

- Introduction

In your home, do you want to spend your time in the bathroom with a dirty toilet? On those bad days do you want to come home to a toilet so dirty that you don't want to go near it. With FlushN'Go, anyone can easily clean their toilet within seconds. For those who have mobility issues it can be hard to bend down and deeply clean the toilet. Or, if a person doesn't want to get their hands dirty, they can use the FlushN'Go to ensure their cleanliness of themselves and the toilet. FlushN'Go will be a compact box with a crank at the top which connects to gears that move 4 brushes at the bottom. When you spin the crank, the gears inside move to move the brushes at the bottom. The FlushN'Go will be an attachment that will go on the lid of the toilet. The toilet will be modified to have a latch so the FlushN'Go can go inside the toilet. Then there will be a protective lining to ensure there will be no leakage.

- Objectives

The goal of FlushN'Go is to serve as an efficient and practical way to clean a toilet. Cleaning a toilet can be time consuming and a monotonous task, FlushN'Go's purpose of efficiency allows anyone to clean their toilet with no problems. The main focus on making FlushN'Go will be the concept of the gears and how they interact with the entire product. The gears will be the hardest part due to compact design and incorporating them with the other parts such as the part connecting the brushes at the bottom. The hope is to efficiently clean the toilet without any damage since many other cleaning products containing bleach, such as Mer-Maid, slowly corrode the plumbing within the toilet.

- Design Strategy

When designing the project, the focus will be towards the harder parts of the project, such as the gear system and outside box, to troubleshoot more. The gear system needs to be perfect with there being many design types and material types to be

tested. Gears have different types and can be made out of different materials making troubleshooting and redesigns very important. When we are making the gears we will test their functionality to ensure they work. Testing the gears is important since they need to work before we install the gears inside the box.

- Plan of Action
- Verification:
 - Testing Procedures:
The testing procedures will include testing the cleaning effectiveness of FlushN'Go compared to flushing a normal toilet. The purpose of FlushN'Go is to efficiently clean the toilet and it is important to test whether or not FlushN'Go can clean a toilet. For the tests there will be stains in the toilet to act as a way to show the effectiveness of FlushN'Go. Another test will be the leakage test. Since there will be a hole in the toilet lid with lining to prevent leakage, there will be tests to determine if the

lining is good enough to prevent leakage.

- Tolerance Analysis: The gears will determine the success of FlushN'Go. To move the brushes at the bottom fast enough to clean the toilet they need to be moved by the gears and axles connecting them. If the gears are correct in any way, the entire project won't work. The gears need to be the right size, tooth count, and tooth diameter in order for them to work. Any damage to the gears will affect their function so the material used for the gears is also crucial.
- Cost and Schedule
 - Cost Analysis:
List of components and costs:
Crank: \$0.50 of 3-D Filament
4 Gears: \$0.50 of 3-D Filament
2 Axles: \$0.50 of 3-D Filament
Latch for toilet lid: \$5-\$10
Connector for the brushes: \$0.50 of 3-D Filament
4 brushes: Approximately \$30

Total: \$42

- Schedule

1. Develop the models and designs of the gears, box containing the gears, the crank, and connector for the brushes. All of these will be designed and modeled on SolidWorks.
2. The next step will be cutting a hole in a toilet lid and attaching the latch and lining to prevent leakage.
3. The next step would be adding all of the 3-D models together and attaching the brushes to the brush container.
4. The last step is to test FlushN'Go to see if it works and make revisions if needed.

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