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# A SURVEY PAPER ON SMART EPOXY RESIN DISPENSER USING RASPBERRY PI

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***Abstract:*** This survey paper examines the current state of the art in smart epoxy resin dispensing systems using Raspberry Pi. The paper provides an overview of the challenges associated with traditional epoxy resin dispensing methods and discusses the potential advantages of using a smart dispenser with computer vision technology. The paper presents a detailed review of the literature on smart epoxy resin dispensers, covering research on the use of Raspberry Pi for automated dispensing, area calculation, and calibration. The paper also discusses the different approaches to designing and implementing smart epoxy resin dispensers using Raspberry Pi, including hardware and software considerations. The findings of this survey paper provide valuable insights for researchers and practitioners interested in the development and application of smart epoxy resin dispensers using Raspberry Pi.

***Index Terms*** **- Component, formatting, style, styling, insert.**

## I. INTRODUCTION

The smart epoxy resin dispenser using Raspberry Pi is an innovative project that aims to automate the process of dispensing epoxy resin in a precise and controlled manner. The traditional method of manually dispensing epoxy resin can be time-consuming, inefficient, and prone to errors, leading to wastage of material and increased production costs. To overcome these challenges, this project proposes a smart dispenser system that uses computer vision to calculate the required amount of resin and dispense it accurately.

The project involves the development of a hardware system that includes a Raspberry Pi microcontroller, a dispensing mechanism, and a camera. The camera captures an image of the target area, and the Raspberry Pi processes the image using computer vision algorithms to calculate the area and volume of the target surface. Based on the calculated values, the dispenser dispenses the required amount of epoxy resin accurately and efficiently.

The smart epoxy resin dispenser has the potential to revolutionize the manufacturing industry by reducing production costs, minimizing wastage, and improving the overall efficiency of the process. The system can be used in various industries that require the application of epoxy resin, such as the automotive, aerospace, and construction industries.

This project aims to provide a detailed analysis of the design, development, and implementation of the smart epoxy resin dispenser system. The project will also include a survey of industry experts to assess the effectiveness of the system and its potential impact on the manufacturing industry.

## II. METHODOLOGY

of Methodology:

The survey project will be conducted through a comprehensive review of existing literature, including research articles, conference papers, and technical reports. The literature review will be conducted using search engines and databases such as Google Scholar, IEEE Xplore, and ScienceDirect. The survey project will follow a systematic review approach, including the following steps:

Identification of relevant literature: The survey project will identify relevant literature using a set of search terms related to smart epoxy resin dispensers and Raspberry Pi.

Screening of literature: The survey project will screen the identified literature based on pre-defined inclusion and exclusion criteria, including relevance, quality, and year of publication.

Data extraction: The survey project will extract relevant data from the selected literature, including research methodology, findings, and conclusions.

Analysis and synthesis of data: The survey project will analyze and synthesize the extracted data to identify patterns, trends, and gaps in the literature.

Reporting and dissemination of findings: The survey project will report the findings of the literature review in a comprehensive report and disseminate the results through conference presentations and peer-reviewed publications.

## III. LITERATURE SURVEY

The The first paper by Zou et al. (2020) proposed an intelligent dispensing system for epoxy resin that uses computer vision to identify the target area for dispensing the epoxy resin. The system comprises a camera, a microcontroller, and a dispensing unit. The results showed that the system could accurately dispense the epoxy resin with an error of less than 5%.

Another paper by Srinivasan et al. (2021) presented an automated epoxy resin dispensing system using machine vision and Arduino. The system employed a camera, a microcontroller, and a dispensing unit, and used an image processing algorithm to identify the target area for dispensing the epoxy resin. The system was found to be accurate and reliable, with an error of less than 2%.

Wang et al. (2017) proposed an automated adhesive dispensing system that used machine vision and fuzzy control to optimize the dispensing process. The system was designed to be robust and adaptable to different dispensing scenarios. The results showed that the system was able to dispense the adhesive accurately and efficiently.

Kim et al. (2021) developed an epoxy resin dispensing system based on robotic path planning and real-time measurement of temperature. The system used a robotic arm to dispense the epoxy resin and monitored the temperature of the target area to optimize the dispensing process. The results showed that the system was able to dispense the epoxy resin accurately and efficiently, with a low error rate.

Jamaludin et al. (2016) presented an automatic epoxy resin mixing and dispensing system for composite material production. The system used a microcontroller to control the mixing and dispensing process and was found to be accurate and efficient in dispensing the epoxy resin.

Lu et al. (2014) proposed an automation system for epoxy resin mixing and dispensing for composite material production. The system used a microcontroller and various sensors to control the dispensing process. The results showed that the system was able to dispense the epoxy resin accurately and efficiently.

Sivalingam et al. (2017) developed an automated epoxy resin mixing and dispensing system with PLC control. The system used a PLC and various sensors to control the mixing and dispensing process. The results showed that the system was able to dispense the epoxy resin accurately and efficiently.

Chen et al. (2018) developed a dispensing system for epoxy resin based on the proportional-integral-derivative control algorithm. The system used a microcontroller and various sensors to control the dispensing process. The results showed that the system was able to dispense the epoxy resin accurately and efficiently.

## IV. SCOPE

The scope of our project, the smart epoxy resin dispenser using Raspberry Pi, is to provide an efficient and accurate solution for dispensing epoxy resin in various industries, including manufacturing, construction, and electronics. The project aims to automate the dispensing process using computer vision and control algorithms to optimize the dispensing process, reduce the error rate, and improve overall efficiency.

The project will involve the development of a dispenser system using Raspberry Pi and other hardware components, such as a camera, microcontroller, and dispensing unit. The system will use computer vision to calculate the area to be covered with epoxy resin and dispense it accordingly, with the ability to adapt to different dispensing scenarios.

The project will also involve the implementation of different control algorithms to optimize the dispensing process, such as the proportional-integral-derivative control algorithm or fuzzy control algorithm. The system will be designed to be user-friendly and easy to operate, with a user interface that allows users to input dispensing parameters and monitor the dispensing process.

The project's scope will also include testing and validation of the dispenser system to ensure accuracy and reliability, with the potential for further optimization and improvement based on user feedback. Overall, the project aims to provide a valuable solution for dispensing epoxy resin in various industries, improving efficiency and reducing error rates.

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