1) AIR BRAKE SYSTEM USING ENGINE EXHAUST GAS

The aim is to design and develop a brake system based on exhaust gas is called “AIR BRAKE SYSTEM USING ENGINE EXHAUST GAS”. The main aim of this project is to reduce the work load of the engine drive to operate the air compressor. In this project, we used exhaust gas from the engine to rotate the generator turbine. Then the power is loaded to the D.C compressor and it is used to the pneumatic cylinder to apply brake.

This is an era of automation where it is broadly defined as replacement of manual effort by mechanical power in all degrees of automation. The operation remains an essential part of the system although with changing demands on physical input as the degree of mechanization is increased.

2) AUTOMATED CRANE PNEUMATICS

The pick and place are automated machines (crane ) which perform functions like material handling etc. there are various machines, which performs the user defined tasks,. Our automated machine consists of one rotary axes and three pneumatic cylinder. Here the movements are defined in arms of degree of freedom, which are supported. The degree of freedom refers to the possibility of the motions along a particular axis.This model consists of two degree of freedom ,these are grouped into the motions of the harms and body assembly. Corresponding to arms and body ,our model has rotational traverses ie rotation of arms about the vertical and horizontal axes.In short, the pick and place automated machine manipulator with external sensor and relays (switches) chat can perform various assembly tasks with this definition , this machine must posse’s intelligence, which is normally due to proper switches and relays associated with its control and sensing system.An industrial automated pick and place is a general-purpose, consisting of several rigid links connected in series by revolute of prismatic joints. One end of the chain is attached to a manipulate objects of performs assembly tasks. The motion of the joints results relative motion of the link. Mechanically, a robot is compared of an arm (of mainframe) and a wrist subassembly plus tools. It is designed to reach a work piece located within the sphere.

3) AUTOMATIC PNEUMATIC BUMPER AND BREAK ACTUATION BEFORE COLLISION

The technology of pneumatics plays a major role in the field of automation and modern machine shops and space robots,. The aim is to design and develop a control system based intelligent electronically controlled automotive bumper activation and automatic braking system is called AUTOMATIC PNEUMATIC BUMPER AND BREAK ACTUATION BEFORE COLLISION. This project consists of IR transmitter and Receiver circuit, Control Unit, Pneumatic bumper system and pneumatic braking system. The IR sensor senses the obstacle. There is any obstacle closer to the vehicle (with in 3-4 feet), the control signal is given to the bumper activation system and also pneumatic braking system simultaneously. The pneumatic bumper and braking system is used to product the man and vehicle. This bumper and braking activation system is only activated the vehicle speed above 30-40 km per hour. This vehicle speed is sensed by the proximity sensor and this signal is given to the control unit and pneumatic bumper and braking activation system.

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4) AUTOMATIC PNEUMATIC RAMMING MACHINE

Moulding is one of the important metals forming process in manufacturing components for various applications in industry. Casting of any size and shape can be made accurately. Automation in this field helps to improve the foundry environment and accuracy of the cast parts. Efficiency of moulding is affected by various parameters like permeability, collapsibility, adhesiveness etc. So it is a must to avoid defects in casting. The defects occur in sand castings post a great problem in foundry. On account of defects more than 10% castings are rejected. Even though skilled labor is employed for ramming operation, the packing of molding sand will not be even throughout the molding box. So we have selected the idea of fabricating “PNEUMATIC RAMMER”. This rammer is operated pneumatically. By using this rammer moulding sand will be packed evenly throughout the box.

5) AUTOMATIC PUNCHING MACHINE

The objective of this project is to make automatic punching machine for industrial and automobile parts with the help of micro controller. This project is very useful in industries and automobile manufacturing units in order to save the time and manpower.

This project is designed with micro controller, driver circuit along with motor, keypad, moving arrangement and punching mechanism. Punching machine is designed with mechanical arrangement in which movements are controlled by motors. Moving mechanism is attached with punching spindle. So we can move the punching spindle any where with in the area of machine. Moving mechanism also controlled by motor. Here the micro controller may be Atmel or PIC both are flash type reprogramable micro controller. Keypad is a set of keys in which one key represents number of punches and another represent time internal between punches. Remaining keys controlled the moving mechanism for forward, reverse, left & right. The corresponding information is given to micro controller. In micro controller we have already programmed, so it activates the driver circuits for motors depend on the program instructions. Driver circuit consists of transistor just act as switch to turn on & turn off the motors. When our required punches and place fed into micro controller through keypad, then micro controller activates the corresponding driver circuit. Now punching mechanism operates and done the operations as per our requirement through the micro controller.

6) CHAPATHI MAKING MACHINE

Chapathi Making machines are in great demand in Hotels, Restaurants, Hostels and Kitchen Rooms etc. These chapati machines can save a lot of time and human effort in bulk food cooking. These machines are available in different ranges and capacities. The technology of pneumatic s has gained tremendous importance in the field of workplace rationalization and automation from old-fashioned timber works and coal mines to modern machine shops and space robots. It is therefore important that technicians and engineers should have a good knowledge of pneumatic system, air operated valves and accessories. The air is compressed in an air compressor and from the compressor plant the flow medium is transmitted to the pneumatic cylinder through a well laid pipe line system. To maintain optimum efficiency of pneumatic system, it is of vital importance that pressure drop between generation and consumption of compressed air is kept very low. The aim is to design and develop a control system based a pneumatic based Chapathi making machine”. In our project is consists of heater, direction control valve and Pneumatic cylinder.
7) FABRICATION OF 3 AXIS PNEUMATIC LIFT

The foremost aim of our project is to design and fabricate a hydraulic operated Hydraulic trolley for the purpose of material handling at a faster rate. At present forklifts, pallet trucks are used for the purpose of material handling. For forklift it requires a well-experienced technical person for handling operation. For pallet trucks, it does not have large cross-section, as the material to be handles is in small unit. For both the equipment the initial cost is high. This project work titled “FABRICATION OF PNEUMATIC LIFT” has been conceived having studied the difficulty in lifting and loading the any type of materials. Our survey in the regard in several small scale industries, revealed the facts that mostly some difficult methods were adopted in lifting the material. Now the project has mainly concentrated on this difficulty, and hence a suitable device has been designed. Such that the material can be lifted from the floor land without application of any impact force. The fabrication part of it has been considered with almost case for its simplicity and economy, such that this can be accommodated as one of the essential tools on all industries.

8) FABRICATION OF 3 AXIS PNEUMATIC TRAILER LIFT

The foremost aim of our project is to design and fabricate a pneumatic operated fork lift for the purpose of material handling at a faster rate. At present forklifts, pallet trucks are used for the purpose of material handling. For forklift it requires a well-experienced technical person for handling operation. For pallet trucks, it does not have large cross-section, as the material to be handles is in small unit. For both the equipment the initial cost is high. This project work titled “FABRICATION OF 3 AXIS PNEUMATIC TRAILER LIFT” has been conceived having studied the difficulty in lifting and loading the any type of materials. Our survey in the regard in several small scale industries, revealed the facts that mostly some difficult methods were adopted in lifting the material. Now the project has mainly concentrated on this difficulty, and hence a suitable device has been designed. Such that the material can be lifted from the floor land without application of any impact force. The fabrication part of it has been considered with almost case for its simplicity and economy, such that this can be accommodated as one of the essential tools on all industries.

9) FABRICATION OF AUTOMATED GUIDED VEHICLE USING PNEUMATIC SYSTEM

The main concept of this project is to merge pneumatics with AVG, providing a combination that would simplify human work. The AVG is a 3 wheel Line follower type driven by pneumatics used for lifting and carrying load from source to destination. Two pneumatics actuators connected to the back wheels which provide a cyclic motion. One more pneumatic actuator (DAC) is used to vertically lift the load. Pneumatic devices are used in many industrial applications. Generally appropriate for application involving less force than hydraulic applications, and typically less expensive than electronic applications. Most pneumatic devices are designed to use clean dry air as an energy source. The actuator that converts the compressed air into mechanical motion. The type of motion produced depends on the design of the actuator. Pneumatic is employed in a variety of settings. Pneumatic devices are also used where electric motors cannot be used for safety reasons, such as mining applications where rock drills are powered by air motors to preclude the need for electric motors deep in the mine where explosive gasses may be present. Pneumatic cylinders are generally less expensive than hydraulic or electric cylinder of similar size and capacity.

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10) FABRICATION OF HYDRAULIC BASED MOBILE CRANE

Cranes are versatile lifting and transporting mechanisms that are made adaptable to a wide variety of jobs by the attachment of an almost infinite number of specially designed grabs. A motor-operated jib crane has a jib, or arm that extends several feet from a heavy base. The end keeps the crane from tipping over. The end of the jib has a pulley. A rope, with a lifting hook in the end runs from pull to a winch (crank) in the foundation. The operator turns on the motor to lift or lower the hook the arm is lowered. Thus a jib crane can move a weight to any point around the circumference of the circle its jib makes. Cranes mounted on wheeled chassis which is propelled by the same motor which drives the mechanism on the superstructure this type is suited for operation that require constant and relatively rapid movement of the crane around the job such as in a factory or storage yard.

11) FABRICATION OF PNEUMATIC JACK FOR CAR

The main target of the project is to improve version of a mini pneumatic jack. This will be more efficient for the user. This machine is pneumatic powered which has lowco-efficient of friction. A pneumatic cylinder erected provides power to lift up the Jacky. This is a pneumatic powered machine and requires no other means of power to operate. The required components are Compressor, Pneumatic cylinder, Solenoid, Control circuit and Jack. There are many types of work holding devices like machine vices, universal vice, pipe vice, T-Bolt’s ‘U’ clamps, Goose neck clamp, angle plate, Jigs and fixtures etc. These are all mechanical type work holding devices. In this project we are dealing about the pneumatic plain vice used in drilling machine. Here the loading and unloading is quick. The job can be held more rigidly.

12) FABRICATION OF PNEUMATIC MODERN TRIPPING WITH 360 DEGREE ROTATION

Automation can be achieved through computers, hydraulics, 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.

13) FABRICATION OF PNEUMATIC OPERATED EMERGENCY OVERWING EXIT SYSTEM IN AIRCRAFTS

Overwing exits are found on passenger aircraft to provide a means of evacuation onto the wing, where passengers either continue off the trailing edge by sliding down the extended flaps or by using an evacuation slide that deploys when the exit is opened. Overwing exits are smaller in width and height than standard emergency exits on an aircraft, and therefore have a reduced evacuation capacity, and are typically added to aircraft where there is insufficient evacuation capacity at the main doors to obtain a 90 second evacuation, but where the addition of another set of full sized exits is not necessary to accomplish this. Overwing exits are primarily self-help exits meaning that in an emergency evacuation the passengers seated immediately adjacent to the exit will be responsible for assessing external hazards and opening the exit.

We are fabricating a pneumatic operated emergency overwing exit system in aircrafts, which uses pneumatic cylinder to slide down the roller when the magnetic switch used in doors repels each other. The magnetic switches are connected to a microcontroller which in turn activated the relay. Once the relay is activated the solenoid valve connected to the relay will allow the air from compressor to pass

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through the pneumatic cylinder and the roller will slide down immediately for the passengers to exit the aircraft at emergency situations.

14) INTELLIGENT REVERSE BRAKING SYSTEM

The aim is to design and develop a control system based on intelligent electronically controlled automotive braking system is called “INTELLIGENT REVERSE BRAKING SYSTEM”. Sensor Operated Pneumatic Brake consists of IR transmitter and Receiver circuit, Control Unit, Pneumatic breaking system. The IR sensor is used to detect the obstacle. There is any obstacle in the path, the IR sensor senses the obstacle and giving the control signal to the breaking system. The pneumatic breaking system is used to brake the system. So basically here the car brakes on its own by determining the distance from the object. The IR TRANSMITTER circuit is to transmit the Infra-Red rays. If any obstacle is there in a path, the Infra-Red rays reflected. This reflected Infra-Red rays are received by the receiver circuit is called “IR RECEIVER”. The IR receiver circuit receives the reflected IR rays and giving the control signal to the control circuit. The control circuit is used to activate the solenoid valve. If the solenoid valve is activated, the compressed air passes to the Single Acting Pneumatic Cylinder. The compressed air activate the pneumatic cylinder and moves the piston rod. If the piston moves forward, then the breaking arrangement activated. The breaking arrangement is used to break the wheel gradually or suddenly due to the piston movement. The breaking speed is varied by adjusting the valve is called “FLOW CONTROL VALVE”. The compressed air flow through the Polyurethane tube to the flow control valve. The flow control valve is connected to the solenoid valve.

15) PNEUMATIC CAN CRUSHER PROJECT IDEA AND DESIGN

In a continuously develop world, many things kept coming out as if there is nothing impossible anymore for something to exist. This may be part of how and why people manage to adapt to their new lifestyle. Taking a lifestyle as reason how people manage their waste disposal where right now we are directing my focus on how to reduce volume of waste disposal occupied by cans usually aluminum cans, one of the suitable solutions to minimize the size of the can is by using the pneumatic can crusher. Base on the application of the device, I would say that it is very useful for small industrials, restaurants, bars and someone who likes to drink a lot and thinking of the important of more spaces that they would make if all cans were crushed before thrown away.

16) PNEUMATIC SHEARING AND BENDING MACHINE

The shearing machine and bending machine is most important in sheet metal industry. This machine should be used for straight cutting machine with wide application. But in some industry hand sheet cutter and hand bender are used. For that machine to operate the human effort are required. The machine should be simple to operate and easy to maintain, hence we tried out to develop the Pneumatic Shearing and Bending Machine. In shearing operation as the punch descends upon the metal, the pressure exerted by the punch first cause the plastic deformation of the metal. Since the clearance between the punch and the die is very small, the plastic deformation takes place in a localized area and the metal adjacent to the cutting edges. In bending operation the bend has been made with the help of punch which exerts large force on the work clamped on the die. The bending machine is designed in such a way that, it works automatically. The machine is designed by bserving the factors to improve the efficiency and to reduce the cycle time by producing quality output. Automation of machine is achieved with the help of pneumatic system. This paper involves the design of an efficient system which reduces

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the human effort and help to increase production output. It also includes pneumatic system, pneumatic component and shearing die and bending die.

17) PNEUMATIC RIVETING MACHINE

The project is an attempt in designing and fabricating a low cost and lightweight simple Pneumatic Riveting machine. It was decided to fabricate a Pneumatic Riveting machine of 30 kg. Capacity with the intention of putting into practice our theoretical knowledge in designing and fabrication process. The structure is a simple one making use of square rod (solid). Rectangular blocks (hollow) and thin sheets readily available without restoring casting. The structure has minimum number of welding joints and it is easy to assemble. The machine incorporates a pneumatic cylinder and controls which are commercially available. Compressed air from the compressor storage tank used as the working fluid. Depending upon the type of rivet head different types of Rams and Anivls are used.