

## Off-Grid Emergency Water & Power Supply

### SeaNergy Systems Preview

This document is a preliminary basic presentation of SeaNergy's integrated systems.

When analyzing emergency needs for potable water supply and electricity we need to examine these parameters:

- ✓ **Purpose of the water - purification quality** (i.e. drinking, irrigation sanitary, and so on)
- ✓ **Source of the raw water** (contaminated wells, lakes, sewage, salt water, seawater etc.)
- ✓ **Quantity needed**
- ✓ **Energy source** (electricity: grid, diesel generators, solar, wind)
- ✓ **Size of machine and mobility** (stationary, portable, flat-bed truck, containerized, towing trailer)

There are two basic systems to purify drinking water: Filtering and Reverse Osmosis (RO) – Desalination.

In a filtering process, the contaminated water flows through several types of filters to its final quality of potable water. This system is NOT suitable for any kind of salted water.

The other common system is Reverse Osmosis when salted and/or contaminated water flows in very high pressure through tiny osmosis membranes to a very pure drinking water quality (including sea water)

SeaNergy, has many years of experience planning, producing, integrating, implementing, and installing these devices worldwide.

For your convenience, you will find here a basic preview of several devices for water and power. We have, ready to production, engineering drawings and plans, so we can start manufacturing almost immediately with minimum alterations according to any specific requests and needs.

According to the information received, we believe that the solution to be provided should be the RO systems.

In addition, on the last page, some basic info on one of our purification ultra-filtration machines is provided.

For your calculations, please note that one American Gallon = 3.875 liters. Every Cubic meter = 264.172 Gallons

All pictures are for information only, the actual size may vary

Please feel free to contact me with any question you may have,

*Best regards,*

Shlomo Gilboa, President



SeaNergy Electric LTD

Please visit our general site: [www.seanergy.co.il](http://www.seanergy.co.il)

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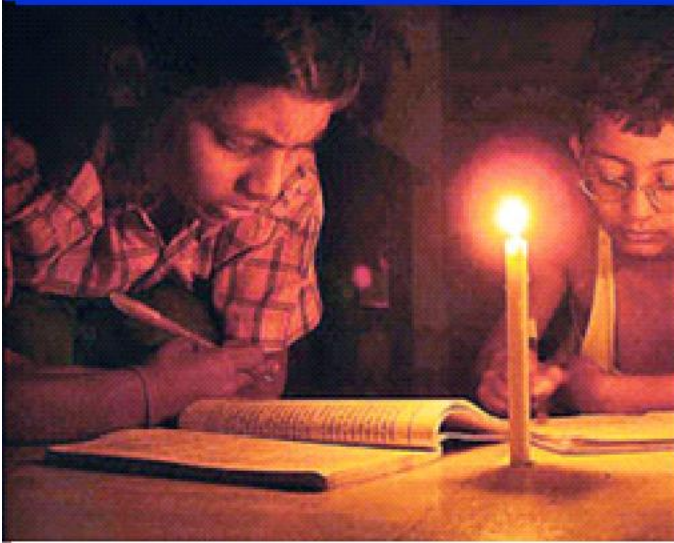
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All forward-looking statements in this document reflect the data supplied to SeaNergy, our current views about future events are based on assumptions and are subject to risks and uncertainties that could cause our actual results to differ materially from future results expressed or implied by the forward-looking statements. Many of these factors are beyond our ability to control or predict.

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**Various SeaNergy's systems are protected under African, European, U.S and other international patents.**

**Remote Off Grid Renewable Energy  
Clean Water & Clean Electricity  
No more shortages!  
NO MORE DIRTY DIESEL !**



# Small, Renewable Electricity / Water plants for remote, off-grid locations

1-5 CM/H (Cubic Meters/Hour) water desalination

And/or up to 8 KW electricity solar/wind Mobile Units



# Mobile hybrid renewable station

## Electricity Generator + Water purification

### Item #3/S (Mobile Solar)



#### #3/S Mobile Solar

The small mobile solar generator + water purification (also available for sea water desalination)

The configuration 3/S

The mobile hybrid station offers a solution to remote villages, camps, disaster areas or small villages with 50 -200 people.

This standard mobile unit has guaranteed capacity of:

- ✓ **1200 liters of potable water per hour.**
- ✓ **Intake pumps**
- ✓ **1-3 KW/H solar electricity**
- ✓ **Batteries for lighting & small appliances operations for 5 hours**
- ✓ **Backup of a small diesel generator.**

### Item #3/SW (Mobile Solar/Wind)

(Actual Size larger than the shown picture)



#### #3/SW Mobile Solar+ Wind)

This largest mobile unit available can purify and even desalinate sea water to fresh drinkable water.

Using SeaNergy folding panels system with a 24 hours power addition from a wind generator.

The Mobile hybrid plant contains solutions to an off the grid village with 200 people, or camps, field hospitals.

The standard mobile unit plant has guaranteed capacity of:

- ✓ **Up to 3,600 liters of potable water per Hour.**
- ✓ **Intake pumps**
- ✓ **Installed 3-8 KW/H solar electricity**
- ✓ **Batteries for lighting & small appliances operations for 5 hours**
- ✓ **Backup of a diesel generator**
- ✓ **Operates 24 hours!**

All calculations are approximate & conservative based and depend on the daily solar radiation/wind speed and the proportion between water production and electricity consumption



# SeaNergy Hybrid **Power & water** Stationary permanent plant (Villages Kiosk) **SeaNergy Item #4/s**



**Off-Grid Electricity And Water plant including water & power storage for 500 people !  
Good for any remote off grid Villages, Camps and Islands**

## **Summery of #4/s standard Electricity & Water station offered:**

The actual SeaNergy hybrid village system offered - SeaNergy **# 4/S**

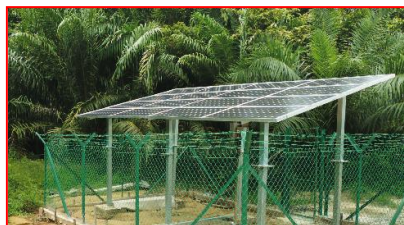
(Similar configuration shown in the picture)

The stationary hybrid plant contains solutions to an off the grid village with 500 people (can be up scaled up to few thousands) .

This standard plant has guaranteed capacity of:

- ✓ **12,500 liters of potable water per day.**
- ✓ **Intake pumps- Storage tank**
- ✓ **Installed 250 KW solar electricity**
- ✓ **Batteries for lighting & small appliances operations for 5 after dark hours for the whole village**
- ✓ **Optional addition of Wind 2-5 KW/H turbine to add 50KW daily + 2,500 litters – 24 hours!**

All calculations are approximate & conservative based and depend on the daily solar radiation and the proportion between water ( can be stored) and electricity consumption



**#4/S** (smaller configuration)

Power/water center with wind generator



## Hybrid solar with vertical wind generator

### VSW600-A



### Tower dimensions

Width:	1775mm/5' 10"
Length:	4900mm/16' 1"
Height:	3900mm/12' 10"
Weight:	2150Kg/4740Lb

### Wind turbine



## 600<sub>w</sub>

Maglev  
Wind  
Turbine

Start wind speed:	1m/sec
Rated wind speed:	12m/sec
Safety wind speed:	45m/sec

### Solar system

No. of Solar Panel:	4
Panel Wattage:	300W
Panel Output:	1200W
Panel Material:	Monocrystal Silicon
Controller:	Morningstar /Other MPPT

### Trailer details

Axle:	Dual
Tire and Rim size:	MAXXIS A/T R15
Outrigger:	Manual
Tow hitch:	50mm Ball 4412LBS
Mast Raise/ Extension:	Manual
Mast Height m/ft :	9m/29'6"
Mast Rotation:	Option
Wind Rating Speed:	100kph

### Battery

Model:	CNJ 200
No. of Battery:	8
Capacity:	200AH
Voltage:	DC 12V
Material:	Colloid

### Other

Diesel Generator Backup:	3KW
Inverter:	5KW



# SeaNergy

## SOLAR POWERED, INDEPENDENT UNIT



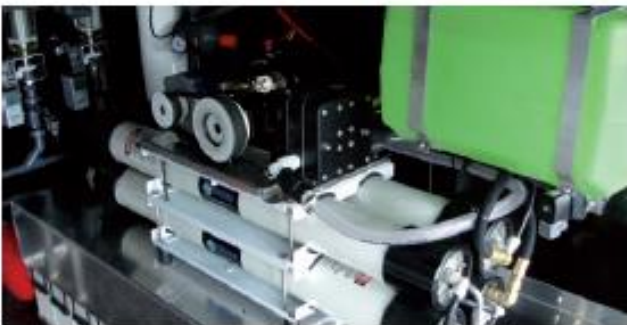
### Mobile unit, easy for installation

Thanks to the design, the containers can be commissioned without complex or time-consuming assembling/ disassembling and the unit is operational within a few hours. The solar panels are folded down and/or stored in a specially designed structure on the container.



### No sand, no dirt, no heat problems

The container housing protects all components from dirt and dust. Container Units have been designed for the harshest desert conditions with all of the equipment installed in a sealed, lockable and secure container that is air conditioned if required to protect the water treatment system and electronic controls.



### High quality components = low operation costs

Water Systems is committed to high quality components that are reliable and long-lasting. The RO-system consists of eight membranes and is equipped with a special and proprietary Pearson pump (energy recovery pump) in order to significantly reduce the power consumption.

### Applications

- Disaster relief (earth quake, flooding)
- Larger community
- Desert area
- Military/defense
- Tourist resorts/hotels

### Optional features

- 48 VDC Air Conditioning
- Monitoring system
- Disinfection
- Sandfilter



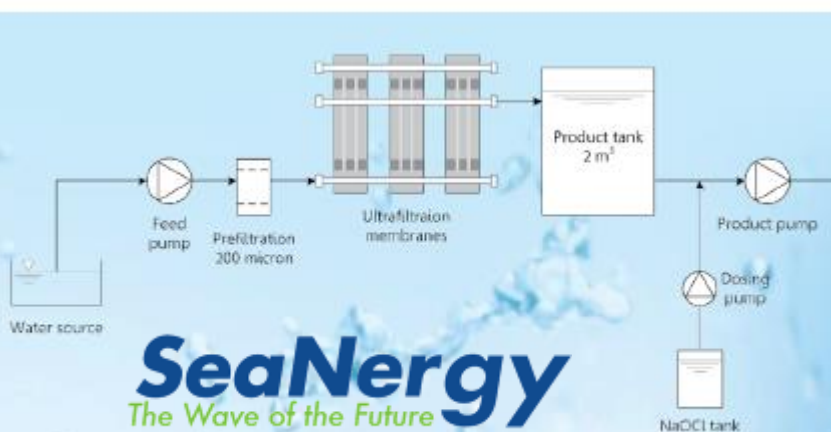
# Granite1 – mobile ultrafiltration system

## General

Earthquakes, floods, natural disasters and emergencies may damage water sources and the water supply system, disrupting regional water supply. EMS Mekorot has designed the "Granite1" mobile ultrafiltration system to deal exactly with such situations. The system is portable, mounted on a trailer and is equipped with a diesel generator to ensure operation in situations when the electricity grid is not available. Water treatment is performed by Ultrafiltration membranes, a technology that ensures removal of particles (suspended and colloidal), bacteria, virus and protozoa from the raw water. The system produces 120 cubic meters of drinking water a day, sufficient for 6,000 people in emergency situations. The unit is designed for quick set up and operation. It is equipped with a PLC and a local display panel, allowing fully automatic operation. Supply scope includes a feed pump, automatic micron filter, ultrafiltration membranes, backwash pump, product pump, chemical feed systems, diesel generator and auxiliary systems.

## Data table

Filtration technology	Ultrafiltration
Raw water source	Well or surface water (river / spring / lake)
Turbidity removal	Raw water turbidity: design 50 NTU, max 100 NTU Product water turbidity: less than 0.3 NTU
Microorganisms removal	Virus - 4 log Bacteria - 9 log Giardia and Cryptosporidium - up to 4 log
Size of particles removal	Up to 0.02 micron
Product chlorination system	Included
Product flow rate	5 m <sup>3</sup> /hr
Prefiltration	200 micron, including automatic flushing system
Number of UF membranes	3
Membrane area	38 m <sup>2</sup> (per unit)
Hypochlorite consumption for product water disinfection	4.4 liter / week
Chemical consumption for membrane periodic cleaning	Hydrochloric acid 33%: 4.2 liter /week Caustic soda 48%: 4.9 liter/week
Power supply	Electricity grid or generator
Average power consumption	4 kW
Specific power consumption	0.8 kWh/m <sup>3</sup>
Generator	Diesel, 12kW, including 200 liters fuel tank
Fuel Consumption	50 liter /day
Power connection	400/230V, 50Hz
Control	Fully automatic, including HMI touch screen
Feed pump	6.6 m <sup>3</sup> /h * 3.5 bar Self priming up to 7 meter
Product pump	5 m <sup>3</sup> /hr * 5 bar
Certificates	NSF/ANSI 61
Trailer	Tandem axle, braking system, spare wheel, taillights, brake lights
Dimensions (mm)	1460(W) X 3600(L) X 2500(H)
Total weight	1850 kg
Perimeter lighting	Included
Documents	System handbook, Operation and maintenance manual



**SeaNergy**  
The Wave of the Future

