International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 02 | Feb 2020 www.irjet.net p-ISSN: 2395-0072

SMART VILLAGE: BETTERMENT PLANNING AND INNOVATIVE STRATEGY USING IoT

Shreyas.B.M[1], Sanjay.V.Bhat[2], Varun Raju.S[3], Prajwal.P.M[4]

[1]UG Scholar, TCE Department, Dayananda Sagar College of Engineering, Karnataka, India
[2] UG Scholar, TCE Department, Dayananda Sagar College of Engineering, Karnataka, India
[3] UG Scholar, TCE Department, Dayananda Sagar College of Engineering, Karnataka, India
[4]UG Scholar, TCE Department, Dayananda Sagar College of Engineering, Karnataka, India

---

Abstract - *The idea of Internet of Things (IoT) is one of the futuristic ideas of technology, this technology is the amalgamation of mobile, internet, and the things around us. It enables us to communicate and interact with devices around us and to finish the tasks on our command. This technology is very much necessary for a country like* India *to work in a smart way. Since India is the land of villages, IoT plays a vital role in addressing some of the common major issues in rural area by making them smart and sustainable. Which means, utilization of both renewable resources and the technology together to make their lives easier. This project mainly focuses on three main issues in a typical rural area viz, smart waste management, power conservation and three phase current notification system*.

***Key Words*: IoT, GSM, Micro Controller, Sensor, LCD**

1.INTRODUCTION

Majority of the population if India resides in villages hence, villages are main criteria for development of a nation. Three phase current is the required for running large water pumps (usually 10-15hp) to draw water from underground and other water resources mainly for the agriculture purposes. There are plenty of wet waste and the cattle waste being unused, that can be addressed using smart wet waste management system. Using smart street lights large amount of power being unnecessarily wasted can be conserved. Which can develop smart, independent, and sustainable village.

1.1 Three Phase Current Notification System

One of the major problems in villages is power supply, rural areas do not get much power supply as compared to the cities. There will be irregular supply of current to the rural areas, they cannot predict the power cuts and supply. Even if there is a power supply it will not be of 3 phase, they will receive single phase current, which is not sufficient to run the three phase motor pumps. The government provides the three-phase current only for a certain amount of time in a day. The occurrence of the three phase is not known by the villagers, that's because of the irregular availability of the three-phase current. People had to hurry to their farm lands to ON the motor.

The government had introduced a new technique, to implement the auto motor which automatically switches ON the motor whenever there is three phase current and automatically switches OFF, when there is no current. Irrespective of the condition of the grove or land whether it rained and land is full of water the motor will be switched on which causes again a loss to the land and even if the water source was dry, the motor used to turn ON, which would burn the inside coils, so the technology was withdrawn.

1.2 Wet Waste Management System

Garbage is the waste generated due to various activities such as mainly vegetable waste, industry waste, commercial waste, household waste. The useful gases which emits from the waste can be utilized for commercial purpose also. The gases which are emitting from the garbage can cause various diseases and harm environment. So, to know that what is concentration of the garbage in various places and in main container, this project is implemented and designed in various places and tested the same. Earlier, people of the society and concerned officials used to know that some sort of gases are emitting from the garbage. Whenever the Methyl Oxide gas that is high in rate, the sensors installed senses the das rate whether it is low or not, it detects and indicates to reduce the level. The waste that include wet waste such as food waste, paper, animal dung, household waste. The waste that is generated in the final is used in generating electricity.

1.3 Vertical Axis Wind Turbine

The implementation of vertical windmill helps the mill to generate electricity irrespective of the direction of the wind. Windmill is to be placed parallel to the field or ground in which it is to be installed, the wind speed is faster in village than in the cities. So, the power can be generated using these kinds of sources can be stored and used in the home.

1.4 Smart Street Light

The simple smart system that's proposed is that, using an LDR and an IR sensor, the light can automatically switch ON and OFF if there is any movement detected in the streets.

Remaining time, the lights is turned OFF and the same power can be stored in a battery.

2. PROPOSED SYSTEM:

As we see in the fig-1,
Whenever the 3-phase current is generated, that is detected and sent to the people in village through SMS intimating that there is available of the current, so that he/she can again send the SMS to switch ON/OFF the motor which is based on IoT application.

The sensors implemented, inform the concerned officials back once the waste is collected. To address the problem about the detection of various hazardous gases which are emitting from the waste causes disease like Asthma, Cholera, Typhoid, Malaria etc. The gases which are emitting form wet waste should be monitored. Hardware or any other means must be installed in the place of garbage.

The simple smart system that's proposed is that, using an LDR and an IR sensor, the light can automatically switch ON and OFF if there is any movement detected in the streets. Remaining time, the lights is turned OFF and the same power can be stored in a battery.

The windmill is placed parallel to field or a ground in which is to be installed, so that the windmill which is cup like structure rotates when the wind hits the mill which rotates and generates the electricity. The windmill is commonly installed where the wind speed is more in the mountains, which rotates only for the particular wind direction and generates huge source of electricity.

Disadvantage is that it cannot rotate for all direction in which the wind blows, if that is the case the positive charges cancels with the negative charges becomes neutralize if it rotates in reverse direction.

Table -1: Smart Village System

Application Layer	Three Phase Current Detector	Wet Waste Management System	Smart Street Light
Network Layer	GSM, 3G/4G	GSM, 3G/4G	——
Acquisition Layer	Microcontroller	Odor & Gas Sensor	LDR Sensor

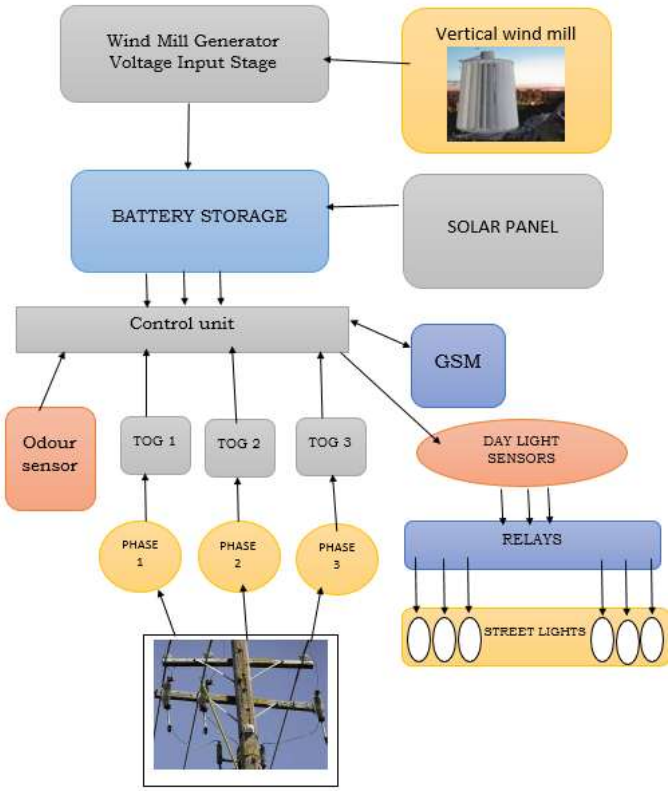

Fig -1: Overview of smart village system

3. CONCLUSION

As envisaged, the methods proposed for the development of smarter and self-sustainable village can be effectively carried out. With the inexpensive hardware operating at very low DC voltage, the fear of a not-so-literate villagers can be driven off. Besides any novice user of a low-end android phone will be capable of operating with simple sequence of pressing of buttons to carry the functions. With the freedom of remote operation and the flexibility of the mobility given while carrying out the routine tasks with an easy-to-understand feedback, the people in the rural areas are empowered in true sense for he is capable of controlling his tasks. The proposed system promises to bring about the smartness to the villagers with its results with high efficiency.

REFERENCES

[1] Intelligent Energy Efficient Street Light Controlling System dependent on IoT for Smart City [IEEE-2018]. M. Caroline Viola Stella Mary Department of IT, Francis Xavier Engineering College Tirunelveli, Anto Theepak Department of IT, Francis Xavier Engineering College Tirunelveli.

[2] Automated Waste Segregation System and its methodology towards age of Ethanol.[2019]. Abhishek Madankar, Dept. of E and TC Engineering, Minal Patil, Dept. of Electronics Engineering, Dr. Prabhakar

Khandait, Dept. of E and TC Engineering, Y. C. School of Engineering, Nagpur, India

[3] Smart Irrigation System Using Machine Learning and IOT[2019]. Revanth Kondaveti, Akash Reddy, Supreet Palabtla, Electronics and Communication (ECE) Vellore Institute of Technology (VIT) Vellore, India.

[4] Smart road light framework with vitality sparing capacity dependent on the sensor network.[2013]Yusaku Fujii Department of Electronic Engineering Gunma University 1-5-1 Tenjin-cho Kiryu, Gunma Japan , Noriaki Yoshiura Department of Information and Computer Sciences Saitama University Saitama City, Japan ,Naoya Ohta Department of Computer Science Gunma University, Gunma Japan, Akihiro Takita Department of Electronic Engineering Gunma University Kiryu, Gunma Japan.

[5] Intelligent Energy Efficient Street Light Controlling System dependent on IoT for Smart City[2018]. M. Caroline Viola Stella Mary Department of IT, Francis Xavier Engineering College Tirunelveli, Tamilnadu, India ,T. Anto Theepak Department of IT, Francis Xavier Engineering College Tirunelveli, Tamilnadu, India,G. Ruler Devaraj Department of IT, Francis Xavier Engineering College Tirunelveli, Tamilnadu, India, D. Joseph Pushparaj Department of IT, Francis Xavier Engineering College Tirunelveli, Tamilnadu, India

[6] Vertical Axis Wind Turbine[2015]. Pranit Nagare Mechanical Engineering Don Bosco Institute of Technology Kurla, India, Arnav Nair Mechanical Engineering Don Bosco Institute of Technology Kurla, India, Rammohan Shettigar Mechanical Engineering Don Bosco Institute of Technology Kurla, India, Pratibha Kale Mechanical Engineering Don Bosco Institute of Technology Kurla, India, Dr. Prasanna Nambiar Mechanical Engineering Don Bosco Institute of Technology Kurla, India.

[7] Prakash , Prabu," IoT Based Waste Management for Smart City", distributed in IJRCCE Volume 4 , Issue 2 , February 2016.

[8] S.S.Navghane, M.S.Killedar, Dr.V.M.Rohokale, " IoT Based Smart Garbage and Waste Collection Bin", IJARECE) Volume 5, Issue 5, May 2016.