MEC102 – ENGINEERING DESIGN
ASSIGNMENT –DESIGN PROJECT

INTRODUCTION:

- Gas stoves became more common when the oven was integrated into the base and the size was reduced to better fit in with the rest of the kitchen furniture. By the 1910s, producers started to enamel their gas stoves for easier cleaning. Ignition of the gas was originally by match and this was followed by the more convenient pilot light. This had the disadvantage of continually consuming gas. The oven still needed to be lit by match and accidentally turning on the gas without igniting it could lead to an explosion. To prevent these types of accidents, oven manufacturers developed and installed a safety valve called a flame failure device for gas hobs (cooktops) and ovens. Most modern gas stoves have electronic ignition, automatic timers for the oven and extractor hoods to remove fumes.

- Gas stoves are a significant source of indoor air pollution, and require good ventilation to maintain acceptable air quality

OBJECTIVE:

- The main objective of designing this is to provide a easy method of cooking through gas stove
- To reduce the fear of cooking in gas stoves
- To have hygenic food and fully boiled and heated healthy foods

NEED STATEMENTS:-

- The user should be comfortable while cooking without any fear of gas stoves or gas cylinders etc..
- Very less risk of gas based damages
- Gas stoves should be protective enough stay away from harmful damages.

DESIGN PROBLEM:

- Low Flame

Regardless of the gas stove or cooktop you have, the slow heating can prove to be a headache and time-consuming in preparing food. The common reasons behind the slow heating of flame can be dirt or debris on some part of the burner openings.

- Noisy Burners

The flames on the burners can become noisy because of the excessive air or gas flow through the valves. This can be risky because too much gas can result in fire. Moreover, the gas gets wasted.

- Gas Odor

Sometimes the gas can leak from the gas or the pipes. This can be risky. But before you move on to repairing it, first check whether the burners are off. If you smell the gas odour even when the burners are off, then the gas is getting leaked.

- Unnecessary Clicking of Igniter

When the burner is turned on, the igniter clicks to give a flame to the gas flow. But if the clicking sound continues even after the burner flame, then this is because of some problem.
A common reason behind the unnecessary clicking of the igniter is the burner blockage or the loose burner cap.

CONSTRAINTS:

- Does not use electricity: One of the advantages of a gas stove over other variants such as induction cook top is that it does not use any electricity. The end result is that you do not have to be worried about your utility bills going up more, as a result of using your gas stove. Moreover, you can continue to cook on your gas stove even when the power goes out, which makes for one efficient cook top that's both dependable and reliable, as long as you have the requisite amount of fuel in the cylinder (attached to the stove).

- Lower heat emission: One of the great things about a gas stove is that it is engineered to be heat efficient. That is why it does not emit much heat around, when switched on and what's more, it cools down immediately on being turned off. Whereas an induction cook top heats the immediate environment as well, which can make standing next to it a tad uncomfortable; gas stoves on the other hand come with lower heat emission and are easier to cook on.

- Accurate cooking temperature: One of the biggest advantages with a gas stove is that you can control the cooking temperature accurately and easily at that. For example, let's say that you want to sauté some onions, you can turn the gas stove on, adjust the flame to low, and sauté it to perfection. This may be a little harder to carry out with an induction cook top as it requires some time to change to a different temperature.

Specifications using user requirements:

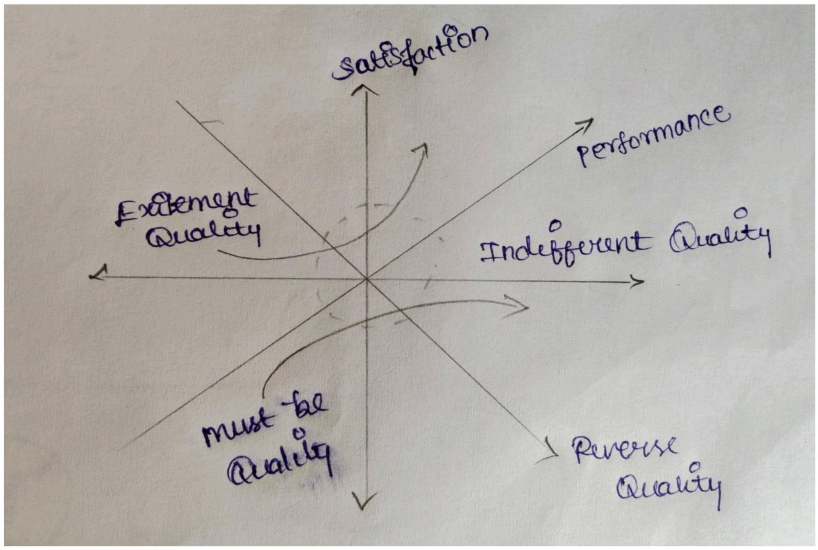
- Heat regulation is of prime importance in cooking. On turning off the heat in these stoves, the change in heat content is immediate. This is not the case with electric stoves where in spite of turning off the stove, the heat content does not diminish immediately.

- Due to the usage of gas, the overall heat generated is less and that helps to maintain heating of the temperature in the house.

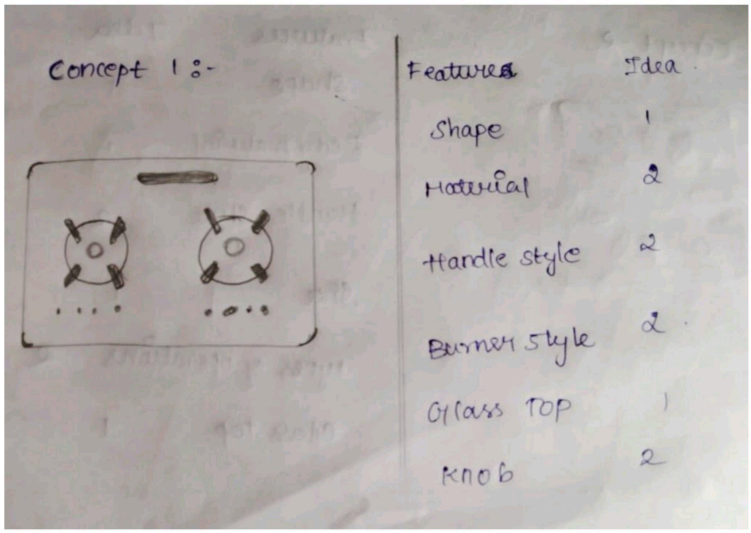
- Gas stoves produce moist heat and that helps in certain dishes like roasts, casseroles and other items where the juice in the food needs to remain intact

- All these benefits are absent in an electric stove. Also, a gas stove is cost effective and unlike its peer, the electricity bill does not shoot up in case of more cooking.

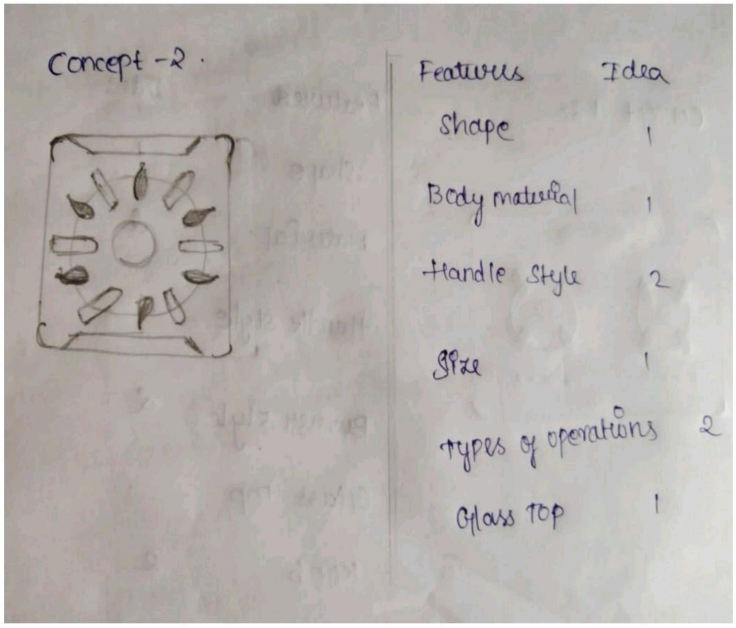
KANO MODEL:


Satisfaction
Performance
Excitement Quality
Indifferent Quality
must-be Quality
Reverse Quality

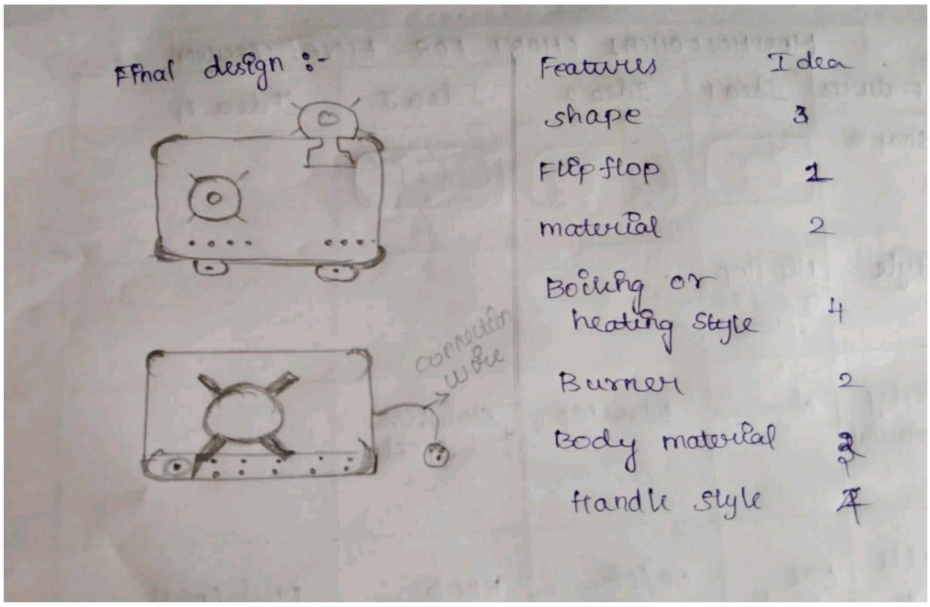
CONCEPTUAL DESIGN 1:



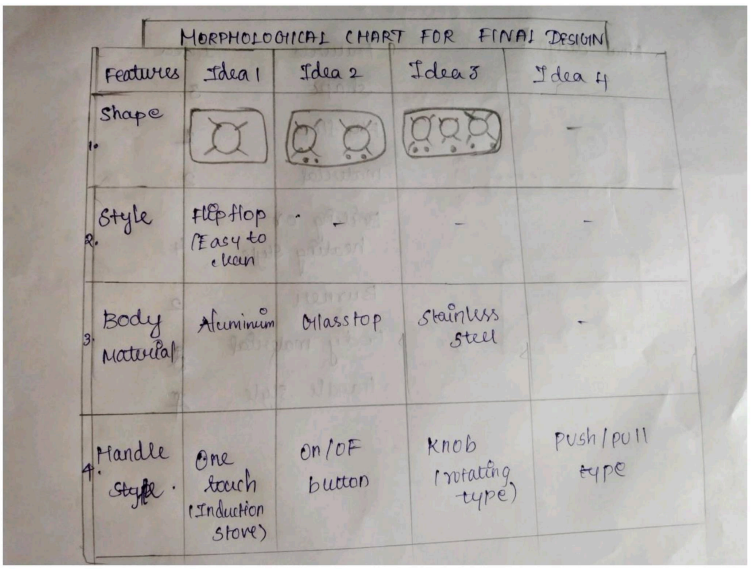
CONCEPTUAL DESIGN 2:-



FINAL DESIGN:



MORPHOLOGICAL CHART FOR FINAL DESIGN :



MORPHOLOGICAL CHART FOR FINAL DESIGN

	Features	Idea 1	Idea 2	Idea 3	Idea 4
1.	Shape				-
2.	Style	Flip flop (Easy to clean	-	-	-
3.	Body Material	Aluminium	Glass top	Stainless steel	-
4.	Handle Style	One touch (Induction stove)	On/OF button	Knob (rotating type)	Push/pull type

LIST OF CRITERIA FOR SELECTING CONCEPT DESIGN:

- Electric ignition feature is mostly seen in the upgraded gas stove models that work completely on electricity.

Some brands even utilize LPG gas and can be ignited with a simple switch- manual and automatic.

- In manual operation, you need to use hands to control the flame using knobs by tuning to low, medium and high levels.

- Sealed burners are another type of gas stove burners that are sealed with the cooktop.
- These are quite different from others and may not heat the pots or utensils quickly.
- Yet, sealed burners are very easy to clean and maintain.

CONCLUSION:

Our final design is better than the other two
conceptual designs. Because, the final design have a fully structured material to use easily and to give the simple solution. Many gas stoves come with at least few modern programmable controls to make the handling easier. LCD displays and some other complex cooking routines are some of the standard features present in most of the basic and high-end manufacturing models. Some of the other programmable controls include precise pre-heating, automatic pizza, cook timers and others.

Safety factors :Modern gas stove ranges are safer than older models. Two of the major safety concerns with gas stoves are child-safe controls and accidental ignition. Some gas cooktops have knobs which can be accidentally switched on even with a gentle bump.use gas stove with modern features and safe

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