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Femmecare Vending Machine

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Abstract -The Waste Segregation System project introduces an innovative approach to modernise waste management systems through automation and sensor-basedtechnology. At its core, the project focuses on enhancing the efficiency and effectiveness of waste segregation processes by integrating metal sensors and fill level detection mechanisms into traditional dustbins. As individuals approach the dustbin to dispose of their waste, the system activates automatically, with the lid opening to facilitate disposal. Upon detection, the system intelligently segregates these metallic items into a dedicated compartment within the dustbin. This segregation is crucial for facilitating the recycling of metal components, thereby contributing to resource conservation and sustainability. By combining sensor technology, automation, and real-time feedback mechanisms, the project aims to streamline waste segregation processes, promote recycling efforts, and contribute to a cleaner and more sustainable environment.

***Key Words*:** Arduino UNO, LCD Display ,Spring, DC motor, RFID card.

1. INTRODUCTION

Most of the teenage girls drop out from the schools because of proper facilities which are not provided to them when they are menstruating. In every woman's life menstrual protection in today's situation is a very serious problem to them. About 90 percent in India women make use of feminine cleanliness that have been practiced for generations such as napkins fashioned out of natural fiber covering or husk that can be strips of cloth. For poor consumers disposable sanitary napkins are so expensive due to lack of awareness that limits to women's comprehension of sanitary napkins should be used and how they promote hygiene and health. In colleges and schools girls don't have access to functional toilets, disposable facilities and proper sanitation. During the first 3 days of menstruation cycle they need to change their sanitary napkins every three to four hours or else they will be getting affected by uterus Cancer and Toxic Shock Syndrome. Toxic Shock Syndrome can affect anyone who will be using the swabbing for a longer duration

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Women taking care of themselves by day to day activities and taking care of women during menstruation are also very important. A small negligence in menstrual hygiene management which will be affecting a women's body which may cause grievous harm and may also act as an instrument for spreading of infection to other people. Now in today's lifestyle, several menstrual hygiene products like sanitary napkins and tampons are available in markets. Indian women of 86% don't use the basic form of protection during menstrual.

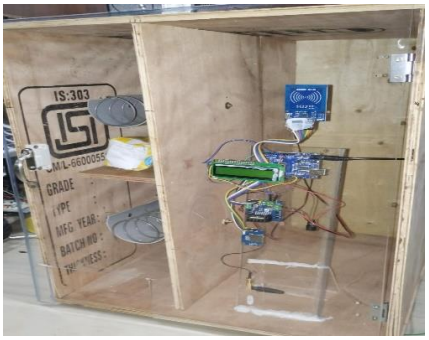

Fig 1.1 femmecare vending machine

PROBLEM STATEMENT

A small look out towards the major social problem regarding women's menstrual cycle this look out may help the female society to lead a healthy wealthy life . And this small contribution of developing vending machine will surely make availability of sanitary napkins to women's and avoid them using any other materials which causes harm to their lives.

The unprepared menstrual cycle becomes the precursor of this study, the reason as to why creating a more reliable hassle-free automated vending machine specifically designed to cater the women's personal needs during menstrual period. Often times, the irregular menstrual cycle of gives a lot of stress to any woman who is experiencing it than those who have regular onset.

The overall population of Collede of Computer Studies (CCS)is around 577 undergraduates, which are all currently enrolled, having 310 male and 267 female students respectively. From the results of the preliminary survey conducted, among the 150 female students from CCS, about 56% of these population used comfort rooms during their menstruations. Furthermore, it showed that 129 out of 150 or 86% of the total female students has a problem accessing sanitary products during their menstrual period especially during school days since most college canteen do not sell sanitary product.

2. OBJECTIVES OF THE PROJECT:

The Objectives of the proposed project are

1. To design and a transportable vending machine using simple techniques
2. We want to provide the vending machine a good and convenient mode for anytime access to the sanitary napkins
3. To adopt a simple design mechanism,this can be easily maintained
4. To supply portable sanitary napkins at economical cost

3. METHODOLOGY:

- Design and Prototype: Plan the layout and design of the vending machine, considering the size of the components and how they will fit together.
- Arduino Programming**:** Write code for the Arduino to control the vending machine's operation. This includes reading RFID cards, displaying information on the LCD, controlling the motor unit and spring for dispensing napkins, and managing power supply.
- RFID Integration: Integrate RFID card reader to authenticate users. When a user swipes their RFID card, the Arduino should recognize it and allow access to the vending machine.
- Motor and Spring Mechanism: Use a motor unit to control the dispensing mechanism. The motor should be programmed to rotate a certain amount to release one sanitary napkin. The spring can assist in smoothly dispensing the napkin.
- LCD Display: Use an LCD display to provide instructions to users and display relevant information such as available stock or transaction details.
- Napkins Collector: Implement a collector mechanism to gather used napkins. This could be a separate compartment or a disposable container.
- Power Supply: Ensure the vending machine has a stable power supply to operate all components reliably.

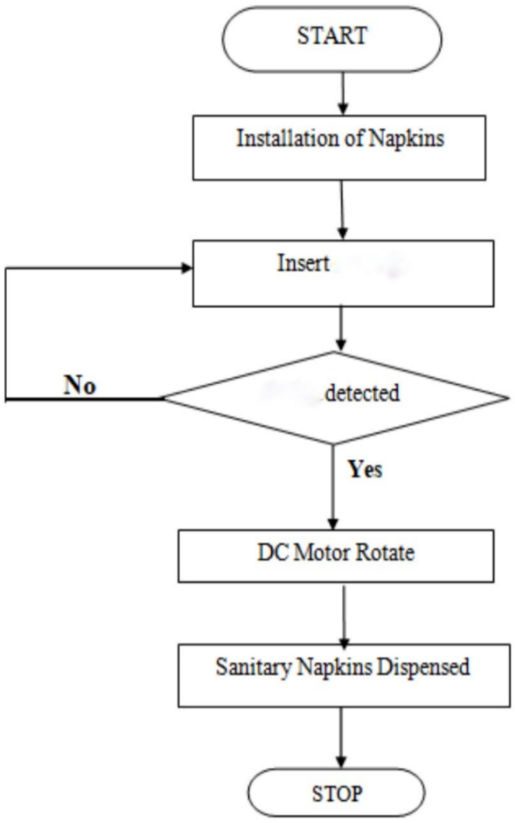

Fig 2: Block Diagram

The user can scan the RFID card through the slot provided. After sensing the RFID card ,execution of the method starts. As the user scans the card , checks whether the card is valid or not. If it is valid card acceptor accepts the card , if not the card is rejected and displays on LED.A sensed card waits for the complete process to be completed before getting deposited into the gathering box. The rotation mechanism of the DC motor working motor and also the associated with springs ensures that proper operation takes place and also the napkins vended properly.Coil spring is a dispensing mechanism for vending machine which connected to the AT mega 328 microcontroller through dc motor and motor driver to achieved required rotation for napkin outlet .Coil spring comprises closely spaced neighboring loops, which capable of supporting and transporting the product to be vended. As the coil is turned napkin is transported towards dead end until it reaches the distantly spaced loops where it drops from the dead end to the dispense slot which can accessible by user.

4. APPLICATION:

1. Public Restrooms**:** Installing vending machines in public restrooms of shopping malls, airports, train stations, and other high-traffic areas provides convenient access to menstrual hygiene products for women on the go.

2. Workplaces: Employers can install vending machines in office buildings and workplaces to support the menstrual health needs of female employees, fostering a more inclusive and supportive work environment

3. Community Centers and Recreational Facilities: Vending

machines in community centers, gyms, sports stadiums, and recreational facilities cater to the menstrual hygiene needs of women participating in various activities and events.

4. Public Transportation**:** Vending machines installed at bus stations, subway stations, and other transportation hubs enable commuters to purchase sanitary napkins while traveling, addressing unexpected needs and emergencies.

5. Hospitals and Healthcare Facilities**:** Automatic vending machines in hospital settings can provide patients, visitors, and staff with access to menstrual hygiene products, ensuring their comfort and well-being during their stay.

6. Remote or Rural Area**s:** Automatic vending machines can be installed in remote or rural areas where access to traditional retail outlets may be limited, ensuring that women in these communities have access to menstrual hygiene pro

5. ADVANTAGES:

1 .24/7 Accessibility: Vending machines provide access to menstrual hygiene products round the clock, ensuring women can obtain what they need at any time, even outside of regular store hours.

2. Privacy and Discretion: Users can discreetly purchase sanitary napkins without the need for face-to-face interactions or discussing their needs with store personnel, promoting privacy and reducing embarrassment

3. Convenience: Vending machines placed in strategic locations such as public restrooms, schools, workplaces, and transportation hubs offer convenient access to menstrual hygiene products wherever women may need them.

4. Quick and Easy Transactions: Automation streamlines the purchasing process, allowing users to select their desired product and complete the transaction swiftly without waiting in line or facing delays.

5. Promotion of Menstrual Health and Hygiene: By providing easy access to menstrual hygiene products, automated vending machines contribute to promoting menstrual health and hygiene, ultimately benefiting the well-being of women and girls

6. Efficient Inventory Management: Automated systems can monitor inventory levels in real-time, ensuring that machines are consistently stocked with an adequate supply of sanitary napkins. This reduces the likelihood of stockouts and ensures product availability.

4. CONCLUSION:

Woman hygiene is our utmost important factor to be considered, this vending machine reduces customer retailer cycle as many girls feel shy of purchasing sanitary napkin on medical store. The Implemented system concludes that Installation of the sanitary napkin vending machine provides the easy accessibility of napkins during the time of emergencies. By easy access of napkins the hazardous diseases like toxic shock syndrome (TSS) and uterus cancer can be prevented. This real time work represents a solution for easy accessibility for the napkins.

In automatic vending machines for sanitary napkins offer a convenient, accessible, and discreet solution to meet the menstrual hygiene needs of women and girls in various settings. By providing round-the-clock access to menstrual hygiene products, these machines promote independence and empowerment, allowing users to obtain the items they need quickly and privately. Whether installed in public restrooms, schools, workplaces, or community centers, automatic vending machines enhance the overall experience of managing menstruation by offering convenience, privacy, and reliability.

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5. Journal of Emerging Technologies and Innovative Research (JETIR) © 2019 JETIR June 2019, Volume6, Issue 6 www.jetir.org(ISSN-2349-5162): Sanitary Napkin Vending Machines with Various Size and Payment Option