MODELING OF TWO WHEELER VEHICLE FOR FUEL INDICATION IN DIGITAL AND ACCIDENT DETECTION

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Abstract— *Today's world is the real time which needs digital techniques for measuring any quantity or parameters. So the fuel meters which were present in previous and as well as today are analog in nature. In this system, we are implementing in digital way, which will shows the value of fuel in digital format. So the fuel will be measured digitally which is present in fuel tank i.e. 1.0, 1.5, 2.0, 2.5 liters etc. Also the thefting of fuel is a bigger problem in today's world. If the fuel gets theft from two wheeler vehicles then the SMS will be sending to the owner of bike and simultaneously the buzzer will make noise to aware the owner of bike. Today's world is facing with traffic issues, accidents are causing on large scale due to transportation so in this system detection of accident can be possible by using accelerometer .In this system gear level sensor is also used to detect whether which gear is in working condition or not and also to make adjustment of gears while driving two wheeler vehicle. All these processes are real time and running state process.*

Keywords: sensors, Atmega328, Arduino board, Max 232, GSM Module.

1.INTRODUCTION:

Nowadays the world is dealing with real time system. But at present stage, digital fuel meters are implemented in recent vehicles. in this recent vehicles system the actual amount of fuel of fuel present in the fuel tank cannot be able to calculate because of analog meter consisting of deflecting needles. These deflecting needles display quantity of fuel in fuel tank as empty or full or low, high. So the people don't come to know the exact fuel present in the fuel tank. To solve this issue, this system implements the fuel meter which will show the exact amount of fuel present in fuel tank in digital format. Fuel thefting is also an major problem, when the customers fills the fuel from petrol pump, the customers doesn't know the exact amount fuel in fuel tank, so the customers will be easily cheated. if the theft is occurred when fuel goes down, the buzzer will turn on to aware the owner of two wheeler vehicle and simultaneously the SMS will be send to the owner of two wheeler vehicle. Traffic is the major issue in today's world, as transportation is increasing, number of accidents is also increasing so to detect accidents accelerometer sensor is used. This will sense the physical condition of the two wheeler vehicle. And also the gears are working properly or not can be detected by using gear level sensor, which will help to know about the gears are activated or not.

2. LITERATURE REVIEW:

In paper [1] system have used fuel float sensor which is a Indicator unit measuring and displaying the amount of electric current flowing through the sending unit. When the tank level is high and maximum current is flowing, the needle points to "F" indicating a full tank. When the tank is empty and the least current is flowing, the needle points to "E" indicting an empty tank.

In paper [2] system have used solenoid and this becomes the limitations for their project because solenoid is having disadvantage of precision limit which is usually only switch two states, in only two Limits positions and solenoid is not continuously adjustable and also can be breakable.

In paper [3] system have not used the Switch/gear level which doesn't not indicate which gears have been used for the gear on which the vehicle is currently running. The speeds of a vehicle are different for different gear levels.

In paper [4] system have not used the buzzer and alert system is not present ,only indication of fuel theft will come to know with help of LCD display, no buzzer or alert systems are used for awaring the owner of bike that fuel theft has been occurred.

In paper [5] system have used the level sensor which indications only three states for fuel indications that is empty middle and full, it will not show the accurate readings of the fuel filled.
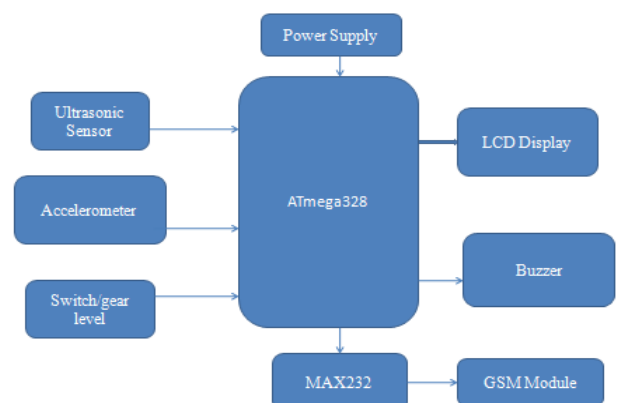
3. PROPOSED BLOCK DIAGRAM:

Fig 1.Proposed block diagram

The proposed block diagram is given above. In above system different blocks are used for their specific functions and their specific reqiurments.Atmega328 is the microcontroller used for controlling different parameters. These parameters are sensed by different sensors. the output of this sensors are analog in nature, so ADC is used to convert analog signal into digital signal which is required for AT mega328 for performing a particular operation. These signals are then sensed by microcontroller. When the two wheeler vehicle is started, it will show the current fuel present in fuel tank ad after sometimes when vehicle is stopped, then microcontroller will store the current value of fuel present in the fuel tank.LCD 16x2 display is used to display the accurate fuel readings and also gear level i.e. which gear is used while driving a two wheeler. Gear level sensor will indicate that whether gear is in working condition or not. For gear level sensor, potentiometer is used.

As the gear changes the potentiometer will show different values for each gear. If gear changes then voltage will change and it will show the respective voltage of that particular gear. Indicating which gear is in working condition i.e. working properly or not. A limit switch is used to turn on ignition system of two wheeler vehicle. After ignition of bike, the LCD will display the current fuel present in the fuel tank and also which gear is activated. This all process is the real time process. In this system fuel thefting is the key point. at present in two wheeler vehicle system ,there is a analog meter which is showing a deflecting needle and indicating fuel in terms of empty or full. it will not show the accurate fuel readings. so fuel thefting can be occurred while filling fuel from petrol pump or also fuel thefting can be occurred even if the two wheeler vehicle is parked anywhere ,for this awareness, buzzer is used for alerting the owner of the two wheeler vehicle. For accident detection, accelerometer (ADXL335) sensor is used in this system; this accelerometer sensor is 3 axis sensors i.e. X, Y, Z axis. Which is able to sense tilt, tap and shake etc. accelerometer sensor is able to sense the physical condition in all three axis or three directions.

This accelerometer will sense different angles as per the position of two wheeler vehicle on the road. These angles can be used for detecting accident. If the accident is occurred and it is detected, then SMS will be sending to their relatives as well as hospital areas. Due to this SMS, people may come to know about accident has been occurred or not. This SMS is send with the help of GSM module. The MAX232 is used for interfacing between the microcontroller and GSM module.
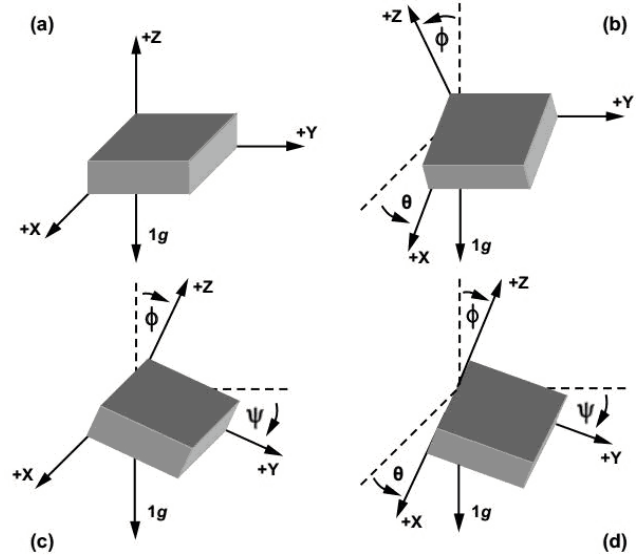

Fig 2. Angle of inclination

Angle of inclination means by how much angle the device is tilted from its plane of surface.

4. CONCLUSION

In this proposed system, thefting of fuel is avoided and the thefting of fuel from petrol pump will come to an end, which will decrease the corruption. Due to this, system will be more reliable .This system will obtain the accurate readings of fuel in digital format. Gears of a two wheeler vehicle are working properly or not will come to know to the owner of two wheeler vehicle. And also this system can be able to detect the accidents occurred.

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