

Automatic Pneumatic Pipe Cutting Machine

K.U.Nagpure¹, R.P.Charkhod², V.D.Aher³, S.M.Chauhan⁴

Students

Mechanical Engineering Department

SVIT College of Engineering, Nasik, Maharashtra, India

ABSTRACT

Today, automation has powerfully entered in the industrial manufacturing process in order to get identical and accuracy of each product by reducing the human involvement. Automatic production is carried out for mass production which is aim at reducing the manufacturing cost of a product. Automatic pipe cutting machine is one of the machine use for mass production and aim at reducing the human involvement in order to increase the productivity and accuracy of the product. Automatic pipe cutting machine used timer circuit to control the movements of the grinder and the sliding mechanism.

Keyword: - Automation, Pipe Cutting.

1. INTRODUCTION

In the 19th century, industrial revolution takes place. After that industries are developed on the large scale. Products are required to produce by the mass production techniques to reduce the cost. For that purpose different techniques are developed. As many processes have to take place simultaneously, there is need for the help in working. For doing different work we need help. Special purpose machines are developed for this. In the perforation of different work for that machine is defined as a device or machine which works according to our order. Our order should be completed in time with precision so the term called Machine comes into play. "Machine – A servant play's important Role in it. In the field of Technology, every day a new technique is ruled. It has his own characteristic due to which we have to adopt it. Today is the World of "New Technology" which we have to take in practice. Machines are one of the areas in the development. Machines are widely used in the Mechanical field. In the mechanical Industries, machines are widely used for the art of wing assembly, material handling, coating facility, manufacturing processes (cutting, drilling, welding etc.). Machines could accomplish many Boring repetitive tasks for us.

1.1 Literature Review

The main purpose of this literature review is to get information about the project from the reference books, magazines, journals, technical papers and website. P. J. Bird, Development in the design and control of pneumatic linear actuators, European Conference on Electrics versus Hydraulics versus Pneumatics, Inst. of Mechanical Engineers, Lond on, In Mechanical Engineering. Research paper extensively elaborates the design and fabrication procedures. Refer the paper of A pneumatic vanes motor to know the function of vane motor.

1.2 Main Components Used

Vane Motor

In our pneumatic cutting, we used one pneumatic motor which is mounted on upper frame. Central motor this motor is also mounted on the upper frame and slider arrangement is used to give depth to the cutter.

Switches and Power Relay

A switch is an electrical component that can make or break an electrical circuit, interrupting the current or diverting it from one conductor to another. Switches are made to handle a wide range of voltages and currents; very large switches may be used to isolate high-voltage circuits in electrical.

Double Acting Cylinder

Cylinders are linear actuators which convert fluid power into mechanical power.

2. WORKING

This project consists of a pneumatic cutter which is mounted on top sides M.S. sliding structure on upper stand. In between two plates the cutter is mounted at the middle of the frame. One double acting cylinder is attached at the upper frame to give depth to the cutter when compressed air is supplied and one double acting cylinder is attached at the lower frame to hold the pipe for cutting. When we insert the pipe in jaw and push the button then, the compressed air is supplied through compressor using solenoid DCV to hold the job using holding fixture for first job holding sequencing operation. After the job holding is taken place then pneumatic cutter is ON and vertical cylinder gives cutting depth to the motor with pneumatic compressed air, cutting performance is affected by compressed air pressure & condition. Therefore proper cleaning & maintenance of the pneumatic system affects high quality pipe cutting performance. When pipe cutting is done the limit switch turns OFF the Solenoid DCV to stop the supply of compressed air.

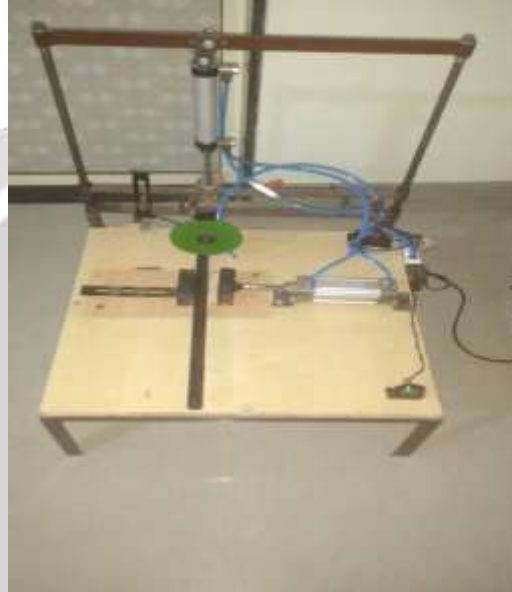


Fig -: Actual Project

3. FUTURE IMPROVEMENTS

3.1 Automated Machine by using Programming:

The cutting machine developed by us is pneumatically operated. Thus in old manual cutting machine it is needed to give full attention of worker to operate the machine. This machine can be modified to fully automate pneumatic cutting machine by using pneumatic controls and programming. This automated pneumatic machine can perform any specified work in minimum time, speed and with high accuracy. It can be used to transfer the job from one work station to another. If the path of the operation is given through programming, this machine does not need any regular attention. Line tracker machine is another improvement that can be done for specific cutting work.

3.2 Actual Industrial prototype:

We developed just a model of the pneumatic cutting machine. In this we have used piston-cylinders and pneumatic motor with required specifications. But if we want to develop a machine that is to be used in the factory floor, we can use the piston-cylinders and motor with higher stroke and capacity to increase the efficiency of the cutting system. Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work.

4. CONCLUSIONS

While concluding this report, we feel quite fulfilled in having completed the project assignment well on time, we had enormous practical experience on fulfillment of the manufacturing schedules of the working project model. We are therefore, happy to state that the in calculation of mechanical aptitude proved to be a very useful purpose. Although the design criterions imposed challenging problems which, however were overcome by us due to availability of good reference books. The selection of choice raw materials helped us in machining of the various components to very close tolerance and thereby minimizing the level of balancing problem. Needless to emphasize here that we had lift no stone unturned in our potential efforts during machining, fabrication and assembly work of the project model to our entire satisfaction.

5. ACKNOWLEDGEMENT

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6. REFERENCES

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