

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI – 590 018.**



A Project synopsis on,

**“ELECTRIC AND PEDAL OPERATED HEAVY DUTY HYBRID
TURMERIC POLISHING MACHINE”**

**Project synopsis submitted in partial fulfillment of the requirement for the
Award of the degree of**

**Bachelor of Engineering In
Mechanical Engineering**

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Certified that the Major project work entitled,

**“ELECTRIC AND PEDAL OPERATED HEAVY DUTY HYBRID
TURMERIC POLISHING MACHINE”**

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CONTENTS

Chapter No.	Page No.
Chapter 1. Introduction	01
Chapter 2. Literature Survey	02
Chapter 3. Objectives	03
Chapter 4. Project Methodology	
Conceptual Design	04
Components of the machine	05
Manufacturing	06
Working Process	07
Chapter 5. Result and Conclusion	08
Chapter 7. Future scope of project	09
References	10

CHAPTER-1

INTRODUCTION

In today's industrial world man's innovative ideas has taken him towards all directions concerning about the production and safety in industrial establishments. Some instruments are of sheer excellence where as others are the result of long research and persistent work, but it is not the amount of time and money spend in the invention of device or the sophistication of it operation is important, but its convenience, utility and operational efficiency that are important in considering the device.

India is a agriculture oriented country, agriculture is the prime business of India and so we aim to help the farmers by designing a mechanical device the powered with the capacity of polishing one of the important spice of India “The Turmeric”. Turmeric is very important spice in India, which produces nearly entire whole world's crop and consumes 80% of it. India is by far the largest producer and exporter of turmeric in the world. Turmeric plays a very important role in increasing the taste of spicy Indian foods; also it is having a great role in medicinal product making. As the harvested turmeric product is surrounded by the mud and the other unexpected waste it was the prime need to polish the harvested turmeric and very there comes the idea of developing a machine which would meet such requirements. And that's because we thought of developing such a machine. Some of advantages of this machine are compact in size, less power consumption ,initial low investment cost, Easy to operate etc.

CHAPTER-2

LITERATURE SURVEY

S.M.Moghe, K.S.Zakiuddin, V.G.Arajpure:

As per the above researchers: The designed machine is very simple in operation, efficient in polishing of harvested turmeric at a good speed of production. This machine seems very simple at same time very efficient in polishing about 50 kg of harvested turmeric at a speed about of 75 rpm for about 20 min.

Shweta S Walunj, AA Sawant, KG Dhande and SB Kalse:

The paper presents the turmeric polishing machine. The performance of developed polishing machine checked at three different capacities (8, 10 and 12 kg) and three speeds (45, 60 and 90 rpm). At speed 60 rpm and 8 kg capacity the highest polishing percentage is obtained and it is 7.68%. The polishing capacity is high as compared to hand polishing, i.e., 30 kg per hour. Polishing machine is easy to operate and useful on farm polishing job. Hence machine polishing is recommended for turmeric processing.

R.V. Powar, S.B. Patil and P.S. Bandgar:

The machine output was greater with tractor operated machine followed by diesel engine operated and electric motor operated machine. Also, it was observed that, the machine output of tractor operated polisher machine was 9.34 per cent and 68.72 per cent than diesel operated and electrical motor operated machine, respectively. This may be due to the more time required for charging and discharging rather than polishing time.

CHAPTER-3

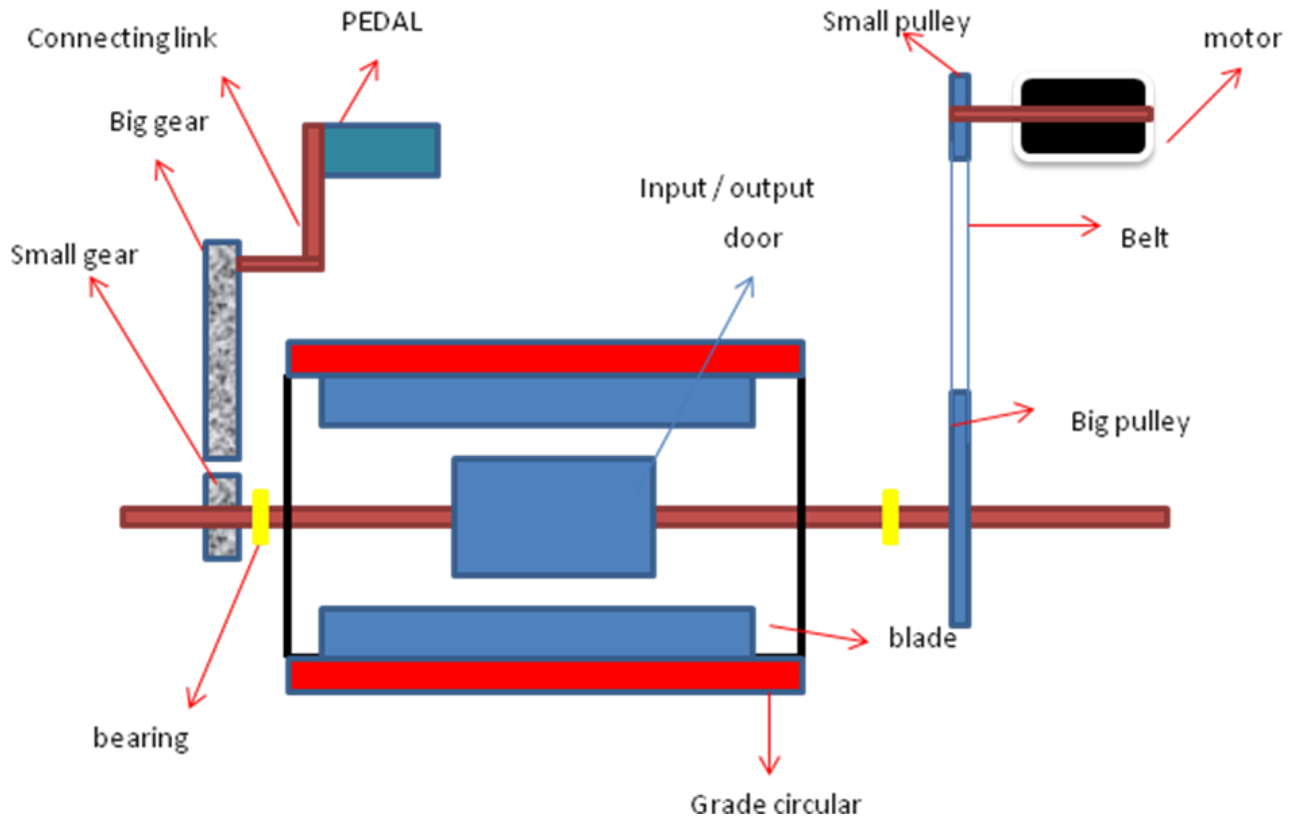
OBJECTIVES

- 1) The main objective of the project is to design and fabricate a turmeric polishing machine that can efficiently and effectively remove impurities and improve the appearance of turmeric.
- 2) To make a complete electromechanical device which is simple to work efficient.
- 3) To build the turmeric polishing machine to the capacity of 10kg.
- 4) To build the machine which can be utilized in with or without the electricity.
- 5) The turmeric polishing machine offers several advantages over traditional polishing methods, including increased efficiency, reduced labor costs, and improved product quality.

CHAPTER-4

METHODOLOGY

A. CONCEPTUAL DESIGN:

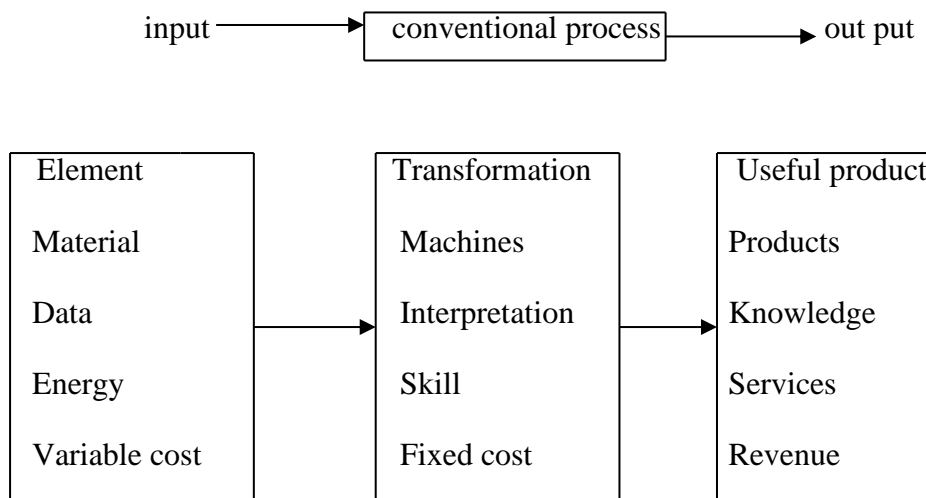


COMPONENTS OF THE MACHINE

- 1) Belt
- 2) Pulley
- 3) Motor
- 4) Shaft
- 5) Wiring
- 6) Grade sheet
- 7) Bearings
- 8) Sheet metal
- 9) Fasteners
- 10) Hinges
- 11) Pedal
- 12) Gears

MANUFACTURING

The process of conversion of raw material into finished products using the three resources as Man, machine and finished sub-components. Manufacturing is the term by which we transform resource inputs to create Useful goods and services as outputs. Manufacturing can also be said as an intentional act of producing something useful. The transformation process is shown below-



It's the phase after the design. Hence referring to the those values we will plan the various processes using the following machines: -

- i) Universal lathe
- ii) Milling machine
- iii) Grinding machine
- iv) Power saw
- v) Drill machine
- vi) Electric arc welding machine

WORKING PROCESS

The working mechanism is very simple this machine works on motor and as well as pedal, the round drum is made with required diameter and then it is placed on the machine structure which is centrally supported with the help of shaft and then it is supported on the bearing which will allow for smooth working, the shaft is drive with the help of pulley and belt drive which is connected to the motor the door is provided to the graded drum from where we can feed the turmeric and remove it after the process is over. The blade is attached inside the drum so in order to polish the turmeric the machine can also run-on pedal swing machine mechanism which can be operated with pedal, the gears are used to provide the smooth operation to polish the turmeric.

CHAPTER-5

RESULT

1. It can clean 40 Kg / Hr of turmeric with good result in terms of quality as well as quantity.
2. It can be easily operated at 300 - 600 rpm at optimum load.
3. It can polish turmeric in minimum time 15 min for one cycle.
4. The machine works on both pedal and motor.
5. It works efficiently and effectively removes impurities and improve the appearance of turmeric.

CONCLUSION

We have taken up this project as real challenge, as we were not experience in this field. We started our work on this project facing new hurdles initially. After the completion of the project work, we tried working in our college machine shop and we were pleased to note that it does meet the requirements for what it is meant. The maneuverability of the device is quite good and the handling is quite simple. For commercial purpose one can improve the efficiency of the device effectively by increasing the size of the device.

CHAPTER-6

FUTURE SCOPE OF THE PROJECT

We feel the project that we have done has a good future scope in any agriculture sector. The main constraint of this device is the high initial cost but has low operating costs.

Savings resulting from the use of this device will make it pay for itself with in short period of time & it can be a great companion in any field dealing with rusted and unused metals.

The device affords plenty of scope for modifications, further improvements & operational efficiency, which should make it commercially available & attractive. If taken up for commercial production and marketed properly, we are sure it will be accepted in the industry.

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