



FABRICATION OF PNEUMATIC METAL ROD BENDING AND TESTING MACHINE

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ABSTRACT

Presently in this world the utilization of twisting machine is expanded. Twisting is utilized in ventures for a wide assortment of purposes, counting blanking and squeezing. There are a wide range of kinds of twisting. The most famous are pneumatic twisting furthermore, water powered twisting. Yet, pneumatic twisting is more ideal than water powered bowing. The best benefit of Pneumatic twisting is their speed. Pneumatic twisting is multiple times quicker than hydraulic bending and they can perform numerous jobs faster and more efficiently. Pneumatic bowing is very adaptable, that they can be put in a plant in any expected position, even topsy turvy. The goal of our task is to Design and Fabrication of Pneumatic twisting limit of and to make a Bend of 6mm thickness TMT bar. The fundamental target of this venture is to carry out the Pneumatic bar bowing machine in the building locales with less expense contrasted with the current twisting machines, and expanding the efficiency of the stirrups. The twisting machine is one of the most significant machine device in sheet metal work shop. It is essentially intended for twisting. The twist has been made with the help of punch which applies enormous power on the work clipped on the bite the dust. The twisting machine is planned in such a way that, it works automatically.

Keywords - bending, twist, machine

1. INTRODUCTION

Since quite some time ago the work plays fundamental part in developments including blending coarse total sand water, concrete, slamming sand, land evening out and digging the establishment for base of construction, cutting rode, and so on. Presently a days because of improvement in innovation it is expected to diminish the work and time since there are part of assets. A few issues comes in to the image when we think about the human work regarding computerization. By utilizing traditional techniques it is preposterous to expect to decrease development time and building it as soon as could really be expected. Thus, mechanization in development framework is required. Presently a days in ventures particularly in auto and different businesses the programmed plate bowing machines are generally utilized. Prior the bowing machines where worked physically. So the result of machine was extremely less. Presently the strategy of bowing activity of the part is changed. Once the plate is stacked the administrator shouldn't just utilize once push button to begin the machine, yet he has worked two push fastens with the goal that both the hands of the administrator are locked in. This plan is made to stay away from wounds to administrators. The primary point of this task is to have the complete expertise of pneumatic gadgets, sensors and so on by which the physically worked press or any machine can be changed over into a semi or completely programmed unit. In this task the twisting machine is a self-loader bowing machine, in which the stacking and dumping of the part is done physically and the twisting of the pole is finished pneumatically.

2. OBJECTIVES

- 1) To make a bending machine to twist a metal bar up to 20mm.
- 2) Insightful plan of pneumatic TMT rod bending machine.
- 3) Demonstrating and reproduction of pneumatic TMT bar bending machine.
- 4) Arrangement of model example of pneumatic TMT bar bending machine.
- 5) Exploratory exercise of pneumatic TMT rod bending machine.
- 6) Investigation of relative outcome of pneumatic TMT bar bending machine.

3. METHODOLOGY

In the metal bar cutting and bowing cycle in development ventures we notice the generally the cutting and twisting activity is completed by physically work and because of this it is an exceptionally tedious interaction and creation rate is gradually and cost of this interaction expanded. And furthermore for both these activity we utilized the separate machine

4. WORKING PRINCIPAL

Project manages the self-loader bowing and cutting of pole. The equipment comprises of pneumatic chamber built with steel, pressure measure, and pole. A pole which is to be bowed is taken. The length of the bar is as our task is self-loader, human impedance is required. The bar is put on the pneumatic chamber machine. Pressure is set in the tension measure .The strain can be The tension check is worked by human. At the point when the pole is put, where it ought to be bowed is set apart on it. With the assistance of strain measure, the power is applied on the bar for twisting. At the point when the tension is applied, the cylinder pushes the bar to the front side of the machine. Because of the strain applied, the bar is bowed per the pneumatic tension. This is a self-loader project so both human and machine obstruction is required. In this paper the pole is twist with the assistance of pneumatic power .The pole is feed consequently with the assistance of engine and pulley course of action. In this paper our intend to twist 8mm breadth of bar. We can make the stirrup of required aspect by utilizing limit switch plan. In this ,when the pole is contacts as far as possible switch that time limit switch gives sign to the control unit, then control unit stop the engine and taking care of bar is stop consequently. After this, signal is given to the first chamber by control unit and Cylinder twist the pole inside a 3-4 stroke and we make total stirrup

5. CONSTRUCTION

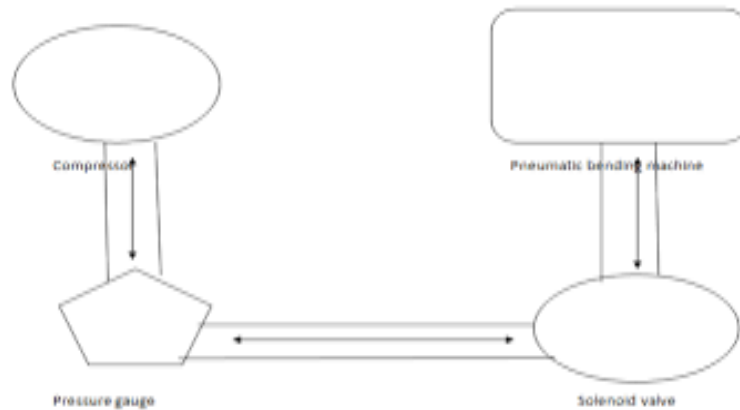
Main components of pneumatic bending machine are:

- 1) **Frame** - The frame is the base element provided with castor wheels, The primary base is made of mild steel square tube and mild steel plate. It supports the entire assembly of the pneumatic metal rod bending and cutting machine system.
- 2) **Cutting mechanism** - Removing of metal by a rotating abrasive wheel.(Very high speed, Shallow cuts)•the wheel action similar to a milling cutter with very large number of cutting points. Any material of dimension within the capacity of the wheel that can be cut off by sawing , shearing flame cutting can be cut off with a properly selected abrasive cutting- off wheel. It is used for all metals including such hard and tough ones as hardened tool steels and stainless steel. Within its scope are rods, tubes shapes and sheets of plastics, brick , tile stone, porcelain carbon, hard rubber state and casein .Many of these materials cannot be satisfactorily cut with a saw. This mechanism is run by A.C. Supply.
- 3) **Shaft** - Main shaft the dia.10 mm which is welded to the base frame vertically on both side of the base frame for sliding the cutter assembly in vertically up-down.
- 4) **Pneumatic cylinder** - Pneumatic cylinder(s)(sometimes known as air chambers) are mechanical gadgets which utilize the force of packed gas to deliver a power in a responding direct movement .Like pressure driven chambers, something powers a cylinder to move in the ideal heading. The cylinder is a circle or chamber, and the cylinder pole moves the power it creates to the item to be moved. Designs once in a while really like to utilize pneumatics since they are calmer, cleaner, and don't need a lot of room for liquid capacity .Because the working liquid is a gas, spillage from a pneumatic chamber won't trickle out and defile the environmental elements, making pneumatics more alluring where neatness is a prerequisite.



6. BLOCK DIAGRAM

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7. ADVANTAGES

- 1) High durability and reliability
- 2) Simple design
- 3) High adaptability to harsh environment
- 4) Pneumatic systems are safer than electromotive systems
- 5) Environmental friendly
- 6) Economical low cost
- 7) less power
- 8) The pneumatic is more efficient in the technical field
- 9) Quick response is achieved
- 10) Simple in construction

8. APPLICATIONS

- 1) Angle bending
- 2) Metal bending
- 3) In construction field
- 4) In production
- 5) This machine is very useful for small scale industries
- 6) All industrial application

9. CONCLUSION

From this project we conclude that Pneumatic bending machine is very cheap as compared to hydraulic bending machine. We can increase the bending thickness by arranging the high pressure compressor. This machine can also be used where electricity problems occur. This type of bending machine uses compressed air. So, when electricity problem occurs we can change our electric compressor to IC-Engine installed compressor. This type of bending machine is very Useful to small scale bending industries because they cant afford the expensive hydraulic Bending machine. In this machine the manually controlled press is converted into automatic machine. So, we can save maximum operating time and the output will also increase

compared to manual. In this project the humans have to only load and unload the TMT bars. It can be also called as semi-automatic type bending machine. This machine can also be converted into fully automatic machine so the loading and unloading will be done automatically. For making automatic one should have to be fully knowledgeable in this particular field. By doing so the existing old machines can be modified and made automatic by which the initial cost, to procure new automatic machines may be minimized. Thus there is a lot of scope in this area (automation). We can achieve many types of shapes by using many types of fixtures in bed. This system is easily handle by any worker. The worker dont have to be someone knowledgeable. Because of its cheap and simple design this machine can be sell everywhere with ease. Advance bar bending machine use for mass production. By using advance bar bending machine increases production rate and reduce labour cost. With the bending machine the manual usage and cycle time is reduced. They are compact in size and reliable

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