

# RESOURCE PLANNING SYSTEM FOR PETROL STATION (PETRO-HASH)

Maheshwari Vidhi Amarnath<sup>1</sup>, Nathwani Nikita Bipin<sup>2</sup>, Shah Neha Ajit<sup>3</sup>, Yedje Priyanka Babaso<sup>4</sup>

Dept of Computer Engineering, Sinhgad Academy of Engineering, Pune, India<sup>1,2,3,4</sup>

**Abstract:** Before the computers were developed all work was done manually. Now the whole world has developed due to automation. Means with the help of computer all work is done automatically. In industries also the work is done through the help of computer only so there is no need of keeping more workers in industries. Because as the work is done automatically the world is progressing due to this. In Pune, Hyderabad & Bangalore the software industries are developing in more percentage so there also the work is done automatically in industries.

As the work at petrol pump is done manually so it becomes hard for the supervisor to maintain a daily record. So for that we decide to make this project in which all the work is done with the help of one computer. Our project gives the supervisor to maintain a daily record in an easiest way. In our project there are several forms we had included. In our project we had included an Inventory management by which the supervisor can find the detail information of the entity. Also with this he can delete the record if he wants. In our project we have a module named product cost in which we can get the cost of each product. Also we have a module named staff management in which we can get the information about each staff like about his address, phone number, joining date, native address. Also in our project we have a report which has connectivity which is useful for entering the data to the database table. Also we have a report form in which there are several reports like pumps daily report, shift delivery report, pumps report, cumulative daily report, salary report. This all has a database query which is useful for entering the data of the database. Also this petrol pump management system will be useful for many pumps. Also we have provided the password facility for each module in our project for its safety purpose so if there are any confidential matter then it can be preserved by giving the password to that module.

## I. OBJECTIVES

The project is proposed for serving the following Objectives:

- To cover all the activities taking place at the Petrol Station.
- To automate those activities.
- To provide minimum navigation to our users who are the management staff at petrol station.
- To provide maximum comfortable environment for our users by actually replicating their huge log books which they use for keeping the track of all the records manually.
- To maximize the ease with which users will be able to use the system by providing data retrievals on a single mouse click.
- In other words we aim to minimize the efforts of our users and maximize the results gained by them as per their demands.

## II. INTRODUCTION

Resource Planning System is a pre-defined software system designed & developed specially for the Petrol Pump Owners, keeping in view with the specific requirements of the Pump Operations.

The basic purpose of this application is to manage & maintain all the activities which are perform at each & every Petrol Station, make the existing system more comfortable. The activities on a petrol pump are increasing in variety and keeping record of all these activities is a tricky job. Pump Management System will help you to do this with an ease and controlling and checking of the activities will become very easy for you. The normal

working of the pump is based on the activities performed in each shift and the sale comprises of fuel items like Petrol, Diesel and other items like oil, lubricants, distilled water etc. The sale of the fuel items is based on the meter readings of the dispensing pumps, the lubricant & other item sale is based on the actual quantity sold. The total sale is either in cash or against credit cards, petro cards or the sale is made to the regular customers on credit. In addition to these regular activities, there are various check points like dip records, density records, attendants' records, power consumption records which need to be updated. Keeping track of all these activities and maintaining all the required records is a big task. You would be required to do all this yourself, or you may have to appoint a person having this vision who also understands the importance of all these records. Today, doing all this manually is neither practical nor advisable. Resource Planning System is specially designed software which will take care of all this on your behalf.

In all petrol pumps if supervisor want to maintain the record of the pumps then he has to go to each pumps for calculating the readings of each pumps. But in our project we have provided facility to the supervisor in such that he can keep records of each pump just by sitting on one computer. If the supervisor wants to calculate to liters sold by an employee then he can view that just by clicking on module named liters sold this will display him the detail information of that employee how much he was given the petrol at the starting of the day and how much he has sold in whole day and the amount he has calculated. Also the supervisor can see whether the target given to him was completed or not.

Also he can keep the record of the employee which are deleted and also can view whether the employee is paid the bonus or not. This will provide the supervisor to do his job easily any time he wants to access the data from the report of the any employee. Also if the supervisor wants the record of the pump then he can view that easily without having any effort of going to their and calculating the reading individually of the pump. This will be useful for viewing the information of all the pump available in the petrol pump.

### III. PROPOSED SYSTEM

We are developing the "Petrol Pump Resource Planner" with better GUI & some basic functionality such as add, update, delete, search records. And main Functionality included as follows:-

1. Sales
2. Purchase
3. Daily Stock Record(DSR)
4. Inventory(stocks)
5. Employee
6. Admin
7. Customer
8. Reports Generations.
9. Memo
10. Other Essentials

#### 1) Sales :

The sales of petrol, diesel and oils can be viewed in following ways:-

- a. Product wise sales:-Sales report are generated according to the products available.
- b. Litre wise sales:-Sales report is generated for petrol and diesel only in terms of quantity sold in litres.
- c. Point wise sales:-Sales report is generated for petrol and diesel only in terms of quantity of fuel sold per nozzle.
- d. Time wise sales:-Sales report is generated for petrol, diesel and oil as per the time span mentioned by the admin.
- e. Shift wise sales:-Sales report is generated for petrol, diesel and oil as per the amount sold per shift.

#### 2) Purchase:

This module keeps the track of tanker decantation details such as:-

##### a. Company details:

This sub module stores the details of the company where the station owner places the order of the products. It includes the basic details such as name, contact details and banking details. These details are referred at the time of placing the order and making payment to the company. For example HPCL BPCL are the companies where the order is placed.

##### b. Purchase Order details

When the owner places the order in a particular company, in this tab the order details are stored. This includes the date of placing the order, the company name, the product ordered and the quantity of the product.

##### c. Pending order:

This sub module shows the details of list of all the orders which are placed but yet to arrive on the station i.e. pending orders. An order is added to list when it is

confirmed from company's side. The order confirmation information includes the company name, the order number (assigned by the company), the vehicle number (vehicle in which the order will arrive), challan number (the receipt no which will be sent with order), the quantity of fuel that will be sent, the amount (the cash amount which the owner needs to pay). Based on this quantity and amount, the rate of the product is calculated. This rate is nothing but the cost price of the product, which is used in calculation of profit. Once these details are sent by the company, that particular order is added to pending order list.

#### d. Owner Payment:

Once the amount to be paid is known to the owner, he needs to pay it to the company so that the order arrives in time on the station. In this module the owner payment details are stored. These details include the company to which the payment is done, the order no. for which the payment is done, the amount paid, the payment mode used, if it is the cheque then its number is stored. If it is through online transfer then cheque no. is kept null. In either cases the concerned bank name is stored in the system.

#### e. Challan details:

Challan is basically a receipt which is sent by the company with the consignment i.e. the order. This challan has a challan no. , the product id i.e. the product that is sent, the order no. which is sent. It also includes certain quality assurance parameters of the product to keep a check on the product quality and the alterations during the transport. The values of these parameters are generated at the time of sending the product at the company. If the product is fuel i.e. petrol or details then the parameters include hydra (hydraulic pressure), temperature, received density, opening time and closing time. In case the product is oil, the only parameter sent is batch no. because oil is sent in cans and there is no chance of alterations and variation in case of oil.

#### f. Decantation Details:

This sub module is used in case the product is fuel. It is used while the tank decantation i.e. pouring the fuel from the company tanker into the storage tank takes place. It contains the detailed record of decantation activity. It has a record of two activities:

i. The nozzle point sale: This record is to keep the track of the fuel sale that takes place at each nozzle point during the decantation activity. It records the opening reading which taken at each nozzle point when decantation starts and closing reading when it ends. The difference of these readings gives the quantity of fuel sold at that particular nozzle. This record is used to generate the sum of fuel sold at all the nozzle points during decantation activity.

ii. Decantation details: This record keeps the track of the decantation activity. This includes the order no which is being decanted, the product (i.e. petrol or diesel), stock in (i.e. the quantity of fuel ordered), opening dip (i.e. the dip reading of the tank at the start of decantation), closing dip (i.e. the dip reading of the tank at the end of

decantation), opening stock (calibration table value w.r.t opening dip reading), closing stock (calibration table value w.r.t closing dip reading), actual in (the difference between opening and closing stock is the actual quantity of fuel poured into the tank. The dip reading is nothing but the measure of the level of fuel present in the tank. It is taken twice during decantation- once at the start and once at the end of decantation. The calibration table stores the per cm volume of the storage tank. So for each dip reading the corresponding value is fetched. The difference of these values gives the volume of fuel filled in the tank. Thus the actual quantity filled in the tank is calculated. Now this actual in value and the sum of quantity of fuel sold at each nozzle obtained from nozzle point sale record is subtracted from the stock in value to generate the variation in the fuel quantity. This variation is also recorded for every tank decantation activity.

### 3) Daily Stock Record(DSR) –

This module keeps the track of the quantity of products sold and amount of revenue generated. It has two sub modules:

#### a. DSR for fuel:

This sub modules keeps the track of the daily sales of fuel taking place at each nozzle point in a particular shift assigned to a particular employee. Thus it records the nozzle point name, the employee id of the employee in charge of that nozzle and the shift id of the shift in which he is working.it also records the start and end reading at each nozzle point in each particular shift. The start reading in given as input only once for each nozzle point at the start of the day. The further start readings for every record is auto generated. The employee is supposed to submit the end reading at the end of his shift. The end reading of the current employee is used as the start reading of the next employee for a particular nozzle. Thus the start reading can be auto generated every time for the whole day. The difference between the start and end meter reading give the quantity of fuel sold on that particular nozzle by a particular employee in a particular shift. The quantity of fuel used for testing of each nozzle is also recorded. The fuel used in testing is not sold actually but it is included in the meter reading. So it is deducted from the difference. This gives the actual quantity sold. This multiplied by the current fuel price gives the amount of money generated at the end of shift. This money is taken from the employee in installments which is handled in a different module called installment. Whatever amount is yet to be taken from that particular employee is thus calculated and stored as left amount.

#### b. DSR for oil:

This field keeps the track of the oil sale taking place. It keeps the track of the product sold which can be any type of oil, for example: gear oil, brake oil etc., the employee who sold the product, the shift in which the product is sold, the item type, example: 200ml, 400ml, 1 liter etc. it keeps the track of the stock left for each type of oil. it also keeps the track of the quantity sold and amount generated.

### 4) Inventory(stocks)

This module is used to keep the track of the total stock

present at the station. It is also used to keep the track of total collection made at the station. For performing these functionalities it has following modules:

#### a. Stock:

This module is basically for keeping the track of the money collection. In this module the product wise collection of money is recorded, the expenses are entered, the amount received by the customers is fetched. Thus the total cash that should be in hand is calculated

#### b. Sale by dip:

This module is used to keep the track of what amount of fuel is removed from the tank which is compared with the total amount of fuel send at each nozzle point for the whole day to calculate the variation. If this variation is positive then loss has occurred and if it is negative profit has occurred. So this record is maintained on daily basis. This includes the tan no from which the fuel is used, dip reading (this is taken at the end of each day, it act as the end reading). The current dip reading is the start reading for the next record of the same tank. The start stock and end stock is obtained from the corresponding dip readings. Difference between the two gives sale by dip (i.e. the actual fuel used up from the tank.). Now the sum of fuel sold at all the nozzle points connected to that particular tank in the whole day is fetched into sale by meter field. The difference between the sale by dip and sale by meter field gives the variation that has occurred in the quantity of fuel.

### 5) Employee

It keeps the track of following details of the employees:-

#### a) Employee details:

This include the basic details such as employee id (it is assigned to each employee by the admin), contact details, joining date, designation, salary, etc. of each employee working at the station. It provides three functionalities:

- i. Add new employee: Here any newly joined employee's details are entered into the system. The auto generated employee id is assigned to the new employee.
- ii. Update Employee Details: Here the details of any employee working in the station can be updated and stored in the database.
- iii. Delete employee: In this module the record of a particular employee can be deleted from the system.

#### b) Payment Sheet:

This module keeps the track of the salary payment made to the employee. It includes the name of the employee, salary status (i.e. paid or unpaid), the net salary to be paid if status is unpaid (salary after deducting the leaves and the advance salary if taken

c) Advance payment: It keeps the track of the advance payment if any taken by the employee.

#### 6) Admin

This module is basically to make the initializations required for the system. Here all the one time occurring events are carried out. All the fields set in this modules are fetched in other modules. So this module is linked to each and every module of the database. It includes the following tabs:

a) Scheduling Shifts:

This tab is used to schedule the shifts in which the employees work on the station. Here every shift is assigned an auto generated id. The shift is named and the start and end time of the shifts are entered.

b) Add Product:

This tab is used to assign each product to be sold at the station a unique product id. It also includes the description of each product.

c) Add nozzle point:

This tab is used to add the nozzle points on the petrol station. This includes the nozzle point name, tank no. (The tank to which the nozzle is associated), nozzle type (whether it is a petrol nozzle or a diesel nozzle), nozzle status (whether the nozzle is currently in use or not).

d) Tank details:

This include the tank no, the tank type (whether it is a petrol tank or diesel tank) and the size of the tank (in liters.)

e) Alert:

This tab is used for setting the minimum dip on which the alert should be generated for placing the order. It depends upon the daily fuel sale of the particular petrol station. So it can be set by the admin as per his requirements.

f) Product pricing:

This tab is used for changing the fuel price if it varies. It includes the current price, the new price, the product id, the rate and the profit based upon the new price.

g) Expenses:

This tab keeps the track of the expenses made by the employees. It includes the expense type, amount expended and the person who is responsible for it. One can also add the type of expenses in the system using this tab.

7) Customer

This module provides the following functionality related to the customers:-

a) Customer Details:

It provides three functionalities:

i. Add new customer: Here any new customer's details are entered into the system. The auto generated customer id is assigned to the new customer.

ii. Update Customer Details: Here the details of any employee working in the station can be updated and stored in the database.

iii. Delete customer: In this module the record of a particular customer can be deleted from the system.

b) Pending payment:

This tab keeps the track of the pending payments made by the customer. It includes the name of customer, vehicle no (the vehicle for which the payment), the status of payment (paid or unpaid) payment mode (card, cheque or cash), accordingly the cheque no. or the credit card no. and the bank name.

c) Fuel Sale:

This tab keeps the track of the fuel sold to the credit customer. It includes the name of the customer, product sold, vehicle no (the vehicle in which petrol is filled of the customer) and quantity.

d) Add vehicle:

This tab is used to add a vehicle associated to a particular credit customer.

8) Reports Generations

Following type of reports are generated by the system:

- Sales
- Purchase
- Inventory
- Employee
- Employee details
- Shift report
- Salary report
- Credit customers
- Accounting report

9) Memo

This module is for generating cash invoices:

It includes the following tabs:

a) Cash memo:

This type of memo is for the local customers who are not kept track of in the system. This memo is generated on customer demand. It has nothing to fetch from the database. It is entered by the admin. It includes the receipt no, date, customer name, vehicle no, bill no (the no on the hard copy i.e. the receipt book) and the particulars purchased by the customer.

b) Credit Memo:

This type of memo is for the credit customers who are permanent visitors of the petrol station. It is the same as the cash memo with the only difference that it fetches the data from the system.

10) Other Essentials:

These includes all those modules which are required on daily basis. So they were demanded to be placed on the home page itself. These include:

a) Instalments:

This module is used when the owner is interested in taking the collection in instalments. In that case the amount taken in instalments is kept in track of using this form. It includes the employee id (the employee from which the instalments are), the respective shift, the respective nozzle point, and the amount submitted as an instalment.

b) Employee Attendance:

Here the attendance of employee is marked. This tab is used to calculate salary deduction in case of leave if any taken.

c) User Registration:

This form is use to make the registration of any new user of the system when the owner needs to create new account.

d) Change password:

This tab is used in case if the user wants to change the password of his account.

### III. MATHEMATICAL MODEL

Problem Definition:

For any petrol station the quantity of fuel stored in the tank is an important parameter. Many activities depend on it. This include checking daily sales, generating stock alert etc. To measure the fuel available in the tank is a difficult job. It is not a usual task of measurement and may involve wastage of fuel and incorrect measurement if not undertaken properly.

We have to estimate the quantity of stock available in the decantation tank. For measuring the quantity of fuel stored in the tank, we use dip readings. The dip reading is taken twice when the fuel is being stored in the tank. The first time before storing the fuel in the tank. This reading is called as start dip reading. The second time it is taken when the fuel is poured in the tank. This reading is called end reading. Using the difference between these dip readings, we can estimate the amount of fuel stored in the tank. For this we require to refer the readings from a special table. This table stores the per centimeter volume of the tank. This table is called as calibration table. Using the entries for whole numbers in this we estimate the approximate quantity for decimal number readings by the below mathematical model:

Consider a decimal number dip reading  $n.m$ . Consider the final stock value to be represented by  $val$ . This dip reading is separated into two parts- integer and floor i.e. integer= $n$  and floor= $m$ . If  $m$  is zero, search  $n$  in the calibration table and add its corresponding value to  $val$ .

If  $m$  is not equal to zero, search  $n$  in calibration table and get the corresponding value1. Increment  $n$  by one. Search  $n$  in calibration table and get the corresponding value2. Store the difference of value1 and value2 in value. Divide value by 10 and multiply it by  $m$ . Add value1 to value. Now add value to  $val$ .

The mathematical formula used in case ( $m \neq 0$ ):

$$\text{Value} = \text{value1} + [((\text{value2} - \text{value1}) / 10) * m]$$

Where:

Value2=calibration table value of  $n+1$ .

Value1=calibration table value of  $n$ .

$m$ =floor part of the input reading

Example:

Input dip reading e.g. 123.7

Compare with  $n.m$

$n$  (integer) =123

$m$  (floor) =7

$m \neq 0$

Therefore value ( $n$ ) (value corresponding to  $n$  from calibration table) = 16660.1

Similarly, value ( $n+1$ ) (value corresponding to  $n+1$  from calibration table) =16836.0

$$16836.0 - 16660.1 = 175.9$$

$$175.9 / 10 = 17.59$$

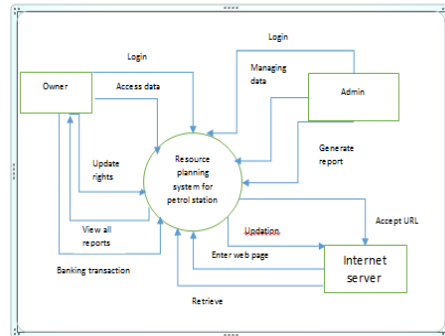
$$17.59 * 7 = 123.13$$

$$16660.1 + 123.13 = 16783.23$$

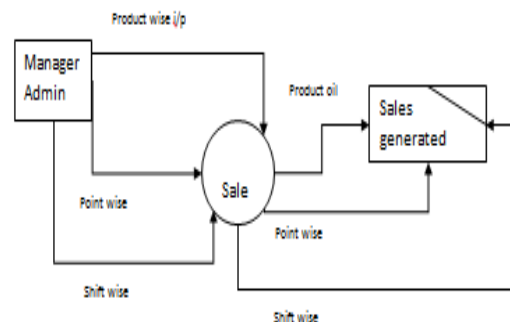
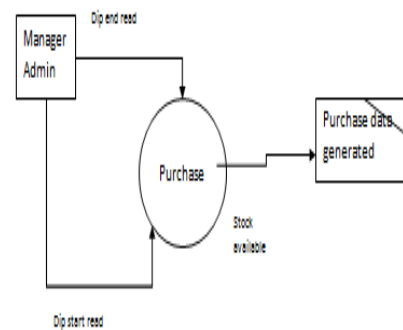
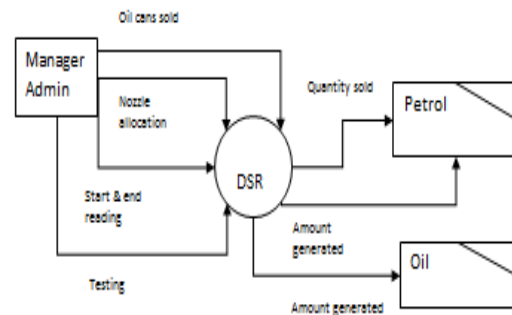
This is the final calibration value corresponding to 123.7  
Add this value to final stock.

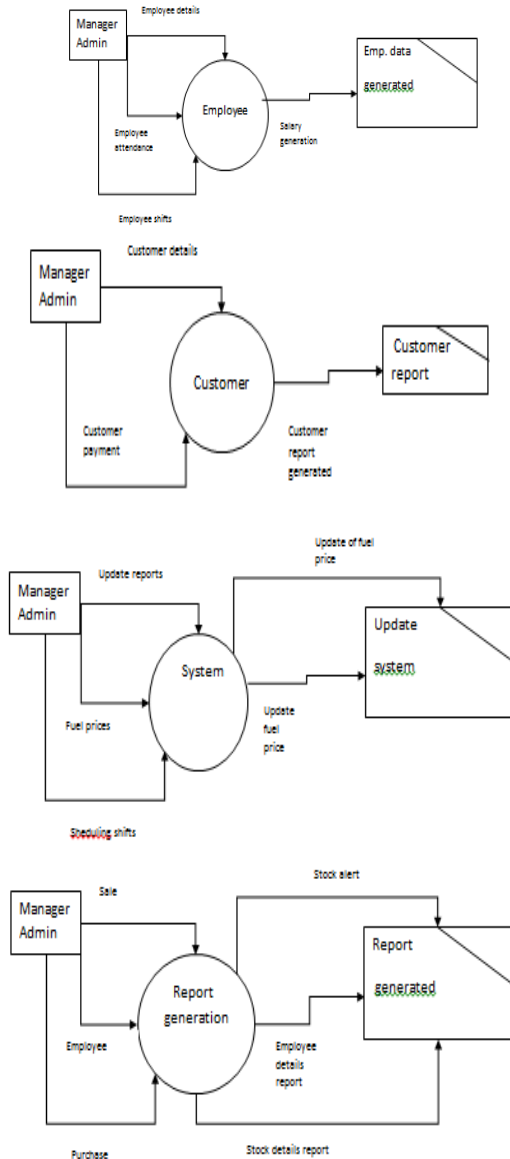
### IV. DATA FLOW DIAGRAM

Level 0



Level 1





#### IV. ACKNOWLEDGMENT

It gives us immense pleasure to present the review paper on the topic- “RESOURCE PLANNING SYSTEM FOR PETROL OUTLET.” We acknowledge enormous assistance and excellent cooperation extended to us by our internal guide Prof. A.S. Shitole. We would also like to thank our external guide, Mr. Hemant Salunkhe (Hashcodes Solutions). We would also like to thank our HOD for providing us this opportunity. Lastly we would like to thanks our friends who helped us through out.

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