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WALL PAINTING MACHINE

Prof. Sonawane R.F.[*1], Darade Tejas Ashok[*2], Ambilwade Govind Ramesh[*3], Gaikwad Rameshwar Machindra[*4], Mhaske Rushikesh Bhausaheb[*5]

[*1]Guide, Department Of Mechanical Engineering, Santosh N. Darade, Polytechnic Babhulgaon, Yeola, India.

[*2,3,4,5]Student, Department Of Mechanical Engineering, Santosh N. Darade, Polytechnic Babhulgaon, Yeola, India.

ABSTRACT

The primary aim of the project is to design, develop and implement Automatic Wall Painting Robot which helps to achieve low cost painting equipment. Despite the advances in robotics and its wide spreading applications, interior wall painting has shared little in research activities. The painting chemicals can cause hazards to the human painters such as eye and respiratory system problems. Also the nature of painting procedure that requires repeated work and hand rising makes it boring, time and effort consuming. When construction workers and robots are properly integrated in building tasks, the whole construction process can be better managed and savings in human labour and timing are obtained as a consequence. In addition, it would offer the opportunity to reduce or eliminate human exposure to difficult and hazardous environments, which would solve most of the problems connected with safety when many activities occur at the same time. These factors motivate the development of an automated robotic painting system.

I. INTRODUCTION

Building and construction is one of the major industries around the world. In this fast moving life construction industry is also growing rapidly. But the labors in the construction industry are not sufficient. This insufficient labors in the construction industry is because of the difficulty in the work. In construction industry, during the work in tall buildings or in the sites where there is more risky situation like interior area in the city. There are some other reasons for the insufficient labor which may be because of the improvement the education level which cause the people to think that these types of work is not as prestigious as the other jobs. The construction industry is labor-intensive and conducted in dangerous situations; therefore the importance of construction robotics has been realized and is grown rapidly. Applications and activities of robotics and automation in this construction industry started in the early 90‟s aiming to optimize equipment operations, improve safety, enhance perception of workspace and furthermore, ensure quality environment for building occupant. After this, the advances in the robotics and automation in the construction industry has grown rapidly. Despite the advances in the robotics and its wide spreading applications, painting is also considered to be the difficult process as it also has to paint the whole building. To make this work easier and safer and also to reduce the number of labors automation in painting was introduced. The automation for painting the exterior wall in buildings has been proposed. Above all these the interior wall painting has shared little in research activities. The painting chemicals can cause hazards to the painters such as eye and respiratory system problems. Also the nature of painting procedure that requires repeated work and hand rising makes it boring, time and effort consuming. These factors motivate the development of an automated robotic painting system. This project aims to develop the interior wall painting robot. This automatic wall painting robot is not designed using complicated components. This robot is simple and portable. The robot is designed using few steels, conveyor shaft, spray gun and a controller unit to control the entire operation of the robot.

II. METHODOLOGY

The working principles of the automatic spray painter is as follows, the object sensor is used to identify the position of The object or the specimen we wants to spray. After identify the position, conveyor belt stop and the controller identify Solenoid valve to adjust the position of the valve of the sprayer. After identify the solenoid valve position the controller Control the DC Motor and the motor helps to spray the specimen.

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The controller in the device is Relay . A relay is an electrically operated switch used to isolate one electrical circuit From another. In its simplest form, a relay consists of a coil used as an electromagnet to open and close switches Contacts. Since the two circuits are isolated from one.

After the spraying operation, the dryer get a signal from control unit to dry the specimen. After the drying operation, the Belt conveyor rotates and next specimen reaches the position. The process continues when we switch off the relay Circuits. Based on the speed of the operation, the process to be continued and the based on the number of specimens the Process stops the operations.

Objectives:

The main goal to design painting machine

1. To make painting friendly and simple
2. Wall painting machine helps to low cost painting machine.
3. In paint chemical hazards to human health.
4. Painting procedure required the painting work which is irritate to the human being and make it boring procedure And consume time

Components:

Relay: The basics for all the relays are the same. Take a look at a 4 – pin relay shown below. There are two colors Shown. The green color represents the control circuit and the red color represents the load circuit. A small control coil is Connected onto the control circuit. A switch is connected to the load. This switch is controlled by the coil in the control Circuit. Now let us take the different steps that occur in a relay.

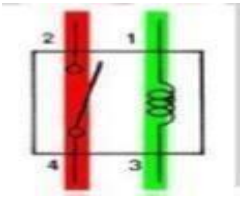

Fig: Relay

ADVANTAGES

1. The machine has very low error.
2. The size of project made by is more suitable for wall panting system.
3. It is easy to make.
4. It has low maintenance.
5. The system has worked fully switched operated.
6. Size of machine is small therefore easy to operated.
7. Construction is very simple and Suitable for Operating

III. WALL PAINTING MACHINE WORKING

The construction of paint paths is apart into the following steps: outlining of painting process, planning of encounter free spray gun motions. Specifies a trajectory of the spray gun, which satisfies the desired paint quality. In this module only spray gun motions are considered in relation to process quality. No restrain of machine are made and collisions between the spray gun and its background are not considered. The system uses the “Geometry Library” and the “Procedure Library” in order to plan this trajectory. The arithmetic library specifies for each arithmetic primary or more painting scheme, which may be e applied for painting that particular type of geometric primitive. The painting procedure specifies how to apply spray gun motions to the surfaces in order to achieve a satisfactory process quality. The procedure library is established through experimental work. The basic idea is to enable outlining of paint strokes that continue everywhere the parts even though different geometric primitives must be covered along the surface and even though continuous robot motions cannot follow the surface. The system will attempt to approximate the triangular patches of the surface model by larger plane regions (virtual surfaces), which are oriented in a few main directions. DP/DT switch has an central OFF position, when operated to one of the ON position, the motor will rotate in clockwise

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direction, operating the worm gear box and thereby the pinion shaft. The pinion rotates to rotate the gear and thereby the main shaft and stand in clockwise direction taking the stand to close position. When other ON position is operated the motor will rotate in counter clockwise direction , operating the worm gear box and thereby the pinion shaft. The pinion rotates to rotate the gear and thereby the main shaft and stand in counter clockwise direction taking the stand to open positions.

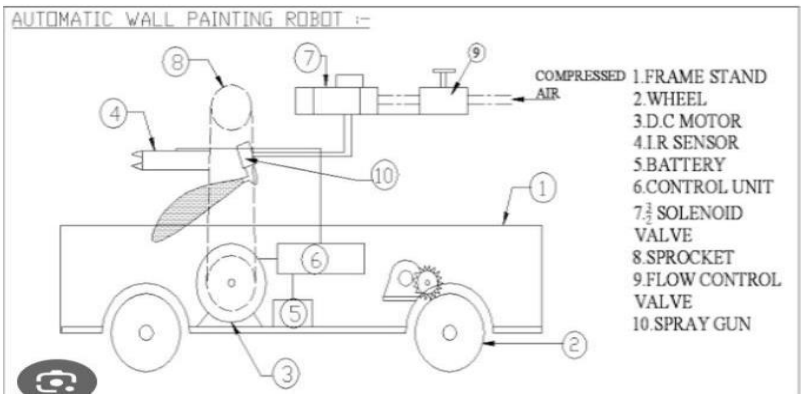

Fig: Automatic Wall painting machine

IV. LIMITATIONS

1. Being semiautomatic we cannot neglect at least one operator.
2. Power supply system is required to operate the machine control circuit & motor operate.
3. Power supply is regularly required.

V. APPLICATIONS

1. Use in big all type panting mfd purpose.
2. Used industrial job painting purpose.
3. In industries purpose.
4. Can be used in engineering Workshop.

VI. CONCLUSION

We have designed and fabricated the prototype model for testing purpose which is limited to a certain height, but it can Be developed and the limit can be increased. Also, our model requires an external compressor for the compressed air This can be eliminated by using an in-built compressor.

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