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Energy Meter Power Theft Detection in Distribution System

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Abstract: Currently, we are seeing that in distribution system the technologies are improving and advancing day by day. Due to increase in the demand the consumption of energy also increases. As we know that the generated electrical energy have to be distributed among the consumer and for this consumption of energy consumers have to pay. For this purpose the energy meters are created which will measure the energy consumption of every type of consumers. Energy meter help to record electrical energy consumption over a particular period of time. After another event, it is found that the consumers are tampering their energy meter to save money, but this type of power theft is a crime which directly affected economy of the nation. Theft of electricity social evil so it has to be eliminated permanently. The power generated is utilised in a efficient manner because power consumption and losses have to be closely monitored the illegal way of electricity is a big problem but now can be solved this problem electronically without any control by human. This improvement will save electricity in huge amount and for more number consumer electricity is available in populated country such as India.

Keywords: theft detection, transmission of power, microcontroller, energy meter, regulated supply.

I. INTRODUCTION

Electrical energy consist of generation, transmission and distribution system. And these generation, transmission, a distribution of electrical energy consist of many non technical losses. While, losses occurred in generation can be technically defined, but T&D losses cannot be precisely identified with the sending end information. This solves the involvement of nontechnical parameters in T&D of electricity. In short technical losses occur naturally and are caused because of power dissipation in transmission lines, transformers, and other power system components. Technical losses in T&D are calculated with the information about total load and the total energy billed. NTL (non technical losses) cannot be precisely calculated but can be concluded from the difference between the total energy supplied to the consumers and the total energy billed. NTL are done due to factors external power system. In many developing countries, NTL are a serious problem for utility companies as they account to about 10 to 40% of their total generation capacity. Data related NTL is unpredictable and it is very hard to resolve theft in terms of actions that cause these losses. Electricity theft produce a great role of the NTL. Electricity theft includes bypassing, tampering with the energy meter and other physical methods to dodge payment. Illegal tapping of electricity from the buses and tampering with the meter are the most popular and accounted ways of theft. Electricity theft can also be termed as, using electricity from the utility company without any payable charges or valid obligation to change its measurement is called electricity theft.

A. Objective

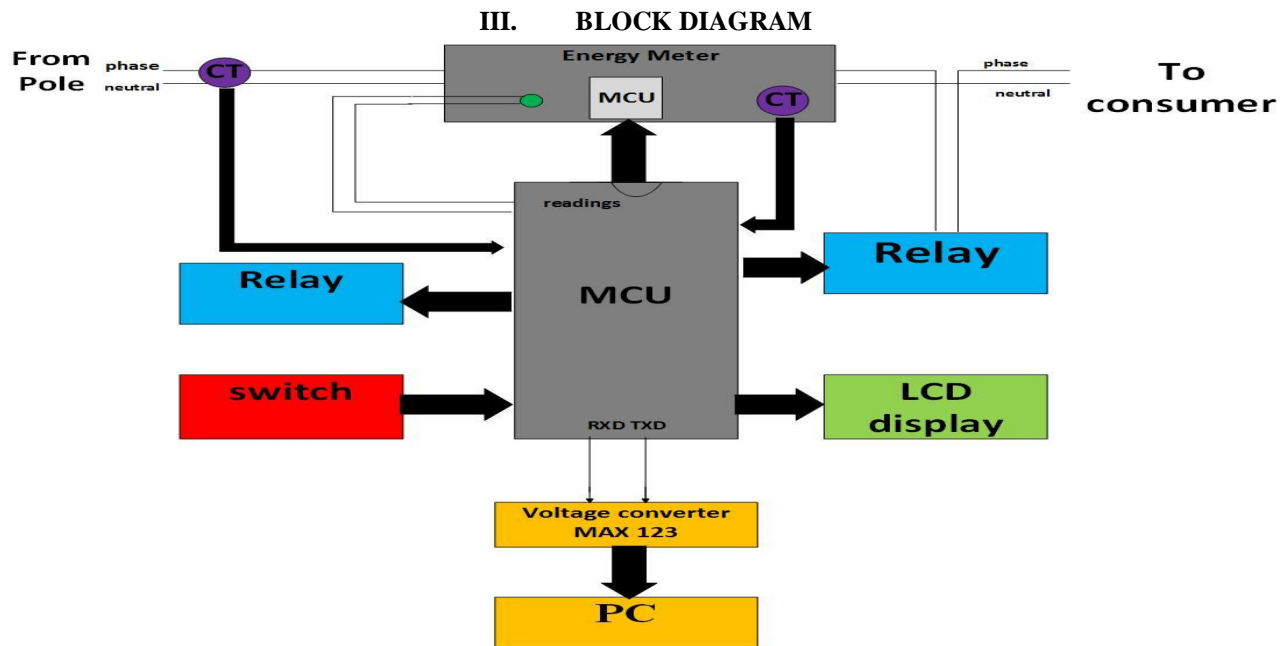
- 1) This system would provide a easy way to find an electrical power theft without any human.
- 2) To maximize turnover generation by the power utility companies.

II. LITERATURE SURVEY

By the survey we studied that, electricity theft detection using the auxiliary CT (current transformer) and tripping circuit interfaced with microcontroller. The pole mounted current transformer on a service wire with a output of energy meter load terminal and microcontroller calculate the difference between them. If the difference is found the theft will automatically detected and supply of energy meter will be tripped. This system is used to overcome the theft of electricity via by passing the energy meter and hence it also controls the revenue losses and utility of the electricity authorized agency. They provide insight into the illegal use or abstraction of electricity in the India. The value and the economic views of theft detection are presented and the current practices and experiences are studied. The paper also proposes a novel methodology for automated detection of illegal utilization of electricity in the future distribution networks calibrated with smart metering infrastructure. The essential data requirements for smart meters

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and distribution substations are defined, in order to unlock this feature in distribution network. They described that Electrical power theft detection system is used to detect an unauthorized tapping on distribution lines. Improved area of this system is a distribution network. The recent system is not capable to locate the exact location of tapping. This system actually gives the location of tapping on electrical lines. This system is a real time. The techniques which are used Wireless data transmission and receiving technique. This technique protect distribution network from theft i.e done by tapping on wire. In the history, various techniques were used detecting the location of direct tapping on a feeder and finding illegal consumers of electrical supply. On a same way, some non-technical measures, such as detection Of customers with specific load profiles and campaigning opposite to illegal consumption, were implemented to control electricity theft. Some of the techniques (proposed worldwide) are described in this section.



IV. NON TECHNICAL LOSSES

- A. Damaging i.e. misusing of meter to ensure the reading for lower consumption
- B. Mistakes in technical losses calculation
- C. hooking on LT lines
- D. Set the false readings by bribing meter readers
- E. Ignored the unpaid bills
- F. Faulty energy meters are used by the consumer to save money
- G. Mistakes in billing and not giving the instant reading
- H. Consumers are not pay continuously for supply

V. THEFT OCCURS ON ENERGY METER

- A. Take a auxiliary connection on service wire.
- B. Cutting the potential reference point in energy meters.
- C. Changing readings of energy meter and switch off display on current reading.
- D. Illegal opening of cover on energy meter.

VI. IDENTIFICATION OF THEFT

A. Financial Rewards

In this type of identification Utility companies embolden costumers to report electricity theft, such as offering jumbo rewards for information leading to any judgement of guilt in court law of anyone stealing electricity. Unluckily, most cases cannot be identified in the apartment industry due to lack of timely information.

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B. Periodic Check

In this type of identification Electricity theft frequently takes place after service has been discontinued. Many utility companies periodically check disconnected meters if the consumer has not contacted them to reconnect service. This labour-intensive, manual process has little chance of success given that the apartment industry 70% turnover annually.

C. Meter Readers

Utility meter readers typically suspect that electricity theft is taking place when they find a broken meter tag or other signs of tampering. But as more utility companies outsource the meter reading function to third parties, training meter readers to detect theft is becoming more difficult and less efficient. In addition, third party meter readers do not read disconnected meters.

VII. CONCLUSION AND FUTURE SCOPE

A. Conclusion

This Paper defines electricity theft in criminal and corruption point of you. This paper gives the most efficient and accurate way to reduce theft which is produced by the consumer by changing the connection which is provided in the energy meter. Theft which is occurred because due to corruption reduce by using this scheme.

B. Future Scope

In recent this model is work by using max232 module but in future the module is replaced by the wireless device such as GSM, Zigbee etc.

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