# ENABLING TECHNOLOGY ON GREEN IOT

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## I.     ABSTRACT

Recent technological advances have led to an increase in the carbon footprint. Energy efficiency in the Internet of Things (IOT) has been attracting a lot of attention from researchers and designers over the last couple of years, paving the way for an emerging area called green IOT. There are various aspects (such as key enablers, communications, services, and applications) of IOT, where efficient utilization of energy is needed to enable a green IOT environment. We explore and discuss how the various enabling technologies (such as the Internet, smart objects, sensors, etc.) can be efficiently deployed to achieve a green IOT. Furthermore, we also review various IOT applications, projects and standardization efforts that are currently under way. Finally, we identify some of the emerging challenges that need to be addressed in the future to enable a green IOT.

*Keywords*:  *Raspberry pi, moisture sensor, temperature sensor, ph sensor, dc motor, Co2 sensor, LDR sensor, GPRS, WIFI module.*

## II.     INTRODUCTION

There is no commonly accepted or internationally agreed definition of green technology. The term can be broadly defined as technology that has the potential to significantly improve environmental performance relative to other technology. It is related to the term "environmentally sound technology", environmentally sound technologies are geared to "protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substituted."1 Other related terms for green technology include: climate-smart, climate-friendly and low-carbon technology. In terms of pollution, green technology includes both process and product technologies that generate low or no waste and increase resource- and energy-efficiency. Green technology does not only mean individual technologies but also systems, including know-how, procedures, goods and services and equipment, as well as organizational and managerial procedures. Green technology covers a broad area of

production and consumption technologies. The adoption and use of green technologies involves the use of environmental technologies for monitoring and assessment, pollution prevention and control, and remediation and restoration. Monitoring and assessment technologies are used to measure and track the condition of the environment, including the release of natural or anthropogenic materials of a harmful nature
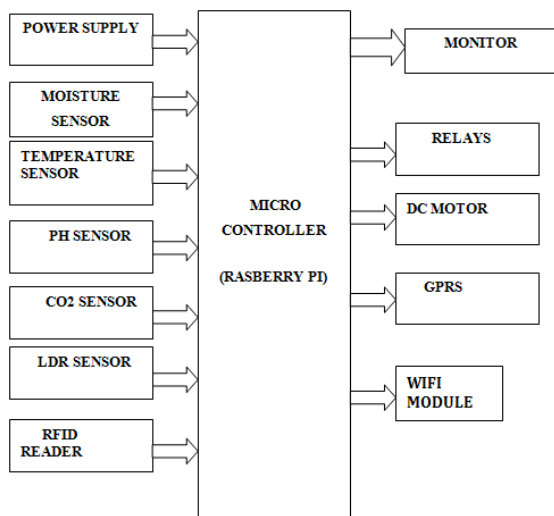
## III.      BLOCK DIAGRAM



Fig. 3.1System block diagram

## IV.      SYSTEM OVERVIEW

**Power Supply:**

This section is meant for supplying Power to all the sections mentioned above. It basically consists of a Transformer to step down the 230V ac to 9V ac followed by diodes. Here diodes are used to rectify the ac to dc. After rectification the obtained rippled dc is filtered using a capacitor Filter. A

positive voltage regulator is used to regulate the obtained dc voltage.

**Microcontroller:**

This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

**Temperature sensor:**

Thermistors are a temperature sensing devise. It is used to sense the temperature. In this project by depends on the value of temperature the exhaust fan will run.

**LCD Display:**

This section is basically meant to show up the status of the project. This project makes use of Liquid Crystal Display to display / prompt for necessary information.

**Relay Section:**

This section consists of an interfacing circuitry to switch ON / OFF the system whenever any unhealthy conditions i.e. overload is detected. This circuitry basically consists of a Relay, transistor and a protection diode. A relay is used to drive the 230V devices.

**DC Motor:**

DC motor is an output for this project. And DC motor is connected to microcontroller. And this motor controlled by the microcontroller with the respective inputs given by us. Its speed will be varied according to the speed set by the switches.

**Moisture sensor:**

Moisture sensor can read the amount of moisture present in the soil surrounding it. It's a low tech sensor, but ideal for monitoring an urban garden, or your pet plant's water level. This is a must have tool for a connected garden .This sensor uses the two probes to pass current through the soil, and then it reads that resistance to get the moisture level.

**Ph sensor:**

The sensor working based on the voltage the ph sensor was operated at 0.9v after than we are keeping in the water then the inside sensing element change the voltage level up to 1.2v .The sensor working with the changes in the voltage levels.

**LDR:**

The LDR is used to measure the light intensity.

**RFID Reader (Radio Frequency Identification):**

Radio Frequency Identification (RFID) is a generic term for non-contacting technologies that use radio waves to automatically identify people or objects. The combined antenna and microchip are called an "RFID transponder" or "RFID tag" and work in combination with an "RFID reader". Radio Frequency Identification (RFID) is the latest technology that is being adopted to track and trace materials, including books.

**GPRS:**

This section consists of a GPRS modem. The modem will communicate with microcontroller using serial communication. The modem is interfaced to microcontroller using MAX 232, a serial driver. The Global Packet Radio Service is a TDMA based digital wireless network technology that is used for connecting directly to internet. GPRS module will help us to post data in the web page directly.

**WIFI module:**

This module helps the data to get placed in the internet and get transferred to the other authenticated users through a wireless network. Here we use WIFI module named as H Link RM04.

**Co2 sensor:**

They are used in gas leakage detecting equipments in family and industry, are suitable for detecting of LPG, i-butane, propane, methane, alcohol, Hydrogen, smoke.

## V.    CONCLUSION

Green growth provides a route for realizing economic, environmental and development goals. It offers an opportunity to make existing heavy industries more sustainable while simultaneously encouraging new industries and economic diversification. Central to the green growth strategy is technological innovation and the establishment of creative, integrated, private and public sector approaches to support innovation in developing countries

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