

Low Cost Sensor Network For Real Time Monitoring and Contamination Detection in Sea Water and Purifying Through Natural Process

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ABSTRACT:

As we have the scarcity of water in India by next 10 years our aim is by using the Mechanical and scientific technologies we will try to convert the sea water into the useful water for household purposes like drinking, cleaning of household and also for the many other domestic purposes. This is a model of desalination of water and it is design to help to know our separator thoroughly and to operate it to our advantage. It contains necessary information for installation, normal operation and maintenance of the equipment.

It also includes general outline of design and working principle of the equipment so that the operating staff will have better understanding and consequently will be able to make optimum use of the equipment to finally achieve the goal of clean water through natural process.

Desalination technologies were introduced about 50 years ago and were able to expand access to water, but at high cost. Developments of new and improved technologies have now significantly broadened the opportunities to access major quantities of safe water in many parts of the world. Costs are still significant but there has been a reducing cost trend, and the option is much more widely available.

When the alternative is no water or inadequate water greater cost may be endurable in many circumstances. So we took it as a project to achieve the goals of our heart regarding the sea water to useful water by using Mechanical processes.



Introduction:

A new approach to seawater desalination processes was developed in Saline Water by integrating the Nano filtration treatment process with one of the conventional desalination processes. Desalination (also called “desalinization” and “desalting”) is the process of removing dissolved salts from water, thus producing fresh water from seawater or brackish water. Desalination technologies were introduced about 50 years ago and were able to expand access to water, but at high cost. Developments of new and improved technologies have now significantly broadened the opportunities to access major quantities of safe water in many parts of the world.

Costs are still significant but there has been a reducing cost trend, and the option is much more widely available. When the alternative is no water or inadequate water greater cost may be endurable in many circumstances. Desalination of seawater is a highly developed and integrated set of processes that adds several dimensions of complexity beyond what is typically involved in the production of drinking water from fresh water sources.

This chapter provides insights into the concept of drinking water production and treatment and the elements that are managed in that process, as well as integrated management approaches for assuring the quality and safety of drinking water at the consumer's tap. Access to sufficient quantities of safe water for drinking and domestic uses and also for Commercial and industrial applications is critical to health and well being, and the opportunity to Achieve economic development. People in many areas of the world have historically suffered from inadequate access to safe water. Some must walk long distances just to obtain sufficient Water to sustain life. As a result they have had to endure health consequences and have not had the opportunity to develop their resources and capabilities to achieve major improvements in their well being.

Natural Process Through

1. PRE TREATMENT
2. TREATMENT
3. POST TREATMENT

PRE TREATMENT

Charcoal:

Charring is a chemical process of incomplete combustion of certain solids when subjected to high heat. Charcoal is a light, black residue, consisting of carbon. Charcoal is usually produced by slow pyrolysis the heating of wood or other substances in the absence of oxygen. Charcoal is major constraint in purifying the water in form of absorbing dust, various traces in water and sanding absorbs the various aspects. Charcoal is important factor to control the aspects ratio which is a light, black residue, consisting of carbon and any remaining ash, obtained by removing water and other volatile constituents from animal and vegetation substances.

Charcoal is usually produced by slow pyrolysis, the heating of wood or other substances in the absence of oxygen (see char and bio char). It is usually an impure form of carbon as it contains ash; however, sugar charcoal is among the purest forms of carbon readily available, particularly if it is not made by heating but by a dehydration reaction with sulfuric acid to minimize the introduction of new impurities, as impurities can be removed from the sugar in advance.



TREATMENT:

The pre-process treatment is sanded into the aluminium tank and using heat as a factor with at constant temperature maintaining with boiling point as a ratio analysing for vapour generation at constant temperature. The aluminium factor is controlled with heat to raise the vapour. By using heat at certain interval time a heating element converts electricity into heat through the process of resistive or Joule heating. Electric current passing through the element encounters resistance, resulting in heating of the element. Unlike the Peltier Effect this process is independent of the direction of current flow. The vaporization begins at heat of 120 degree to 190 degree with timing interval of 6 minutes stay around the vaporization and waiting state to begins 2 minutes off state



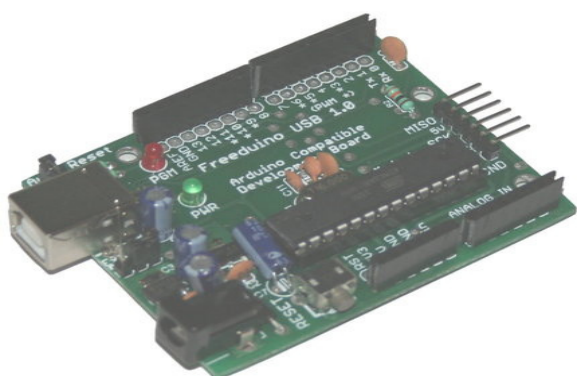
POST TREATMENT:

The colander purifies with tissue so the traces gets stuck at vaporization The various droplets of steam can be stored in a borosil or containers with tasteless traces which is measured as first step of pre-treatment. Finding differentiation using light sensor where it identifies the traces to be countered in with reading of factor of controlling aspects in computer with reading resolution of 1024 corectance.

A light dependant resistor also know as a LDR, photoresistor, photoconductor or photocell, is a resistor whose resistance increases or decreases depending on the amount of light intensity. LDRs (Light Dependant Resistors) are a very useful tool in a light/dark circuits. A LDRs can have a variety of resistance and functions. For example it can be used to turn on a light when the LDR is in darkness or to turn o a light when the LDR is in light. It can also work the other way around so when the LDR is in light it turns on the circuit and when it's in darkness the resistance increase and disrupts the circuit.

ARDUINO BOARD:

Any microcontroller based board which follows the standard Arduino schematic and is flashed with the Arduino boot loader can be called an Arduino board. The Arduino is referred to as open source hardware, since the standard schematic is open to everyone and anybody can make their own version of Arduino board following the standard schematic.



```
void setup()
{
  pinMode(2,OUTPUT);
}
```

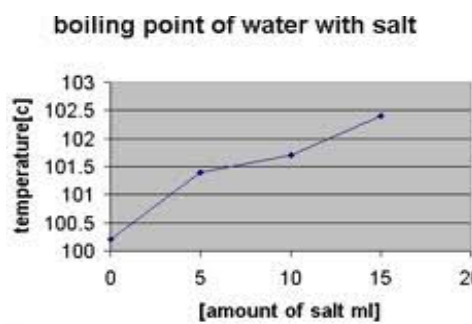
```
void loop()
{
  digitalWrite(2,HIGH); // turn LED on
  delay(1000);
  digitalWrite(2,LOW); // turn LED off
  delay(1000);
}
```

Here is a program that loops in place, displaying the value of an I/O pin. This is useful for checking the state of sensors or switches .

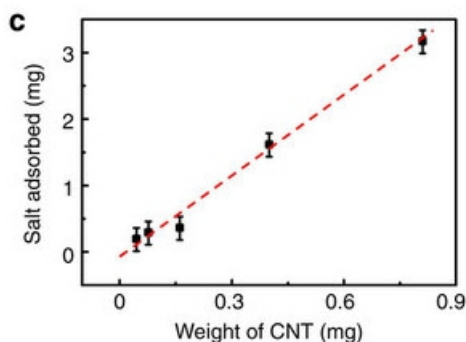
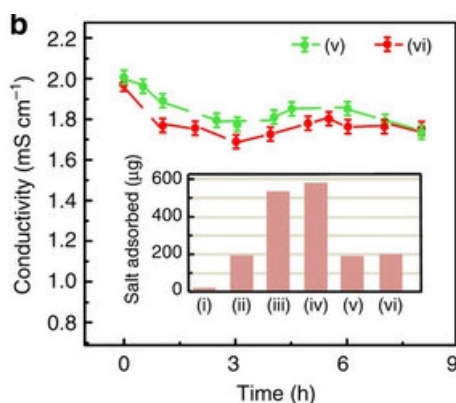
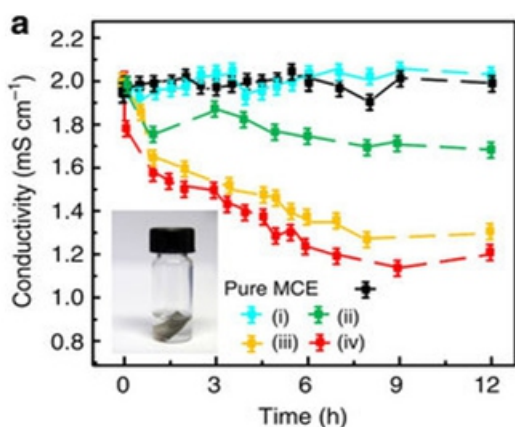
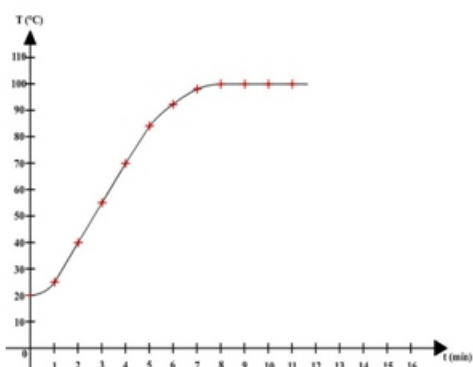
```
void setup()
{
  Serial.begin(9600);
}
void loop()
{
  Serial.println(digitalRead(2));
  delay(100);
}
```

Sno	Heat in terms of vaporization	Number of droplets/minutes	Calibrated Timer
1.	56 degree	6	Delay(300000) ON
2.	52 degree	8	Delay(120000) OFF
3.	58 degree	11	Delay(300000) ON
4.	59 degree	11	Delay(120000) OFF
5.	63 degree	12	Delay(300000) ON
6.	62 degree	13	Delay(120000) OFF

Graphs:



Boiling point of salt water



Salt absorbed vs weight of CNT

Conclusion:

In this project Low Cost Sensor Network For Real Time Monitoring And Contamination Detection In Sea water And Purifying Through Natural Process , This Process makes the system to purify the sea water to pure drinking water and other useful process .it also consists of sensing system, a microcontroller and relays.

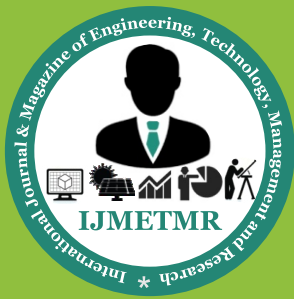
The incoming water which is received from the container to drinking borosil, to identify whether it is pure or not, we used a sensor system to monitor the whole process. Value for each Case will be compared with values of the original readings. Here we are using Arduino microcontroller which has the special feature of converting analog signals to digital signals. This work used 3 axes acceleration values whereas the existing system used only 2 axes values. So, it provides accuracy to this system values.

Future Scope:

The future work can be extended to work for a fine and better result oriented control of the implementation and development and modification of this by employing some mechanical application protocol such as multi stage, Flash and many more so that our aim will be fulfilled as a mechanical engineers can be more efficiently employed.

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