LPG DISTRIBUTION AUTOMATION SYSTEM USING PHP AND LARAVEL

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***Abstract*— This paper describes about the solution of analog LPG management system problem. Using both hardware and software we make a smart system for Liquified Petroleum Gas distribution management. People don't need to worry about the LPG cylinder refill again. By this project we are going to replace the old distribution management system with a Smart and automated system.**

I. INTRODUCTION

LPG is the next generation of fuel. Bangladesh is one of the densely populated countries in the world. The energy consumer is increasing gradually in the country. The key energy source in the country is natural gas but the supply is less than the demand. The government is not allowing the pipeline gas connection for household chores. Demand for LPG is growing highly in the country. Till last year, the number of LPG consumers was 38 Lakh. against 2.5 lakh in the year 2009, according to the annual report of the Energy and Mineral Resources Division (EMRD) of 2018-19. It will go up to around 90 Lakh by the time of 2025. This sector needs proper distribution management. [1]

Electronic commerce or E-commerce is the fastest growing B2C business in this country. Any Distribution management depends on E-commerce. E-commerce is still young and emerging in our country. The whole world is experiencing the major transformation in retailer business, and Bangladesh does not differ from the global trend. According to Bangladesh telecommunication regulatory commission (BTRC), latest statistics (June 2018) shows that the number of Internet users is 52.77%. Another report shows that There are more than 2500 e-commerce websites and around 8,000 e-commerce pages on Facebook that operating business.
It is high time to bring on the LPG distribution under E-commerce to grow this business, make peoples not to worry about Cylinder supply and to refill them. [2]

Like every ecommerce system, our system will be mostly the same. But there is now no management system in this sector now. We will make a proper management system from dealer to customer. There will be an admin dashboard for the dealer shop and a customer dashboard for customer to order or to make query or to compare the prices of different companies LPG.

Most of the ecommerce business only have product list updated and shows the pricelist. But there is no payment gateway to pay digitally. We will use the SSLCOMMERZ to overcome this situation. SSLCOMMEREZ is Bangladeshi Payment Gateway. Bangladeshi people mostly like to have a COD (Cash on Delivery). We will also impose that.

The biggest headache of LPG is refilling system. Consumer have faced plenty of problems regarding LPG refill. They do not know how much is left and when to refill. With Basic e-commerce functionality we are going to solve this problem and automate the refill system. With the smart automation system of the LPG distribution management, we are going to make a revolutionary change in this growing sector.

II. METHODOLOGY

We are making an analog system smart with the help of latest technology. We are using both hardware and software solution for this project.

A. Features

i. An Ecommerce Website for LPG With Home, Product, cart pages with payment Gateway

ii. A hardware device for measuring the level of cylinder and send the data to database

iii. An API to collect the gas remaining gas level and send it to server. Server will respond

B. Technology

1. *Software:*

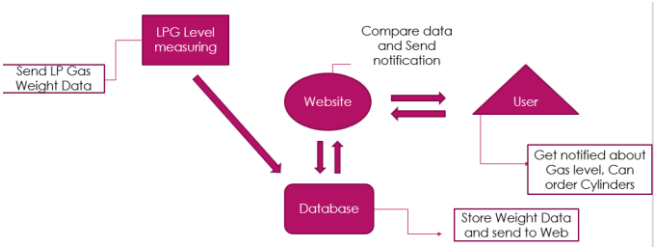
The website is base platform for provider and consumer.

i. Frontend: HTML & CSS to design the front end.

ii. Backend: PHP for backend. session, cookies are used for better user experience.\

iii. Database: MYSQL database to store the user data. There is a table for registration and login data, there is table for product and there is a table for cylinder gas level data

2. Hardware: hardware we will use Arduino, ESP 8266 and Load sensor for measuring LPG level.



C. *Functionality*

1. Consumer Functionality:
   i. Registration page: A consumer can register here
   ii. Login Page: A consumer or admin can login to website
   iii. Product page: Consumer can view the products and order LPG here
   iv. Payment section: Consumer can pay his/her bill here with mobile banking system

2. Admin functionality:
   i. Login: Admin can login here
   ii. Upload Product: Admin can upload and update product details here
   iii. Refill Automation: Admin can automate the refill system

III. Result

We have proposed a solution with software and hardware.

A. *Software:*

We've started Website Design. This website is the base of whole project. We will execute all the features through this website.

We've designed 4 pages

1. Home: Where User will land and explore
2. Registration: Where User will Register
3. Login/Logout: Where User will login/logout from profile
4. My Profile: Where user will view, update personal information

B. *Hardware:*

As these is a continuous course, we will do this part in the 499B part. In this section, we will measure the level of LPG using the Arduino and Load sensor. Load sensor will send the data to the Arduino where we can use LCD display for showing the measurement of the LPG remaining in the cylinder. We will use ESP8266 to send these data to the server. Then the server will read the data and act accordingly. It will show the remaining percentage of Gas in the cylinder. Consumer can log into their profile and view the data, if a certain level reached, user will be notified for make payment or confirmation for refilling. Admin of the provider will also be notified about the refill information. After confirmation from the provider, the cylinder will be refilled.

IV. Conclusion

In this 499A part, we have basically identified the problem, study the problem, found out the solution and start implementing.

After talking with providers and users, we have found out the motivation for this project. Most of them wanted a hassle- free refill system for the Cylinders. We have found out a way to make a solution for it. Using gas level measurement, we can automate the refill system.

We've started and implemented software part. We've figured out hardware solution too which we will introduce in 499B part. After completing the project, there will be no hassle for LPG distribution. The backdated analog delivery system of LPG will turn into a smart distribution management.

V. Reference

[1].https://mpemr.gov.bd/assets/media/pdffiles/Bangladesh_GSMP_Final_Report.pdf

[2].https://www.researchgate.net/publication/268354187_The_present_E-commerce_situation_in_Bangladesh_for_B2C_E-commerce