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Smart Sawerage Monitoring System Using Gps: Review

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Abstract: *The underground sewerage Pipeline systems are responsible for transporting vital materials . Any leakage in the pipe can cause major financial losses and possible environmental damages. Currently, buried pipelines are only monitored at key points, which can be spaced several kilometers apart. A system with a higher spatial resolution would provide operators with a better understanding of their network. In buried pipeline monitoring, sensor nodes are deployed in soil. The underground environment imposes major limitations on sensor nodes, as poor RF transmission and lack of maintainability. The prior alerts of blockages and locate them using IOT. Trace location using GPS and send SMS through GSM. This review paper covers contribution from various researches in this area.*
Keywords: *RF, GPS, SMS, GSM, IOT .*

I. Introduction

Pipeline systems are responsible for transporting vital materials such as water, oil and gas. Any leakage in the pipe can cause major financial losses and possible environmental damages. Currently, buried pipelines are only monitored at key points, which can be spaced several kilometers apart. A system with a higher spatial resolution would provide operators with a better understanding of their network. In buried pipeline monitoring, sensor nodes are deployed in soil. The underground environment imposes major limitations on sensor nodes, as poor RF transmission and lack of maintainability.

The underground sewerage system is an important component of urban infrastructure. It is considered to be city's lifeline. Most management on underground sewerage is manual therefore it is not efficient to have clean and working underground system also in such big cities, it is difficult for the government personnel to locate the exact manhole which is facing the problem. Therefore, it is essential to develop a system which can handle underground sewerage without human intervention. Underground sewerage involves sewerage system, gas pipeline network, water pipeline, and manholes. This project describes various functions used for maintenance and monitoring of underground sewerage system. It provides a system which is able to monitor the water level, atmospheric temperature, water flow and toxic gasses. If sewerage system gets blocked and water overflows it can be identified by the sen sor system. And that sensor sends information the transmitter which is located in that area to the corresponding magnetic station. Today's sewerage system is not high-tech. So whenever there is blockage it is difficult to figure out the exact location of the blockage. Also, early alerts of the blockage are not received. Hence detection and repairing of the blockage become time consuming. It becomes very inconvenient to handle the situation when pipes are blocked completely. Due to such failure of sewerage line people face a lot of problems.

Paper[1]: Ms T.Deepiga

II. Related Work

In this paper,it is used to define the water monitoring system such as tank water level sensing monitoring ,water pollution monitoring and water pipeline leakage sensing monitoring .by using wireless sensor Technology we avoidsthe huge amount of water is being wasted by uncontrolled use of large apartments/offices. The microcontroller(PID) based.

Paper[2]: Zulhani Rasin

This paper proposed how such monitoring system can be setup emphasizing on the aspects of low cost, easy ad hoc installation and easy handling and maintenance. The use of wireless system for monitoring purpose will not only reduce the overall monitoring system cost in term of facilities setup and labor cost, but will also provide flexibility in term of distance or location.

Paper[3]:Hua-Ping YU

This paper firstly analyzed the wireless channel characteristics and energy consumption model in near-surfaceunderground soil, and then studied the spatial structure of oil and gas pipelines and introduced the three-layersystem structure of WUSN for oil and gas pipelines monitoring. Secondly, the optimal deployment strategy inXY plane and XZ plane which were projected from three- dimensional oil and gas pipeline structure was analyzed.

Paper[4]:Daniel Granlund

This paper describes a sensor-based system for monitoring of sewer flooding. A global trend in Smart Cities is the installation of sensors for surveillance of the city infrastructure. The presented system is mounted in a number of strategic sewers for initial evaluation. In order to monitor the natural variations of the sewer (including daily variations) the system should be able to integrate into normal monitoring/alarm systems.

III. Architecture Details

Mostly smart cities are implemented in every field of the life by automating real environment using smart nodes.there exists some work on smart sewerage which is described by traditional Iot concept.we have proposed sewerage system.

1] LCD (LIQUID CRYSTAL DISPLAY):

LCD stands for Liquid Crystal Display. LCD is finding wide spread use replacing LEDs (seven segment LEDs or other multi segment LEDs) because of the following reasons:

1. The declining prices of LCDs.
2. The ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters.

2] SENSOR UNIT :-

A sensor unit is basically consists of several sensors used to detect the predetermined parameters that indicate the quality of water. In this work, three types of sensor; pH sensor that senses the acidity of basicity of the water, temperature sensor and turbidity sensor based on phototransistor are used. All the sensors use battery for its operation. The information being sensed by the sensors are then converted into electrical signal and go through the signal conditioning circuit that functions to make sure the voltage or current produced by the sensors is proportional to the actual values of parameters being sensed. Then it is passed to a microcontroll er or microprocessorthat processes it to the value understandable by human.

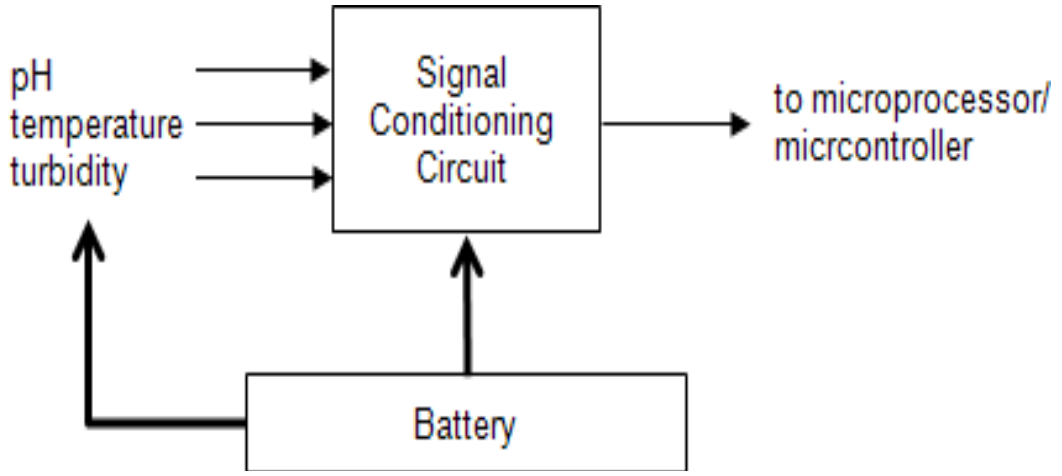

Fig. 1. Block diagram of sensor unit

3]Wireless Sensor Node :-

The wireless sensor node in this work is consist of sensor unit as mentioned in section A; a microcontroller or microprocessor with a task of signal digitizing, data transmission, networking managementetc; and radio frequency transceiver for communications at the physical layer. All of them share a single battery as a power source.

Relative pressure sensing method based on force sensitive resistors (FSR) is used for pressure measurements in the proposed UWSN for pipeline monitoring. This system operates based on the principle of a changing diameter of the pipe caused by an internal pressure change. Underground Wireless Sensor Network (UWSN) for a Pipeline Systeme.

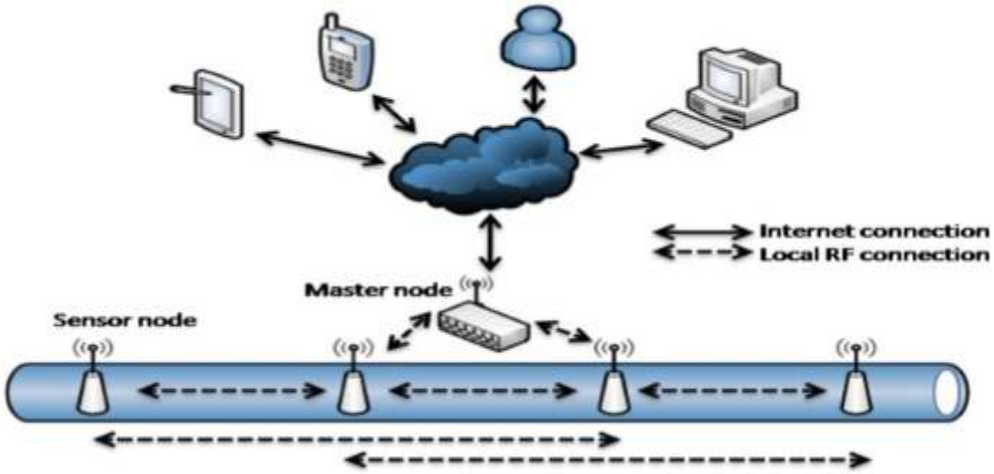

Fig-2: Underground Wireless Sensor Network (UWSN) for a Pipeline System.

IV. Algorithm

- Power Up hardware.
- Initialize hardware Module.
- Display On LCD as "SEWERAGE MONITORING SYSTEM"
- Microcontroller sense Sensor value.
- Temperature sensor sense temperature display value on LCD
- CO2 sensor check for carbon dioxide level in environment.
- When level increases and flow decreases at that time.
- GPS trace location of that place.
- By using GSM location will be send.
- If any sensor exceeds than its set value. Then GSM through message will be sent.
- IOT used for sensor related data will be updated on the web server.
- All information will be display on LCD.
- STOP

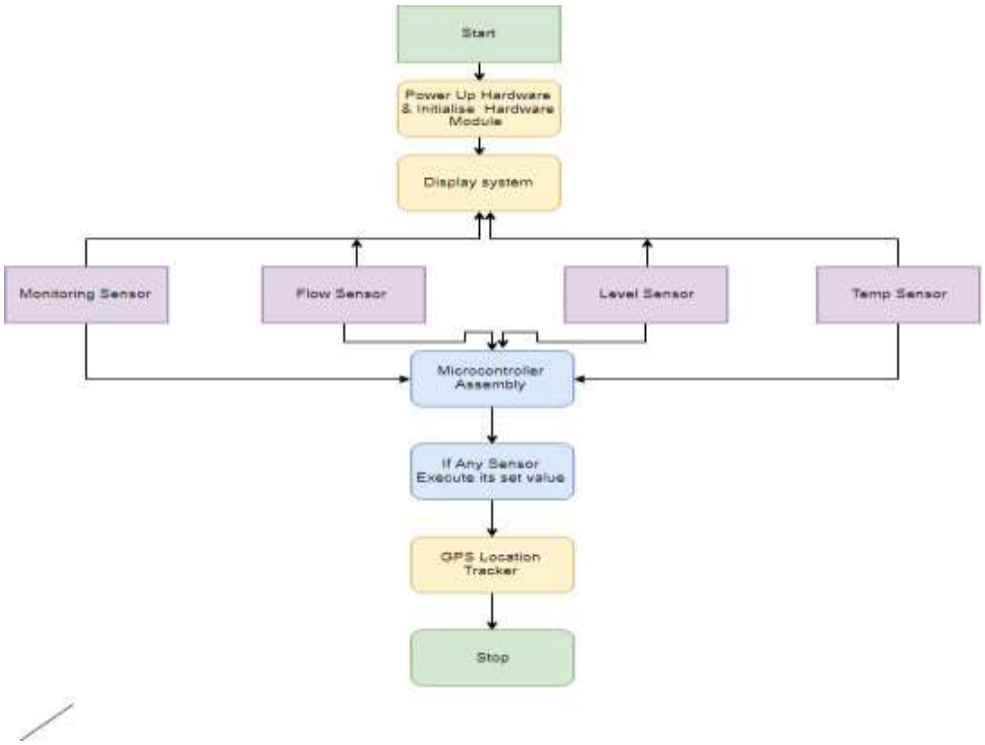

Fig 3: Flow Chart

V. Applications

1] Smart sewerage monitoring system are used for smart city. 2]Smart sewerage monitoring system are used for Home.
3] Used for Office. 4] Used for Farm.
5] Used for Industrial. 6]Used for Hospital . 7]Used for Hotel.

VI. Future Scope

Sensor networks are considered as the key enablers for the IoT paradigm. However, due to the widening variety of applications, it is increasingly difficult to define common requirements for the WSN nodes and platforms. This project addresses all automated Internet of Things for Underground Drainage phases of the practical development of an Underground Drainage Monitoring System (UDMS) through IoT applications for metropolitan cities. A real life, demanding application is selected as a reference to gui de. Aspects of sensor network platform considered are: platform structure, flexibility and reusability, optimization of the sensor nodes, optimization of the communication, error recovery from communications and node operation, high availability of service at all levels, application server reliability and the interfacing with IoT applications. This project can be used to guide the specification, optimization, and development of sensor network Platforms for other IoT application domains.

VII. Conclusion

Underground monitoring is challenging problem. This project proposes different methods for monitoring and managing underground drainage system. It explains various applications like underground drainage and manhole identification in real time. Various parameters like temperature, toxic gases, flow and level of water are being monitored and updated on the internet using the Internet of Things. This enables the person in-charge to take the necessary actions regarding the same. In this way the unnecessary trips on the manholes are saved and can only be conducted as and when required. Also, real time update on the internet helps in maintaining the regularity in drainage check thus avoiding the hazards

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