

# “SEMIAUTOMATIC INJECTION MOULDING MACHINE”

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## ABSTRACT

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Injection moulding machine is a machine which is used to produce complex shape plastic product. In product manufacturing industry we all know about hand operated injection moulding machine but day by day world moves towards automation and time saving. So to solve this problem we tried to design and developed semiautomatic injection moulding machine on small scale industry. In hand operated injection moulding machine a man is required for pressing molten plastic material into die should be experience full.

Nowadays there are many methods to develop plastic parts like bottle caps, mobile phone parts, electronic housings, containers, automotive interiors and most other plastic products. Moulding process are industrial process in which plastic parts are created by injection of molten metal in mould. In the study of moulding process the output quality is rather important. A significant improvement in output quality may be obtained by machine which we are going to be develop.

Semiautomatic injection moulding machine is a machine which is used in manufacturing of plastic product.



This machine consist power transmission system and SCOTCH YOKE MECHANISM. Power transmission system transfer power from motor to final shaft on which scotch yoke mechanism is installed, this mechanism convert rotatory motion into reciprocating motion. A punch is connected to scotch yoke mechanism which compresses the molten plastic material into the die through nozzle. After solidification desired product is obtained.

The injection unit is responsible for both heating and injecting the material into the mould. The first part of this unit is the hopper into which the raw plastic is poured. The hopper has an open bottom, which allows the material to feed into the barrel. The barrel contains the mechanism for heating and injecting the material into the mould. The mechanism is usually a ram injector or a reciprocating punch. A ram injector forces the material forward through a heated section with a ram or plunger that is usually powered by scotch yoke mechanism. Today, the more common technique is the use of a reciprocating punch.

A reciprocating punch moves the material forward by pressing molten material and sliding axially, being powered by electric motor. Injection moulding is an economical and very efficient method of producing injection moulded parts. It can produced millions of arts with exactly the same shape, dimension and quality. Some examples of injection moulded parts are the mobile phones, mouse, keyboard, and many components found inside the automobiles.

As the molten resin is being injected into the mould, it enters the mould opening called the die. The cavity must be filled precisely to avoid short shots but it must not be over packed(over packing is forcing more than enough pressure to the resin and it can damage the mould).

The molten resin will stay in the cavity for 30 seconds to 1 minute or more until it cools down and solidify. When the resins solidify a moulded part is formed. The mould will open and then the moulded part will be ejected. The mould closes and it's ready for another shot.

## SEMI AUTOMATIC INJECTION MOULDING MACHINE



### PROJECT GROUP MEMBERS:-

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### FINAL YEAR MECHANICAL DEPT. REC BAND