

Deliverable F

**GNG 1103F-
Winter 2024
University of Ottawa**

**Breaking Good
Ibrahim Usman, John, Lightning, James, Ahsan**

March 3rd, 2024

Contents

- Prototype designing.....3
- Analysis of features of prototype5
- Prototyping test plan/Analysis/results.....5
- Feedback from people we have reached out to.....6
- Target specifications changes (if any)6
- Change**Error! Bookmark not defined.**
- Prototyping test plan for prototype two7

Prototype designing

For the prototype team breaking good has decided to use a blender as an electric motor.

[Hamilton Beach 51101B Personal Blender with Travel Lid, Black : Amazon.ca: Home](#)



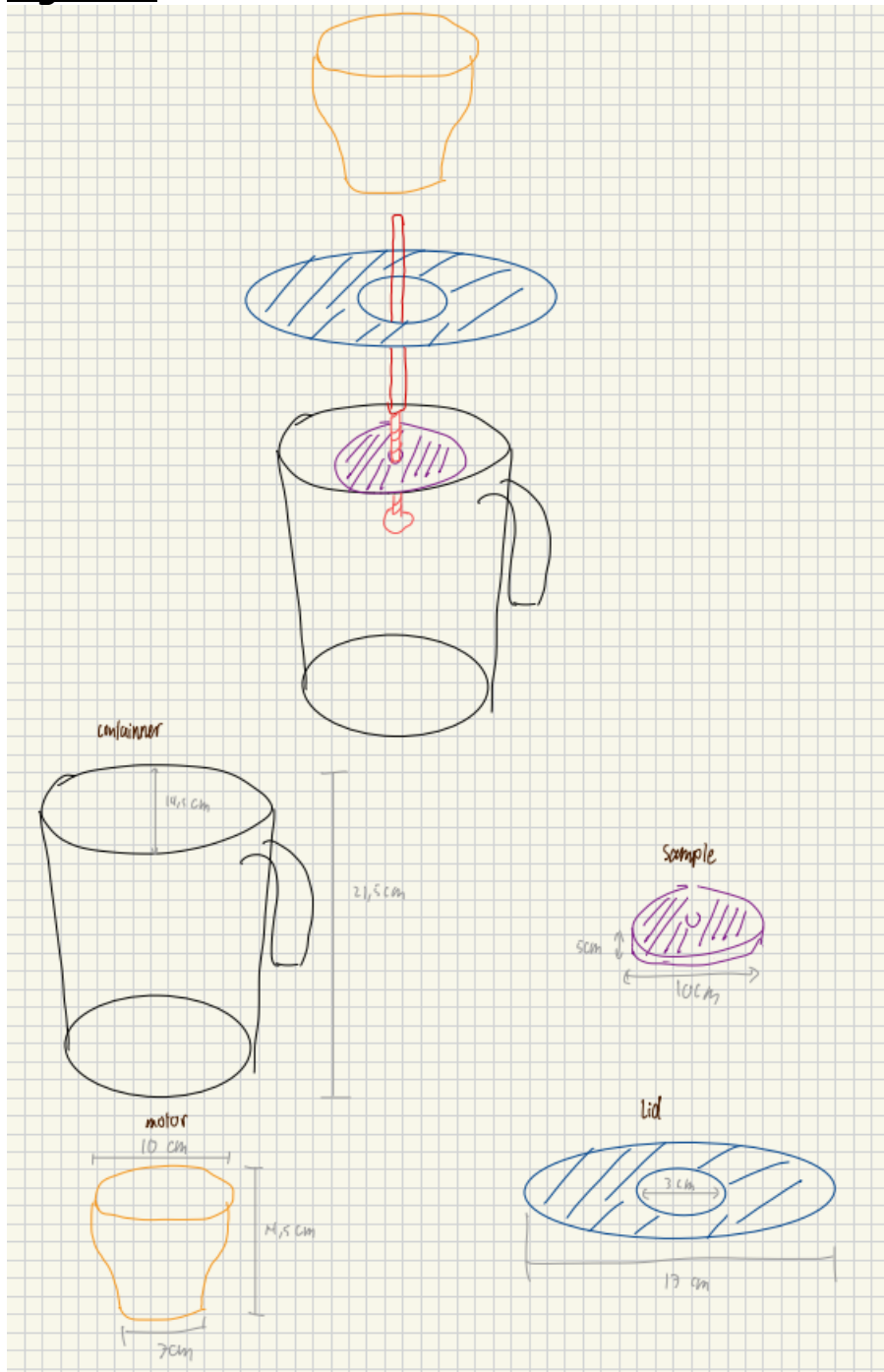
This motor already previously belonged to a group member, so it is cost free. For the container, team breaking good scoured the stores of Ottawa until they find a juice jug that fits the proper dimensions of the container. (within an 8-inch diameter and a 12-inch height).

As for the other necessary materials, the team, Breaking Good has decided to 3D print the other necessary materials (stick, bolt, screw, sample).

(photo of design drawing)

We plan on putting it together with glue, refer to figure 1 for how the prototype would look like.

Figure 1:



We also had to put in a stabilizing system we made of scrap wood to stabilize the motor.

The real life prototype is as seen in figure 2

Figure 2:



Analysis of features of prototype

The features of this prototype are very basic as it was only constructed to demonstrate structure. It has been constructed to fit the sample and contain any liquid without leaks.

Prototyping test plan/Analysis/results

Prototype Test Plan:

The plan is to perform two tests on the first prototype. The first will be testing the structure to see if it will be able to fit and contain the sample's dimensions comfortably. For the second test, we will fill the container with water to test for any leakage or damage.

Analysis:

The concerns for these first prototype tests were missing pieces of scrap to complete the construction and making the scrap-based prototype rotation rotate. After analyzing the tests, we have been assured that these cases did not occur.

Results:

The first prototype's scrap system was built successfully. The rotation did end up working. We attached a rod to the base of a bender to simulate what our final design will look like. We also filled the container with water and the system was able to hold it perfectly.

Feedback from people we have reached out to

Team Breaking good has made attempts in sharing our prototype to receive feedback from Bigelow Laboratory for Ocean Sciences ([Bigelow Laboratory for Ocean Sciences - Bold Science for Our Blue Planet](#)), the client in nuclear laboratories, and the boat company Boat manufacturing and brands ([Boat Manufacturers and Brands \(boats.com\)](#)). But to our inconvenience non of them have replied to our messages.

Target specifications changes (if any)

As our tests were all successful, there aren't any immediate changes that we will make to our target specifications.

Bill of Materials (BOM)

Materials	Price \$
Bucket	4.75
Juice Jug	2.5

Other materials that do not cost any money

- Bolt (3d print)
- Screw (3d print)

- Rod (3d print)
- Motor (lightning)
- Wood pieces

Prototyping test plan for prototype two

The test plan for the second prototype is much more intricate than the first. Firstly, we want to test the motor itself and how it works with the system. The test will be done by leaving the motor on for intervals of ten and twenty minutes. After this, motor health will be observed and based on the results, the software will be tweaked, or the motor will be replaced altogether. The next test will be to secure the lid on the system and make sure it doesn't leak. To test this, we will leave the system running for intervals of twenty minutes, or until leakage shows. If we do find any leakage, an attempt will be made to improve the seal in that location. We will then be testing the rod to make sure it holds the sample securely while the system is active. After a couple hours of spinning, we'll see if any parts or screws come loose and adjust accordingly. The final test will be the slurry. We will experiment with different ratios of liquid to solid and see how they behave in the system. This will essentially require the entire system to be active. After the testing, if everything has been deemed satisfactory, we will move on to planning the third prototype.

Trello link :

<https://trello.com/invite/b/D74MvsJy/ATTIf8fe314234d95033ddb1ac8bbec2bfd9246D7BBB/breaking-good>