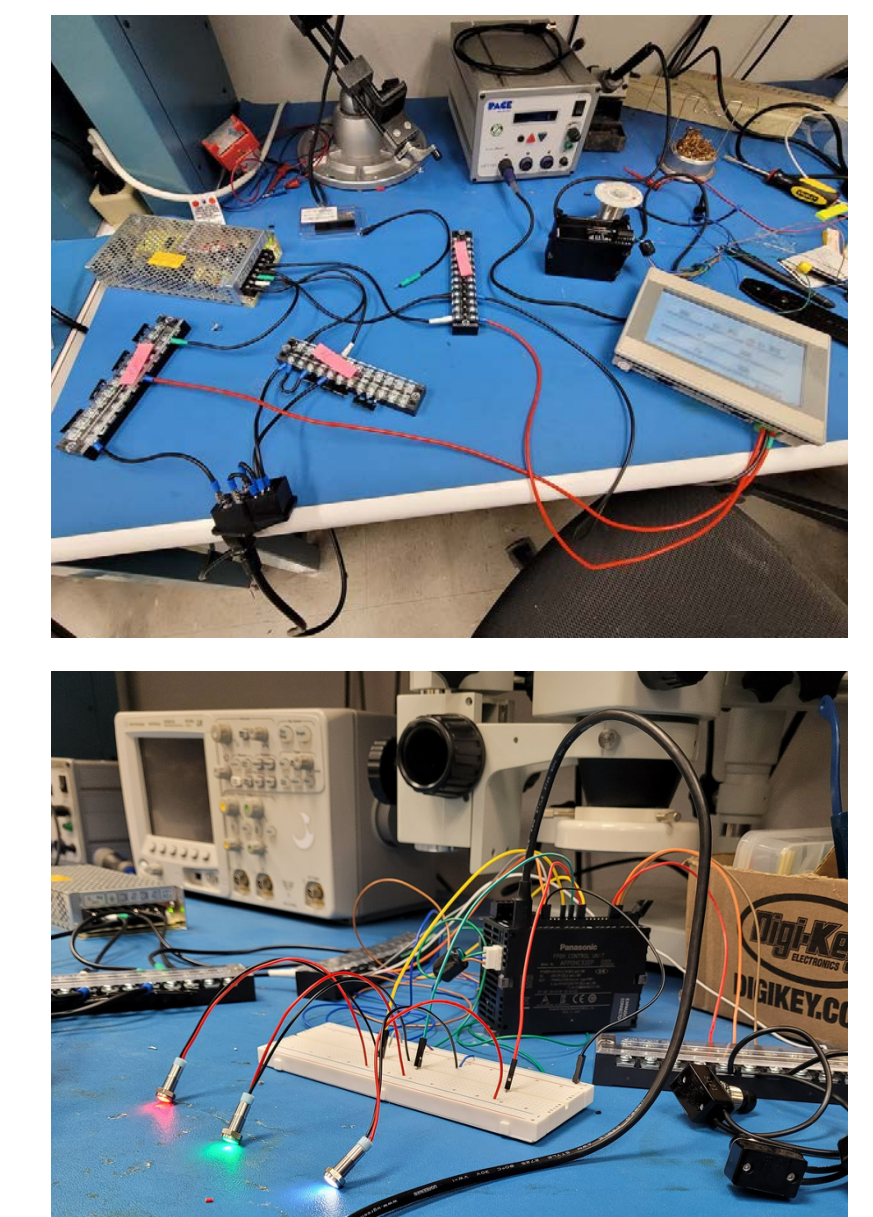
ENGINEERING ANALYSIS AND TESTING



UV-C Light Intensity Analysis quantifying minimum and maximum exposure areas



UV-C Dosimeter Cards used to verify that the UV-C light bulbs meet the minimum exposure requirements.



HMI and Indicator Light Test Fixtures used to demonstrate different states of the oven's operation.

TEAM LUV ENGINEERING



Micaela Rafael - ME



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Calvin Phan - ME



Spencer Owen - ME



Matthew Hui - ME



Lorance Malan - ECE



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Nathaniel Guba - ECE

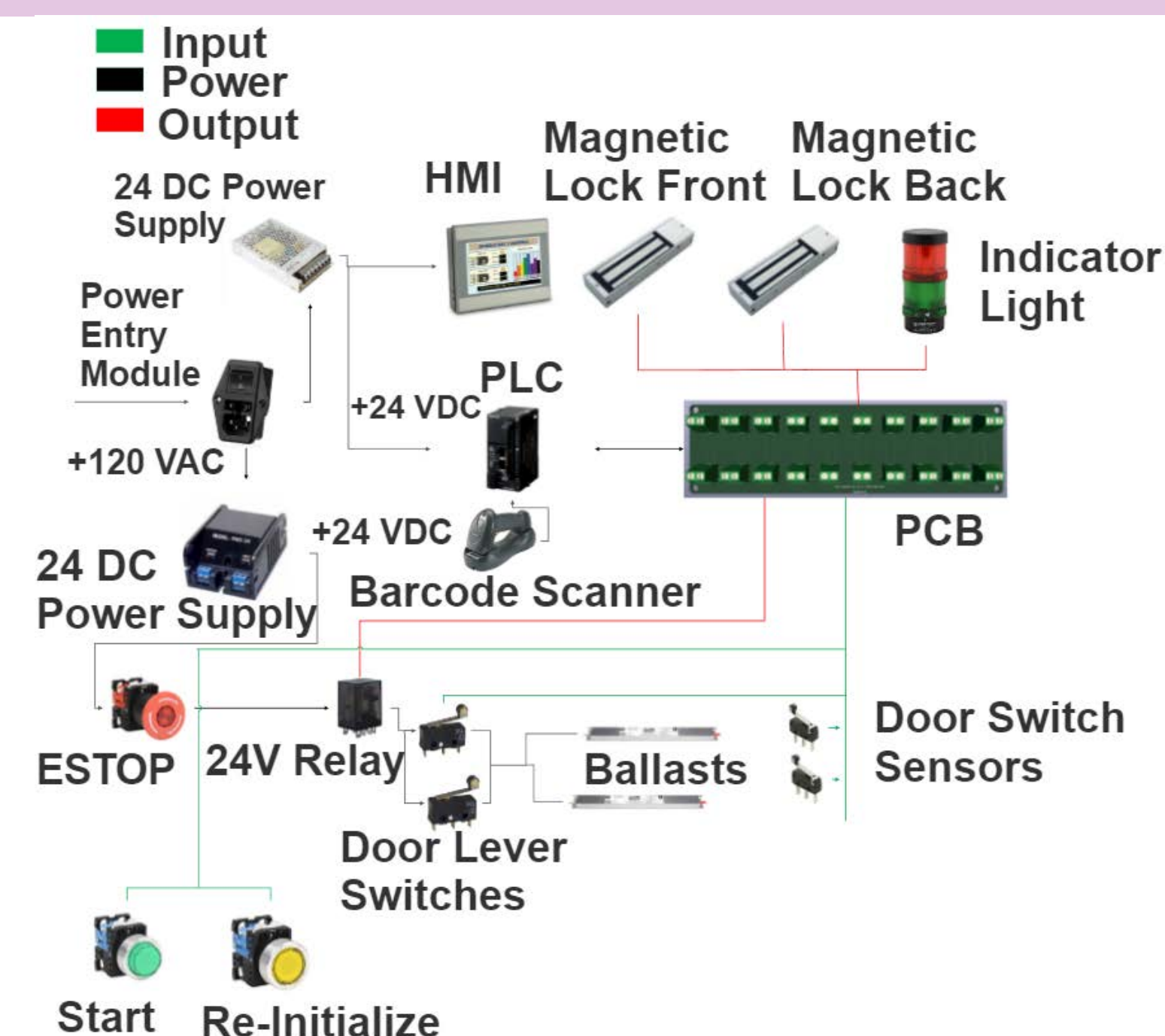


Lauren Prentiss - ECE

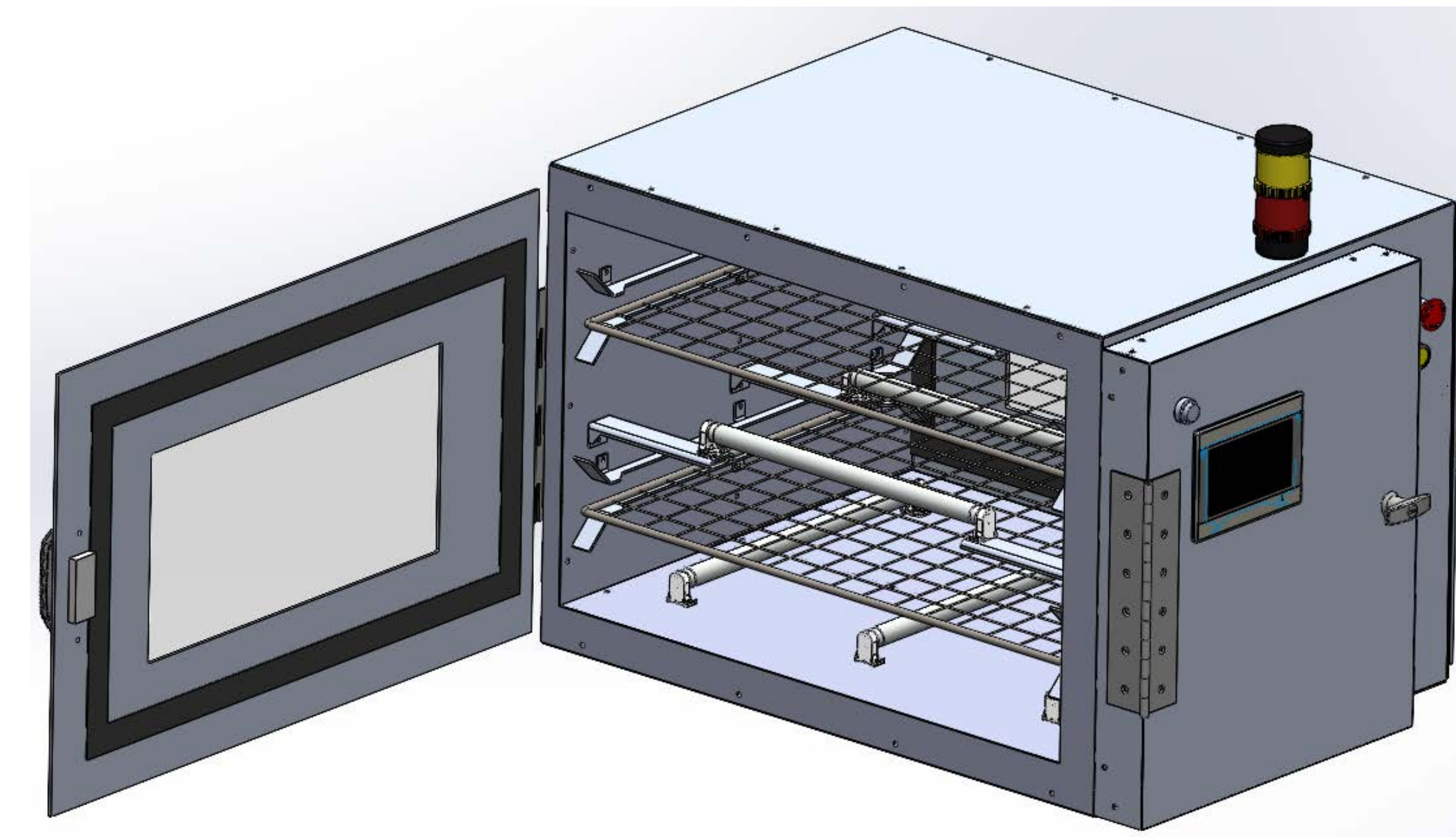


James Scobie - ECE

ELECTRICAL SCHEMATIC



FINAL PRODUCT



- Utilizes nine UV-C fluorescent bulbs
- Equipped with a programmable logic controller & printed circuit board
- 1440 square inches of exposure area
- Quick exposure time and easy to insert trays maximizes product throughput
- Design combines robust safety measures with ease of use

ACKNOWLEDGMENTS

Stanley Chang - Masimo, Braeden Clewis - Masimo, Prof. Barry Dorr - SDSU, Austin Pike - Masimo, Glenn Pohly - Masimo, Dr. Scott Shaffar - SDSU, Pratul Singh - Masimo, Jason von Wilpert - Masimo

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