

# “Automatic Stamping Machine ”

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**Abstract:-** This paper represents the design of a new ladder diagram for the application of a stamping process. The stamping mechanism is controlled by PLC hence it can be implemented in small scale as well as big industries for faster operation and less labor requirement. A physical simulation has been used a rubber stamping kit that comes with a Fatek programmable logic controller. This programming software is been selected because it has its own capabilities and designated symbol.

**Keywords:-** Stamping machine, PLC, Pneumatics cylinder, Ladder logic programming.

## I. INTRODUCTION

The conventional method for object stamping is manual, it is very time consuming and in non-automatic form. Continuous stamping or printing results in hand fatigue requires lots of efforts and also affects the accuracy to result so the manual method must be replaced by PLC Automation. Automatic stamping of object has received significant attention because automatic stamping is reliable and reproducible. This not only reduce manual effort but also gives more time for marketing also prevent danger which might occur when human being works in hazardous environment. Automation greatly improves the profit and productivity, it is very scalable.

## II. LITERATURE REVIEW

T Sheela. S .Shivraman et al [1] in the paper titled “Low Cost Automation for Sorting of Objects on Conveyor Belt”, proposed the system which describes that uses Raspberry pi 3 making the model generally sensing the colour of the object is a big challenge as there is a chance of high uncertainty due to the external lighting conditions and each nose. Similarly, while collecting objects from conveyor belt by a linear actuator, there are variations in weight and size of object. Further approaches to this system can be made to increase the capability to segregate large and heavy objects and sort them effectively. The objects once kept on the conveyor belt, the further assembly makes the work of sorting the objects very efficiently. In the paper, the author shave revealed that they have proposed a system which sorts the objects based on their colour which can future be enhanced to sort them based on

their size and shape with the help of IR sensor of near about short range communication requirements.

Amruta Pandit, jyoti Rangole et al [2] in the paper titled “Object Counting using Image processing techniques” which describes Image Processing techniques that are helpful for object counting and reduce the time of counting effectively. Proper Recognition of the object is important for object counting. The accuracy of the algorithm depends on camera used, size of object, whether or not objects touching and illumination conditions. Object counting using image processing system has huge applications where automation is to be introduced and time of counting is to be reduced linearly it reduces the man power required behind the counting, sorting and identification mechanism. These authors have implemented the most efficient and effective technique so as to provide the above said platform in order to achieve the tasks effectively.

Avadhoot R. Telepatil, Prashant M. Jadhav et al [3] in the paper titled “Colour Object Counting and Sorting Mechanism Using Im-age Processing Approach” proposed that the colour object counting and sorting is the major task that needs to be done at final dispatch section. Manual sorting is the tradition approach that preferred by industries. In this approach, visual inspection performed by human opera-tors. This traditional approach is time-consuming and non-consistent. Therefore the efforts are made to design and implemented the automatic technique to determine colour of an object, colour based object counting using image processing. In implemented system, image of a coloured object which is rolling over a conveyer belt has been captured using suitable image acquisition device.

The stamping is a process for reproducing text and images using a templates. The example of the cylinder seals and objects such as Cyrus Cylinder. The printing include the movable type. The first developed by Bi Sheng in china. These is mechanical movable type printing to Europe in the 15 the century ,printing press key role in the development of the Renaissance, reformation, scientific resolution, and material basis for the modern knowledge based economy. The paper is the most common material, it is also done on metals, plastics, cloth and composite material. The printing press rapidly spread across Europe, leading up to Renaissance and later all

around the world. The movable type printing have been called the most important invention of the second millennium. This is cost effective, less maintenance and gives considerable output. In this machine there are three modes of operation we have added i.e. manual mode, signal auto, continuous auto.

Mr. Ravipothina, B. Raju et al [4] in this paper titled “Automatic Pneumatic Stamping Machine” From last few years it has been seen that the pneumatic system playing very important role in industries due to its precision and cost. Mainly there is no need to be operated by skilled ones. The main advantage of this machine that it can be operated at low pressure (upto 6 bar). The quick retrieval mechanism is used in the stamping machine by action of pressurized air. Solenoid valves are used as direction control valves for operation. By replacing some attachment we can also elaborates other applications. The further objective of the system is, this is susceptible of a low cost of manufacturing with regards to both cost and labor, and which accordingly is then susceptible of low prices of sale to the public, so thereby making such automatic stamping machine are very economically to available to the public.

A Gundawar, Y Shahane et al [5] in this paper titled “Pneumatic Stamping Machine” The idea behind the project is to create a pneumatic stamping machine at a very low cost. Pneumatic control systems are widely used in our society, especially in the industrial sectors for the driving of automatic machine. The general purpose of the present invention, which will be described subsequently in greater details, is to provide a portable automatic pneumatic stamping machine which has many advantages of the low power consumption and effective performance and many specified features of the system, which is not anticipated. further objective of the system is, this is susceptible of a low cost of manufacturing with regards to both cost and labor, and which accordingly is then susceptible of low prices of sale to the public, so thereby making such automatic stamping machine are very economically to available to the public.

Mr. Arun S, Sree Rajendra and Vijayavithal Bongale[6] The proposed work describes the design and fabrication of prototype of automatic punching machine controlled by PLC and shedding light on the working principle and the hardware structure of the system. Punching or pressing process is one of the most important and necessary processing step in sheet metal industry. By automating this process one can have a greater control over the process Programmable Logic Controllers are used for the control of the system. This system can replace existing manual feed and operated punching and pressing machines. By interfacing PLC controls with the conventional machines, it is possible to achieve good results in the form of reduced manufacturing lead time, reduced cost and increased safety of the worker.

Mr. Raj Kumar Sharma, Rakesh Patwal, Rakesh Kumar Yadav, Vijay pratap[7] This project is basically an automation

based control system. The project is done by integrating cam and follower driven stamping machine. This machine will run on several steps of process that is paper feeding, and stamping. The purpose of this project is to generate the correct sequence of events for a stamping machine by designing the cam and follower and by controlling the motions of cam, conveyor and printer which is used for paper feeding with the help of some circuit mecha-nisms such as relays, electronic timers etc. The cost of stamp-ing paper by the machine is very less as compare to the man. Time taken by the machine to stamp is more as compare to man. Our machine can stamp only A4 sheet (It depend upon printer) but man can stamp any size of paper. Machine can work for long hours without break but man needs break. Speed of machine to stamp is constant but the speed of man is decrease with time. Our machine required electricity to oper-ate while man doesn't. Our machine can stamp only at speci-fied position but man is flexible, so it can Stamp any position.

### III. SYSTEM METHODOLOGY

Mr. Ravipothina and B. Raju et al[4] are research and work on the “Automatic Pneumatic Stamping Machine” In this paper they work on the pneumatic cylinder. They are used Microcontroller.

In this paper they used the compressor for the piston up and down in the pneumatic cylinder. Relay switching is controlled by program in microcontroller. Based on its code relay are operated and solenod starts working by passing air to the cylinder valves which will be making the piston to reciprocate up and down the cylinder is double acting cyllinder type. Compressor is machine, it is generate the required pressurized air as a input source of electrical or mechanical energy.

In this fabrication of automatic pneumatic stamping machine we are using the continuous flow of air compressor as the power source is direct current.

Graph 1.1 operating pressure graph in a compressor



Fig 1:- Microcontroller

A Gundawar, Y Shahane et al [5] in this paper titled “Pneumatic Stamping Machine”. This system have low cast ,low power consumption. In this system they not used the conveyor belt for the moving object they only stamp in the one place. Its not fully automated because when they want to stamp any material its replace by the human. For this system time complexity is more.

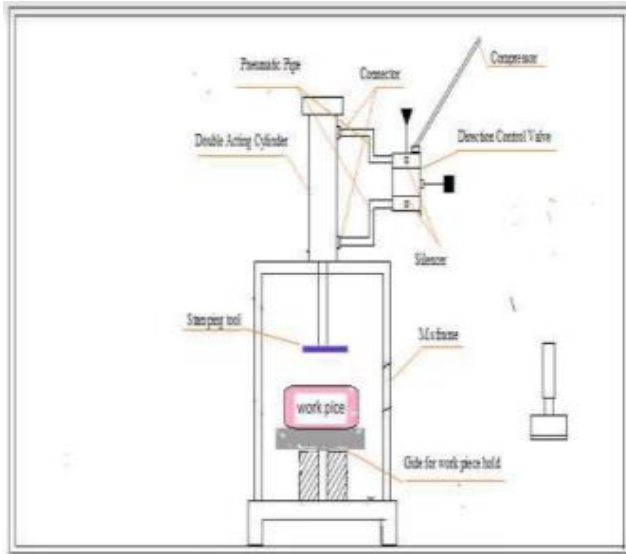


Fig 2:- Actual Project Diagram

**IV. SELF PROPOSED WORK**

The pneumatic cylinder is fixed vertically and die are fixed at the end of the pneumatic cylinder piston rod. The pneumatic cylinder is operated through the air, which is coming from compressor. By using solenoid operated valve the compressed air delivered to the pneumatic cylinder. The solenoid valves are operated through the PLC which work as control unit in this system. The air enters into the pneumatic cylinder to one port to moves the stamping die (rubber stamp) in downward direction.

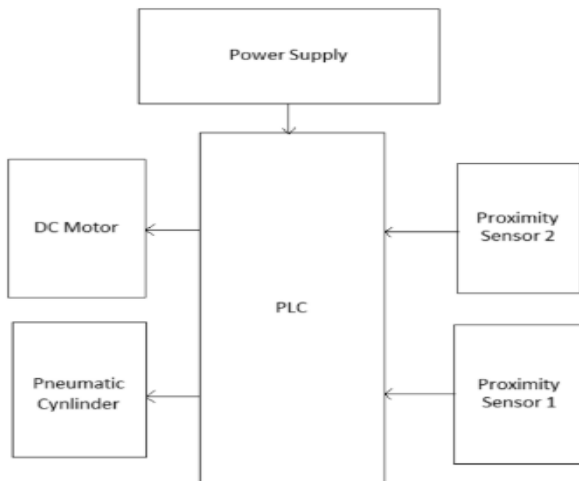


Fig 3:- Block diagram

**V. CONCLUSION**

In this paper we conclude that “Automatic stamping machine” It is the reliable printing mechanism this replaces traditional hand stamping on any object. The general purpose of the present invention, which will be described subsequently in greater details, is to provide a portable automatic pneumatic stamping machine which has many advantages of the low power consumption effective performance and many specified features of the system.

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