Automated Cold Frame

Overview
Our focus was to create a power system that will regulate temperature and wind exposure inside a cold frame. Our sponsor’s main priority is a system that requires minimal user interaction and is capable of maintaining a suitable environment for seedling growth.

Objectives
- Create an off-grid power supply for heaters, sensors, and the automated lift system.
- The system keeps the temperature within user input range by turning a heating cable on/off and raising/lowering the lid using an automated linear actuator.

Approach
- First met with team sponsor to gather customer needs and outline the project.
- Visited PSU Student Farm site to gather data.
- Generated a block diagram to overview the project.
- Gathered materials and prototyped system.
- Performed testing.
- Compared results to project requirements.
- Implemented system at PSU Student Farm.

Outcomes
- The system we provided to the PSU Student Farm would have cost them more than $2000 to create, not including the engineering labor costs, estimated to be $20,286.
- The project reduced setup time and assembly time to approximately 6 hours.
- The end product was a design unlike others in use with respect to its size and price, making it an asset to the PSU Student Farm.