

# Mini Containers Research Project

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## Introduction

The Mini Containers Research project aims to reduce the food waste and carbon footprint of the current technologies used for transporting fresh produce by creating individual environmentally controlled containers that monitor the conditions of the product inside to keep it at optimal levels. This will be achieved by retrofitting the back of a trailer to fit 39 of these containers on top of a central driving unit that will supply air to the container as well as a microcontroller that will be in charge of opening all the valves needed for air to reach the container. The mini containers research project will also allow the transportation of dissimilar producers from different sources, eliminating the risk of cross-contamination and eliminating the waste of transporting one product at a time on top of benefiting small farmers.

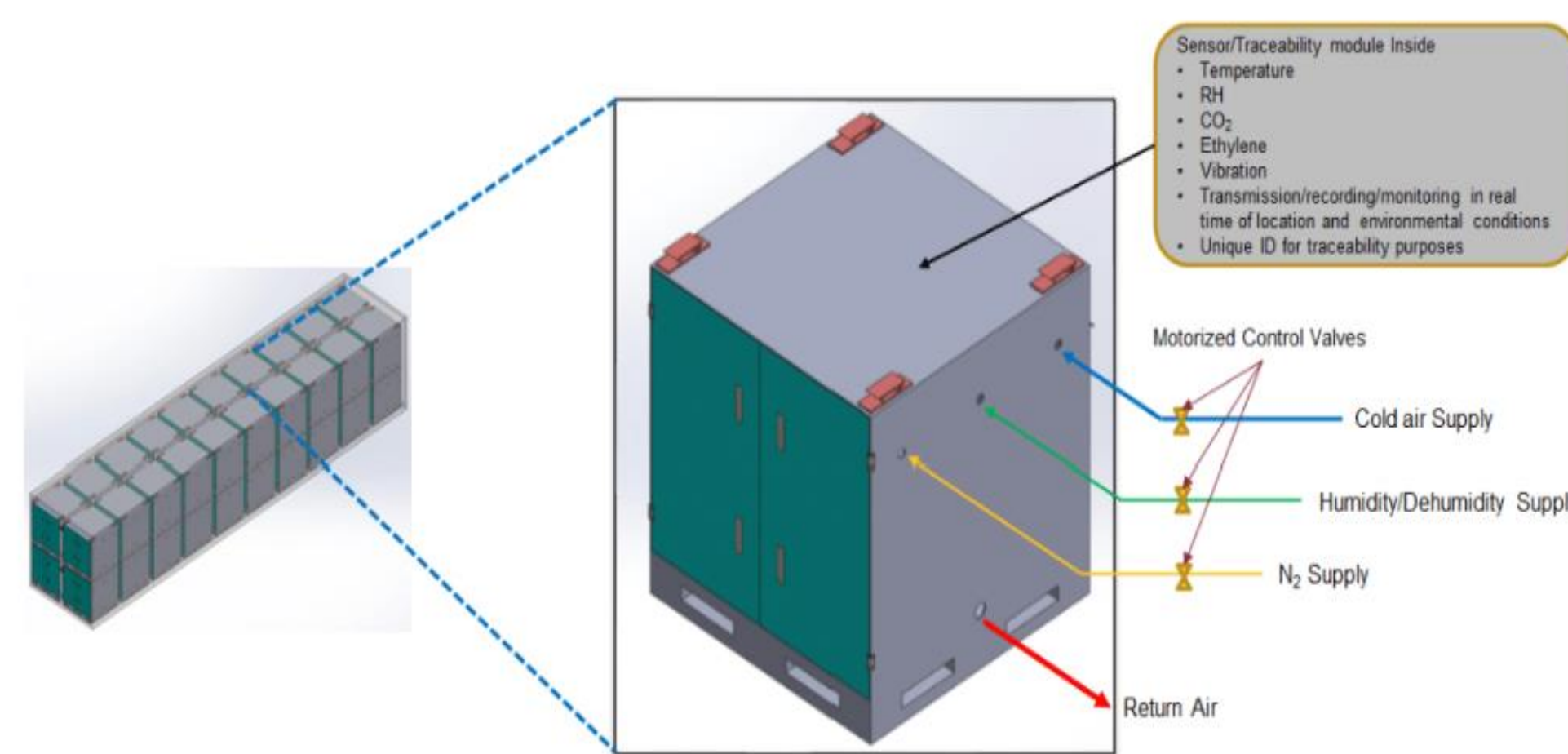


Figure 1 Schematic diagram of stackable mini containers for refrigerated transport of fresh produce. Refrigeration and ventilation would be provided by a Central Driving Unit (CDU), which is not shown.

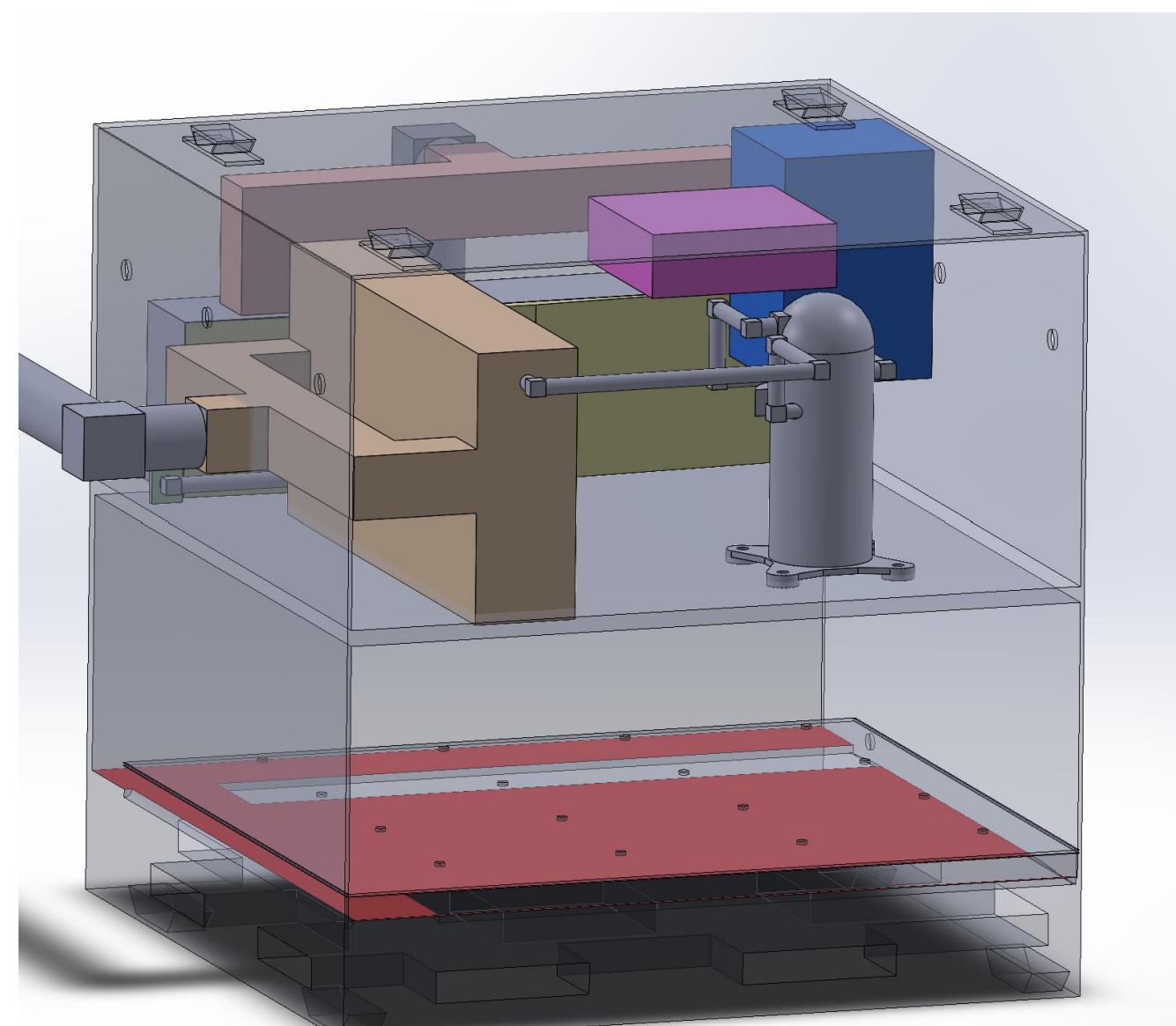
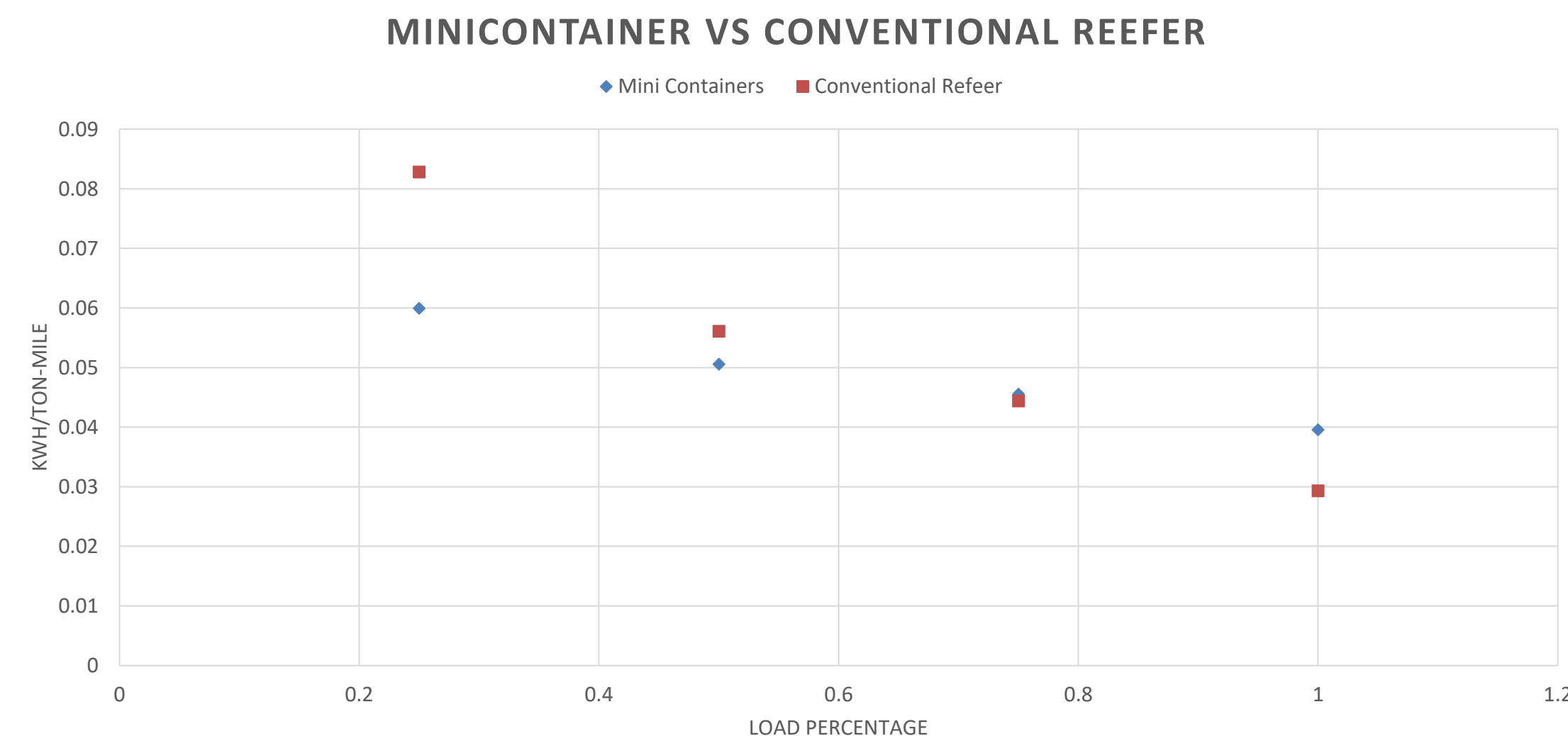


Figure 2 Central Driving Unit (CDU)

## Future Work

- Variable Frequency Drive
- Recycling of Air
- Internal Combustion Engine for Battery Charging
- Crop Database

## Inspiration

One of the main sources of food waste is the improper handling of the product during the “first mile” which corresponds to the interface between the farm and the start of the cold chain [1][2]. Moreover, researchers identified the lack of appropriate cold chain facilities and procedures as major contributors to food waste [3]. It has been reported that the first mile costs represent up to 20% of the total transportation cost of fresh produce [4], thus we believe this could be a major area for improvement since it is generally established that the grower receives less than 30 cents for each dollar the consumer pays for the final product. If we consider that the prices received by the grower are the main reason for food waste at the farm level [5],[6] and that the priced received by the farmer is directly related to the first mile logistics, we can expect that by lowering the logistics costs of the first mile we can impact small farms and waste reduction.

## References

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