



**REGEN**  
Sustainable Power Solutions **POWER**

# ACQUA SMART

**Safe Drinking Water Solutions  
for Remote Communities**

using

**Hybrid Renewable Energy  
Power Supply**



# ACQUA SMART

## Clean Drinking Water:

Clean drinking water is a basic human need, and its availability is a critical factor for reducing water borne diseases. Water used for drinking should be treated and disinfected before consumption. Water used for drinking should also be professionally tested for quality as there may be concentrations of naturally occurring elements such as arsenic, uranium, or nitrates, which exceed health criteria.



## Plight of Remote Area Residents:

It is estimated that more than 60% of the population in remote areas is without access, or have inadequate access,

to clean drinking water. Water is drunk directly from rivers and streams without being cleaned, or it is collected and boiled. In developing countries, impure water is responsible for 2.5 million deaths per year

## Lack of Sustainable Energy:

One of the biggest challenges facing about 1.6 billion people living in remote areas living in the world is the lack of sustainable energy supply ( energy that is accessible, cleaner, more efficient and affordable ) for services such as water pumping and treatment



# ACQUA SMART



## Smart Solution from REGEN:

Regen Power introduces AcquaSmart - a clean sustainable solution to provide clean drinking water to remote areas.

AcquaSmart is powered Regen's patented Hybrid Energy system which combines renewable energy sources such as Solar Photovoltaic , Small Wind Turbines , Micro Hydro with our innovative Variable Speed Generator technology.

The system results in the lowest cost of production of drinking water meeting WHO standards. The system can be used to provide bottled water in recyclable plastic bottles to remote village households at an affordable price.

Regen is also able to combine power and water supply- in which case most of the water pumping and treatment will occur during the sunshine hours. The battery storage requirement will be minimised in order to cut down on the capital cost.

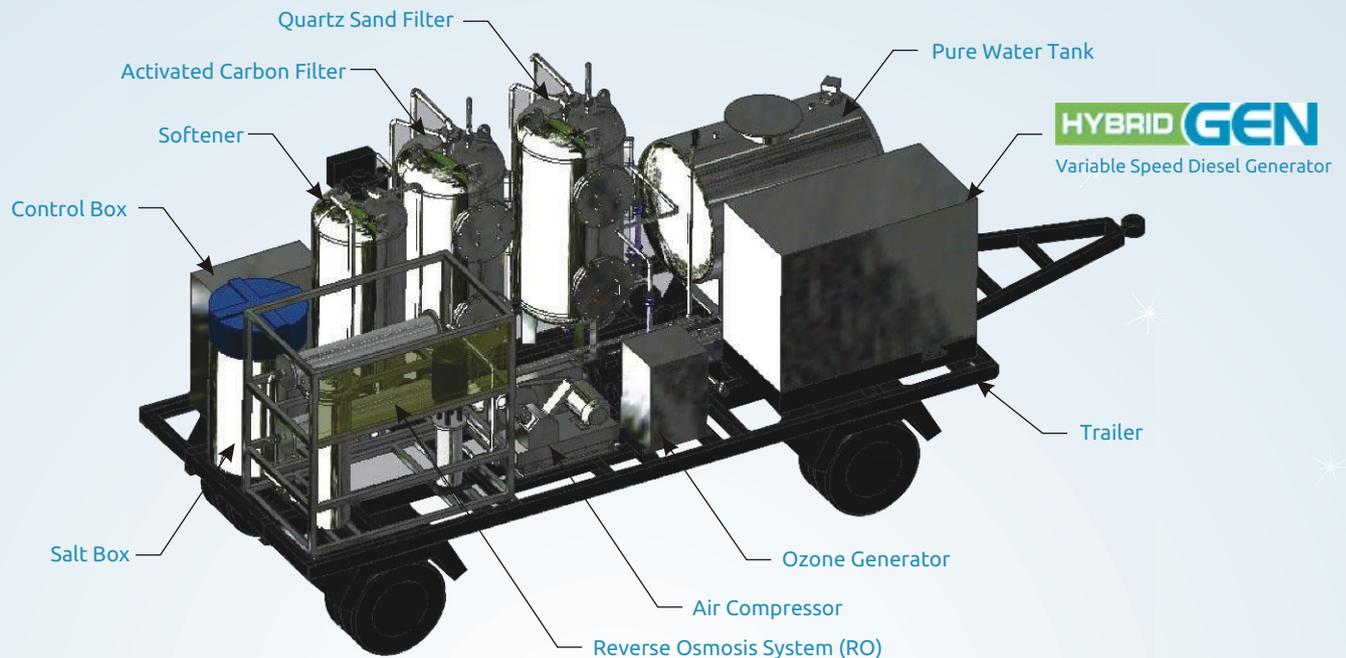
## Who can benefit from AcquaSmart?

- Remote villages with difficult access to clean drinking water, where piped water systems will not be established in the foreseeable future.
- Remote areas with dispersed households spread over vast difficult terrain, where piped water systems are too expensive to establish and maintain
- Villages with persistent problems of achieving safe drinking water standards in their piped systems
- Remote areas without central grid electricity

## Unique features of AcquaSmart?

- Fully automatic
- Versatile mobile system mounted on a trailer
- Powered by solar PV panels / Small wind turbines
- Patented Variable Speed Generator for backup
- Cutting edge water treatment components - source water pumping, quartz filter, carbon filter, RO plant, UV steriliser, Ozone steriliser
- Real time monitoring

# ACQUA SMART



## System Components of AquaSmart

### Pre-Treatment System

The objective of the pre-treatment system is to collect source water and perform preliminary purification of the water before it goes through the Reverse Osmosis plant. In this stage, portion of microscopic or minute organisms such as an amoeba, bacteria, colloids, heavy metal ions, organic matters, and free chlorine will be removed.



The system consists of

- ★ Driving pump to pump surface water into treatment plant
- ★ Source water tank collect water (water level control included)
- ★ Source water pump provide sufficient pressure for pretreatment
- ★ Quartz sand filter remove sand, impurity, suspended matter
- ★ Activated carbon filter remove organic, heavy metal, smell, chlorine
- ★ Softener reduce water hardness to 0.03mmol/L
- ★ Fine filter to remove all impurities larger than 5 µm

### Reverse Osmosis System (RO)

Reverse osmosis process utilizes a semi-permeable helix membrane to remove substances like dissolved solids, organic matter, colloidal matter and bacteria in the water. When the raw water is sent to the RO membrane at a certain pressure, the water will permeate the membrane through the tiny pores and then permeated water can be collected, and the impurities in water will be concentrated and removed in the detained liquid.



This membrane is capable of removing:

- ★ more than 96% dissolved solids
- ★ more than 99% organic substances
- ★ more than 99% colloid
- ★ nearly 100% bacteria

RO has become the first choice for water purification due to its low operation cost, no pollution, easy and reliable operation. Our RO System includes a high-pressure pump to guarantee sufficient flow rate through the RO membrane. The inlet & outlet pipes are made by stainless steel, allowing a flow rate of 15 cubic meters per hour. The plant is equipped with high-pressure & low-pressure protectors.

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## Ultra-Violet and Ozone Sterilisation

The sterilization system consists of Ozone actuator and a Ultraviolet (UV) tube. UV treatment of water inactivates pathogenic micro-organisms that cause E-coli, cholera, typhoid, dysentery and hepatitis.

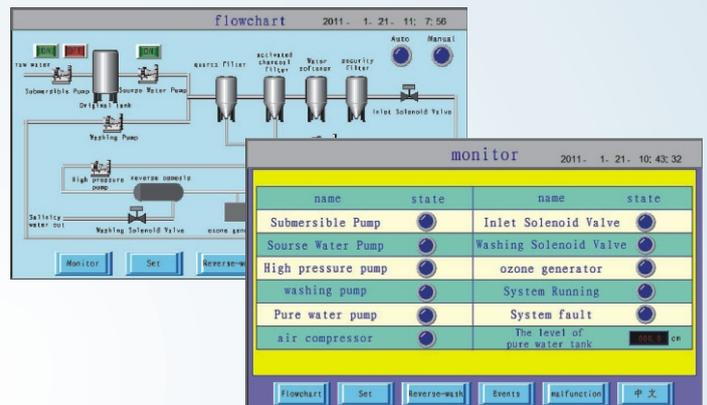
Ozone treatment is also able to remove organic and inorganic material, iron, manganese and sulphur. This is secondly used for the disinfection of the pipelines between treatment and the delivery nozzle.

Ozone will oxidize and decompose the enzyme which can form the glucose to maintain bacteria. The ozone actuator can ionize air to produce ozone which is further mixed with water through Venturi ejector. By using these sterilisation techniques together, we ensure highest water quality.



## Automatic Control & Monitoring System

The control & monitoring system implements the function of start, operation, stop, control, display, fault alarm and safety protection of each pump and some of the valves according to the system working principle. Safety, reliability and high efficiency is guaranteed, and the latest technologies of PLC control, touch screen and network communication are provided



## Trailer Mounted Housing

The complete system is compactly mounted on a trailer which can be towed by a pick up truck to any convenient location. Having all of the electrical power and water treatment equipment located in one trailer makes the system operational instantly and there is no need to gather and organize additional supplies.

Water from rivers, lakes, floods, broken water mains and most freshwater sources can be purified into clean and safe drinking water making it ideal for remote areas.

Call us now for more information

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