

# Intelligent Tractor Starting System For Driver Safety

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**Abstract-** *Un safe problem in vehicle particularly in tractor due to maintenance. Currently no safety measure in tractor, a cost effective starting kit is developed. The system is simple and cost effective starting kit is developed. The system is simple and cost effective. The system is efficient and holds effective mechanism. The components of the starting kit is clutch sensor, seat occupancy sensor, ignition switch, relay and electronic control unit. The main work of the clutch sensor is to start the tractor when the gear is engaged. The frequent update is being made. The fuel injector working is calculated by 555 timer. Diode is used as the switch at the time of injector monitoring process. In tractor the driver safety is the primary concern.*

## I. INTRODUCTION

Tractor is one of the comprehensive vehicle for the farmers. Tractor is the multipurpose vehicle for the farmers. It emerged as one of the most powerful vehicle . The starting system in the tractor currently used in the tractor is not safer. Without the proper starting system the engine get malfunction. Tractor is the mobile source for the farmers. The fuel injector with 555 timer is to provide the same amount of fuel to the engine cylinder by the high pressure fuel pump. If the injector get damaged it can check out by the timer unit . The injector working same as the solenoid valve while the driver start the tractor when the gear is engaged the tractor get up set.

## II. FEATURE OF STARTING SYSTEM

Starting ignition is simple from the olden days. A problem that needs solution is the vehicle ignition system. Manual starting is taking place, due to specific problem the farmer engaged in the work are suffering proper use of starting system and control technologies may rectify the prevailing situation to some degree. The proposed concept of an starting system that involves an advanced system that travel smoothly. The smart system is build for the driver safety . It consists of the electronic control unit, clutch sensor and seat sensor, relay unit. This system is the first of its kind proposed specially for the tractor. It updated frequently.

## III. STARTING MECHANISM SYSTEM

The mechanism aims to present a method for starting a vehicle in a safety measure. This is cost effective starting system which, if installed, will prove to be a wonderful to the engine. The system matches virtually every climatic situation. They exist to prevent an engine paired to a manual transmission from being started in gear. This is almost certain to result in premature starter motor defects. Clutch sensor is located in the manual transmission vehicle at the clutch pedal or on the clutch push rod.

Applying the idea in the current starting system makes ensure that no problem will occur in the tractor. The sharp starting system gives an effective output and guarantees safety. The idea of starting technology can also used in procedure for starter motor to drive the engine. Smart starting system is a new idea to vehicle performance. Smart starting system is a good time saving system and safer for the engine. The machine can be controlled by the external members that makes it user friendly. The starting system is an effective other option for cranking engine. The timer unit control and monitor the fuel injector . Our unit saves an fuel and resources compared to currently available system, because a single fuel pump send a fuel to multi fuel injector. The vehicle are now in the process of eco friendly. Intelligent starting system can only operated along with the tractor.

## WORKING METHOD:

This intelligent starting system is not executed in the tractor. The sensors are replaced behind the clutch pedal pod and seat belt . The sensor are connected with the relay module, relay act as switch. Now the driver start the tractor the engine will not crank. Now driver wear the seat belt and didn't press the clutch pedal the the engine will not crank. At the end the driver press the clutch pedal pod and wearing the seat belt, now the signal send from both the sensor to electronic control unit, then it indicated and the engine will started.

The 555 timer unit is to monitor the fuel injector. If the injector get damaged, it is rectified through timer unit. The electronic control unit control the fuel injector to supply same

amount of fuel to all the injector in the tractor. The gear position displayed in the dash board.

The starter motor with solenoid attached to the crankshaft to crank the engine. The electronic control unit is to control the device, it act as the engine heart to the tractor. The clutch sensor , seat occupancy sensor and relay module works in 12 volt input.

#### IV. METHODOLOGY

- The idea behind the intelligent starting system in tractor project is to create a more capable.
- Cost effective system to start the tractor .
- The system which is developed consists of the electronic control unit, timer unit, sensors, relay module.

#### V. RESULTS AND FUTURE WORK

The clutch sensor send the signal to the electronic control unit and seat occupancy sensor sends the signal to the electronic control unit. The timer unit monitor the injector, then the electronic control unit control the device.

The future work in the intelligent starting system in tractor is that using of Internet of things to send the fuel level, engine temperature and device information to the tractor owner. If the person owned more than 4 tractor he can easily know about all the tractor engine temperature, fuel level through IOT. It is very use full system for the owner. Installing of GPS in the tractor to know the location of tractor.

#### Algorithm:

The starting process is started, Now the engine will not crank. Signal send from the clutch sensor to electronic control unit and signal from seat sensor to electronic control unit to crank the engine. The relay module will act as the switch for the sensors. Timer unit monitor the fuel injector, it helps for the same amount of fuel gets into the engine cylinder.

#### Starting kit and injector Applications :

- The sensor were gives the correct signal to the ECU.
- The 555 timer can calculate the amount of the fuel.
- Features techniques are upgraded.
- It was controlled by Electronic control unit.
- aspects of an starting system is invariant.

#### VI. CONCLUSION

The intelligent starting system provides an effective starting process of tractor and guarantees safety with driver intervention. The tested starting system will be used in the tractors. Intelligent starting system is very good safer for driver. This system will works in all climatic condition. This system prevents the engine parts , gear rods from damages. This system provide effective alternative than normal starting system. Our system will be safer. This is also environmentally friendly. This is fully manual system. The key limitation in developing the starting system is stable not mobility. The starting system can only works along the electronic control unit.

#### REFERENCES

- [1] Xingyoung song university of minnesota, USA, in the topic “pressure based clutch control for automotive using controller” in 2006.
- [2] Zongxuan sun university of Minnesota, USA, “ control theory and application to automotive “ in 2007.
- [3] Nelu v.blaz university of novi sed, Serbia, “Detection of seat occupancy sensor”.