Retraction

Retraction: Sensor based Automized Solar Water Management System (J. Phys.: Conf. Ser. 1916 012194)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

IOP Publishing respectfully requests that readers consider all work within this volume potentially unreliable, as the volume has not been through a credible peer review process.

IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1

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Sensor based Automized Solar Water Management System

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Abstract. Automated hot water management system is an automatic system for management of water, to form our standard of living simple and economical. The automated use of water referred to as water automation that may be a method to make sure the right use of water and scale back the human effort. The solar water heater may be a device that uses alternative energy to heat water for domestic, commercial, industrial desires and numerous desires. In solar heater, we do not get plight instantly. It will nearly take twenty liters of traditional water to produce plight in sunny days and in cloudy days quite fifty liters of water. On a median someone wastes 0-45 liters of water per day, nearly one hundred twenty five million liters of water wasted daily. In our system once there's no availability of plight from solar heater the cold water is taken to electrical heater and plight is made to user. Temperature sensor device is mounted on the faucet to acknowledge whether or not the new water is ready or not. The main objective of our project is to save lots of water and to form economical usage of water while not wasting.

Keywords: Automation, Cold water, Efficient, Faucet, Hot water, Solar water heater, Sensor

1. Introduction

The abundance available of solar energy at no cost made the invention of solar heaters, solar lights etc. As the demand for non-renewable resource like petrol, coal, natural gas increases, the quantity of these resources decreased. As far as non-renewable resource goes down there is need for other resource for providing energy. Heating of water nearly consumes 20%of total energy consumption for family in average. Solar heating systems are low cost and cheap for heating of water by the use of alternative energy. Solar heaters convert solar energy into thermal energy as black surface absorbs heat and water is brought into contact with dark surface the water is heated directly it may also be known as direct system which may be seen in sunny days.when there's less radiation of solar rays the warmth is transfer to fluid like glycol which mixture is felt heat exchanges this technique is termed indirect system. Solar collector is devices that collect radiation from sun. Solar collector works the same as heat exchangers the collectors are fixed in tilt angle up to its generation. Solar water heater is a lifetime investment. Collector orientation ought to be crucial for achieving most performance the optimum orientation of collector is in hemisphere the collector will approach to ninety degree east or west. The tilt angle for solar collector is equal to latitude. The collector is of
two varieties that's flat plate collector, exhausted tube collectors, concentrating collector. For the domestic purpose and in solar hot-water tank flat plate collector is employed to collect both direct and diffused radiation.

They are simple to design and the initial cost is very low. Ambient condition, collector orientation and tilt, arrangement of collector and transport fluid rate are the factors which affect solar water heater performance. Collector is metal foam which is porous medium, absorber plate and other things are investigated for performance of collector. Agitator is used in collectors. The main function of agitator is to increase the heat transfer collector surface is packed with pebble metal chips for longer heat absorption. All solar systems depend on the shape of collector such as flat plate, evacuated tube. Now a day’s water heater is based on thermal siphon principle for heating water for domestic purpose. Air is evacuated in inner tube to reduce the effect of cold temperature. Collectors are the metal foam which is porous medium, absorber plate. Agitator is used in solar collector. The main function of agitator is to increase the heat transfer, collector surface is packed with pebbles and metal chips for longer heat absorption.

Water management teach us to use water in restricted quantity when needed. The automated use of water may be referred to as water automation that may be a method to confirm the correct usage of water and to scale back the human effort. It's used for various functions like irrigation within the agricultural land, water usage observation, asking of water usage etc.

The hot water does not come instantly while using solar water heater. It take some time and waste large quantity water. Nearly five to six buckets of water is wasted for a day. In cloudy days, the radiation from sun is minimum and takes long time and more than seventy litre nearly thirty buckets of water is wasted.

The main objective our project is to save water and to make efficient usage of water without wasting. When this project is implemented, the average annual per capita of water wastage would be reduced to 36 per cent by 2035.

Present the choice technique of solar water utility. This machine-driven system would permit the end user to urge plight from the heater as long because the solar heater will provide plight higher than set temperature. When heater is unable to provide water higher than set temperature, and then solely can electrical hot-water heater get action. It's economical as a result of our controller ensures that solar hot-water heater is employed to provide plight eightieth of time, and therefore rest two hundredth are equipped by electrical hot-water heater. It's low cost as a result of, our system runs on alternative energy that is plentiful and free. It uses terribly bit of electricity and thus, reduces the expenses for the user.[1-4]

2. Materials and Methodology

Materials

The requisite to implement this project are listed below with the following two categories of requirements

2.1 Hardware requirements

- Solar Water Heater
- Electric Water Heater
- Solenoid Valve
- Temperature Sensor
2.2 Software requirements

- Arduino Compiler

Language
- Embedded C

Methodology

A flow sensor is an associate device that measures or regulates the flow of liquids among tubes and pipes [5]. Flow sensors areunit devices used for activity the flow or quantity of a moving liquid or gas. Once water flows through the rotor, rotor rolls its speed changes with totally different rate of flow. This one is appropriate to discover flow in. The flow can be calculated by formula, flow = volume / time [6].

A temperature detector is an associate degree device that measures the temperature of its setting and converts the information or input into electronic data to record, monitor, or signal temperature changes. they’re devices to live temperature readings through electrical signals. The detector is created of 2 metals, that generate electrical voltage or resistance once it notices a modification in temperature. There square measure four varieties of temperature sensors that square are employed in electronics, thermistors, thermocouples, and semiconductor made integrated circuits (IC). LM35 could be a temperature detector that outputs an associate degree analog signal that is proportional to the instant temperature [7]. The output voltage will simply be understood to get a temperature reading in uranologist. The advantage of LM35 over semiconductor is it doesn't need any external standardisation. The fundamental principle of operating of the temperature sensors is that the voltage across the diode terminals [8]. If the voltage will increase, the temperature additionally rises, followed by a drop between the junction transistor terminals of base and electrode in a very diode.

The Arduino Uno is an Associate in Nursing ASCII computer file microcontroller board supported the chip ATMega328P microcontroller. This board is made to supplied with sets of continuous or discrete input. Arduino board has fourteen discrete signal Input/output pins six continuous signal Input/Output pins, and it is programmable with the Arduino IDE via a USB cable. USB cable gives power to board [9].

Temperature T1 (90-110 degree) for temperature sensor is set. When enough radiation falls on solar collectors hot water is produced at the Temperature T1 and hot water is allow to flow valve 1. In case, if there is inadequate radiation so that solar water heater is unable to produce hot water, there comes action of electric water heater. When Temperature sensor detects that temperature of flowing water is less than our set temperature T1, valve 2 is opened water is taken to electric heater, when valve 2 is open electric heater is made ON. When water out from electric heater is flown through Valve 1. When valve 1 is on electric heater is made OFF. The flow of water is detected by Flow sensor. The ON and OFF of electric heater and opening of valve 1 and 2 is controlled by Arudinoboard. Figure 1 shows the block diagram.
3. Result and Discussion

In our automated system the user is allowed to get hot water till it provide. When it is unable to provide the hot water, the electric heater is turned ON and water is supplied. It is efficient because controller ensures 80% of water comes from solar heater and only 20% of electric heater is used.

Again, the regular cleanup of the solar panels is extremely abundant necessary within the arid and semi-arid areas wherever around seventy nine of the star capability additions are purported to happen. It’s been ascertained that thanks to mud accumulation the potency of the solar systems gets affected substantially. As per the CEEW estimation the water necessities for operation and maintenance in Asian country to lie between 7000 and 20000 litres per MW per wash. This create the solar plant not solely non-economical however conjointly non-sustainable to control. Answer is to travel for water less cleanup that has the potential to form the utility scale star plant comes a property solution as way as conservation and power necessities is taken into account. the hassle ought to be to explore alternative potential water economical or 100 per cent water free solar module clean up solutions similarly in numerous elements of Asian country supported the environmental conditions of the plant location.

4. Conclusions

This model depends on water management that teaches us to use water in restricted quantity once needed. The automated use of water will be known as water automation that may be a method to confirm the right usage of water and to cut back the human effort. It's used for various functions in numerous places like house, hostels, hotel etc. In our machine-controlled system end user is allowed to urge quandary until it give. Once it’s unable to supply the new water, the electrical heater is turned ON and water is equipped. It's economical as a result of controller ensures eighthieth of water comes from warmer and solely two hundredth of electrical heater is employed. The aim of the project is to avoid wasting water and to create economical usage of water while not wasting.

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