

A review on Development of Pneumatically Operated Biodegradable Dish Making Machine

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Abstract - Generally, the dish made in plastics. The plastics are harmful and it has many disadvantages to us. Biodegradable by using this we can make dish. It is very cheap and it does not have any chemical effects. The Biodegradable dish is made by a pneumatic machine. The machine is operated by the pneumatic system. By using this we can produce cup at high production rate. By using different shape die we can produce different shape and size dish. This project is based on fabrication and assembly of pneumatically operated Biodegradable dish making machine. The project is basically by considering the current problem of expensive computer-controlled Biodegradable dish making machines. Biodegradable dishes are mainly consisting of plastics. And plastic is a material which is very hazardous to the environment. With the help of this pneumatically operated machine Biodegradable dishes are made from any kind of Biodegradable are also used for making dish.

Key Words: Biodegradable material, pneumatic pressure, pneumatic dish making machine, punching die, punching force.

1. INTRODUCTION

Biodegradable dish is mainly used at special events, celebration, occasion to serve solid food such as fast food, salad etc. Biodegradable dish coated with plastic or wax it prevents the leakage of liquid from dish. The paper cup is used where the washing is unavailable and they throw out after used. So, the biodegradable dish is used in restaurants and hospitals to serve prepared food. The pneumatic press and hydraulic press are two methods which are mainly used for making biodegradable dish. But, the pneumatic method of formation of biodegradable dish is preferred. Because, pneumatic method is more economical as compared to hydraulic method. Because, highly expensive fluids are used in hydraulic method for compression. Hence, pneumatic method of compressing air is select for making biodegradable dish. Any kind of paper can be used for making biodegradable dish. For making of biodegradable dish, we required numerous devices like double acting cylinder, punch and die of required shaped, direction control valve, flow control connector and hose, heater coils.

They mainly focused on hydraulic press which is operated at very high speed and it increases production rate by pressing the number of biodegradables at a time. Studied leaf container machine is designed having straight forward pedal work mechanism. It needs 300 watts of electric power to operate. Leaves are washed and dried and put on lower kick and pedal is pushed down. All operation like collapsing, trimming, squeezing into shape and drying done by squeezing the pedal lever. A pneumatic system is used to compressed air. Direction control valve which controls flow of air into the cylinder. The air flow into flow control valve and pressure to the double acting cylinder. High pressure air apply pressure on the punch & die and biodegradable gets deform in different shapes.

The raw material for production of biodegradable r is primary source mainly obtained plants. To provide alternative source of raw material there is need of invention of process of recycling. Studied use of solid waste and recycle the material in construction. Studied design analysis of various types of punches with special attention to their cutting profiles, using the finite element technique.

Review on pneumatic punching machine and modification in punch tool to reduce punching force required. Initially the biodegradable mixed with the water produced the pulp, then by using heater coil we are removing water from pulp. This pulp now places in between die and punch of plate shape. By using pneumatic cylinder air pressure can be applied on dry pulp by using actuator. The main application of this machine is to improve production rate and high uses of waste product and the maintain waste management system.

2. LITERATURE REVIEW

Omkar S. Chilmulwar, Sahil J. Mahendra, Nikhil N. Kodurwar, Jayant C. Piprode, Dr. Deepak V. Bhope (March 2018) [1] There are two purposes of this project, one is to introduce automation in production and the second is to reduce human efforts. It is found that this machine can produce one stirrup in 18-20 second which is nearly at the same speed that of the skilled worker when he is most productive. Due to the automation in stirrups making, this machine has greatly

reduced human efforts. As due to some constraints machine has to run between a pressure ranges and hence 7 stirrups can be made with available air compressor fully filled up to the maximum pressure limit. Because of this machine, it has become possible to reduce the human effort to a great extent.

A.K.Kumaresh, B.Balaji, M. Raj Kumar (April-2016) [2] In this thesis analytical calculations for punching die parts are analyzed by the finite element methods with close meshing analysis. This die design mainly designed for the MSME industries which are facing some problems related to their own usage. By implementing this type of die design to compete few recommendations such as (1) Increase of production rate/batch (2) Get a possible product in a die (3) Reduction of man power (4) Eliminate the storage spaces for die.

Viraj N. Suryawanshi, Nilesh V.Wakadem Prof. Prashant A. Narwade (May 2019) [3] This project has met its objective to produce a hole by pneumatic force. By using pneumatic force, they perform operation like punching, which is very useful and helpful to do small task at colleges. they chose a simple c-frame machine which occupies less space and easy to operate. They tested their project by punching the sheet metal. As their project is based on manufacturing of pneumatic punching.

Future Extension:

They contemplate the following future features which can be incorporated into this project: -

- 1) Automation of pneumatic punching machine
- 2) Accident avoiding systems by adding LDR sensors
- 3) Improvements in pneumatic machine by adding components like timers, silencers, etc.

Shubhangi.S.Shetake (May 2020)[4] It is determined that the gas(air) cutting is incredibly low-cost as compared to hydraulic cutting machine. The vary of the cutting thickness will be inflated by mistreatment air mass mechanical device and additional hardened blades. This machine is advantageous to tiny sheet cutting industries as they can't afford the dearly-won hydraulic cutting machine. more with the utilization of automation, it provides provision to enter the quantity of sheets to be cut and needed length of the sheet. Thus, human effort is reduced with increase in accuracy operational.

P.Goyal, G.Srivastava, R.Singh, N.Singh (February 2015) [5] In this review paper they studied various Pneumatic operated punching machine which is suitable for small and medium size industries. On basis of the shear provided on the punch face, the punching force reduces of 25% to 60% there by increasing tool life and also reduces tool machining cost. After

referring this review paper, we can understand effect of punching force, area of punch, tool machining cost, etc.

3. CONCLUSION

After reviewing these research paper and review papers we can say that Biodegradable dish can be manufactured at high rate with the available machines. Manufacturing normally requires pneumatic dish making machines to operate at a very highspeed. But recent machines are not that much of capable to generate pressure and cutting force at same time for Biodegradable material. to resolve this problem, we can use servo motor or high-pressure capacity pneumatic cylinder for performing cutting of extra material after completion of punching operation in pneumatically operated Biodegradable dish making machine.

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