

Motivation, Goal, Impact

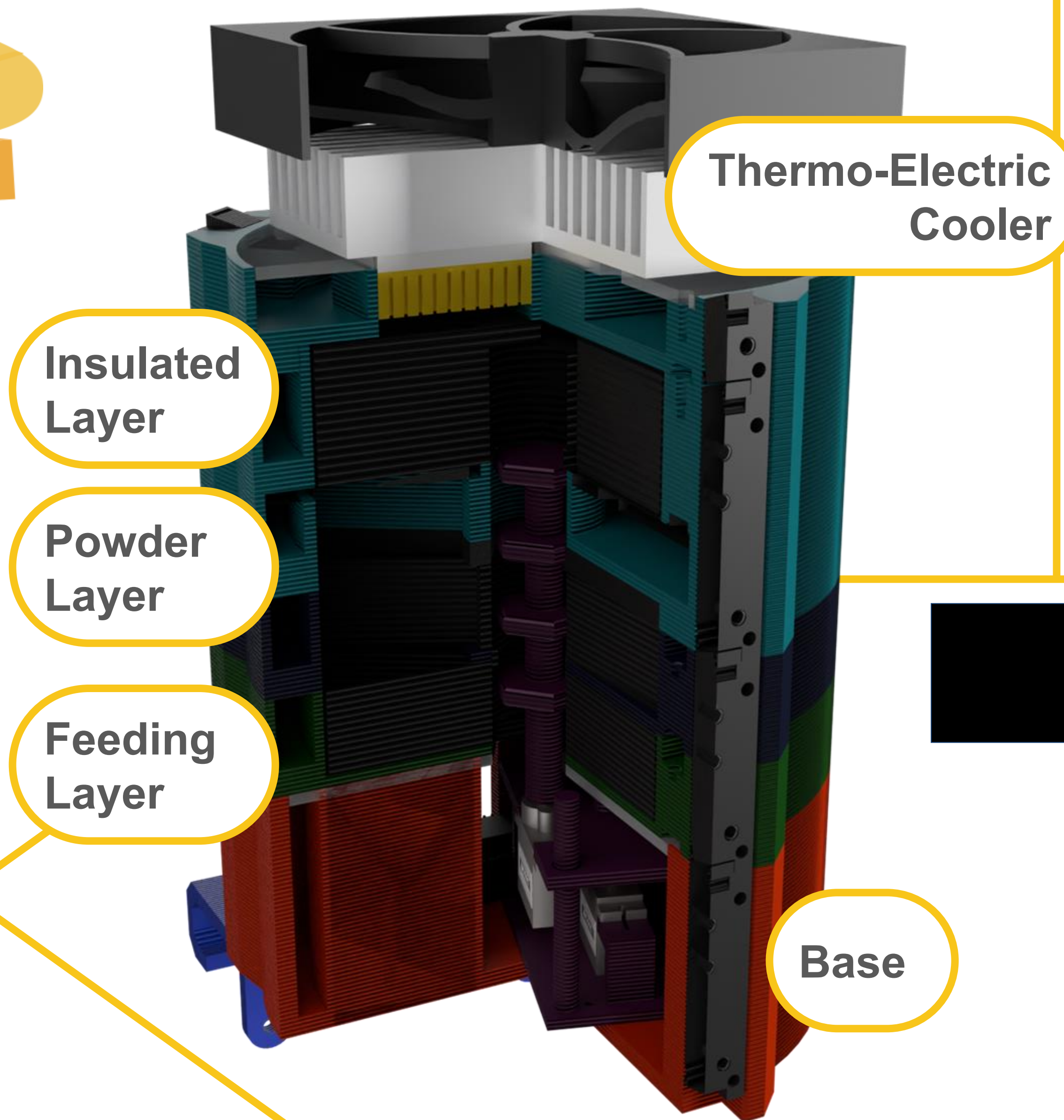
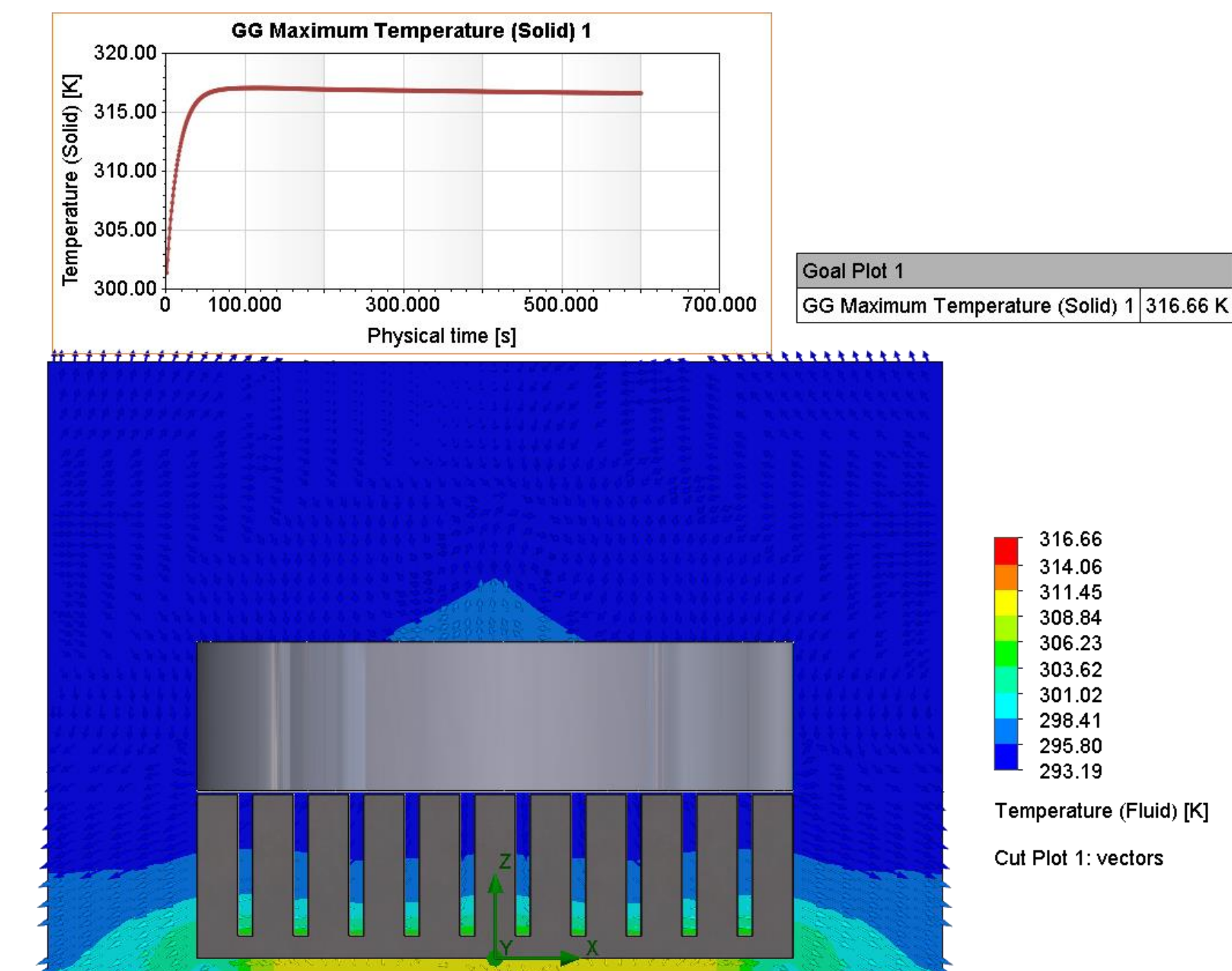
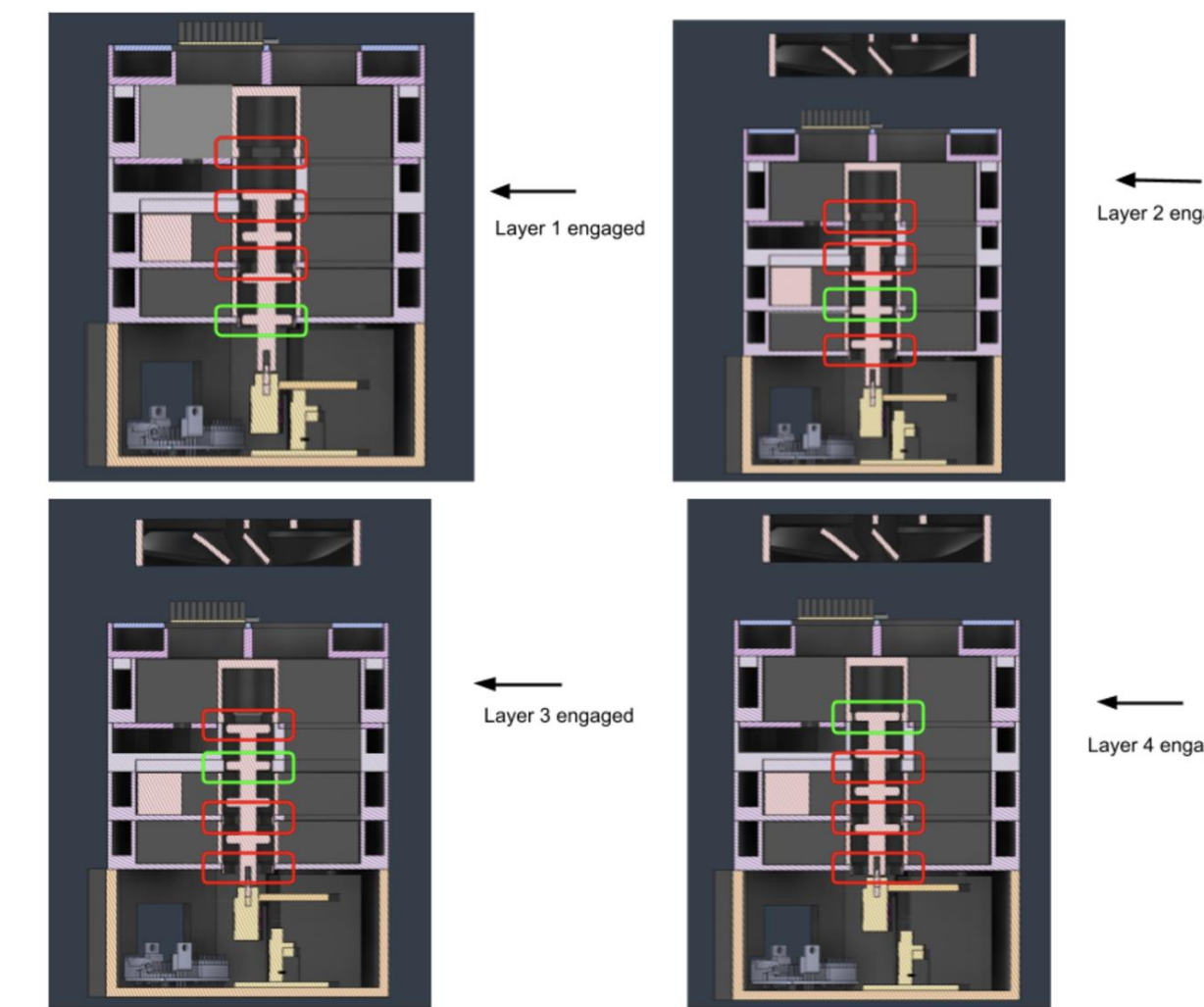
Owning a reptile as a pet can be special for many people, due to their uniqueness compared to traditional pets. However, owning a reptile has a higher barrier to entry compared with traditional pets due to their stricter diets. Reptiles need to be fed live food, which requires specific preparation. An automatic feeder helps alleviate that difficulty, allowing current and perspective pet owners not let the feeding routine impact their pet decisions.



Stakeholder	Proximity	Size Estimate (People)
Reptile Pet Owners	Primary	2,400k
Zoo Keepers	Primary	200k
Pet Store Owners/Employees	Primary	120k
Feed Insect Suppliers	Secondary	55k
Pet Supply Manufacturers	Secondary	110k
Zoo Visitors	Secondary	209,000k

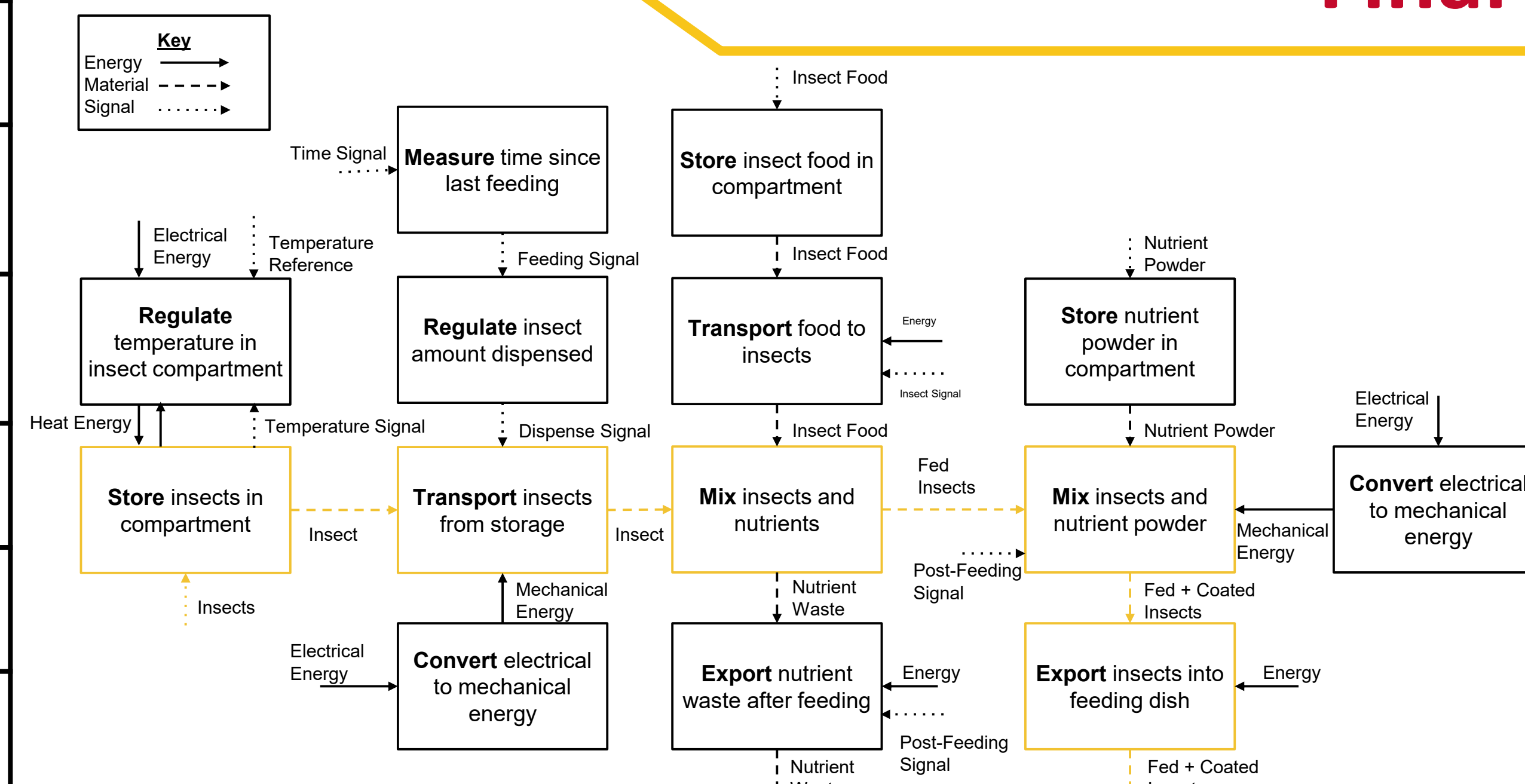
Design Decisions

Live insects require subambient temperatures to prevent rapid aging, A refrigerated compartment is required and utilizes a thermo-electric cooler and insulation to generate the temperature difference.

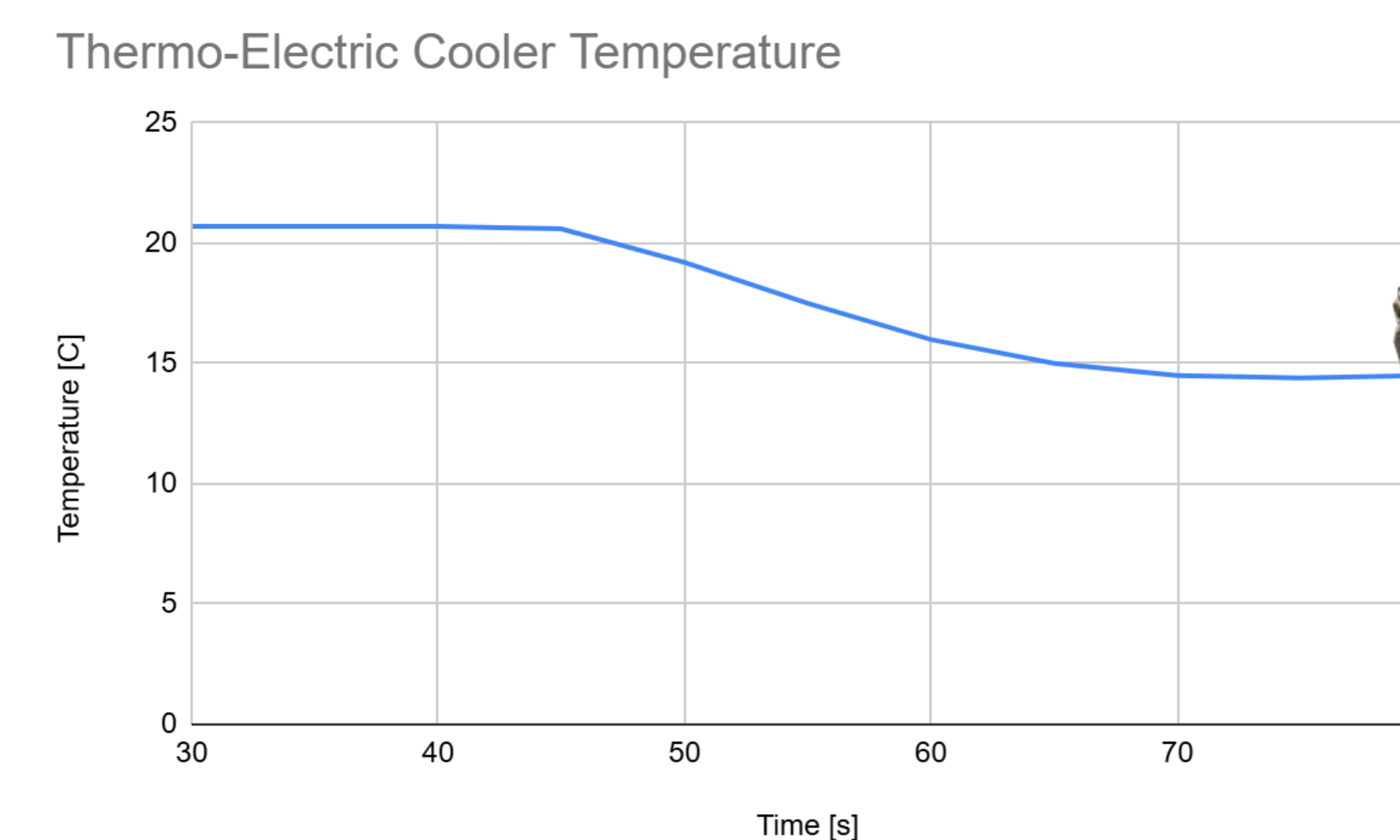


Requirements

1. Keep insects alive until fed to reptile
2. Automatically dispensed
3. Doesn't overfeed or underfeed reptile
4. Feeding insects prior to dispensing
5. Apply nutrient powder to insects
6. System is easily cleanable
7. Minimize tank modification



Final Design



Prototype and Test Results



Task	User 1	User 2
Align Two Refrigeration Layers	Started incorrect orientation, initially misaligned pins, but succeeded after alignment	Started correct orientation but struggled to line up the latches
Use Latches to officially connect	Once aligned, latches were easily used to connect layers	Once aligned, latches were easily used to connect layers
Separate the layers of the device	After alignment, layers were easily separated	After alignment, layers were easily separated