

## **TANK WATER FILTERATION**

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### **Abstract:**

Human need for clean freshwater, water is perhaps the important nutrient in our diets. The human adult needs to drink approximately 2litre (8 glass) of water everyday replenish the water that is lost from the body through the skin, respiratory tract, And urine. But some water sources cannot safely be used to meet our requirements for drinking water. Infact 99.7% of the earth water supply is not useable by humans. These unusable water include saltwater, ice, and water vapours in the atmosphere. Only fresh water, which is contented in rivers, lakes, and can be used for human consumption.

Further no, any fresh water sources are not suitable for human to drink. Many serious diseases, such as cholera are caused by drinking water that contains parasitic microorganisms. Water containing large amount of industrial waste or agricultural chemicals. (Ex. Pesticides) can also be toxic and unfit for drinking. Hence, human have great need for a reliable source of clean fresh water for drinking.

### **Introduction:**

#### **Concept –**

The cool water purification project provides a small, economical, water purification system that may be applied on a larger scale. The design has minimal moving parts, thereby reducing the risk of mechanical failure. The final device is driven from a windmill interface. The design easily separates waste and optimizes clean water output. The cool water purification project is intended to fulfill the requirements of the same design competition and then be adapted to use a renewable energy source. When adapted to a renewable energy source, this small scale water purification device will attempt to satisfy market needs for individual families who desire purified drinking water. The purpose of this project is to design and manufacture a small scale water purification system which requires minimal maintenance and is cost efficient. Originally, a human powered bike will be used to power the purification system for the competition and a wind turbine will be used to adapt the system to renewable energy. The power produced will be converted into heat by using a resistive heating element which will be placed in a boiling chamber. Once the water is boiled, it is condensed in the heat exchanger and the system will collect the potable water. The final product of the cool water purification system will provide potable water to people around the worldFiltration system.

Filtration often, the particles generated by the precipitation reactions described above are too small to settle efficiently by sedimentation. One strategy that is frequently employed to remove these solids is gravity filtration in this process, water containing solid impurities (e.g., precipitates from water softening) is passed through a porous medium, typically layers of sand and gravel. The force of gravity is used to push the water through the medium. The small water molecules pass through the holes between sand and gravel pieces. However, the solids (from precipitation) get stuck in the holes, and are thus retained in the porous medium. The water that passes through the bottom of the filter no longer contains those solid impurities. Gravity filters at water-treatment plants have a pipe feeding into the under drain, the bottom layer where the clean water is collected.

### **Specification**

**Technical specification:**

1. Selection of the water tank system.
2. Selection of the water motor system.
3. Selection of the timer arrangement.
4. Selection of the pipe system.

**Machine required for completion of above project**

1. ARC Welding Machine,
2. Drilling Machine, Grinder,
3. Powder coating machine,
4. Powder coating gun.

**Parts lists**

1. Motor = 1
2. Frame work = 1
3. Power supply = 1
4. Transformer = 2
5. Operator switches =1
6. Mounting Fabrication = 1

**Manufacturing process**

**Arc welding:**

Arc welding is one of several fusion processes for joining metals. By applying intense heat, metal at the joint between two parts is melted and caused to intermix - directly, or more commonly, with an intermediate molten filler metal. Upon cooling and solidification, a metallurgical bond is created. Since the joining is an intermixture of metals, the final element potentially has the same strength properties as the metal of the parts. This is in sharp contrast to non-fusion processes of joining (i.e. soldering, brazing etc.) in which the mechanical and physical properties of the base materials cannot be duplicated at the joint.

**Reverse osmosis (RO):**

Reverse osmosis removes contaminants from unfiltered water, or feed water, when pressure forces it through a semipermeable membrane. Water flows from the more concentrated side (more contaminants) of the RO membrane to the less concentrated side (fewer contaminants) to provide clean drinking water. The fresh water produced is called the permeate.

**Reverse osmosis system benefits:**

A reverse osmosis system is one of the most extensive methods of filtration. It removes 98% of dissolved solids, which makes it healthier to drink. A water distiller is the only other

drinking water system that also reduces TDS, but it's less efficient than an RO system.

harmful dissolved contaminants reduced, sodium reduced, bad tastes and odors reduced, more environmentally friendly than bottled water, easy to install and maintain, fits under the kitchen sink.

**Advantages and disadvantages with scope:**

**Advantages of our project:**

1. The machine has very low error.
2. The size of project made by is more suitable for material handling system.
3. The cost of machine is less.
4. It is easy to make.
5. It has low maintenance.
6. The system has worked fully water tank force operated.
7. Size of machine is small therefore it is easy to transport.
8. Weight of machine is less.

**Disadvantages of our project:**

1. Being semiautomatic we cannot neglect at least one operator.
2. Power supply is most important for duster and water pump operated.

**Application of our project:**

1. In educational organization.
2. In industries purpose.
3. Can be used to agriculture.
4. It is used in domestic purpose.

**Future scope for our project:**

Largely used in village.

It is simple and compact.

**Conclusion:**

The proper guidance of project head and the sincere efforts of our group have lead to the successfully accomplishment of our concerned projects.

“TANK WATER FILTERATION” was interesting to work on and was also gained in this

project work. This knowledge of project will definitely be helpful in our future. So we must maintain that this final year project was an essential part of our engineering education enhancing our technical knowledge and practical skill.

Our aim was to lift the maximum weight in minimum power consumption as to reduce the

Power. Hence we are provided our aim by design a suitable 12 volt to get maximum mechanical advantages .due to force required to lift the load is not coming directly on the motor power.so at the end shaft the speed is reduced which we are required & sufficient force is increase to water filtration. Hence motor is revolving with min. force over its shaft with minimum filter capacity.

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