

Deliverable C: Design Criteria and Target Specifications

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Prioritized Design Criteria

After Deliverable B, we created a table of prioritized interpreted needs essential for our cleaning product.

Colour indicates: Functional or Non-functional		
Priority	Group	Interpreted Needs
1	Easy Use	<ul style="list-style-type: none"> The product needs to be simple, straightforward and easily repairable The product needs to be safe for everyone while in use or while left unattended
2	Automated	<ul style="list-style-type: none"> The product should be self cleaning The developed system is time-efficient Limited to no supervision is required while the product is in use
3	Cleanability	<ul style="list-style-type: none"> The product is effective at cleaning all contours of the board The product should be eco-friendly, food safe, sterile The product is corrosion resistant
4	Space	<ul style="list-style-type: none"> The product is encouraged to take up minimal space

Technical Benchmarking

Basing our benchmarking off of these needs, we found a number of dishwashing products that satisfy these needs and listed their technical specifications as follows:

Washing Machine Specifications	Noble Warewashing DG Low Temperature Single Rack Glass Washer / Dishwasher	Hobart LxH-1 Undercounter Dishwasher - Hot Water Sanitizing 208-240V	Jackson DishStar HT-E-SEER High Temperature Undercounter Dishwasher with Energy Recovery - 208/230V, 1 Phase
Cost	\$4,319.00	\$8,376.90	\$7,667.05
Racks / hour	40	32	20
Operating cycle	90 seconds	109 seconds	145 - 313 seconds
Built-in waste accumulator	Yes	N/A	N/A
Material	304 stainless steel	N/A	Stainless steel

Water connection	½ in	¾ in	¾ in
Energy Star qualified	Yes	Yes	Yes
Hardwired by professional	Yes	Yes	Yes
Size	25¼ x 24½ x 39 in	23 15/16 in x 25 9/16 in x 32 ½ in	24 ¼ x 26 7/8 x 33 ¼ In
Water Usage	1.15 Gallons/rack	0.74 Gallons/rack	0.65 Gallons/rack
Amps	16 A	30.5 A	26.7 A
Voltage	115 V	208 - 240 V	208/230 V
Button to start / stop	Yes	Yes	Yes
Pump Power	1 HP	N/A	1 HP

Target Specifications

We used these technical benchmarked specifications to create reasonable and measurable values for our own cleaning device that meet all the predetermined design criteria.

	Design Specifications	Relation (=, < or >)	Value	Units	Verification Method
Functional Requirements					
1	Human labour	<=	30	Seconds /Board	Test
2	Automatic labour	<=	180	Second/Cycle	Test
3	Button to start / stop	=	Yes	Boolean	Inspection
4	Pump Power	<=	1	HP	Research
Non-Functional Requirements					
1	Corrosion resistant	=	Yes	N/A	Test
2	Chemical-free	=	Yes	N/A	Research
3	Can be left unattended	=	Yes	N/A	Test
4	Size	<=	Wall Mounted: 48 x 72 x 36 Surface Mounted: 30 x 96	inches	Measure

Constraints					
1	Weight	<	100	Lbs	Analysis
2	Cost	<=	100	Dollars (CAD)	Estimation
3	Voltage	=	120	Volts	Analysis
4	Amperage	<=	15	Amps	Analysis

Conclusion

During the client meeting, the group was able to understand the clients needs to assure the product will satisfy the clients expectations. Through this deliverable, the group used the clients criteria to construct target specifications that coincide with the requirements mentioned in the meeting. Since deliverable B, the group has made a few changes. For instance, instead of encouraging the product to optimize space, the goal is now to minimize space; a change that has been made after reflecting on the specifications. We have also placed more emphasis on the need for a stop/start button on the machine - a need brought up by the client, but was generalized by us to “the product needs to be straightforward” for ease of use by the users.

References

- A. WebstaurantStore. (2022). *2022 reviews: The Best Commercial Dishwashers*. WebstaurantStore. Retrieved October 6, 2022, from <https://www.webstaurantstore.com/reviews/commercial-dishwasher-reviews.html>