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DESIGN AND DEVELOPMENT OF AUTOMATIC PAINTING MACHINE

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ABSTRACT:

Robotics has developed very fast in last 10 years. Many startups and other companies have come up with robotics applications in various areas right from industrial automation, home automation to medical field as a care taker for human facing medical issues. Robotics is improving with accuracy and other performance issues. The major concern with this technology is to find low cost solutions to make it affordable by common people. Robots in industrial applications are used by several multinational companies whereas the small scale industries are lacking with budgetary provision for the same. Authors have designed a robot for application of painting of household. The designed model is presented in this paper.

KEYWORDS: Robot, Painting Machine, Motor, Automation, etc.

INTRODUCTION:

Automation is always implemented to complete the particular task with higher efficiency by avoiding human errors in repetitive task. Automatic work completion with machines makes it possible with robotics technology. The process of painting a building is repetitive work still not very easy task. Many accidents occurred while painting a building without proper care and poor technology used. It is very much needed to develop a machine for carrying out the task of painting for buildings.

The labors working in this sector are unorganized and they are not literate or not knowing any safety precautions to be taken while working on field. On the other hand the chemicals used in paint are also hazardous to the workers heath. Authors have designed a machine to carry out the work of painting with flexibility and improved performance to control the quantity of paint used. The motors, tank, roller and some assembly are used for making this machine. For

multistory buildings it is very difficult to complete painting work when moving to upward from ground floor.

OBJECTIVES OF THE WORK:

The work is carried out with following objectives:

- Designing the machine to carry out painting work.
- Developing the painting machine with capability of artistic painting.
- Enhancing the design for painting of multistory buildings in India.

SYSTEM REQUIREMENT:

Table.1: Specifications of Main Components Required

Sr. No.	Component Details	Photo of Purchased Component
1	AC Motor 1Phase, 230V, 7.5A, 0.5HP, 1500RPM	
2	DC Motor 12V,10 RPM, 5Amp,	
3	Roller Brush 12 Inch	
4	Colour Tank 5 to 10 Liters	

SYSTEM DESIGN:

The CAD design for isometric view of painting machine developed by authors is shown in picture below.

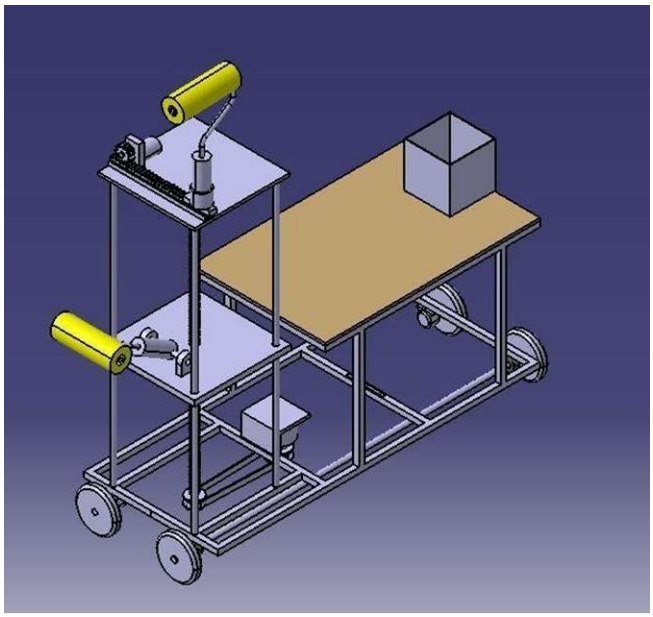

Fig.1: Isometric View

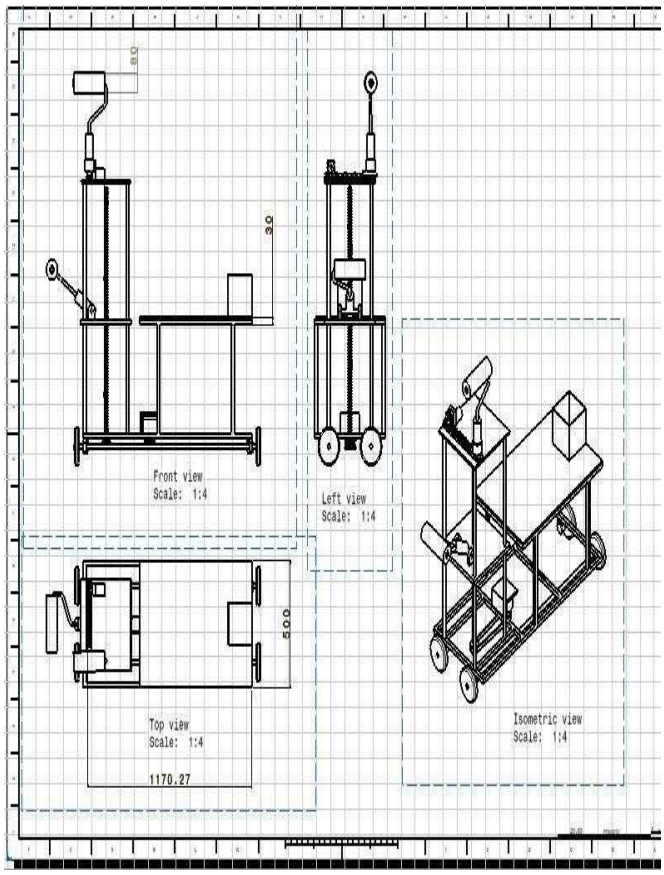

Fig.2: Draft View

FUTURE SCOPE:

The project is developed to paint the plain surfaces. In future the camera can be added to monitor the work going on. This system can be connected to computer through microcontroller in order to control movement of rollers. The accuracy of the machine can be enhanced with software hardware interfacing of control devices. Capacity of tank is when increased adds extra weight on system. Tank can be placed on floor and an arm for controller movement of paint roller can be used.

CONCLUSION:

Robotics has enhanced the work target completion with extra accuracy in the work carried out. The development in electronics and software has made it possible to develop machines to carry out the tasks such as painting applications. Painting of large buildings is challenging job and a machine can do this work with better efficiency. The CAD design of painting machine is presented in this paper. This design is checked for the safety norms and found suitable for households. The work presented is the step in developing prototype. Further developments are required if this design need to be used for practical implementation.

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