

ID	Risk Item (Nontechnical)	Effect	Cause	Likelihood	Severity	Importance	Action to Minimize Risk	Owner
1	Team won't have enough time to create to entire prototype	Project does not get completed	Tasks are larger than originally planned	1	3	3	Focusing on the deliverables instead of extras	Sullivan Group
2	Long lead times on ordered parts	Assembly is delayed	Didn't identify correct lead times	1	3	3	Identify long lead time parts early	Hussain
3	Device does not comply to cultural limitations	Target consumer cannot utilize the product	Improper/insufficient research of culture	1	2	2	Research culture and customs, communicate with customer/user	Baglio Hussain
4	Design does not meet budget requirements	need redesign to reach production	Overdesigned	2	2	4	Focus on meeting core design requirements	Sullivan Group
			Unforeseen costs	2	2	4	Plan ahead to understand the scope of a proposed design	
5	Misplace parts	Project not completed within time span or within budget	Neglect, theft, delivered to wrong place	1	2	2	Take care to place parts in a secure location	Hussain
6	Necessary technology not available for budget allocated	Unit is not designed in the best/most efficient way possible	Higher cost of newer technologies	3	1	3	Create a design that fully utilizes current, cheaper technologies	Sullivan Group
7	Unit Errors/Inconsistencies	Unit fails to meet power requirements or size restrictions	Improper measuring or converting of units	1	2	2	Label units to ensure consistency between group members	Lopez Zwecker
8	Final cost of device does not meet customers' requirements	Device must be redesigned or cannot reach as many users	Overdesigned or not designed for manufacture	2	2	4	Plan for budget restrictions early on and design product accordingly	Sullivan Group

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9	Does not meet design safety features	Untreated water flows from system	Control system malfunction	2	3	6	Extensive testing to ensure safeguards are functional	Lopez Baglio
			Solenoid malfunction/short-circuit	1	3	3	Use of a 'power-open' solenoid and durable circuitry	
10	Device does not provide auxiliary power	Diminishes customer incentive	Auxiliary power system requires too much power	1	2	2	Ensure the auxiliary power system that is implemented efficiently utilizes the unit's surplus power	Lopez Group
11	Device does not produce treated water that meets standards	Potential to harm end user	UV bulb is not producing specified intensity	2	3	6	Provide user with a method to know when bulb needs to be replaced due to age	Sullivan Group
			Water is flowing too quickly through system	2	3	6	Restrict water flow through system	Sullivan Group
12	B9 device does not meet power output requirements	Treatment system fails to operate	Improperly designed user input	1	3	3	Design the system to exceed the power requirements	Lopez Group
13	B9 requires too much energy to operate	Device will be difficult to use and not provide user sufficient water	Poorly designed/implemented user interface	2	2	4	Provide design with significant mechanical advantage	Lopez Group
14	Design is not durable	Device is not in service for intended lifespan	Low factor of safety and inadequate testing	1	3	3	Identify potential weaknesses, test and fortify design	Zwecker Hussain Baglio
			Poorly understood market	1	3	3	Research the unit's intended environment	Sullivan
15	Water does not flow through system correctly	System is unusable	Electronics or solenoid failure	1	2	2	Properly design and test electronic components	Zwecker Hussain Baglio
16	Components do not fit in enclosure	Unit is unprotected from environment	Improperly designed enclosure	1	3	3	Design enclosure after the unit's internals are finalized	Baglio Zwecker

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17	Enclosure is not sealed to the environment	Reduced lifespan of in-field unit	Enclosure is not resistant to environmental effects	1	3	3	Understand what environmental forces unit will encounter	Zwecker Hussain Baglio
			Enclosure allows environment to effect internal components	1	3	3	Test enclosure to ensure it meets intended performance	Sullivan
18	Parts must be reworked	Project falls behind schedule	Error in creating or reading drawings	1	2	2	Check for consistency in drawings and allow for extra time to accommodate	Zwecker Baglio Hussain
19	Parts need to be sent out for machining	Project falls behind schedule	Parts cannot be made in-house or can be done cheaper elsewhere	1	2	2	Allow for necessary lead time	Zwecker Baglio Hussain
20	Mechanical and Electrical systems don't interface well with each other	System is unusable	Poor communication between mechanical and electrical disciplines.	1	2	2	Make sure correct parts are ordered and design is done correctly	Zwecker Baglio Hussain
21	Systems and components don't pass testing phase	Required Specification are not met	Assembled incorrectly	1	2	2	Assemble parts as planned	Zwecker Baglio Hussain
22	Debugging doesn't fix problems encountered during testing	Project falls behind schedule	Improperly designed	1	2	2	Make sure design is done correctly	Zwecker Baglio Hussain
23	Torque is greater than newly designed shaft can handle (B9)	Shaft Breaks, system unusable	Improperly designed	2	3	6	Test stresses before assembly	Baglio
24	Flywheel is not uniformly packed (B9)	Flywheel spins uneven, causing stress and vibration of system	User does not pack correctly or design is poor	1	2	2	Make sure design is done correctly and make clear filling instructions	Baglio
25	Flywheel makes device imbalanced (B9)	Added stress could break the device	Improperly designed	1	2	2	Make sure design is done correctly	Zwecker Baglio Hussain

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26	New B9 hand crank requires the same or more exertion level to operate	The Flywheel does not improve performance or ease of use	Improperly designed	1	3	3	Test current design against new design and test concept before	Baglio Sullivan
27	Flywheel is unable to be created by rapid prototype machine (B9)	Project falls behind schedule	Not identifying alternative options for development of flywheel	3	3	3	Identify alternative methods for creating prototype flywheel	Baglio Sullivan
28	Inadequate flow of water in CW4TW device	Inadequate treatment of water	Not identifying effects of reversing flow of water in system	1	3	3	Identify and plan for effects of reversing flow of water	Baglio Sullivan
29	Difficulty in mounting components in CW4TW enclosure	Project falls behind schedule	Not using CAD to model the enclosure	1	3	3	Model the enclosure with components in CAD and optimize space	Baglio Sullivan