

Automatic Spray Painting

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ABSTRACT

Today, Automation is the necessary in almost every field that we come across. This project focuses on one such implementation of automation to paint walls. This project deals with the development and fabrication of automated robotic vehicle which can be used for painting walls. This vehicle consists of an automated robotic platform which is incorporated with a vertical lift. When initiated the robot starts painting along the vertical axis from the bottom of the wall using the vertical travel system provided. After completing the complete pass along vertical axis, the robot moves ahead, to cover the next pass of unpainted wall. This process continues till the complete wall is painted.

Keywords: Automation, spray, painting.

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I. INTRODUCTION

It's is the coating applied to the walls a building, to provide a protective coating which would prevent rain penetration. it also act as a decorative finish to enhance the appearance of the building, This is the technique used to render paint automatically on the walls of building, it is the traditional craft that has evolve over many centuries .basic rendering began as a method of excluding droughts and rain by using paints these materials has once significance disadvantage in that they were not very resistant to water this method is very easy and efficient ,this method has different requirements as per the different places and applications by using this machine we can paint 500 square range. Color changes everything. Or lack of color, if that's your thing. Point is, everyone knows you can give your drab, washed-out walls a burst of brilliant depth (or wash away your decorating sins with virgin white) just by picking up a paint can and having at them. That's the power of a coat of paint: It rearranges your reality. Which is why painting is the most oft-tackled home-improvement project. While you don't have to be a pro to learn how to paint like one, there is more to a good paint job than just slathering some color on the wall. That's where we come in.

II. PROBLEM STATEMENT

Before the widespread use of rollers which are far more effective and increase the painting speed, the painting was usually done with the help of brushes. This was time consuming and more a work of skill. The painters need to be more skilled for using the brushes and the time required to paint the entire house or wall using the brush was more. Also too much of paint was wasted in dipping the brush every time in the paint bucket and the coat of paint applied was also non uniform.

III. OBJECTIVE

1. Taking safety as prime consideration: This device is safer in all respects.
2. To develop a device this can make work simple.
3. To develop a device which can run cost efficient

IV. SCOPE

The main requirement of the mechanism is to control the total painting process without any harm caused by chemicals from the paint.

It provides:

- Better process working.
- Safety to human workers.
- Automation controlled working.

V. METHODOLOGY

This is a machine or a device in which we can do the construction work simple mechanism cost efficient in this device the paint is filled in the sprayer and the motion of X and Y direction is given to the motors with the help of wireless device or button as per the requirement the device works on battery and compress air the working is very simple as we have 2 motors one for X direction and other for Y direction in the guide ways are provided with the cylindrical bearing in order there is smoother working. In this two motors are used one of 60 rpm and other is 10 rpm. The 60 rpm motor is used for horizontal that is in X direction and 10 rpm motor is used for vertical moment that is in Y direction. The chain and sprockets are used for the moment. The spray gun is used for painting which works on compress air which is given from compressor. The 12 volt battery is used for driving motor. Motor rotates in both clockwise and anticlockwise direction.

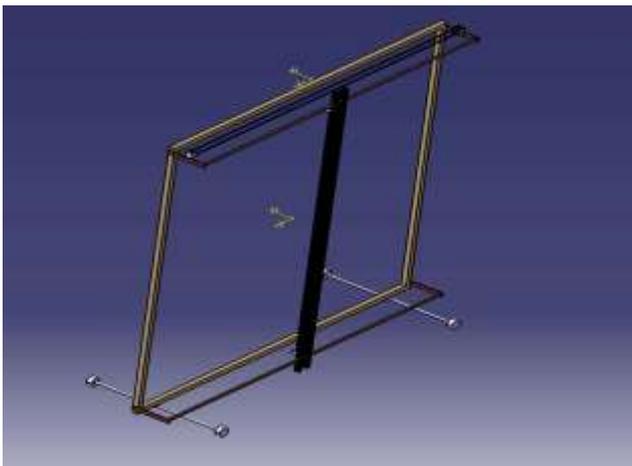


Fig.1-experimental set-up

VI. LITERATURE REVIEW

Warszawsky and Kahane has explained the contribution in the robotics towards the automation. International Journal of Robotics and Computer Integrated Manufacturing He has developed a robot for interior finishing tasks named "TAMIR", and was used in four interior finishing tasks namely; painting, plastering, tiling and masonry. The robot has 6 DOF (Degrees Of Freedom) with an average reach of 1.7m and end effector payload of 30 kg. It is mounted on 3 wheeled mobile-robot which gives another 3 DOF. The platform moves between workstations and at each one it deploys four stabilizing legs. The robot arm used is the S-700 model made by General Motors, of 500 Kg weight.

Naticchia has contributed towards the revolution in the robotics by bringing his innovatives ideas into society.

International Journal of Robotics .A scaled down robot setup for interior wall painting together with a multicolor spraying end tool were implemented by Naticchia and claimed to work in full scale without reduction in performance. The robot named "Pollock#1" had 6 DOF, a nominal reach of 0.4 m and a maximum payload of 4kg. It should be fixed on a 2 DOF hexapod for horizontal movement but was not actually used in experiments.

Aris has contributed in the introduction for ceiling painting. International Journal of Ceiling painting by use of modern technology. A full scale mechanism for ceil painting was introduced by Aris . It had 3DOF without considering those of the platform, a working envelope of (84cm by 72 cm by 122 cm). Significant improvement in painting time and cost had been reached where 46 m² of ceil were painted in 3.5 hours which is 1.5 times faster than manual painting. Most of us can do an okay job of painting a room. But a seasoned professional does a great job. Obviously, pros have more experience than the average homeowner, but they also know techniques and tricks that make them better painters. We asked six pro painters to share those secrets. They probably kept a few tips to themselves, but they provided us with more than enough to help you work more efficiently and get better results. Some of what you'll read may surprise you. For instance, their secrets won't cut painting time. Painters spend two to four days on an average-size room. That's how long it takes to prep, prime and paint correctly. It's more work, but when you stand back to admire the results, you'll agree it's time well spent. Clear the Decks . To begin, move everything out of the room. Every painter we spoke with had a horror story about the time he didn't follow Rule No. 1. Bigger pieces of furniture can sometimes be left covered in the center of larger rooms, but if you are repairing drywall, says Chris Span, of Span's Quality Painting in Mobile, Alabama, "Take everything out. Drywall dust goes everywhere." Remove doors, light fixtures and hardware, and label everything with masking tape. Also, invest in drop cloths. "It's surprising how well a few drops of paint can cover a floor," says Rich Maceyunas, of Maceyunas Painting and Wallpaper in Waterbury, Connecticut. Buy high-quality drop cloths, such as canvas or paper-backed plastic. (Paint soaks right through lightweight fabrics and bedsheets.) Plastic sheeting works, but it's very slippery and doesn't absorb drips. Benjamin Moore These top tips from the experts at Behr and Benjamin Moore will make your next paint job a smashing success. Wait for dry weather. Humidity means drips and slow drying, so avoid painting on a rainy day. If you must paint when it's humid, take your time — and take advantage of slow-drying paint to correct your errors before moving on to the next coat. But don't overwork, or it will show when you're finished. Do a thorough visual inspection and prep. Any cracked, flaking, or peeling areas need to be lightly sanded or scraped (and then thoroughly rinsed) before applying new primer and paint, because the weight of the new coat will pull the old paint loose. —You'll just end up wasting your time and money if you don't tackle that first, says Tom

Lee, Senior VP of Consumer Marketing for Behr. Greasy spots may also need a bit of washing with soap, followed by a rinse with clean water. Otherwise, give the walls a quick wipe-down with a damp cloth so that paint will have a clean, dust-free surface to stick to. Buy high-quality brushes, roller covers, and painter's tape. If you're splurging on great paint, you definitely don't want to pinch pennies on the application. Good brushes and roller covers give excellent coverage so that you don't waste time and paint on re-application, and high-end painter's tape is the real deal when it comes to sealing out drips and blurs. The more texture your walls have, the thicker the nap you'll want on your roller cover so that it can reach into crevices and give complete coverage. But if you go too thick, you might actually create texture where you don't want it, so be prepared to give your salesperson details about what you're painting. Protect anything you don't want painted. You will never regret the time you spend covering floors, furniture, and hardware before you begin a paint project. Drop cloths are a must, and small plastic sandwich bags secured with tape are an easy way to protect doorknobs. Remove light switch and outlet covers. If you're impatient, you'll be tempted to skip this five-minute step, but don't. Use primer. Paint-and-primer combinations are fine if you already have a clean, smooth surface, but if there are any issues with the wall or it's been more than eight years since you last painted, bite the bullet and go with a separate primer. If you need to cover an especially challenging surface (say, glass or high-gloss paint), use a bonding primer such as Benjamin Moore's Insl-x Stix Waterborne Bonding Primer Adhesion Interior & Exterior Bonding Primer. Box your paint. Get your salesperson to help you with a realistic estimate of how much paint you'll really need so that you can buy it all at once. Then, instead of using one gallon at a time, combine all the paint into one large container and mix it thoroughly. This is known as —boxing your paint, and it keeps your color consistent from beginning to end. Let the roller do the work. Today's premium paints flow on easily, and you've already chosen a good roller cover (right?), so there's no need to use much pressure. Be sure to use an extension pole so you can reach the maximum amount of area with the least effort — and without straining your back. Paint from top to bottom. After you've cut in your edges at the ceiling and baseboard using a brush, use your roller to apply paint from the ceiling downward. Amateurs often have telltale drips and splatters at the end of a paint job, but pros paint right over their mistakes as they work their way down the wall. Once an area starts to dry, it's best to leave it alone. Going back over it can leave marks and color streaks in the paint's surface. Painting your home can be completely hassle-free with the right planning.

VII. CONCLUSION

The development of the dangerous painting techniques takes place. It called for the application of various concepts of engineering. The mechanism was developed and manufactured effectively by us. We arrangement and

manufacturing of the mechanism improve the performance and it was found to give fairly accurate working, thereby eliminating the drawbacks encountered with manual painting process.

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