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A New Trend in Pneumatic Drilling Machine

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Abstract--- *Our project aim is designing a voice operating pneumatic clamping device in drilling machine. In a normal drilling machine the machine vice is used to clamp the work piece. But it's some difficult to hold the irregular work piece in certain position. Because of our two hands are used to position the work piece in the drilling machine. And then the external source is needed to fitting the job (or) work piece. For this purpose we provided voice operating pneumatic clamping device in drilling machine. Now a day the normal drilling machine is used in own small companies.*

Keyword--- *Pneumatic Drilling Machine, Pneumatic Double Acting Cylinder, Solenoid Valves, Object Sensor, Zigbee, Voice Recognition Sensor HM2007, Microcontroller.*

I. INTRODUCTION

The main objective of our project is to perform job holding operation effectively with less human effort by incorporating a machine with the pneumatic power. This also takes less time due to its quick action. For a developing industry the operation performed and the parts (or) components produced should have it minimum possible production cost, and then only industry runs profitably. The main advantage of all pneumatic systems is economy and simplicity. Automation plays an important in mass production.

II. PNEUMATICS

Pneumatics system operates on a supply of compressed air which must be made available in sufficient quantity and at a pressure to suit the capacity of the system. When the pneumatic system is deign adopted for the first time, however it wills indeed the necessary to deal with the question of compressed air supply. The compressibility of the air was first investigated by robot Boyle in 1962 and that found that the product of pressure and volumes of particular of gas.

PV=C (or) P1V1=P2v2

In this equation the pressure is the absolute pressure which for free is about 14.7psi and is of courage capable of maintaining a column of mercury, nearly 30 inches high in an ordinary barometer. Any gas can be used in pneumatic system bit air is the mostly used system now a day

2.1 Pneumatic Cylinder

An air cylinder is an operative device in which the input energy of compressed air i.e. pneumatic power is converted into mechanical output power, by reducing the pressure of the air to that of the atmosphere. They are two types of cylinder

2.1.1single acting cylinder
2.1.2double acting cylinder

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2.2solenoid Valves

The direction valve is one of the important parts of a pneumatic system. Commonly known DCV; this valve is used to control the direction of air flow in this by changing the position of its internal movable part.

2.3 Pneumatic Vice Machine

The pneumatic machine vice consist of pair of jaws. The jaws are made out of mild steel. One of the jaws is fixed, while other jaw is movable. The work pieces are placed on the table in between the jaws. The moving jaw is moved with the help of pneumatic power, to hold the work piece firmly against the fixed jaw.

2.4 Pneumatic Rotors

A pneumatic drill or jackhammer is a portable percussive drill powered by compressed air (though the same type of equipment mounted to construction machinery can also be hydraulically powered). It is used to drill rock and break up pavement, among other applications. The operation is similar to a hammer and hisel, with an internal hammer drives in doth direction by alternate blast of compressed air; first down to strike the back of the bit, then back up to repeat the cycle, while the chisel (or bit)Usually recovers from the stroke by means of a spring.

2.5 Control Unit

In pneumatic multipurpose device is an air-operated device used for many small operations. It is portable one. Compressed air is the source of energy for this device. The compressed air is allowed thorough the nozzle in such a way to rotate to fan the rotation is utilized for machining. Here the compressor firstly enters the control unit. In the control unit the pressure of the air is controlled and sent Valve controls the pressure volume of air. Then the pressure is read by pressure gauges. Then

The air is admitted to the barrel, a shaft is placed and if carries the fan. The shaft is supported in either and by bearing. The beatings are placed in the coupling, which covers, which cover the end of barrel.

III. PNEUMATIC COMPONENTS

The pneumatic multipurpose press machine consists of the following components to full fill the requirement of complete operation of the machine.

1. Double acting pneumatic cylinder
2. Solenoid vale
3. Connectors
4. Hoses

IV. WORKING PRINCIPLE

Our project consists of pneumatic cylinder, solenoid valve, pneumatic rotor and control units one cylinder is fixed the horizontal for clamping and another one is fixed vertical with pneumatic rotor drilling operation. The whole set up is controlled by the control unit which already programmed as our need. Zigbee is used as a wireless sensor for transmitting the signal. In the transmitter and receiver is used to perform the task in transmitter, our voice instruction like “UP”,”DOWN”,”CLAMP” and “REMOVE” is received by speech recognition module.

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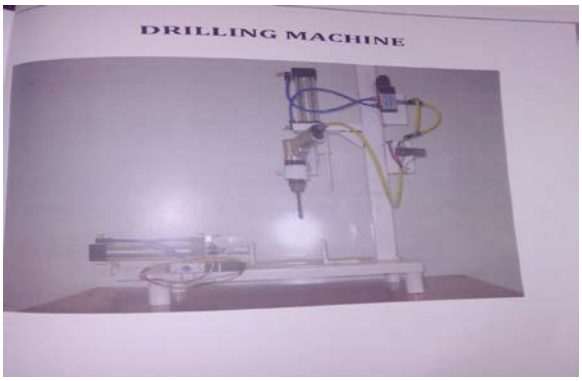

MERITS:

1.It reduces the manual work.
2. Low cost
3.Easy to handle.

DEMERITS:

1.Noise operation
2. Need a separate compressor.

V. APPLICATIONS

1. Bearing press operation in all industries
2. used for pattern marking
3. used in civil engineering for bending metal rods.

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