

DESIGN AND FABRICATION OF POTATO PEELING MACHINE

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ABSTRACT

This project deals with durability assessment for development of potato peeling machine. The study of manufacturing was very important in order to carried out this project to ensure that student understand on what are needs to do. This project is about development of potato peeling machine to help people easy to use at home. This project involved the process of sketching and drawing. After design had complete, the next process is fabrication to transform from the paper to become real product. This project also require to ensure the safety for the indeed of publishing. Methods and process involve in this project like welding, shearing, cutting, drilling and rivet. This project is mainly about generating a new concept of portable potato machine and more function. After all process had been done, this potato machine may help us to understand the fabrication and designing process that involved in this project.

Keywords:- potato peeling machine, fabrication, designing

1. INTRODUCTION

Peeling of vegetables and fruits is one of the most frequent operations even at house hold purposes or at hotels. Manual peeling is peeling the vegetables with hand tool is toughest and time consuming process. It also causes for the loss of vitamins and become contaminated with the atmospheric air. This has led to the invention of a machine which peels the vegetables with less human effort and less time. The processes involved in this project are designing of potato peeling machine. This project will be developing based on research from product in marketing. This project required to focusing only a peeling potato for home kitchen facilities.

2. CONSTRUCTION

The following are the main parts of the project

1.1 MOTOR :

Electric motors involve rotating coils of wire which are driven by the magnetic force exerted by a magnetic field on an electric current. They transform electrical energy into mechanical energy.. The reverse of this is the conversion of mechanical energy into electrical energy and is done by an electric generator.

1.2 BALL BEARINGS

A ball bearing is a type of rolling-element bearing that uses balls to maintain the separation between the bearing races. The purpose of a ball bearing is to reduce rotational friction and support radial and axial loads. It achieves this by using at least two races to contain the balls and transmit the loads through the balls. In most applications, one race is stationary and the other is attached to the rotating assembly (e.g., a hub or shaft). As one of the bearing races rotates it causes the balls to rotate as well. Because the balls are rolling they have a much lower coefficient of friction than if two flat surfaces were sliding against each other. Ball bearings tend to have lower load capacity for their size than other kinds of rolling-element bearings due to the smaller contact area between the balls and races. However, they can tolerate some misalignment of the inner and outer races.

1.3 ABRASIVE DRUM

These sanding cylinders are surfaced in a tough, long-lived aluminum oxide abrasive, 1.4 mm thick that is glued to a cotton web backing which is in turn glued to a cylinder. The cylinders with smaller radii are especially versatile, for example, enlarging cut-outs or holes. They can also be used to sharpen rounded blades, like the one you can see on this [tenon cutter](#). They are designed to be used on many materials, such as wood, plastic, steel, iron, and non-ferrous metals.

1.4 ROTATING DISC

The rotation of a fast moving disc or cylindrical member can set up axial, circumferential and radial stresses. For instance, in the turbine section of an aircraft gas turbine engine, the rotor disc frequently turns at speeds in the region of 10000 r.p.m. This generates large amounts of stresses and strains on the material of the rotor disc. Similar loads are borne by the cylindrical turbine rotor shafts that transmit the rotational movement from the turbine to the compressor section. To design a disc or shaft that can withstand these

1.5 PULLEYS

A **pulley** is a wheel on an axle or shaft that is designed to support movement and change of direction of a taut cable, rope or belt along its circumference. Pulleys are used in a variety of ways to lift loads, apply forces, and to transmit power. In nautical contexts, the assembly of wheel, axle, and supporting shell is referred to as a "block." A pulley may also be called a sheave or drum and may have a groove or grooves between two flanges around its circumference. The drive element of a pulley system can be a rope, cable, belt, or chain that runs over the pulley inside the groove or grooves.

1.6 SHAFT

A **shaft** is a rotating machine element, usually circular in cross section, which is used to transmit power from one part to another, or from a machine which produces power to a machine which absorbs power.^[1] The various members such as pulleys and gears are mounted on it. The material used for ordinary shafts is mild steel. When high strength is required, an alloy steel such as nickel, nickel-chromium or chromium-vanadium steel is used.

2. WORKING

Where applicable, fit the rubber fill hose connector over any cold freshwater tap. Position the hopper top in place on the peeler housing. Pour product into the peeling chamber. There should be room in the peeling chamber for product to move around while peeling. Do not overload the peeler. Turn on water supply. As the base of the drum rotates the potatoes /hard vegetables strike against the abrasive inner wall which removes the skin. Peeling times will vary, depending on the type and condition of the product. When the desired degree of peeling has been reached, turn off the water. Place a container under the discharge chute to catch product and open the discharge chute door. The peeler should be cleaned after the peeling operation has been completed.

PRODUCTION CAPACITY PER BATCH : 10 Kg
REQUIRED SPACE : 81 X 46 X89 cm

3. ADVANTAGES

1. Compact design thus occupies very little space.
2. Body is from stainless steel with cast iron ring stand for better vibration absorb.
3. Easy to operate, high rinsing and peeling ratio, no damage to potato flesh and suitable for the souse potato chip.
4. Low temperature peeling technology thus the original ingredient cannot destroy.

4. APPLICATIONS

Electric potato peeler is suitable for bulb vegetables such as potatoes, carrots, turnip and taro, pachysandras, guava, beet root, and cleaning in very short time.

5. REFERENCES

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