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IOT BASED DETERGENT LEVEL MONITORING SYSTEM

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ABSTRACT

Monitoring the detergent level in real life might be difficult, particularly in places where significant volumes of detergent are frequently used. It might be challenging to manage inventories and avoid wastage without a reliable and precise method to measure the detergent level. Inaccurate readings may additionally impact the ways the detergent is being pumped, which might damage the machines or delay the cleaning process. This thesis aims to design an IoT Based Detergent Level Monitoring system by using Arduino Wemos D1 R1. This thesis proposed a detergent level monitoring system by using IoT technology. The system is composed of an ultrasonic sensor that measures the detergent level, an Arduino Wemos D1 R1 microcontroller that controls the pump and processes sensor data, a keypad for user input, an LCD screen to display the detergent level and other system status, an LED indicator to alert the user of low detergent level, and Blynk app to remotely monitor the detergent level. Hence, by using an accurate and efficient monitoring system, businesses can ensure that they are using the optimal amount of detergent, thereby saving costs.

Keywords: detergent, Arduino Wemos D1 R1, monitoring, IoT, sensor

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CHAPTER ONE:

INTRODUCTION

1.1   Project Overview

In Malaysia's industrial and commercial environment, detergent level monitoring is essential to the prudent and sustainable use of cleaning products. With a rising economy characterised by a wide range of manufacturing activities, efficient detergent level monitoring is essential for both operational cost-effectiveness and environmental preservation. The implementation of Internet of Things (IoT) technology for detergent level monitoring in Malaysia has been noticeably slow, despite the notable global developments in technology [1]. The reluctance to use IoT solutions creates a gap between the potential benefits of contemporary technology and the condition of monitoring techniques, making it difficult to optimise resource utilisation and solve environmental problems. Malaysian detergent level monitoring systems, which are divided into automatic and manual categories, are dualistic in nature. Manual systems are prone to inefficiencies, human mistakes, and possible resource waste because they require human inspections on a regular basis. In contrast, automated systems make use of modern technology like data analytics platforms, communication modules, and sensors that are enabled by the Internet of Things. By providing quick and reliable information to decision-makers, these systems enable real-time monitoring and optimise detergent usage and operational efficiency [2].

Other than that, depending on the technology approach used, various components are used in Malaysian detergent level monitoring systems. To measure detergent levels, traditional systems usually use sensors, float switches, or visual indications. On the other hand, contemporary automated systems incorporate an increasingly complex range of elements, including sensors that are connected to the Internet of Things, advanced communication modules, platforms for data analytics, and cloud-based storage options. These sophisticated devices do more than just keep an eye on detergent levels, they also enable predictive maintenance plans, which save downtime and boost overall operational effectiveness in a changing industrial environment [3]. Hence, to move Malaysia closer to Industry 4.0, it is

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