

Enhancing the Passenger's Safety by Automatic Door Locking System and Self Locking of Starter Motor

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ABSTRACT: This work deals with design of self-locking starter motor with safe door locking system for a car. Monitoring system is designed and all the four doors are connected with control circuit. Before ignition all of the four relays should be closed. The control circuits monitors for door status. If the all doors are closed then the control circuit switches on dash light. We can start the car when the dash board light is on that is when all the doors are closed. Ignition key is used to start the vehicle. If the ignition key is switched on and if four doors are closed then the control circuit starts the engine through the relay circuit. The self-motor attached with the relay circuit starts the engine when the relay is turned on.

KEYWORDS: Monitoring system, door, dash light, Ignition key.

I.INTRODUCTION

Here this system is equipped by limit switches, control unit and relays. The main objective of the journal is to develop a self-locking starter motor is used to start the engine. In normal condition the starter motor cranks the engine, when the starter switch is operated. The main risk in this system is that motor can crank the engine even the engine is running. This will damage the starter motor. In order to prevent this defect and to improve the safety we are introducing this system.

II.PROBLEM ANALYSIS

In actual condition when ignition key is turned while the car engine is already running it will again try to start the motor and make the unnecessary starter engage and it will possibly damage the starter gear. In order to avoid the problem when the ignition key is switch on we are checking for the engine status. If the engine is already on then the engine will switched off. So, the motor life time will be extended and the problems will reduced.

III.DOORS

A vehicle door typically hinged but it is attached by other mechanisms such as tracks in front of an opening which is used for entering and exiting a vehicle. A door of the vehicle provides can be opened to provide access to the opening or closed to secure it. These doors can be opened manually operated or powered electronically. Powered doors are used in modified cars or high end cars.

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Fig.1: A car door

IV.EXISTING SETUP

In olden days the locking system was dependent on mechanical keys but now many techniques are evolved in locking the doors. They are locking the doors by using the Bluetooth, using the messages sent in the phones, face identification, voice identification, finger vein identification, using GSM and GPS in mobile phones, using Bluetooth based android for mobile phone. Here above mentioned technologies prevents the cars from being theft. But our paper is different that provides the safety for the driver and passenger. If all doors are closed only the engines starts its ignition.

V.STARTER MOTOR

Starter motor converts the electrical energy through a battery into mechanical rotating mechanical energy. These motor works under heavy load. They produce big power in short interval of time and in a small volume. For initiating internal combustion engine the rotating movement of starter motor should be requested being greater. The starter motor must rotating at a minimum speed at starting position. The starter motor turns for approximately 3 seconds during each starting condition. Here we don't know at what position the engine stop so that starting gears gets damaged so here the motor is locked at running condition



Fig.2: Starter Motor

VI. PARTS AND FUNCTIONS

Doors are connected in series connection Doors 1 and 4 are connected to control circuit. Ignition key portion is connected to the control circuit. The Control circuit is connected to the dash broad light. Control circuit is powered by Generator. Control circuit controls the relay. Relay is connected with the Self motor. The ac voltage is connected to transformer which steps that ac voltage down to level of desired output .A diode rectifier then provides a full wave

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rectified voltage that is initially filtered by a simple capacitor filter to produces a dc voltage This resulting dc voltage usually has ripple or ac voltage variation. Voltage regulation is usually obtained using one of popular voltage regulator IC units. An ignition switch is control system of internal combustion engine motor vehicle that activates the main electrical system for the vehicle. The ignition switch usually requires a key to ignite it. It works of switch mechanism. It is frequently combined with the starter switch activates the starter motor. The ignition switch is the device which receives your car key usually located in the steering column or on the dash board near the steering wheel. Relays are used to isolate voltage level from another. A PLC may be used control the operation of medium voltage motor perhaps 2300v or 4000v. A relay is used to energizes the starter which in turn switches the motor voltage while the PLC controls the relay. Here limit switches are used to determine the absence, passing and positioning and end current through the circuit. A starter is an electrical motor that in over or cranks the engine to start it. Alternator is electro mechanical device that converts mechanical energizes to electrical energy in the form of electric current. But it usually the term refers to small rotating machines driven by automotive and internal combustion.



Fig.3: Ignition Key

VII.WORKING

Self – locking starter motor with safe door locking is an closed system in which the starter motor locking and door connecting are working is same circuit. When the driver turned the ignition key to on position key to ON position the four relays provide to each door get charge from battery and energized. The door circuit is made in a series connection. The circuit will complete only when all the four doors are closed correctly ie to make limit switch to activate which is provided between the door and the body. By actuating the limit switch the energized relay transfer the relay transfer the charge and completes the circuit. Thus relays are connected with the control circuit provided below the steering wheel. If all the doors are closed then the control circuit monitors for the door status. If all the doors are closed then circuit switches on the light on. We can start the car when the dash board light is o that is when the doors are closed. Ignition key is used to start the vehicle. If the ignition key is switched on if four doors are closed then the control circuit starts the engine via the relay circuit . The self -motor is attached with the relay circuit starts the engine when the relay is turned on.



Fig.4: Main Relay



Fig.5 : Fuel Pump Relay

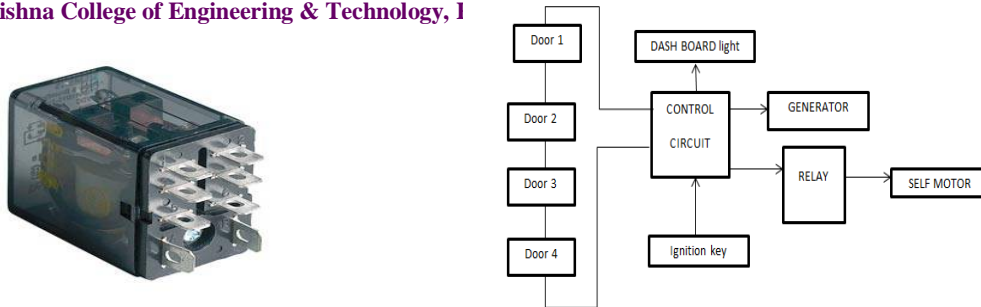
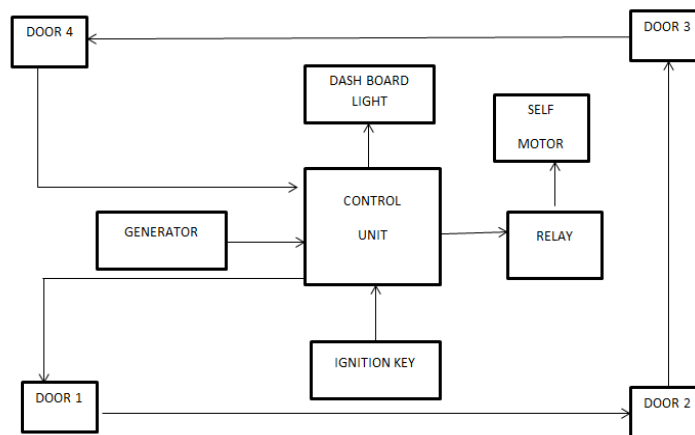


Fig.6 : Plug-in relay

While the engine is in running condition the generator in the engine also works. The generator is connected with the control unit through connecting wires. The control unit and starter motor is connected through the relay. The relay always is in off position the circuit is completed at the time the engine is not in working condition. When the engine is ignited and started the generator rotates and develops some amount of output current from the generator to the battery is received by the control unit and send the current to relay to actuate. The relay gets energized and thus it disconnects the connection of starter motor. It avoids the repeated cranking the engine while in on position. Thus the motor life will extends and the problems will be reduced.

VIII. BLOCK DIAGRAM



IX. CONCLUSION

1. This Self-Locking motor provides excess safety to starter gears and also provides safety to the passenger. The major advantage is that the Self-Locking system activates at the time where is required.
2. The Self-Locking motor is also advantageous because it provide a long life to the motor. The cracking of motor is reduced by the use of this type of motor.
3. This advantage factors entrains the consumer to look over the safety factors and provides additional factor to buy the vehicle.
4. From this concept, the major factor which is the safety of the passengers are attained in a highly appreciable position.
5. Moreover, the safety of engine from cracks and starter motor safety is also determined. In the system additional factors can also be added for the convenience of the consumers.

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