

# System for Work Hour Measurement of Tractor

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**Abstract-** In India 70% of the population is engaged in farming hence most of the earning is from farming. Farmers used various types of machineries. As the development in the technology farmer uses tractors which performs all of his work related to agriculture. Tractor companies use an hour meter in their tractors. The warrantee provided by these tractor companies is based on number of working hours of tractors. So, the hour meter is used for the purpose of measuring the working hours of the tractor. Particular period is provided by these companies as per their policies. But these hour meters can be manipulated. People are tampering with hour meters to get extended warranty. And this is being a large problem for companies and mostly the dealers. So there is need to overcome this problem. It can be done by implementing a secret work hour measurement system. So this paper focuses on implementation of System for work hour measurement of tractor.

## I. INTRODUCTION

Tractor companies use an hour meter in their tractors. The warrantee provided by these tractor companies is based on number of working hours of tractors. So the hour meter is used for the purpose of measuring the working hours of the tractor. Particular period is provided by these companies as per their policies. But these hour meters can be manipulated. People are tampering with hour meters to get extended warranty. And this is being a large problem for companies and mostly the dealers. So there is need to overcome this problem. It can be done by implementing a secret work hour measurement system. We have presented a system for that work hour measurement. It uses IR sensors to detect the on period of the tractor. And this data is directly transferred to the company by using GSM. So the company will get correct data and will be able to notify the customer about his warrantee period.

Problems to customers: The owner of the tractor needs to remember his warranty period. If the period

is over then his warranty will void. Because of these he loses offers or services provided by company or sometimes it needs to pay fine. So, it is needed to check period to avoid warranty damage. Problem to company: In servicing Centre or showroom they needed to check the data of all customers. Sometimes they needed to visit the vehicle to see working period. Also, they give card to every customer and when they come for servicing it needed to find the information of customer and store the data manually.

## II. HARDWARE DESCRIPTION

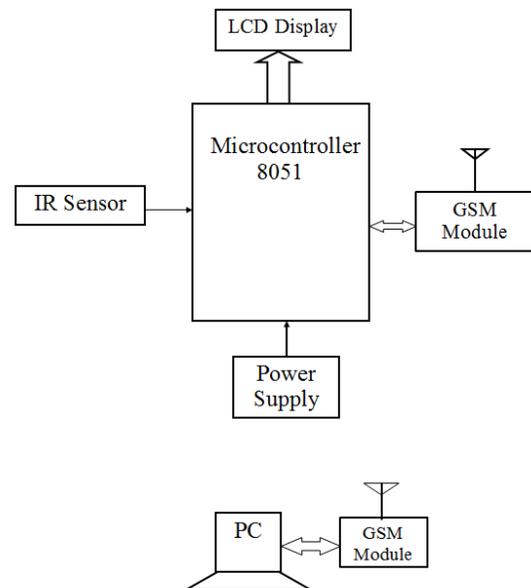


Figure 1: Block Diagram

As shown above block diagram consists of Transmitter & receiver block. Transmitter is connected in tractor & receiver is at service center. Transmitter consists of Microcontroller which is interfaced with IR sensor, LCD display & GSM module. IR sensor is used to keep track on the system. IR sensor is situated near the cooling fan as

the machine requires cooling fan it will give information about whether the tractor is on or off. IR sensor will give signal to the microcontroller. As per on and off of the tractor the current time period will be sent by GSM module. With the help of the GSM module at a particular time of the day this data will be sent to the company. Thus company will get daily data from different customers and this data is stored with the help of the c#. So the company will get all working details of the tractor. LCD display shows data to the customer. On LCD screen it will show Hours used and Hours remaining. Thus the customer will also understand his warranty period.

### III. SOFTWARE DETAIL

Following figure shows flowchart of working of project.

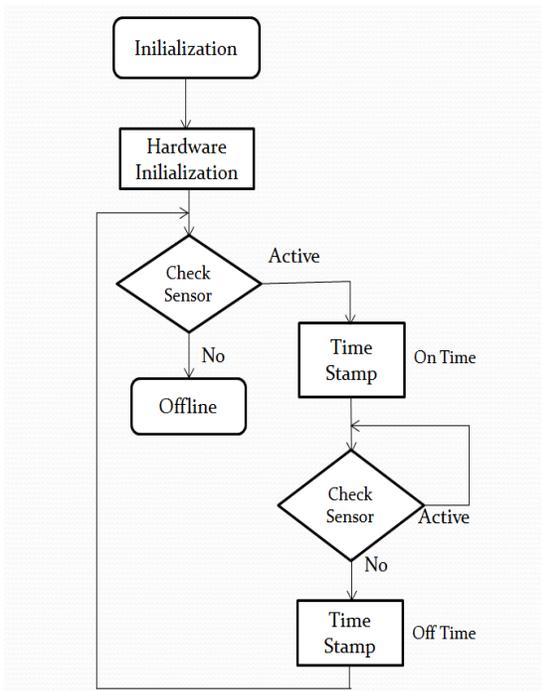


Figure 2: Flowchart of working operation

Transmitter side is programmed with embedded C programming of 8051 microcontroller which handles all operations related with hardware while receiver side which at service provider is programmed using C# in order to keep record related with customers.

### IV. SIMULATION RESULT

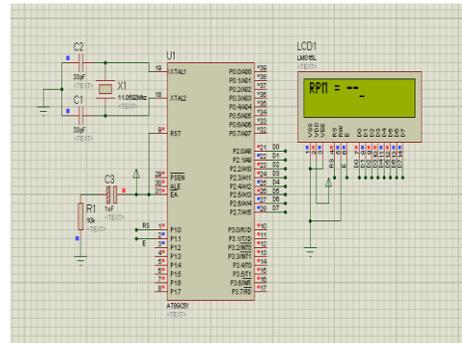


Figure3: simulation of LCD display

Figure 3 shows simulation of LCD display connected to micro controller in Protues

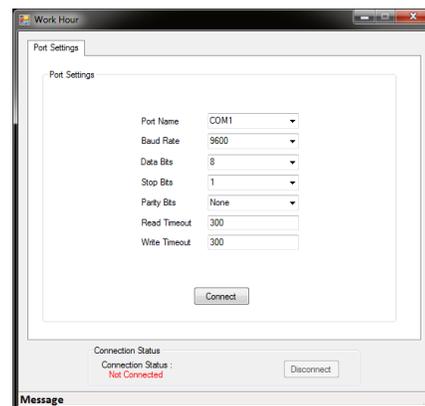


Figure 4: Starting Connection

Figure 4 shows It is starting window we see when the application is open. Port selection tab detects the connection of port where the GSM is connected.

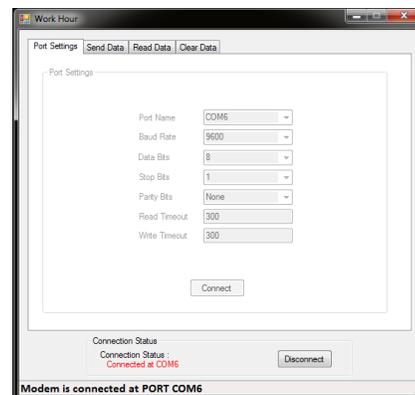


Figure 5: connection succeeded

Figure 5 shows window after successful connection this window will open showing connection at port.

customer & service provider. So this type of system can avoid frauds.

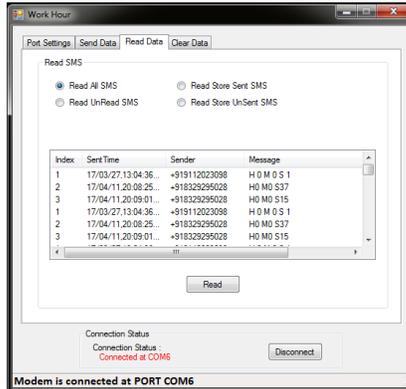


Figure 6: Read data window

Figure 6 shows this tab we read all the SMS sent by GSM module which is on machine of tractor. The message contains data as TIME, Sender and Message. In message it will show time period for which it was worked as H=Hour, M=Minute, S=Second format.

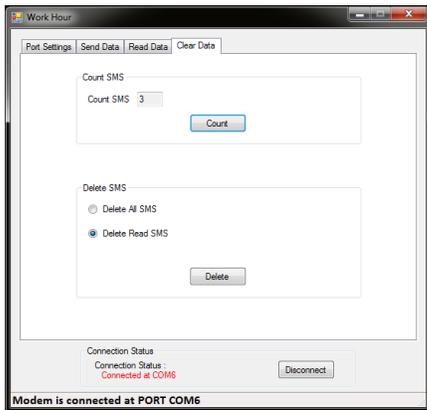


Figure 7: Clear Data

Figure 7 shows that we can count the number for which the tractor is started by counting SMS. It is also possible delete the previous messages.

#### IV. CONCLUSION

The implemented system is low cost way to measure the real working period of tractor. By using this system the company will get accurate data directly in their centre. Also, company can send alert message to customer in advance which is beneficial for both

#### REFERENCES

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