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Design and Fabrication of Antifuel Theft Device

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ABSTRACT*:* It is a simple device which is used to predict the fuel theft in vehicles. Fuel theft is often occurs in the parked vehicles. Due to this heavy fuel loss occurs to the owners of the vehicles, since it is in great demand and expensive one. Fuel theft is often carried out by the strangers as well as drivers. In earlier days fuel theft device is only capable of sensing the theft. So it can only sense the theft and it cannot be blocked. In order to reduce this drawback we have designed new simple device which can sense as well as block. In this device we are using siphoning in the opening of the tank by which fuel is filled in the tank, but cannot be taken out. We are using meshing mechanism in the fuel inlet tube to the engine. We are using two infrared sensors in fuel inlet as well as overflow by which we can predict the unplugging of fuel tube. We are using control circuit in which we have transmitter and receiver by which we can receive signals in case of fuel theft.

KEYWORDS: To the predict and block the fuel theft in vehicles

I. INTRODUCTION

In recent times, fuel theft is a common problem which is faced by the owners of the vehicle .now a day's fuel is in great demand and expensive one. Due to this they face loss in their business without recognizing the theft. Mainly theft is carried on the parked vehicles even the unknown stranger can easily theft the fuel without notice .since it is a common problem taking place everywhere ,in order to reduce the fuel theft we have designed simple equipment to sense and block the fuel theft.

Our project is mainly concentrated on not only sensing the theft ,but also to block the fuel theft .In order to block the fuel coming out, when the vehicle is in rest we are using meshing of two pipes .If the fuel inlet to engine is plucked out, automatically fuel stops coming out from the tank. This meshing mechanism is carried out with help of a small spring and a washer present inside the pipe To sense the theft we are using sensors especially IR sensor which is used to sense the small deflection in the pipe .we are using two IR sensors which is fixed on the upper and lower side opening of the tank. Here fuel is circulated using the fuel pump .It acts like engine by circulating the fuel.

II. FUEL TANK

The fuel tank is used to store the petrol, diesel and other gasoline fuels. It is also used for the production of the energy i.e. is mainly for the running the engine. it stores the fuel and supplies to engine. It converts the fuel into gases while during conversion the fuel is converted into energy. It looks larger in size. It can hold the fuel in litres. Fuel tank can be classified according to the vehicle which for their convenient. If a car its fuel tank is not much larger than the lorry's fuel tank.

Fuel tank could not store more amount of litres in its. The fuel tank consists of nozzle and the lid for closing. The fuel tank should close because of vaporization of the fuel. The mechanism of the fuel tank is to give the fuel for the engine. The engine is the heart of any vehicles. To avoid the vaporization of the fuel the tank should be closed. The fuel tank is located at the bottom in the body of the vehicle. In the vehicle the fuel tank is consistent in size. The fuel tank is at left side or right side of the vehicle bottom.

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There are several types of tanks are there according to

- Metallic tank
- Cylindrical tank
- Plastic tank
- Rectangular tank

Siphoning

Siphoning is a device like a filter, which have a lot of multiple holes. It is cylinder structure one side open and three side close surface, the open side is in the size of fuel inlet opening.

Siphoning is the purpose of filtering the fuel and blocking the fuel from theft. This device is most important to block the fuel from the theft. This device not only in a cylindrical structure it based on all informal structure. It is a leading blocker device in market. In this siphoning device are only entering the fuel but not out take the fuel. This reason is most valuable to select this device. Siphoning is the great anti fuel theft device so we used this device to our project.

III. MESH PIPE

Mesh pipe is a mechanical device. It is most important part of the project. This is one of the kinematic assumption occurs in the device. These types of device are also available in market. Purpose of mesh pipe is to avoid the theft of fuel and block the wastage of fuel. It is also a simple device and has a mechanism to predict the theft. This device is works under the process of interactive section about two pipe with pressure. This two pipe are disengaged mean there is no flow of fuel .if the engagement of this two pipe with some amount of pressure only the flow can pass from one side to another side.

These types of advantage are the main purpose to select the device. The mechanism is the best thing to block the fuel to the tank. So it can fully avoid the theft of fuel.

Sensors

It is used to sense the objects. In over heated the machine the sensor will be used to stop their machine. Otherwise the sensor used to stopping their vehicle and any fire on shopping complex then danger alarm will be automatically serene.

If there any short circuit on any building on to off the main connection. The sensor used by to avoid the vehicle in fuel theft and to create the alarm, to send the message on owner. The flow control sensor used b and to create the alarm, to send the message on owner. The flow control sensor used to the control the flow rate on fuel tank to engine flow on fuel .Flow rate is change in engine stop the pump and engine. Theft of the fuel in tank and over flow, engine inlet pipe line in three place of thefted area. So three place in tank fit the infrared a sensor any person disconnect the signal stop the engine and pump.

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IV. DESIGN AND FABRICATION

Bending

In engineering mechanics, bending (also known as flexure) characterizes the behavior of a slender structural element subjected to an external load applied perpendicularly to a longitudinal axis of the element. The structural element is assumed to be such that at least one of its dimensions is a small fraction, typically 1/10 or less, of the other two. When the length is considerably longer than the width and the thickness, the element is called a beam. For example, a closet rod sagging under the weight of clothes on clothes hangers is an example of a beam experiencing bending. On the other hand, a shell is a structure of any geometric form where the length and the width are of the same order of magnitude but the thickness of the structure (known as the 'wall') is considerably smaller. A large diameter, but thin-walled, short tube supported at its ends and loaded laterally is an example of a shell experiencing bending

Welding

Welding is a fabrication or sculptural process that joins materials, usually metals or thermoplastics, by causing coalescence. This is often done by melting the work pieces and adding a filler material to form a pool of molten material (the weld pool) that cools to become a strong joint, with pressure sometimes used in conjunction with heat, or by itself, to produce the weld. This is in contrast with soldering and brazing, which involve melting a lower-melting-point material between the work pieces to form a bond between them, without melting the work pieces.
Many different energy sources can be used for welding, including a gas flame, an electric arc, a laser, an electron beam, friction, and ultrasound. While often an industrial process, welding may be performed in many different environments, including open air, under water and in outer space. Welding is a potentially hazardous undertaking and precautions are required to avoid burns, electric shock, vision damage, inhalation of poisonous gases and fumes, and exposure to intense ultraviolet radiation.

Power supplies

To supply the electrical energy necessary for arc welding processes, a number of different power supplies can be used. The most common welding power supplies are constant current power supplies and constant voltage power supplies. In arc welding, the length of the arc is directly related to the voltage, and the amount of heat input is related to the current.

Constant current power supplies are most often used for manual welding processes such as gas tungsten arc welding and shielded metal arc welding, because they maintain a relatively constant current even as the voltage varies. This is important because in manual welding, it can be difficult to hold the electrode perfectly steady, and as a result, the arc length and thus voltage tend to fluctuate. Constant voltage power supplies hold the voltage constant and vary the current, and as a result, are most often used for automated welding processes such as gas metal arc welding, flux cored arc welding, and submerged arc welding.

In these processes, arc length is kept constant, since any fluctuation in the distance between the wire and the base material is quickly rectified by a large change in current. For example, if the wire and the base material get too close, the current will rapidly increase, which in turn causes the heat to increase and the tip of the wire to melt, returning it to its original separation distance.

The type of current used also plays an important role in arc welding. Consumable electrode processes such as shielded metal arc welding and gas metal arc welding generally use direct current, but the electrode can be charged either positively or negatively. In welding, the positively charged anode will have a greater heat concentration, and as a result, changing the polarity of the electrode has an impact on weld properties.

If the electrode is positively charged, the base metal will be hotter, increasing weld penetration and welding speed. Alternatively, a negatively charged electrode results in more shallow welds. No consumable electrode processes, such as gas tungsten arc welding, can use either type of direct current, as well as alternating current. However, with direct current, because the electrode only creates the arc and does not provide filler material, a positively charged electrode

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causes shallow welds, while a negatively charged electrode makes deeper welds. Alternating current rapidly moves between these two, resulting in medium-penetration welds.

One disadvantage of AC, the fact that the arc must be re-ignited after every zero crossing, has been addressed with the invention of special power units that produce a square wave pattern instead of the normal sine wave, making rapid zero crossings possible and minimizing the effects of the problem.

Resistance welding involves the generation of heat by passing current through the resistance caused by the contact between two or more metal surfaces. Small pools of molten metal are formed at the weld area as high current (1000–100,000 A) is passed through the metal. In general, resistance welding methods are efficient and cause little pollution, but their applications are somewhat limited and the equipment cost can be high.

Drilling

Drilling is a cutting process that uses a drill bit to cut or enlarge a hole of circular cross-section in solid materials. The drill bit is a rotary cutting tool, often multipoint. The bit is pressed against the work piece and rotated at rates from hundreds to thousands of revolutions per minute. This forces the cutting edge against the work piece, cutting off chips from what will become the hole being drilled. Exceptionally, specially-shaped bits can cut holes of non-circular cross-section; a square cross-section is possible. Drilled holes are characterized by their sharp edge on the entrance side and the presence of burrs on the exit side (unless they have been removed). Also, the inside of the hole usually has helical feed marks.

Drilling may affect the mechanical properties of the work piece by creating low residual stresses around the whole opening and a very thin layer of highly stressed and disturbed material on the newly formed surface. This causes the work piece to become more susceptible to corrosion at the stressed surface. For fluted drill bits, any chips are removed via the flutes. Chips may be long spirals or small flakes, depending on the material, and process parameters. The type of chips formed can be an indicator of the mach inability of the material, with long gummy chips reducing mach inability.

Shaping

Shaping is a conditioning procedure used primarily in the experimental analysis of behavior. The method used is differential reinforcement of successive approximations. It was introduced by B.F. Skinner with pigeons and extended to dogs, dolphins, humans and other species. In shaping, the form of an existing response is gradually changed across successive trials towards a desired target behavior by rewarding exact segments of behavior. Skinner's explanation of shaping was this. We first give the bird food when it turns slightly in the direction of the spot from any part of the cage. This increases the frequency of such behavior. We then withhold reinforcement until a slight movement is made toward the spot.

This again alters the general distribution of behavior without producing a new unit. We continue by reinforcing positions successively closer to the spot, then by reinforcing only when the head is moved slightly forward, and finally only when the beak actually makes contact with the spot. ... The original probability of the response in its final form is very low; in some cases it may even be zero.

In this way we can build complicated operands which would never appear in the repertoire of the organism otherwise. By reinforcing a series of successive approximations, we bring a rare response to a very high probability in a short time. ... The total act of turning toward the spot from any point in the box, walking toward it, raising the head, and striking the spot may seem to be a functionally coherent unit of behavior; but it is constructed by a continual process of differential reinforcement from undifferentiated behavior, just as the sculptor shapes his figure from a lump of clay.

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V. GENERAL PROCEDURE

The general procedure for making the fuel tank is done by above explained process. By bending the sheet metal using some external load and bend the metal to required shape (i.e.) shape of tank. It is bent like the cylinder, when it comes to the shape of the cylinder it is fixed for some time, afterwards the sheet metal is welded in the cylinder shape itself. After the welding process is over, the cylinder shaped tank is drilled in both sides, in order to produce holes on the either side of the tank.

When drilling process is over, mesh pipes are fitted in the holes with the welding process. And siphoning equipment is welded in the opening of the tank

VI. ADVANTAGES OF FUTURE SCOPE

1. The primary advantage is that it is able simultaneously to detect direct fuel theft, in other words, theft described in fuel theft method no.

2.In the background section of this specification, as well as fraudulent fuel theft, as described in fuel theft methods nos.

3 . In particular, the direct fuel theft is detected by monitoring fuel levels in successive periods of time, whereas the fraudulent fuel theft is detected by comparing the amount of fuel actually dispensed into the fuel tank and the amount of fuel alleged to have been dispensed into the fuel tank. By simultaneously being able to determine both types of fuel theft, it is believed that the present invention will go a long way to addressing fuel theft.

VII. CONCLUSION

We make this project entirely different from others projects. Since concepts involved in our project is entirely different that a single unit is used to various purpose, which is not developed by any of other team members. By doing this project work, we understood the principle and uses of sensor, mesh pipe, siphoning, etc., Once again we express our sincere thanks to our staff members.

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