

DESIGN AND FABRICATION OF PEAS DEPPER

S.Kumar¹, Umesh Garg², Arvind Dewangan³ Ajay Singh Rana⁴

¹ Department of Mechanical Engineering,
HCTM, Kaithal (Haryana), India Email:itsarungarg@yahoo.co.in

²Department of Mechanical Engineering,
HCTM, Kaithal (Haryana), India

³Department of Civil Engineering,
HCTM, Kaithal (Haryana), India

⁴Department of Mechanical Engineering,
HCTM, Kaithal (Haryana), India

ABSTRACT

The future of this earth and mankind substantially depends on our ability to slow down the population increases in the, “third world” by civilized means. The keys is to increase the standard of living to overcome the in human poverty and deprivation.

Pea depper is a new technique to depper the peas in a very little time. In this project we depper 30 kg pea in one hour. We can also depper the nut, potato and so many things those are related to that kind of function. With the increasing demand of stored pea we are not fulfilling the demand of storage pea to different plants, which related to food production and work on stored pea. So we decided to make that a product, which will solve this problem in a very short time. Manually it takes lot of time to depper the pea and now with this project we reached in that situation so that we can do our work in very little time.

Keywords: Pea depper, food production

Sub Area: Production Technology

Broad area: Mechanical Engineering

1. INTRODUCTION

The future of this earth and mankind substantially depends on our Ability to slow down the population increases in the, “third world” by civilized means. The keys is to increase the standard of living to overcome the in human poverty and deprivation.

Pea deppoder is a new technique to deppod the peas in a very little time. In this project we deppod 30 kg pea in one hour. We can also deppod the nut, potato and so many things those are related to that kind of function. With the increasing demand of stored pea we are not fulfilling the demand of storage pea to different plants, which related to food production and work on stored pea. So we decided to make that a product, which will solve this problem in a very short time. Manually it takes lot of time to deppod the pea and now with this project we reached in that situation so that we can do our work in very little time.



Fig 1.1 model of pea deppoder



Fig 1.1 model of pea deppoder

2 DESCRIPTION OF PEAS DEPPER

1. Electric motor
2. Pulleys
3. Shaft
4. Rotor
5. Bearing
6. Collector

ELECTRIC MOTOR: -

In our project the function of the electric motor is to run whole system. Electric motor gets supply from outside source. The capacity of motor used for this project is 1 horse power. Most electric motors develop their mechanical torque by the interaction of conductors carrying current in a direction at right angles to a magnetic field. The various types of electric motor differ in the ways in which the conductor. Any of a class of devices that convert electrical energy to mechanical energy, usually by employing electromagnetic phenomena.

PULLEYS & SHAFT:-

After the supply of electric power, motor rotates. Motor rotate the 2" pulley with the help of belt and we used a counter shaft in between the 2" pulley and 9" pulley. At the counter shaft we put the two pulleys of 4" & 8" pulleys. The 2" pulley is connected to 4" pulley with the help of belt and 8" pulley is connected to the 9" pulley with the help of belt. The

function of the pulley is to reduce the initial r.p.m of the motor and increase the number of revolution of the rotor. The pulleys are used to transmit power from one shaft to another by means of flat belts, V belts or ropes. Since the velocity ratio is the inverse ratio of the diameters of driving and driven pulleys, therefore the pulley diameter should be carefully selected in order to have a desired velocity ratio. The pulleys must be perfect alignment in order to allow the belt to travel in a line normal to the pulley faces.

The pulleys may be made of cast iron, cast steel or pressed steel, wood and paper. The cast materials should have good friction and wear characteristics. The pulleys made of pressed steel are lighter than cast pulleys, but in many cases they have lower friction and may produce excessive wear.

BEARINGS:-

A bearing is a machine element, which supports another moving machine element known as journals. It permits a relative motion between the contact surfaces of the members, while carrying the load.

ROTOR:-

Rotor rotates with the help of belt & pulley arrangements. Two wooden blades are mounted on the rotor. The length of the blades depends upon the length of the rotor. The length of the rotor is 885 mm. after the rotation of rotor we feed the pea from the feeder. After that blades strike on the pea then blade deppod the pea and the speed of the rotor is 200 r.p.m. the deppoding of the pea depend upon the speed of the rotor. . If we use high speed of rotor then pea deppoder will not deppod the pea but it will destroy whole pea.

COLLECTOR:-

we use two collectors one is connected below the hollow thin plates and second is connected at the right side of the rotor. The use of the first collector is to collect the deppoded pea and the use of second is to collect the wastage.

3. ASSUMPTIONS AND NOTATIONS :-

This is a new method for deppoding pea from a pea deppoder machine. The material used for this project is stainless steel and the capacity of motor used for this project is 1 horse power, because we require lesser power from the motor. If we use high power then pea deppoder will not deppod the pea but it will destroy whole pea. We take a thin plate (S.S) and cut the hole according to the pea dia. The dia of the hole is 14 mm and the length & dia hollow thin plate is 918 mm & 360 mm. It consists of following function and these are discussing below:

The data use for the fabrication is taken considering all condition.

$$\begin{aligned} \text{Speed of motor (N1)} &= 900 \text{ r.p.m} \\ \text{Dia of first pulley (D1)} &= 2'' \\ \text{Dia of second pulley (D2)} &= 4'' \\ \text{Dia of third pulley (D3)} &= 8'' \\ \text{Dia of fourth pulley (D4)} &= 9'' \\ \text{N2/N1} &= \text{D1/D2} \\ \text{N2} &= \text{N1 X (D1/D2)} \\ &= 450 \text{ r.p.m} \\ \text{N3/N2} &= \text{D2/D3} \\ \text{N3} &= \text{N2 X D2/D3} \\ &= 225 \text{ r.p.m} \\ \text{N4/N3} &= \text{D3/D4} \\ \text{N4} &= \text{N3 X D3/D4} \\ &= 200 \text{ r.p.m} \end{aligned}$$

Where,

$$\begin{aligned} \text{Speed of first pulley} &= \text{N2} \\ \text{Speed of second pulley} &= \text{N3} \\ \text{Speed of third pulley} &= \text{N4} \end{aligned}$$

5. ADVANTAGES & APPLICATION:-

- Saving of time
- Fast operation
- Easy operation
- Less maintenance cost
- Economical for large production
- Reduce working time
- Reduce labour cost
- Improve production rate
- Reduce manual fatigue
- In restaurant
- Storage in large quantity
- In small scale industry

5. RESULT AND DISCUSSION:-

In this pea are feed in the pea deppoder from the feeder and due to rotation of rotor, pea move forward and they also rotate with rotor. The blades are mounted on the rotor and these blades are rotate according to the rotation of rotor. The blades strike on the pea then peas are deppoded.

Due to electric motor and revolution of pulleys & shaft, the rotor revolves and then the **peas are deppoded** according to the speed of rotor.

In this project we have used rotor , shaft , pulleys , motor , bearings , collector and frame which are basically used on very small scale production and this same setup when used in large scale production will result in better effects helpful for large scale industries. We have employed small scale production because of its range of cost , otherwise it would have gone beyond reach and would have brought more desirable results.

7. CONCLUSION:-

After manufacturing pea deppoder we concluded that we can deppod any thing related to food. In this pea are feed in the pea deppoder from the feeder and due to rotation of rotor, pea move forward and they also rotate with rotor. The blades are mounted on the rotor and these blades are rotate according to the rotation of rotor. The blades strike on the pea then peas are deppoded. Due to electric motor and revolution of pulleys & shaft, the rotor revolves and then the **peas are deppoded** according to the speed of rotor.

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