Hydraulic Punching Machine Die

Khan Umair[1], Shaikh Raju[2], Shaikh Irfan[3], Sajjad Faisal[4]
[1, 2, 3, 4] Dept of Mechanical Enginering,
[1, 2, 3, 4] Everest Education Society's Group Of Institution ,Everest College Of Engineering & Technology Aurangabad

Abstract- *In an attempt to alleviate the problem of the dearth of equipment in our laboratories in most of our higher institutions, a 2-ton hydraulic press was designed, constructed and tested using locally sourced materials. The principal parameters of the design included the maximum load (300 kN), the distance the load resistance has to move (piston stroke, 150 mm), the system pressure, the cylinder area (piston diameter =100 mm) and the volume flow rate of the working fluid. The major components of the press designed includes the cylinder and piston arrangement, the frame and the hydraulic circuit. The machine was tested for performance with a load of 10 kN provided by two compression springs of constant 9 N/mm each arranged in parallel between the upper and lower platens and was found to be satisfactory.*

A hydraulic machine can be thought of as a large flexible mechanical structure that is moved by some sort of control system. The control system takes its input from a human operator and translates this command into the motion of actuators, which move the mechanical structure. The high performance and highly powerful, hydraulic punching machine vice with the capacity for high volumes of punching has done.

I. INTRODUCTION

Automation can be achieved through computers, hydraulics, robotics, etc., of these sources, hydraulics form an attractive medium. Automation plays an important role in automobile. Nowadays almost all the automobile vehicle is being atomized in order to product the human being. The press is a metal forming machine tool, designed to shape or cut metal by applying mechanical force or pressure with help of press tool. The metal is formed to desired shape without removal of chips. Press tools are exclusively intended for mass production work. Sheet metal operation plays an important role in engineering works. Press tool are made to produce a particular component in very large numbers, mainly out of sheet metal. The principle press tool operations are cutting and forming operations of sheet metal. Sheet metal components such as automobile parts, parts of house hold appliances and electronic equipment's are produced by press tools.

Nowadays lot of sheet metals parts are being utilized in lot of sectors irrespective of particular fields like mechanical, electrical, electronics, computers. Sheet metal components are mainly used for the followings,

- Lesser in weight
- Less Expensive
- Replaceable and better aesthetic

A hydraulic machine can be thought of as a large flexible mechanical structure that is moved by some sort of control system. The control system takes its input from a human operator and translates this command into the motion of actuators, which move the mechanical structure. The high performance and highly powerful, hydraulic punching machine vice with the capacity for high volumes of punching has done.

Punching is a operation of producing permanent impression over a job, it historical day it is done by hammering, where nowadays it is done pneumatic machine with accessories

One form of in efficiency in current systems is due to the link between the flows of the two ports of the cylinder. This is because most valves use a single spool to control the flow in both ports. Because of this link, it is impossible to set the pressure levels in the two sides of the cylinder independently.

Therefore, the outlet side will develop a back pressure, which acts in opposition to the direction of travel, which increases the pressure required on the inlet side to maintain motion. Since the force generated by the actuator is proportional to the pressure difference between the two sides, the actual pressures in the cylinder don't affect the action of the cylinder.

Generally,Hydraulic cylinder operations are based on Hydrulic jack operation.

II. IDENTIFY, RESEARCH AND COLLECT IDEA

Hydraulics is a branch of engineering concerned mainly with moving liquids. The term is applied commonly to the study of the mechanical properties of water, other liquids, and even gases when the effects of compressibility are small.

Hydraulics can be divided into two areas, hydrostatic and hydrokinetics. Pascal's law states the when a confined fluid is placed under pressure; the pressure is transmitted equally in all directions and directed normal on all faces of the container.
Hydraulics has proven to be the most efficient and economical system adaptable to aviation. First used by the ancient Greek's as a means of elevating the stages of their amphitheater, the principles of hydraulics were explained scientifically by the seventeenth century scholars Pascal and Boyle.

The Laws discovered by these two men regarding the effects of pressure and temperature on fluids and gases in confined areas form the basis of the principles on mechanical advantage in other words, the "why and how" of hydraulics.

The word "hydraulics" is derived from two Greek words "hydro" meaning liquid of water and "aulos" meaning pipe or tubing. "Hydraulics", therefore, is an adjective implying that the word it modifies is in some major way concerned with liquids. Examples can be found in the everyday usage on "hydraulics" in connection with familiar items such as automobile jacks and brakes. As a further example, the phrase " hydraulics freight elevator" refers to an elevator ascending and descending on a column of liquid instead of using cables and a drum. On the other hand, the word "hydraulics" is the
generic name of a subject.

According to the dictionary "hydraulics" is defined as a branch of science that deals with practical applications (such as the transmission of energy or the effects of flow) of a liquid in motion.

Until 1700 AD fly press were not in engineering applications. Earlier open Die or Small fly presses particularly for Gold smith's work in ornamental work were evolved and used effectively.

III. WRITE DOWN YOUR STUDIES AND FINDINGS

 Design and Fabrication of Auto Roll Punching Mac by Kundan Kumar ISSN(Online) : 2319 - 8753 In their research they revealed that design and fabrication of auto roll punching machine will make an impressing mark in the flied of small scale industries this has also reduce the cost involved in the concern and it required task taking minimum time.

 Improvement in design of manual small press machine by Vivek Sharma ISSN : 2278 - 0149 In their research they revealed that machine in capable to do work with some shear force by putting (diametrically opposite) variable additional weights on the flywheel we can obtained that desired energy levels to suit the maximum load required for manufacturing different types of engineering parts. Of course it is understood that only limited variation in capacity in possible. If at all some bigger or odd components to be manufactured one can choose the next higher range of the fly press. It is very clear that for given press reasonable flexibility is possible as far as energy is total load is concerned.

 Isaac Bamgboye and Moral into T.A. An improved oil screw press has been designed and constructed having 98.6% efficiency and a capacity of 0.86 tons/day. Abrasion rate of screw-shafts has been reduced from 63.3% to 12.6% by using high. Carbon steel material instead of lowcarbon steel. Peter Between in 2007 gives an idea about press machine and the result is extended due to improvement in the plate form in the design if the machine.

IV. GET PEER REVIEWED

The hydraulic jack is a device for lifting heavy load by the application of much smaller effort. It is based on Pascal’s law, which states that intensity of pressure is transmitted equally in all directions through a mass of fluid. It consists of cylinder (fixed) in which the piston slides. The lower end of the piston carries a movable plate which moves up & down with the piston.when liquid under high pressure is supplied to the cylinder, the piston moves upward & applies tremendous pressure (equal to the product intensity of pressure supplied & area of the ram) on any material placed on it.

V. CONCLUSION

A 2-ton hydraulic press was designed, manufactured, and calibrated. The machine was tested to ensure conformability to design objectives and serviceability. The machine was found to be satisfactory at a test load of 10 kN.

VI. ACKNOWLEDGMENT

We would like to take this opportunity to express our deep sense of gratitude and respect to our guide Prof.V.R.WARUL Lecturer and Head of Department Mechanical Engineering. It was a great privilege to get his constant inspiration and guidance during our project work. We extend vote of thanks to all our department Teaching and Non Teaching Staff members, who each time, stood behind to support and help us. We are thankful to beloved Principal Sir for providing all necessary facilities and encouraging us throughout the work. We are highly obliged to the entire friends, group providing the way in difficult times.

REFERENCES

[1] Improvement in design of manual small press machine by Vivek Sharma ISSN: 2278 0149 Doc Smith and Mates in 1999.
[2] Oseni K Owolarafe, Michael O Faborode 25May 2000.
[3] Isaac Bamgboye and Moral into T.A.
[4] Kundan Kumar, Design and Fabrication of Auto Roll Punching Machine, IJIRSET May 2016,96-108.
[5] V. B. Bhandari, "Design of Machine Elements", Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 2008