

INJECTION MOULDING MACHINE WITH SHREDDER

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Abstract: The Main aim of work is to convert plastic waste in to the useful final product. This machine can be used in small scale industries or in small scale startups. This machine can solve the problem of plastic waste. This can also be useful at school and colleges for recycle plastic scrap. It is very useful to prevent damage to environment through the plastic waste.

1. Introduction

Total solid waste is everything that people throw away each day. Total solid waste comes from agriculture, mining, industry and municipal solid waste. Municipal solid waste is the garbage that people produce in their homes and where they work which is operated and controlled by local officials such as city or Gove. Contains all kinds of garbage including paper. yard, waste, plastic, old appliance, household garbage, used furniture and anything that people throw away at homes, schools and business. Sustainable solid waste management is crucial problem not only for developing countries but for the developed countries as well. However, the plastic waste as significant portion and component of the municipal solid waste is a quite problematic for its non-biodegradability and therefore can stay in the environment for a considerable length of time carrying all sorts of problems.

There are two major categories of plastics include thermoplastics and thermosets. Thermoplastics refer to plastic materials that can be formed into other products by re- melting or processing into different shapes by the application of heat and pressure. These are easily recycling into other products. These thermoplastics include polyethylene, low and high density (LDPE, HDPE) polypropylene (PP), polyvinyl chloride (PVC), Polystyrene terephthalate (PET) etc.

Working of project:-

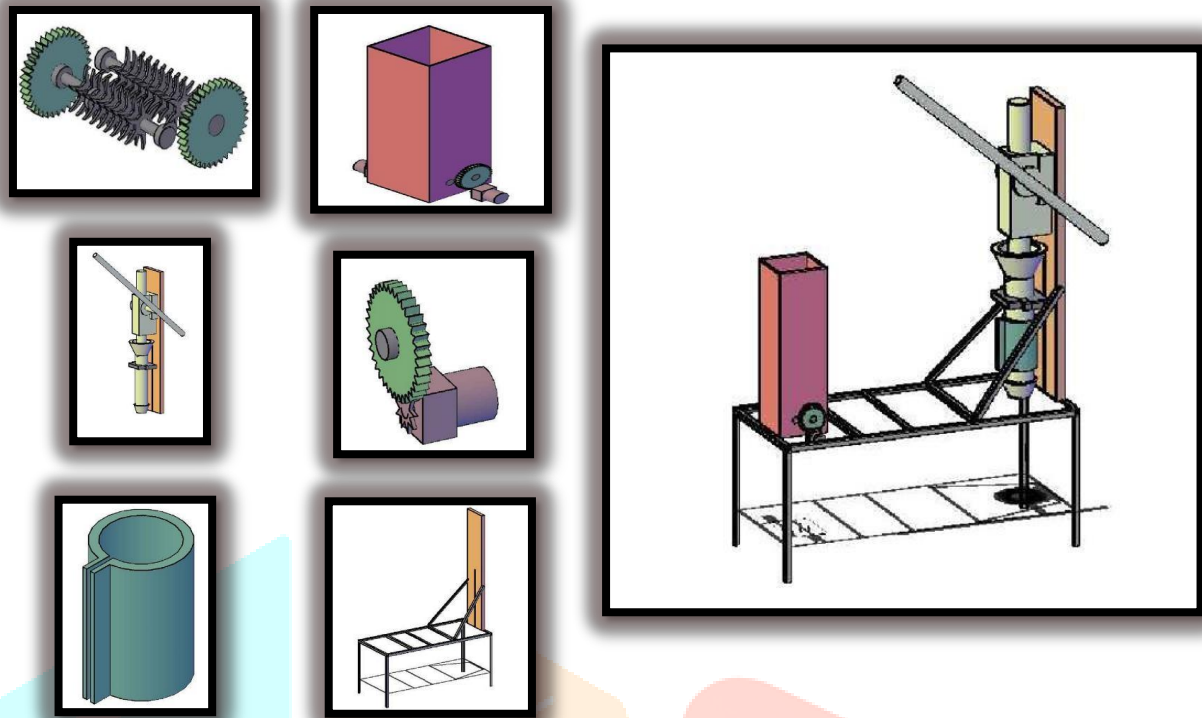
In today's world the plastic waste management is the biggest problem. In industrial areas there are many types of plastic waste. For that plastic waste management propose we have designed the "INJECTION MOULDING MACHINE".

This machine can solve the problem of plastic waste management problem. This machine converts the plastic waste in to use full final product. This machine can be used in small scale industries or start up's.

This machine first converts the plastic waste into shredded plastic this is how it converts in raw material then shredded plastic material goes in to the "INJECTOR" then plastic melts with the help of heat then with the external force melt plastic goes to the core and converts into useful final product.

CONSTRUCTION OF PROJECT: -

- MOTOR** : Motor for giving the rotary motion to the blades and shaft.
- GEAR BOX** : Gear box decrease the rotary motion comes from the motor and increase the torque.
- BLADES** : Blades are made from steel and it cut from the steel thick sheet. It shreds the plastic into small pieces
- TEMPERATURE CONTROLLER** : Temperature controller can control the temp. of the band hatter.
- CORE** : Core is made from steel. When plastic melts it goes to the core and it gene the shape of the core.

ASSEMBLY AND DISASSEMBLY OF PARTS: -**Details of inspection carried out: -****Band heaters**

Provide countless solutions for cylindrical surface heating applications. For other cylindrical or non-cylindrical surfaces, we recommend cartridge-, circulation-, immersion-, strip-, tubular- or flexible heaters.

WORKING PRINCIPLE OF BAND HEATER

Heating is a complex process governed by the principles of thermodynamics, fluid mechanics, and heat transfer. Heat transfer, in particular, is useful knowledge as it will help inform important aspects of heater selection and system design. Heat transfer is the movement of heat from one area (or object) to another, always from areas of high concentration (hot) to areas of low concentration (cool). There are three methods of heat transfer.

DETAILS OF REWORK/RECTIFICATION CARRIED OUT: -**FRAME: -**

- First we make frame with cast iron.
- We cut the angle with the help of power hacksaw cutter.
- Then we weld all the angles to make frame with the help of welding machine.

BLADES: -

- First we bought H.S.S. From the shop.
- Then cut the blades from the sheet metal with the help CNC machine.
- Then we make the shaft.
- Then assemble the blades and shaft.

INJECTOR: -

- We bought the INJECTOR from the shop.

HOPPER: -

- Frist we bought the material from the shop.
- Then cut the metal sheet as per dimension.
- Then weld all the parts.

MOTOR WITH GEAR: -

- Then we bought the A.C. motor and gear from the Shop.

ADVANTAGES: -

- High efficiency
- Enhanced Strength
- Ability to use multiple plastic types simultaneously
- Fast Production.
- Low labour costs.
- Design flexibility.
- High output production.
- Good colour control.
- Good product consistency.
- Good dimensional control.
- Can be used to produce very small product.
- Leaves little post-production scrap.

DISADVANTAGES: -

- High initial tooling and machinery cost.
- Part design restrictions.
- Small runs of part can be costly.

APPLICATION: -

- Can be use for making small parts.
- Plastic waste can be recycle.
- Cable assemblies.
- Computer electronics.
- Engineering Prototypes.
- Marketing samples.
- Medical and Dental products.
- New product design & development.
- R&D labs.
- Test specimens.
- Can be use for making aerospace components.
- Can be use for making automotive components.
- Can be used for Geophysics.

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