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DESIGN AND FABRICATION OF PORTABLE WASHING MACHINE

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ABSTRACT

This paper presents a simplified two dimensional dynamic model of a horizontal-axis portable washing machine .This model is used to predict the verge of walking instability during the spinning cycle. Next, two novel method of stabilization are presented. The design - base methods reduce the instability and is cost effective. The control base method eliminates and vibrations and it's associated with active balancing. Both method satisfy the current trend towards portable, lightweight full-feature washing machine.

Washing machine is a device which is use to wash various type of cloths without applying any physical effort .This method is provides a simple washing machine designed for cleaning few cloths. This technique is use for describe a cleaning, developing a cleaning process, integrating the process, selecting and sizing appropriate cleaning equipment. A sole purpose to develop a small, efficient, energy and time saving washing machine. For portable we replace the existing heavy, large and inefficient parts for small sized components of washing machine. The design based method reduces instability and it's cost effective. By use of this product, a person can spend extra time on other important work or generating income.

KEYWORD - Availability, Cleaning, Effective, Portable, Low Cost, Easy Handling, Easy To Use.

I. INTRODUCTION

The manufacturing of washing machine has lately been an important issue for the appliance industry. Current environmental awareness demands the improvement of washer efficiency. To this end, the use of closed- loop control instead traditional open loop approaches is being adopted. In addition , although horizontal-axis washers have a higher manufacturing cost, they are becoming more popular because it has been estimated that they are consume less energy, water and detergent compared to the vertical-axis ones. The reduction of washer mass is of crucial importance not only for environmental, but also for financial reason. Unfortunately, washing machine remains big and heavy, weight usually over fifty kilogram. This is due to the unbalanced rotation of the laundry mass during spinning.Washing machine is the device to use washes various type of the clothes without applying any physical effort. With help of washing machine you do not have to rub the clothes with hand or squeeze then to remove the water from them. The washing machine is also called as clothes washer or simply the washer .A washing machine is a home application use to wash laundry**.**In present era when on one hand both husbands and wife have to work to maintain certain living standards and on other hand price rise, domestic electrical appliances play useful role. The appliance soothing the housewife varies and also brings about some saving in machine the domestic expenses. Washing machine of late, are becoming increasingly popular especially in urban areas. Further, because of the availability of power in remote areas also, the demand of washing machine is likely to go up. A few years ago domestic washing machines were popular only in metropolitan cities only whereas now even in town area also the demand for washing machine is growing up rapi.

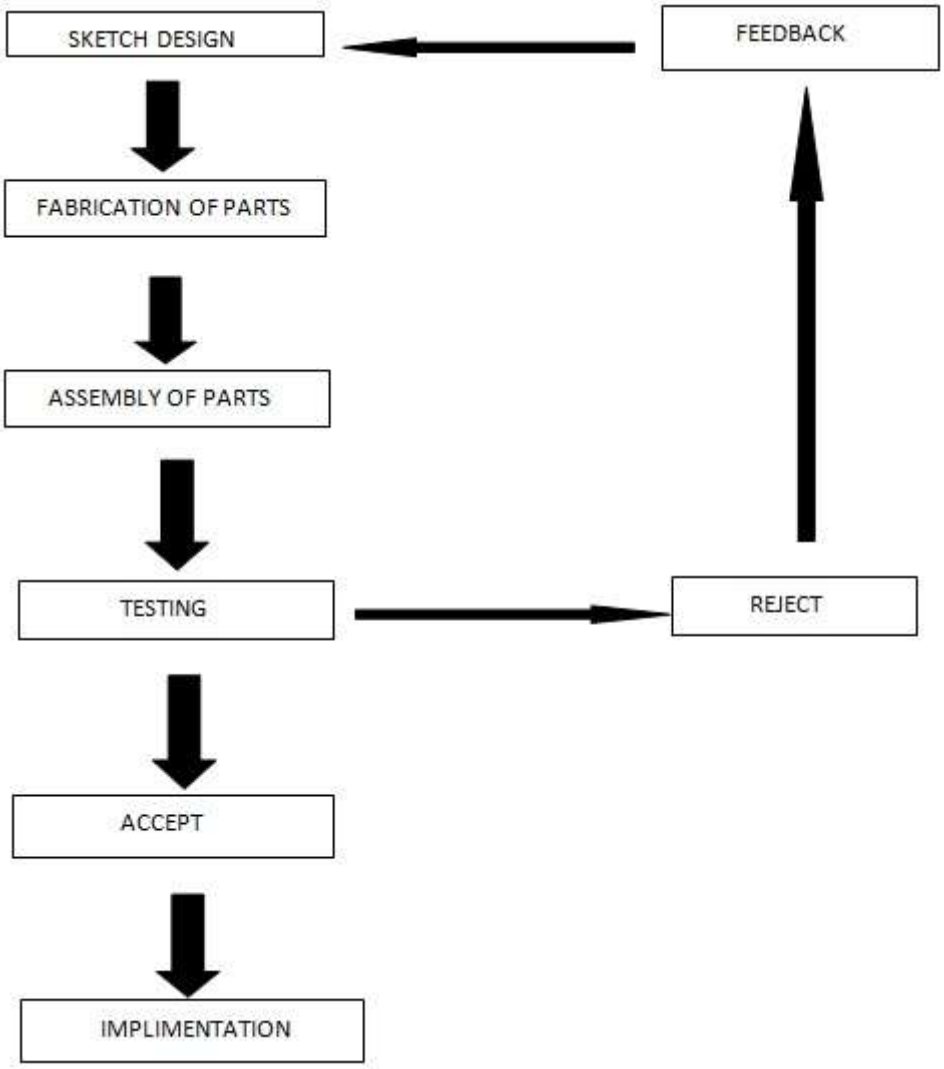
II. LITERATURE REVIEW

1) This paper focused on modelling, design and control of vertical axis washing machine with emphasis on light weight portable appliance. It has been concluded that rotational slip can be measure problem if the washer centre of mass is not on the plane of rotation of the laundry mass.

2) We proposed an approach to evaluate the angular position and mass of the unbalanced load in washing machine limit the performance and therefore accurate estimation of unbalance load, including their magnitude and location in washing machine drum is required.

3) Appliance field study of contribution of appliance replacement and consumer behaviour to reduce the energy. Involved a four months study of household in the borrow of walking in order to certain.

III. METHODOLOGY



IV. NOVELTY

We are reduce the size of washing machine and cost as compare to at this time available washing machine in market and make light weight ,use some parts wooden leg, buckets, motor, timer, etc.

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V. COMPONENT

A). Base Frame:

Fig-1: Base Frame

The materials of base frame is mild steel and the wood. At the base frame we are situated the bucket or any parts which is containing the water and detergent and dirty clothes. The radius of the base frame is 12 inches and the heights of the base frame is 30 inches. The three legs of wooden is rotates in the bucket which is situated on the base frame. The base frame shown in figure 1.

B). Motor Control Circute:

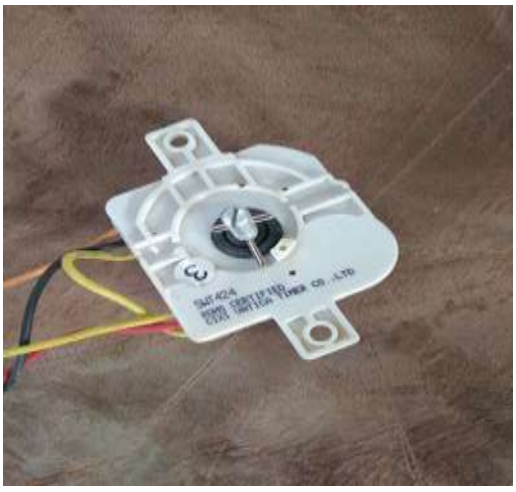

Fig-2: Motor control circuit

The timer on your washing machine contains a variety of small parts that can keep your appliance from operating properly, if instance, a rotating camshaft within the washer activates individual contacts it open and closed these contacts for powering the next washing cycle.

Motor control circuit shown on above fig -2, its divided into three slots and each slot makes into five minutes.

C). Speed Reducer:

Fig-3: Speed reducer

Application specific types to customized specific solution types including of Helical worm motor gear reducer, parallel shaft helical gear reducer, and helical reduction gear box.

Its speed reducer gear box is uses in three phase asynchronous AC electric motor

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- Its speed reducer gear box is uses in three phase asynchronous AC electric motor.

D). Induction Motor:

Fig-4: Induction motor

An induction motor can therefore be made without electric connections to the rotor. Induction motor shown in above fig – 4, it is three phase induction motor. This motor is rotate clockwise direction and anti-clockwise direction through the timer, the timer plays an important role for rotating the motor. Motor voltage: 220 volt Speed: 1325 rpm.

An induction motor or asynchronous motor is an AC electric motor in which the electric current in the motor needed to produce torque is obtained by electromagnetic induction from the magnetic field of the stator winding.

- After speed reduction output shaft rpm 1450rpm.
  Power 75 watt.

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VI. SKETCK AND DESIGN

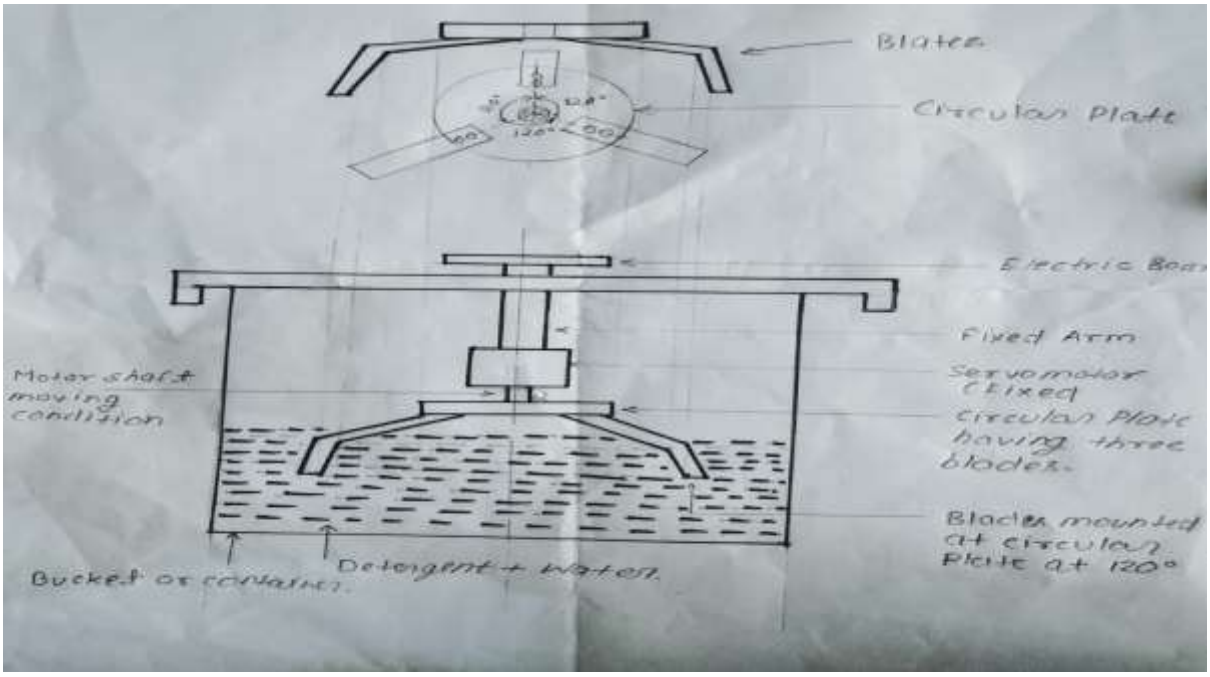

Fig-5: Sketch and designing

- Block diagram of sketch and designing is shown in above fig.5
- Its diameter 609mm.
- Washing machine height 965mm.
- Use of material mild steel strip, wooden leg.
- Use any adjustable bucket.
- A wooden leg fixed on circular plate. The circular plate divided into120 degree.
- Each wooden leg have different lengths

Fig-6: Bucket

Fig-7: Circular plate

In this above figure we shows the bucket and circular plate. The circular plate is containing the three legs at the angle of 120 degree. The legs is wooden parts. And the buckets is containing the dirty clothes and detergent and water.

VII. FUTURE SCOPE AND CONCLUSIONS

In current time we are using the wooden leg is fixed on circular plate but in future we have will use of metal parts.

- In future we have will also add the dryer system.

- In general, our next step concern market identification and product feedback.
- In coordinating with Lima kids to determine how our project can work with their aims a however, we believe that we need to expand beyond Lima kids in order to search of demogra.

This paper focused on modelling, design and control of vertical-axis washing machine, with emphasis on lightweight, portable appliances. It has been concluded that rotational slip can be a major problem if the washer centre of mass is not on the plane of rotation of the laundry mass .The threshold speed for impending walk is then that of translational slip. Next, a design based stabilization method was introduced.

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