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Waste Water Management for Smart City

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ABSTRACT

In the recent years, the scarcity of water is one of the major important problems for human needs and other living things. In the existing has the inaccurate output. The advanced system overcomes the existing system. This system uses the automatically manages the waste water without waste. The system uses the Internet of things (IoT) for waste water management in smart cities. It also uses the sensors for sensing the waste water and also the data is transmitted to the mobile app or web application through IOT using cloud. The PH sensor is used to separate the water for the specified purpose like agriculture and other sources. This technology is used to remove the contamination from the waste water.

KEYWORDS: *PH sensor, scarcity of water, IOT, waste water management, sensors, agriculture*

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I. INRODUCTION

Due to population growth and rapid industrialization, causes the demand in water. The scarcity of water is occurring in population growing areas and in urban areas. Urban populations may nearly double from current 3.4 billion to 6.4 billion by 2050. Expansion occur in urban areas, but in small and medium sized cities with populations of less than 500 000. Due to population growth, the water usage can be increased.

Due to population growth, many problems can be occurring. Deforestation can be occurred due to the increasing population. So annual rainfall can be changed and the global warming is occurring. In this situation, the scarcity of water can be involved in the human life. For usage of water and there is many problem can be solve and conflict is occur between living organisms. In every year, approximately 1.8 million children can be die in water related diseases under the age of five years old. In the world`s half of the disease is occur due to the water related diseases. Most of the patients admitted in the hospital are the water related diseases.

The result of the system, how to recycle the sewage water and the measurements can be done by using this kinds of sensors. The wasted water can be monitored through the mobile application of blynk application.

In the past decades, the waste water can be managed by using the manual operation only. The output from this system is inaccurate. It is reused instead of going to the waste. The waste water can be continuously monitored by manual operation. The waste contains solid materials and it gets deposited to the bottom of the waste water. Then, the waste water can be purified. The solids can be cleared from the waste water and the waste contains the chemical components and pathogens. It can be cleared by using the filter.

In this paper, we have proposed the automatic waste water management using the IOT. It also contains the sensors in the system. The PH sensor is used for measure the PH level of the water. The gas sensor is used for detection of toxic gas present in the water and also it detects other gases and its level. The ultrasonic sensor is used for detection of objects present in the water and the motor gets compressed the water using compressor motor. The PH sensor separates the wasted water and the purified water depends upon the PH value.

II. RELATED WORK

S. De Vito: The SIMONA project is aimed to design, deploy and test an integrated, intelligent, pervasive monitoring infrastructure based on a network of low cost/low mainteinance quali-quantitative multisensor nodes. All the information is made available via a GIS based Web HCI. Based on XML data exchange, the frameworks guarantee an open source implementation for geo-localization, monitoring, control and alerting services (SOS). The demonstration phase will last 6 months. The data will be

gathered furthering the evaluation of results. Waste water management plant protection is a major concern for water cycle management entities. The rapid identification and possible localization of anomalous or even malicious waste liquids immission may allow for undertaking pollution risk mitigation actions (e.g. using of ancillary basins) and reduce maintenance costs. Pervasive monitoring of the transport network is hence needed although economic and technical issues prevent its implementation. The SIMONA project is aimed to design, deploy and test an integrated, intelligent, pervasive monitoring infrastructure based on a network of low cost/low maintenance quali-quantitative multisensory nodes. A scalable data processing facility permit the ingestion and the processing of the data stream while a set of models provide for quali-quantitative forecasting increasing the manager situational awareness about the smart infrastructure.

O. A. Shvetsova: The article deals with theoretical and practical issues of industrial waste management in developed countries by the example of the Pacific-Asian region. The problems of forming a system for controlling the disposal of industrial wastes are being studied. The modern technologies of South Korean companies in the field of industrial waste processing are analyzed.

Amin Shahraki: Internet of Things (IoT) as a new phenomenon is changing other fundamental definitions such as smart cities and urbanism. Based on IoT technology, new smart cities can have more opportunities to provide effective facilities and services for citizens. Urbanism as a multidisciplinary study, which includes urban design, urban planning and management and etc., has always tried to enhance the quality of life in urban environments. The concept of urbanism under the influence of technology is changing efficiently. Combining these 3 concepts can help to design new urban environments that are smart and comfortable for different people categories and also provide trade-off for cross-section categories. This paper surveys challenges from urbanism perspective as the results of integrating these definitions. Different aspects that IoT based Smart cities can interact with urbanism have been investigated. In addition, future directions and issues will be evaluated to determine different aspects of the mixture. Different concepts and challenges that urban designer should consider to provide an appropriate infrastructure for the mixture will be explained as well.

Ayoub Arroub: During the last years, both academicians and professional researchers attribute an interest to the future of cities. They conclude that the technological leap will influence the both architecture and infrastructure, which will give birth to the smart cities vision. This essay aims to provide a comprehensive understanding of the movement towards smartness by providing a study on divers smart city definitions which depend on geographical, environmental, economical and social constraints of each city, next to presenting dimensions that let smart city a 3D concept and highlighting some smart city Models. It gives an overview of smart city characteristics: Smart Economy, Smart Environment, Smart Governance, Smart Mobility, Smart Living and Smart Human Level and shows some big pictures of the components of each paradigm and how they been illustrated. People usually moves to cities in order to fulfil their needs in job, relationships tpand enjoy the modern life, the urbanization phenomenon, climate change and resources depletion took place and addressed a significant number of Smart cities challenges were appeared in urban areas. However, thanks to ICT, Smart City provides opportunities for people to create, invent, test and experience new things in order to optimize their quality of life.

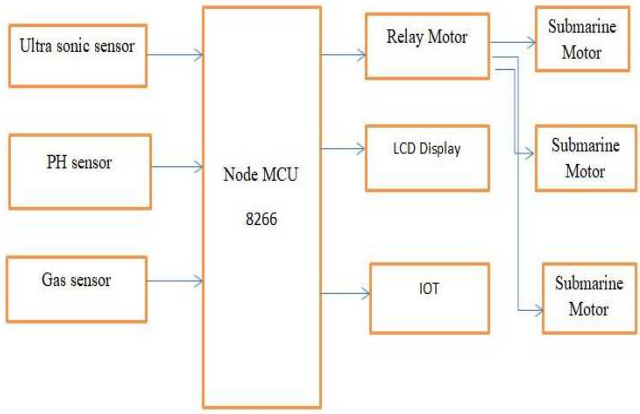
Pérez González: Social, technological and economic changes, citizen demand of services modernization, new ICT developments related to the Internet of Things and an economic situation that urges more efficient public administrations, have allowed the adoption of ICT by municipalities in order to provide public services. All the foregoing constitutes a boost of the smart city concept, which is considered in the scientific literature mainly from a technical point of view, overlooking deeper analysis on the specific services being provided by means of smart technologies. The current research identifies services provided using smart technologies at 26 Spanish smart cities and the degree of smart development of those cities based on which services provide. The results highlight that the services most widely implemented are those that allow direct reductions in local administration expenditure. On the other hand, the remaining services enjoy greater perspectives of future development. Additionally, three groups of smart city development have been identified, which allows benchmarking analysis and enhances the exchange of information between the cities.

III. PROBLEM DEFINITION

The extensive use of intelligent devices such as smart meters, capable of collecting real time and accurate information about electricity usage patterns, as well as about the status of distributed energy resources and other components of the grid, enable the an efficient energy management. Smart meter systems include a smart meter which can communicate and execute control commands remotely or locally, a communication. The main disadvantage of this system is inaccurate. When using only data of services provided (active and partially) and not provided (both planned and not considered), groups change and some cities modify their position.

In this paper, we proposed the system to senses the data from waste water. The sensed data can be sends to the mobile application through internet. The data is stored in the cloud. The PH value can be measured from the waste water. it can be separated for the different purposes. If it is basic, the water can be used for the agricultural purposes. the water can be used for other purpose. This system also senses the gas present in the water and which type of gas is detected. Then, the notification of specified sensor is displayed on LCD. The main contributions of the systems are: It has low time consume for separation. It also decreases the death rate. The human need for water can be fulfilled. The output has been accurately detected. The conflict between humans for scarcity of water can be reduced due to this system

BLOCK DIAGRAM



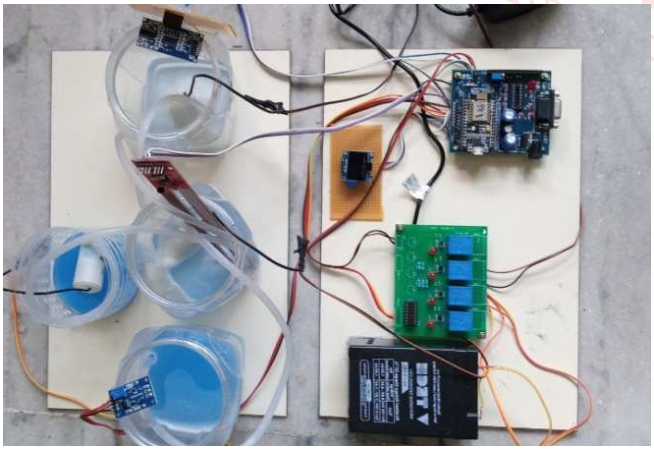
SYSTEM IMPLEMENTATION

In the proposed system, the water can be monitored and separated to the particular purpose of the usage and it depends upon the water`s PH level. The power supply for the system is from AC and the value is 230 to 12V AC. It uses the step down transformer for the AC current. The solid particles or any obstacles present in the water and it can be monitored by the ultrasonic sensor.

If any obstacles present in the water and it can be filtered. The remaining water can be sends to the PH sensor. The PH sensor senses the water either. The motor driver cleaning the water and it drives to the PH level. If the PH level of water is in basic and it provides to the drinking water and to the agricultural usage. The PH level of water is can be used for the bathroom.

The gas sensor is used for detecting the toxic gas and the chemical components present in the water. The relay is used for switched the waste water. It filters or removes the chemical components and the toxic gases from the water. It consists of the ultrasonic sensor, PH sensor and the Gas sensor.

RESULTS

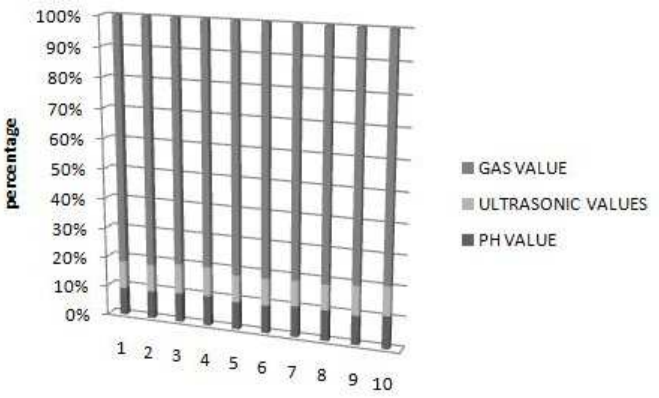


In this experiment to be needs for agriculture based environmental of waste water treatment to enclose their particular time we need this process the happens that constant water flow particles in that manner in various environmental in becomes in water waste places to be uses this paper.

So that we use the ultrasonic sensor has level of that one constant values to be measure it given that range between tank and water level has calculated and suppose water has excites and submarine motor to be on because another level of PH sensor to enclose that particular values of their increases or decreases in depends upon water based molecular or in chemicals are mixed wastes in particular time bases of their movement has don't know another not in places it's given on IOT environment has helped

S. No	Ph Value	Ultrasonic Value	Gas Values
1	7.23	6	57
2	6.94	7	57
3	7.85	7	57

In sensor values has through different places in same environmental such act as a kind places in given that particles to higher and lower values to enclose through continuous places acting as



CONCLUSION

Every living thing needed the water for many purposes. This advanced method helps us to saving the huge amount of water. It consists of three blocks of sensors. It is used to monitor the water and treated to clean the water. Ultrasonic sensor monitors the obstacle and level of the water. It can be passed to another block of PH sensor. It measures the PH level of the water. If the PH level of water is less than 7. Then Motor is ON and to treated the water. If the PH level of water is more than 7 and it is basic. The water is passed to the block 3 and to monitor the toxic gas or chemical component present in the water.

The water can be treated as purified water. The power supply for the process is to alternate current. The relay is used for that process. The use of relay is to switch ON and OFF. It also provides the adjustable current for that device. This system saves the water for many living organism in the world. It also reduces the scarcity of water.

FUTURE ENHANCEMENT

In the future enhancement, the sewage water can be send to the treated area of waste water. By using the convolution neural network (CNN) and the Support vector Machine (SVM). The sewage water can be automatically treated. The water can be separated for the particular depends upon the result. It automatically distributed. The SVM algorithm is used for comparison. The amount of waste water can be stored to the database and the values can be compared with the other areas or state. So, the necessary action can be required. It can be compared by the graphical representation.

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