



Oregon State
University

ME 382
Final Presentation

Team: 5

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Agenda

Project Description
Project Requirements
Design Development
Design Solution

Project Description



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Automated Cocktail Maker:

- Makes cocktail making process easier, faster and more accurate
- Cost effective in comparison to rivals
- User creates their cocktail of choice from 10 different liquids



Rival: Barsys 2.0 - \$1250.00

Project Description



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Automated Cocktail Maker: Drink Making Process

1. User selects drink of choice
2. Ice is dispensed with a wheel
3. Cocktail maker dispenses precise amounts of each liquid using pumps
4. Multi-head nozzle dispenses all ingredients into glass

Project Requirements



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Most important customer requirements:

- Affordable
- Easy to use
- Work quickly

Most important engineering specifications:

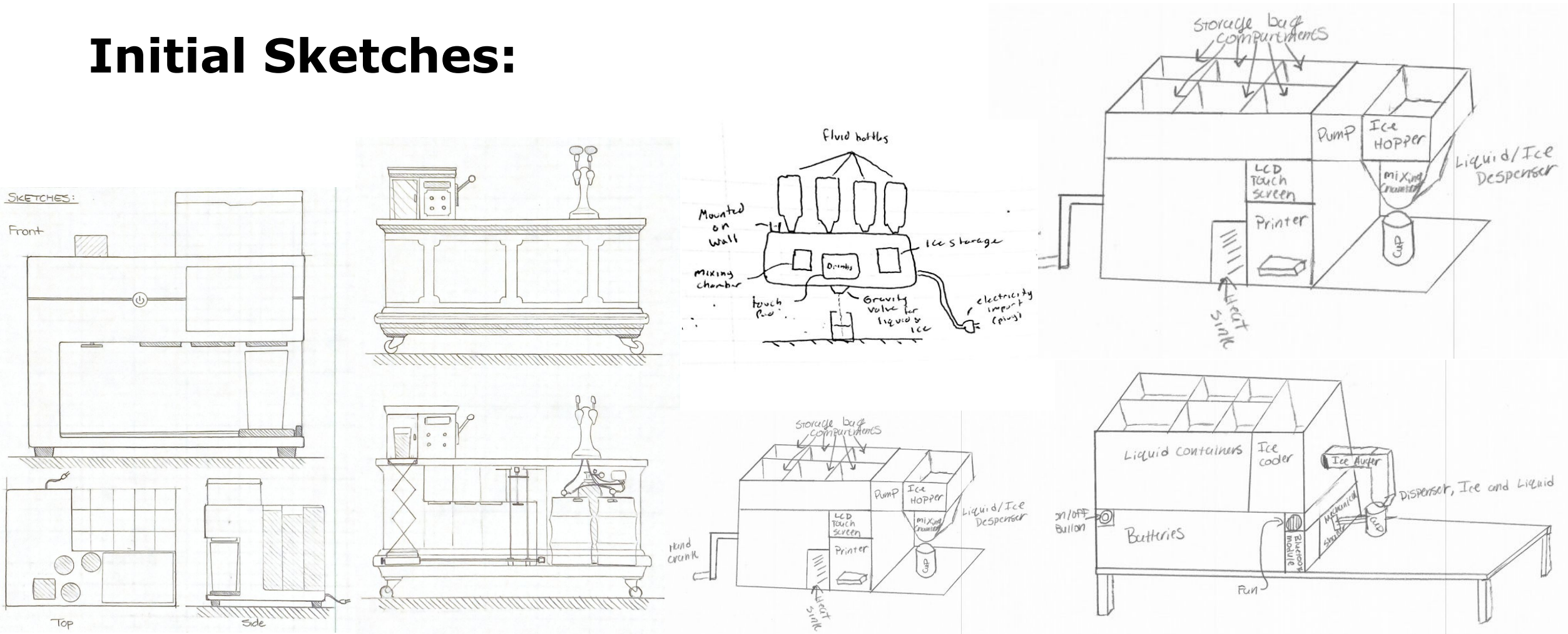
- Fluid storage capacity
- Flow rate
- Final dimensions
- Measurement of final volumes

Design Development



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Initial Sketches:

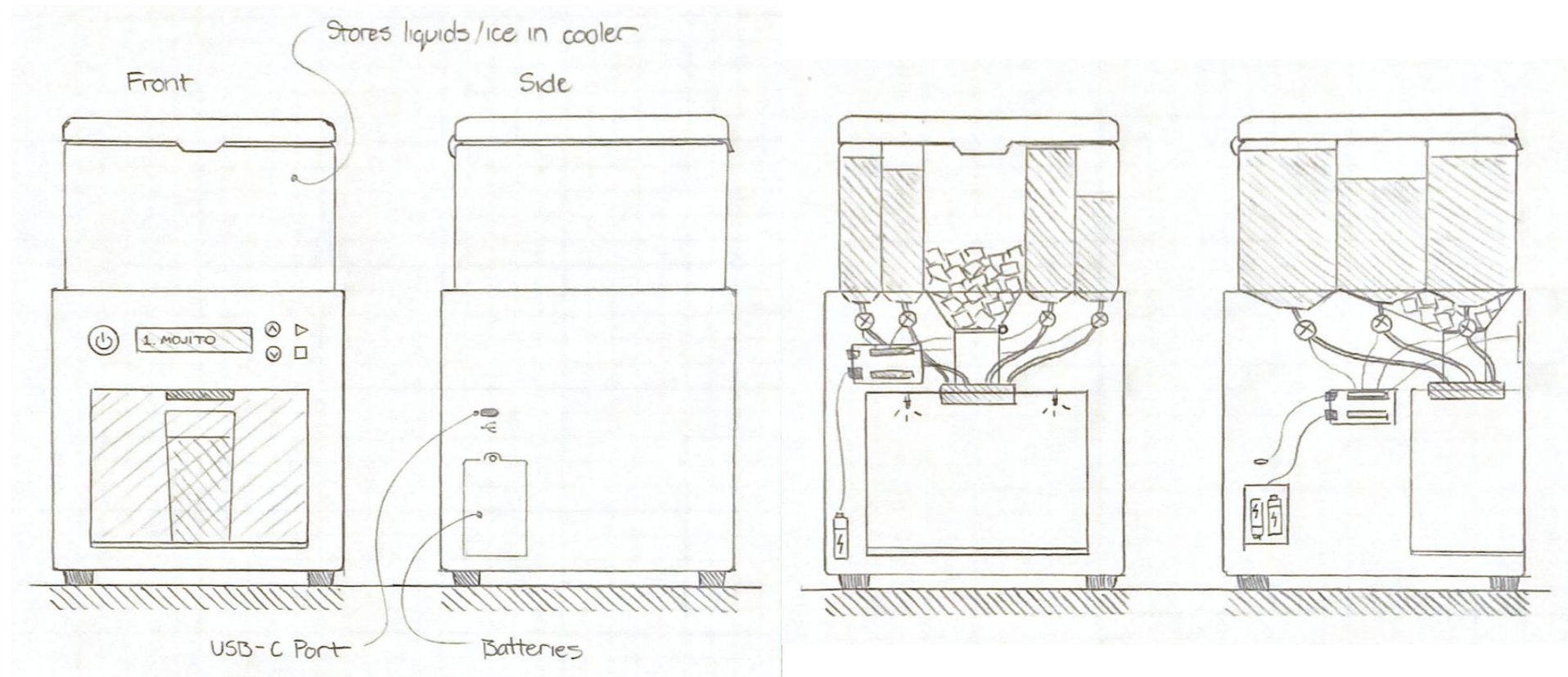


Design Development



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Key Sketches:



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Pump vs Gravity:

- Changes in depth of fluid
- Flow rate
- Different viscosity of liquids

Fluid Mixing:

- Expensive
- Not required with high enough flow rate

3.6 volts	Keurig Pump					
	Trial 1 (s)	Trial 2 (s)	Trial 3 (s)	Current (mA)	Average Time (s)	Flow Rate (ml/s)
Water	12.71	12.83	13.21	16.3	12.9166666	6.86864516
Vodka	18.06	17.78	17.38	17.5	17.74	5.00112739
Simple Syrup	19.33	19.73	19.11	19.8	19.39	4.57555440
Ginger Beer	11.52	10.83	10.45	15.2	10.9333333	8.11463414
7.5 volts	Keurig pump					
	Trial 1 (s)	Trial 2 (s)	Trial 3 (s)	Current (mA)	Average Time (s)	Flow Rate (ml/s)
Water	9.34	9.41	9.87	20.6	9.54	9.29979035
Vodka	10.15	10.07	10.02	21.2	10.08	8.80158730
Simple Syrup	13.76	13.9	13.56	24.1	13.74	6.45705968
Ginger Beer	10.83	10.62	10.47	20.6	10.64	8.33834586
7.5 volts	Diaphragm Pump					
	Trial 1 (s)	Trial 2 (s)	Trial 3 (s)	Current (mA)	Average Time (s)	Flow Rate (ml/s)
Water	31.07	32.73	32.16	1.9	24.465	3.62640506
Vodka	32.76	33.08	33.54	2.4	25.445	3.48673609
Simple Syrup					#DIV/0!	#DIV/0!
Ginger Beer					#DIV/0!	#DIV/0!



Material Analysis:

- Price and thermal conductivity are major factors
- Polyurethane foam chosen for insulating material
- Polypropylene chosen for cooler shell

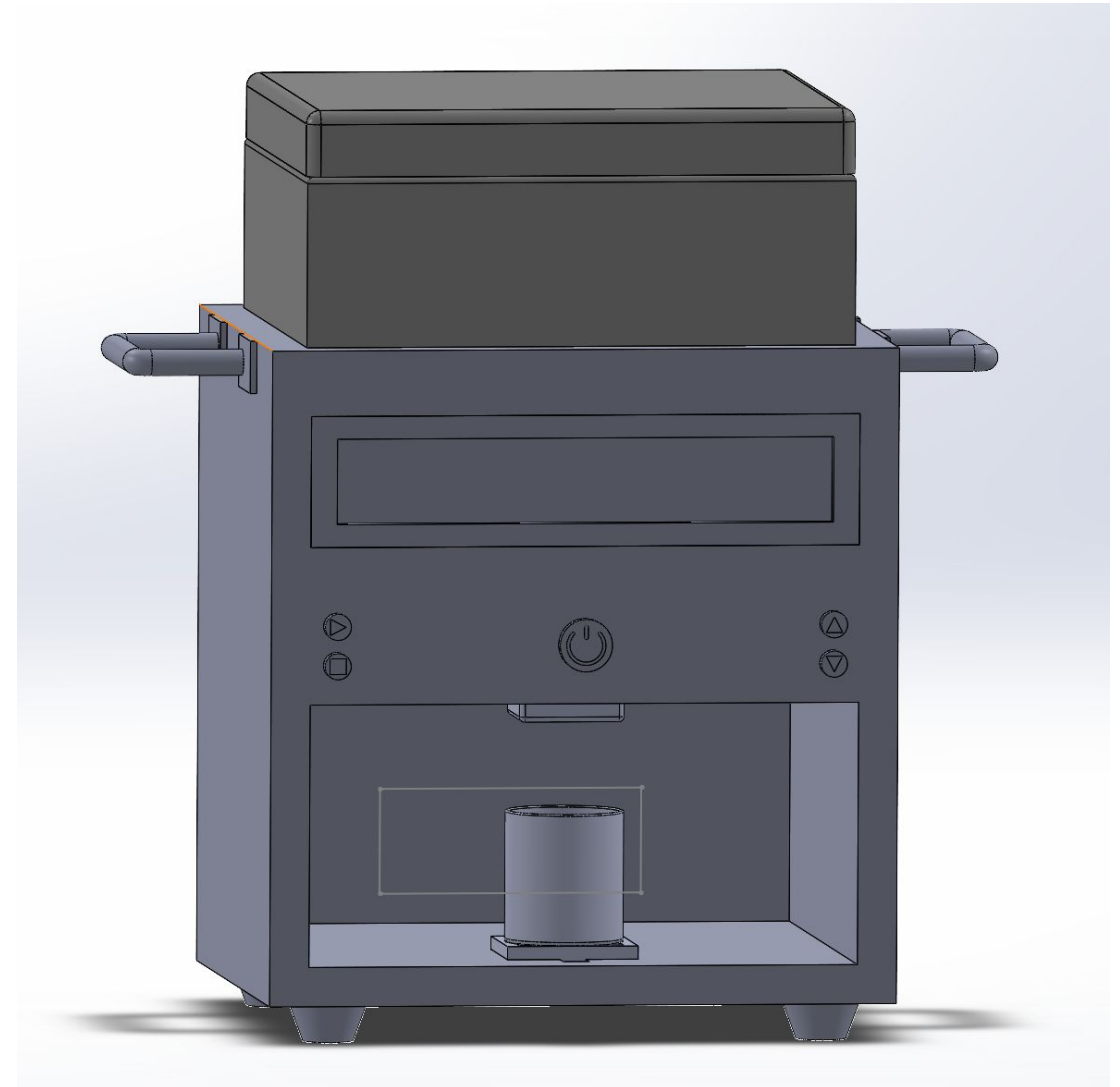
Material	Density (kg/m ³)	Thermal Conductivity (W/m*K)	Price
Polystyrene, expanded and extruded	55	0.027	\$2-2.25 per square foot
Cork Board	120	0.039	\$5.50 per square foot
Polyurethane Foam, rigid	70	0.026	\$1.50 per square foot
Aluminum Foil and Glass Paper Laminate	120	0.000017	\$3-4k per ton
Polypropylene	855	0.1	\$526 per ton
Stainless Steel 201	7800	14.3	\$1.20 per pound

Design Solution



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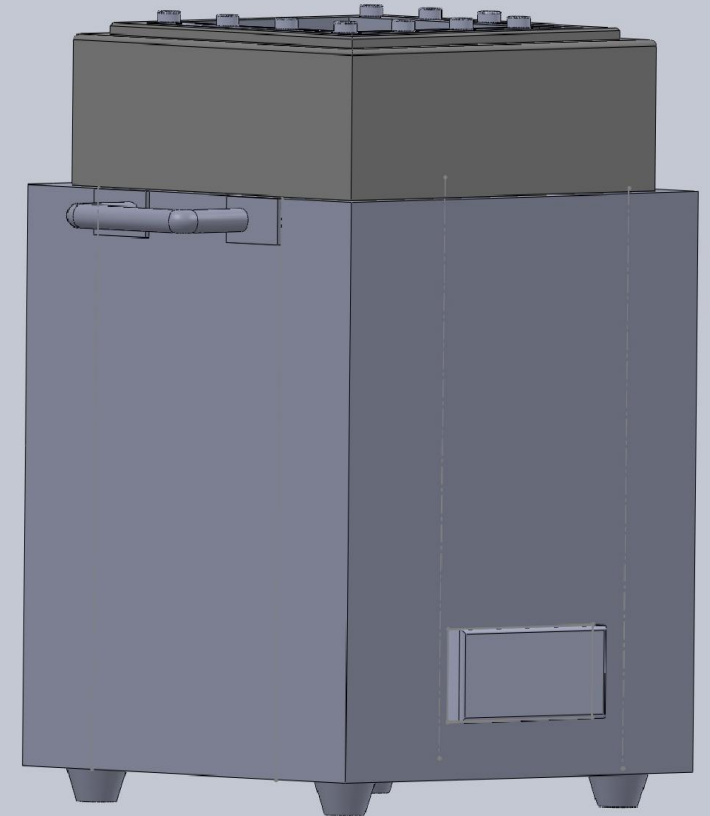
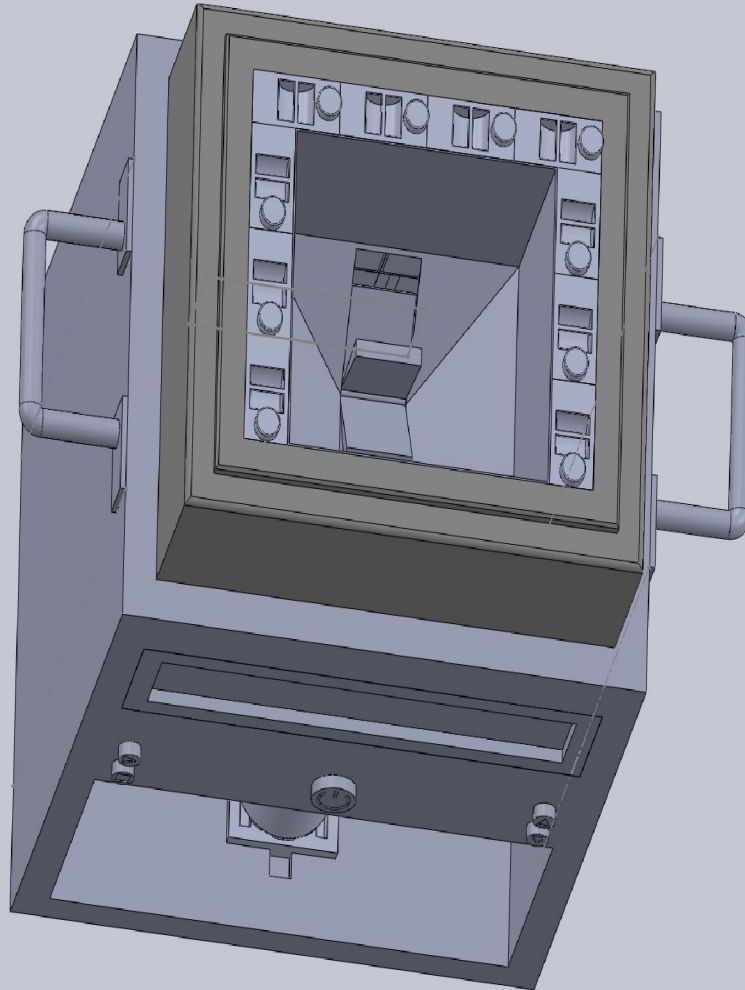
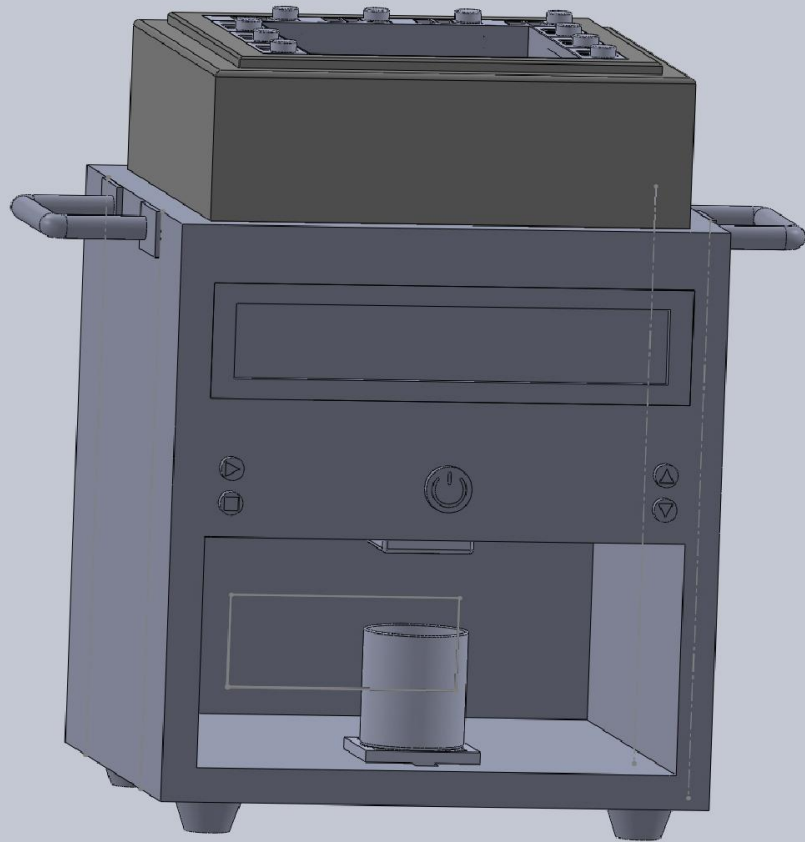
- Final Price:
~\$450 to produce, ~\$700 to sell
- Final Dimensions:
67cm X 50.25cm X 70cm
- Units produced per year: 2,000,000
- Mix a minimum of 250 drinks per battery



Design Solution



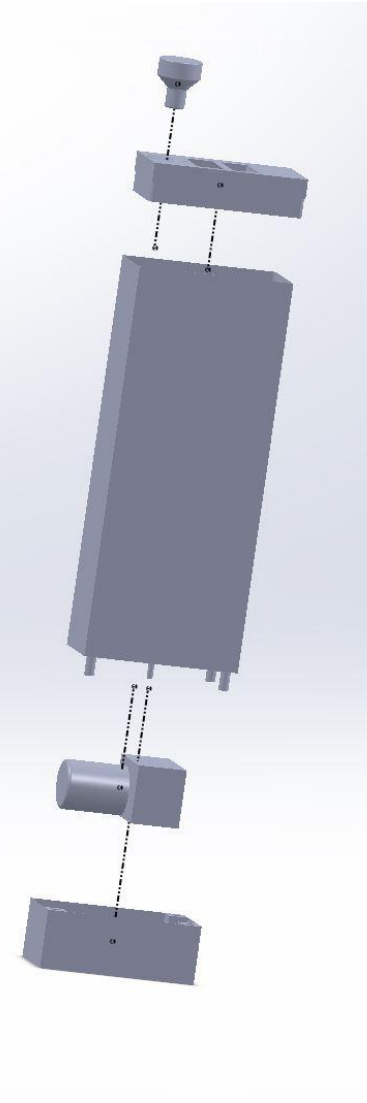
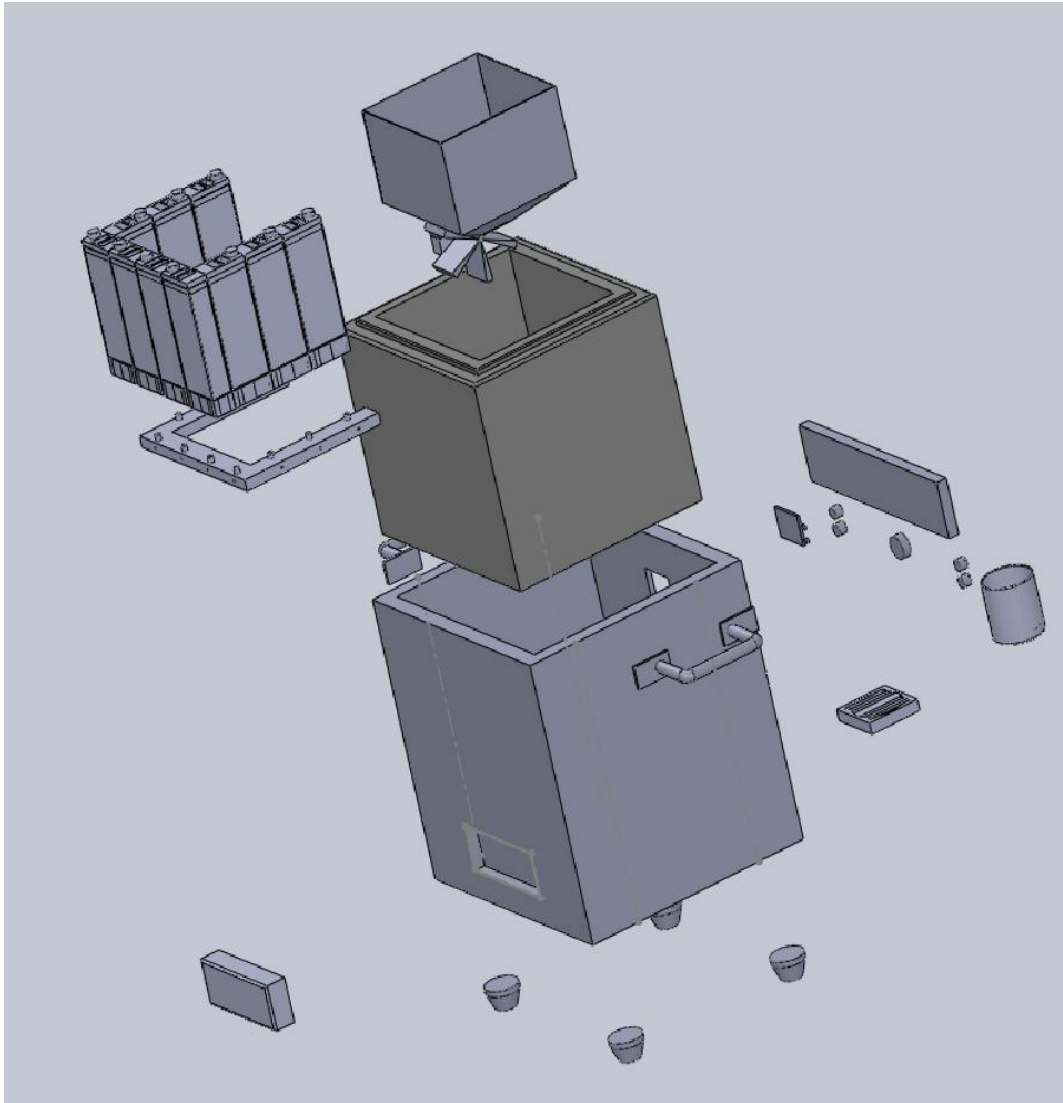
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Design Solution



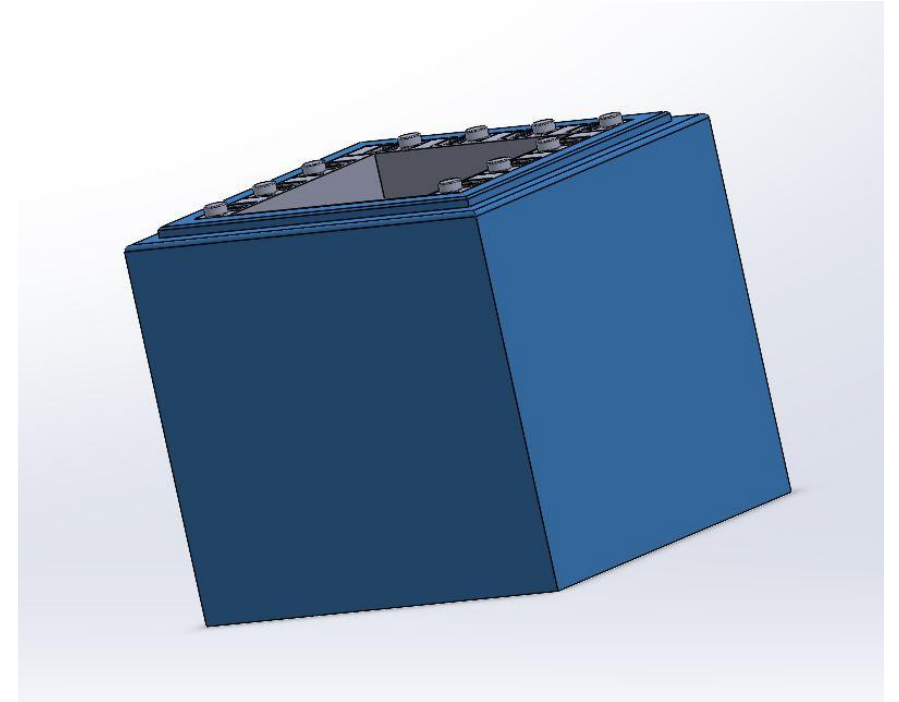
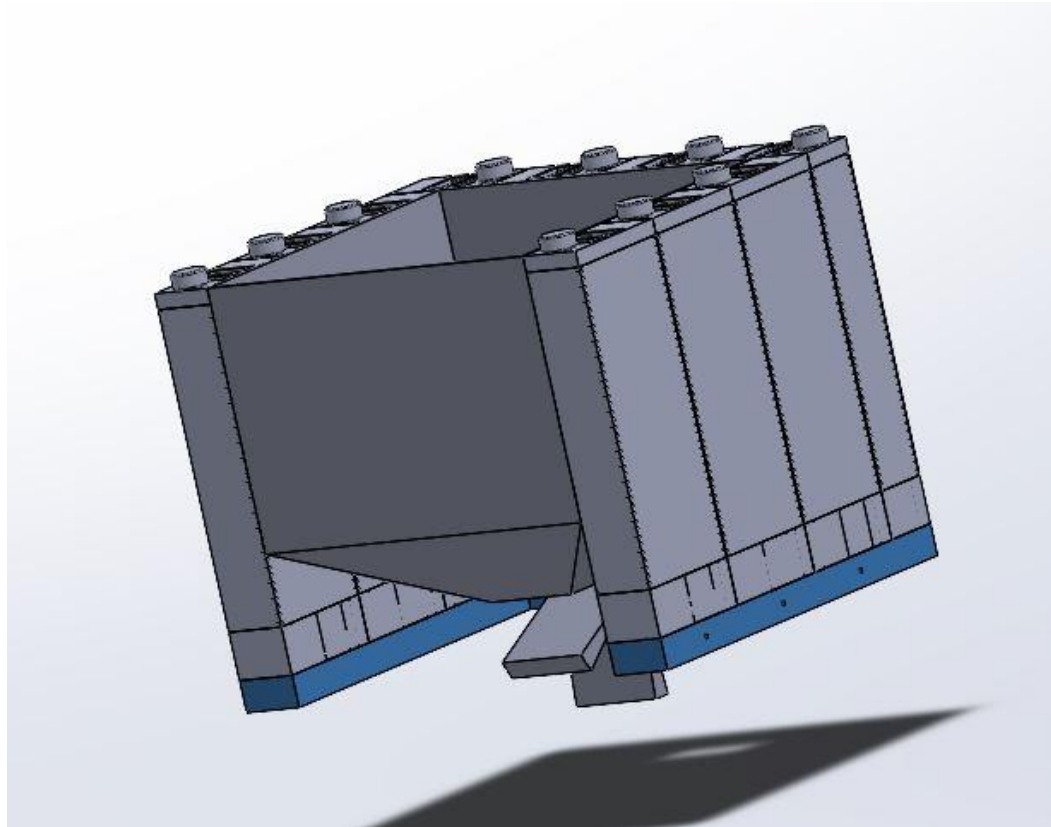
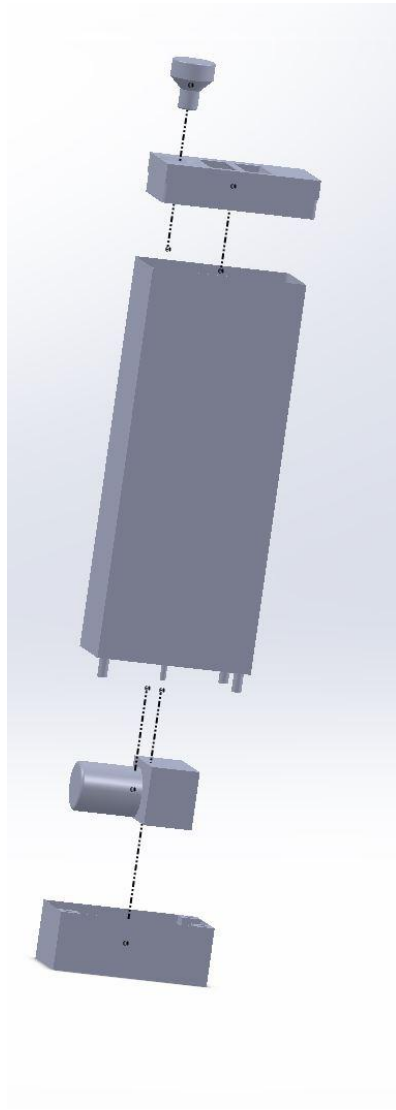
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Questions?

Thank you