

DESIGN OF NOVEL RICE GRINDING MACHINE

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ABSTRACT

Wet grinder is one of the most commonly used electrical household appliances. In existing wet grinder single phase induction motor is used and thus it provides benefits in improving the energy efficiency and the motor drive. Since the cleaning mechanism and timer is not yet enhanced in an industrial/domestic wet chopper, a mechanism to completely fully automate is initiated. The system of inlet, outlet valve, timer and a design process it can be obtained. Consequently, effort and also time consumption is minimized. Through the timer the consequence of grinding is aligned and the grinding progression is revealed in real time.

Index terms— wet grinder, timer, comparator sensor, cleaning mechanism, and microcontroller.

I. INTRODUCTION

A wet grinder refers to a tool for abrasive cutting of hard materials, or a food preparation appliance used especially in Indian cuisine for grinding food grains to produce a paste or batter. Wet grinder for abrasive cutting uses fluid for lubrication or cooling, whereas one for food preparation uses water to combine with ground grain to produce batter. Wet grinding is rare in western fare inn universal in Indian cuisine. Wet grinders are used to make pastes from grains and lentils, such as those used during cooking dosas and idly in South Indian cuisine. These grinders generally consist of a few granite stone plates that are rolled against another stone plate with an item to be ground between them.

Wet grinders have two advantages over electric mixers or blenders. First, the stone chopper generates less heat than a mixer; heat affects the flavor of a food. Second, the stones remain sharp for a greater time than do metal blades. Wet grinder is a household appliance used for preparing an idly and dosa. Before the invention of the mechanical wet grinders hand operated grinding stones were used for making this batter. Wet grinders are largely manufactured in Coimbatore because granite is easily available in this region. Some angle grinders, most tile saws and some grinders for sharpening blades used in wood work are wet grinders. The fluid helps with lubrication of the cutting process and with cooling to avoid cracking or damaging the cutting appliance or the work piece.

S. Ekram [1] et al presents an advanced design of a high effectiveness 3-phase, 6/4 switched reluctance motor (SRM) meant for vigorous 280 W mixer-grinder. The usual motor being worn for this application so far is a worldwide motor and because of its inherent drawback such as the constraint of a perfunctory commutates by way of brushes, and non-appearance of trouble-free controllability, efficiency not at all go beyond 70%. Seeing that for every investigation that fallout in this paper. The projected SRM as an alternative to release the similar power next to an esteem momentum of 10000 rpm to a great extended 86% efficiency with quite a few added compensation in the vein of squat noise, speed ensuing in flat

mixing/grinding besides with small power utilization.

The conventional SRM method with its authentication using 2-D finite element analysis [2], the effect of blender capacity or lying on the drain supply voltage comes out transversely in devices, slice type control for warning the power peak and also the test results on the improved mixer grinder be chat about in fact.

The mixer-grinder [3] currently has become an unavoidable domestic piece of equipment in all homes. General motor is worn like the drive motor in more or less the entire mixer-grinders. These motors are perceptibly small dexterous in nature in the red to the charisma of an automatic commutator by brushes.

Additionally, the need of an uncomplicated controllability for rigid speed before additional output distinctiveness, formulate them to devour extra power. The toggle reluctance motors possess remunerations like easy and peak competence, programming torque in opposition to velocity attribute and small rate be capable of a just right pick designed for mixer-grinder appliance. The Unipolar quality of the constrain circuit offers the potential intended for greater speed and blunder imperviousness

A chop up current control course for a switched reluctance machine endow with an angle determining at an opening of a dynamic conduction stage of a segment owing to an energized phase twisting. PWM sacking pulses are leisurely condensed in time phase so that the switch linking the current twisting in the lively stage and crumble of current incline phase is curved. The industrial motor is qualified at complete load circumstance for solitary pulse mode along with chopped approach.

Wang Huiqiang and Xing Yanqiu [4,5] introduced the core organized classification for strap grinder in PLC in addition to the touch panel as the man-machine boundary. The parameters of grinding, grinding process are shown in real time via contact screen. Approve to the USS etiquette it systematize the frequency converter to comprehend the belt grinder tempo to draft. Therefore, got improved

control accuracy, better flexibility and firmness of control scheme for grinding diverse materials.

Song Yixu, Yang Hongjun, and L v Hongbo [6,7] portrays an automaton belt grinding method to afford hopeful scenario for reducing hand grinders commencing noisy work background, seeing that for advanced machining precision and product firmness. However, for a developing structure with a supple grinder, calculating the machine to act upon defined material deduction of free-form shell is dealt. In the strap grinding progression, material exclusion is linked to a multiplicity of aspect likes work piece outline, contact strength, and robot speed. Some of the grinding operation, such as belt wear, is time-deviation [8].

To attain the preferred elimination in the grinding course, an intellectual direct technique for the developed robot is projected. Leading, an adaptive model to follow irregular transform in functioning circumstances is composed to specifically foresee material deletion in harmony with *in situ* quantity of a data. With aforementioned facts, the process greatly enhances model precisions, which deteriorate once latest samples beginning an *in situ* dimension are inadequate or are not uniformly scattered under new running conditions.

Subsequent to, an online route invention system for the robots manage parameter is anticipated. By manipulating the best possible power bound in real occasion, the control evolution practice is reduced and its pessimistic outcome on grinding superiority is condensed.

Lastly, the preface grinding researches corroborate the workability along with efficacy of the projected control scheme. The electrically chaotic washing has been projected to look up washing facility with advanced competence and diminish show off. Simulation outcome have been on hand to exemplify the planned chaotic action. Additional work desires to be completed on the realization of the electrically chaotic washing [9].

II. WORKING PRINCIPLE

To facilitate a working women and for an aged folks it's hard to do maintenance of wet grinder, in order to lessen the work load and time utilization it is realized by means of entirely automatic wet grinder by fitting inlet and outlet valve and also appends timer devices. By doing this automatically grinder can wash itself without depending on the human being. In this paper timer, microcontroller, comparator sensor, water pump, water outlet valve and alarm are used.

Principle of this paper is timer is used to set the start and end time of the wet grinder function. Timer output is given to the microcontroller. During the fire up instance, microcontroller toggle ON the grinder motor during transmit. Since the cleaning mechanism and timer is not yet enhanced in an industrial/ domestic approach, a mechanism to completely automate is initiated. By considering the system of inlet and outlet valve, sensors and timer the above approaches can overcome. Hence, work load and also time consump-

tion is minimized. Above all hygiene is improved which reduce spreading of diseases.

III. HARDWARE DESIGN OF FULLY AUTOMATED WET GRINDER

The foremost group organization in general design diagram is exposed in Figure 1. The arrangement execute component primarily embraces a timer, microcontroller, comparator sensor, water pump, water subsist valve and alarm.

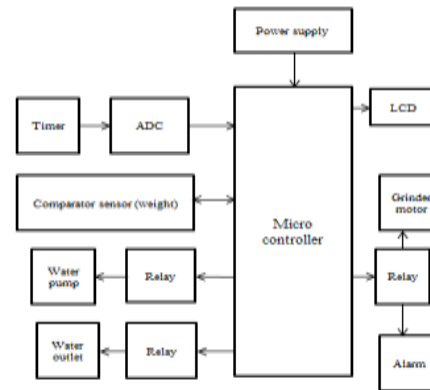


Fig.1 Block illustration of fully automatic Wet grinder

Comparator sensor is used to stumble on the unfilled stage of wet grinder. When the bare level is noticed in the microcontroller it will robotically knob ON and the water propel into the system for a few minutes. Then the grinder motor is ON and then mechanically grinder is wiped out of the waste batter, thus cleaning it completely and finally the waste water in the grinder is vent by the water exist valve. The huge quantity of energy plus water used in cleaning machines is reduced. Its enormous market, the upgrade in washing capability, particularly that of the top loaders is vastly desirable and permissible.

IV SIMULATION RESULTS

The simulation result of timer output has been shown in figure 2. It represents the operation of timer based on input and output given to the microcontroller. Once the timer output exists the alarm will be turned ON.

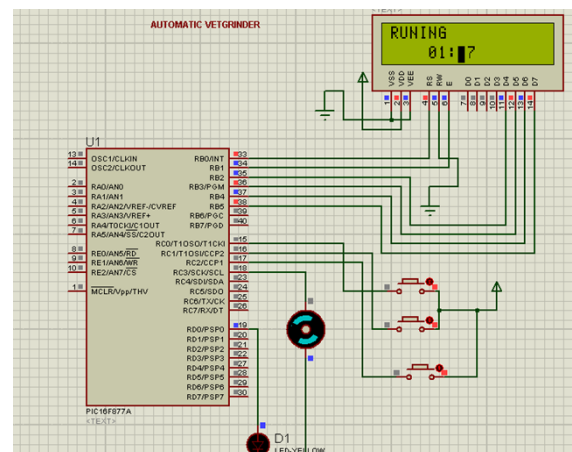


Fig.2 Timer output

V CONCLUSION

The Proposed design provides cleaning and minimal time consumption better than the conventional grinding process by using inlet and outlet valve. It is observed that the proposed design provides the desired outcome with reasonable cost and in overall helps in the good hygiene of people without human intervention.

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