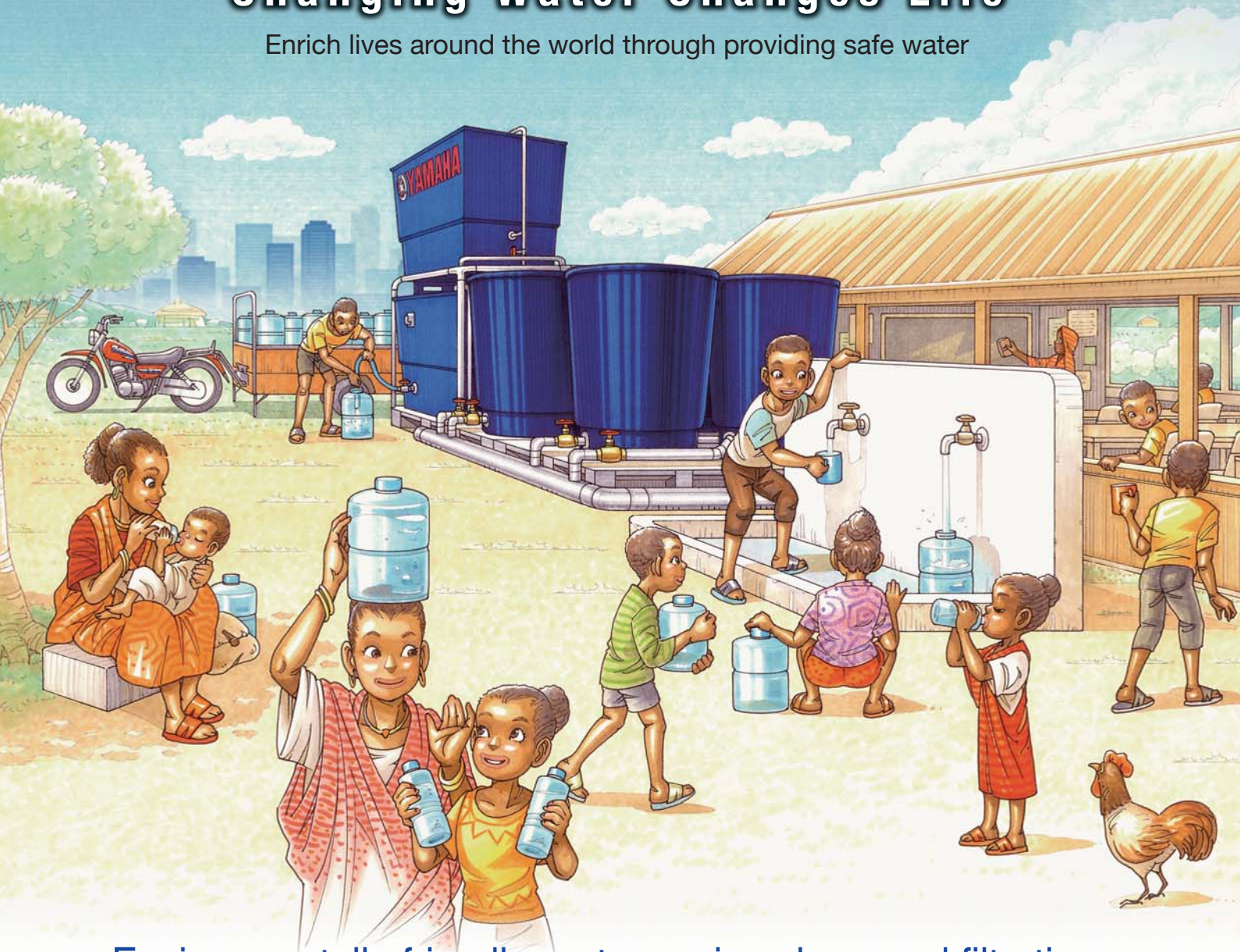


# YAMAHA CLEAN WATER SUPPLY SYSTEM

## Changing Water Changes Life

Enrich lives around the world through providing safe water



Environmentally-friendly system using slow sand filtration

Easy maintenance

Low running cost



# YAMAHA CLEAN WATER SUPPLY SYSTEM

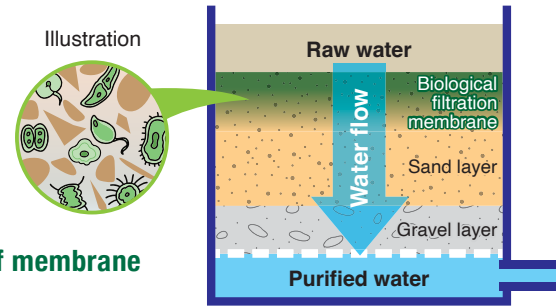


## Why is the “slow sand filtration” suitable for rural villages?

### What is the “slow sand filtration” method?

In addition to physical filtration through sand filtration, microorganism feeds on bacteria contained in the water and results to purifying the water.

- Excellence in...**
- Energy efficiency: **Filtration method using gravity**
  - Easy maintenance: **Simple equipment structure**
  - Low running cost: **No need of coagulants and replacement of membrane**



## Providing Equipment and Service

### Installation Process

1	<b>INSPECTION</b>	• Check raw water quality • Check installation site etc. <b>SUPPORT</b> Visit the site and conduct a preliminary inspection
2	<b>QUOTATION</b>	• Yamaha Clean Water Supply System • Local construction
3	<b>CONTRACTS</b>	• Contract with concerned parties • Confirm necessary permits <b>SUPPORT</b> Established a water committee to maintain the equipment and to vend purified water.
4	<b>LOCAL CONSTRUCTION</b>	• Foundation for basement • Electricity supply • Intake • Drain
5	<b>INSTALLATION</b>	• Install the Clean Water Supply System, and water running test (1 week) • Stabilize water quality (2-3 weeks) <b>SUPPORT</b> Dispatch technical staff to install the equipment together with the villagers
6	<b>TRAINING</b>	• Maintenance training (2 days) <b>SUPPORT</b> Conduct maintenance training for water committee operators
7	<b>WATER QUALITY CHECK / HAND OVER</b>	• Water quality check by official organizations (2 weeks) • Transfer ownership from Yamaha to purchaser



Inspection



Water Committee Establishment

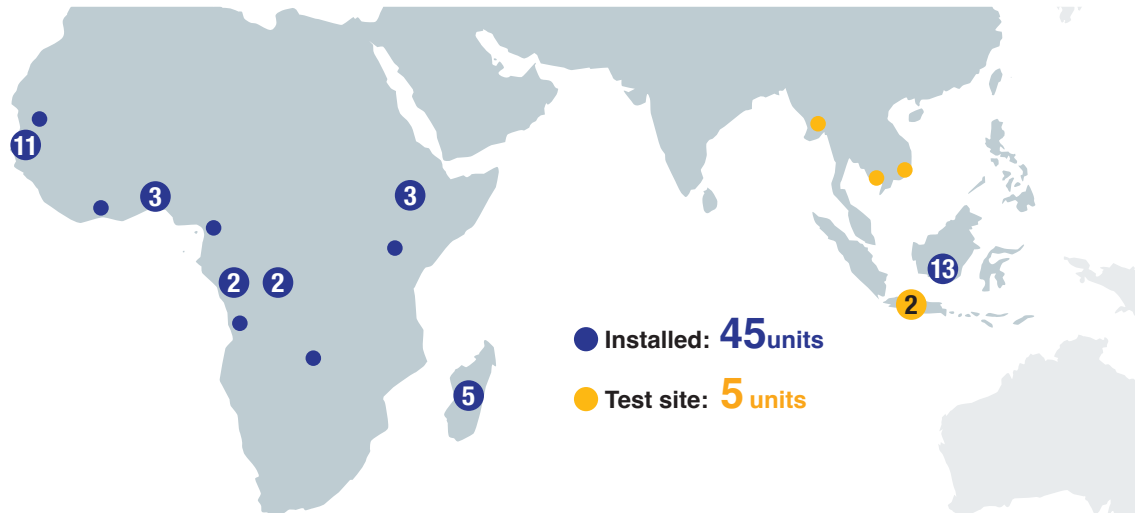


Installation Guidance



Technical Training

### Achievement : 50units of installment in Asia/ Africa. (as end of 2023, including 5units of test sites)



### Educational Activities.

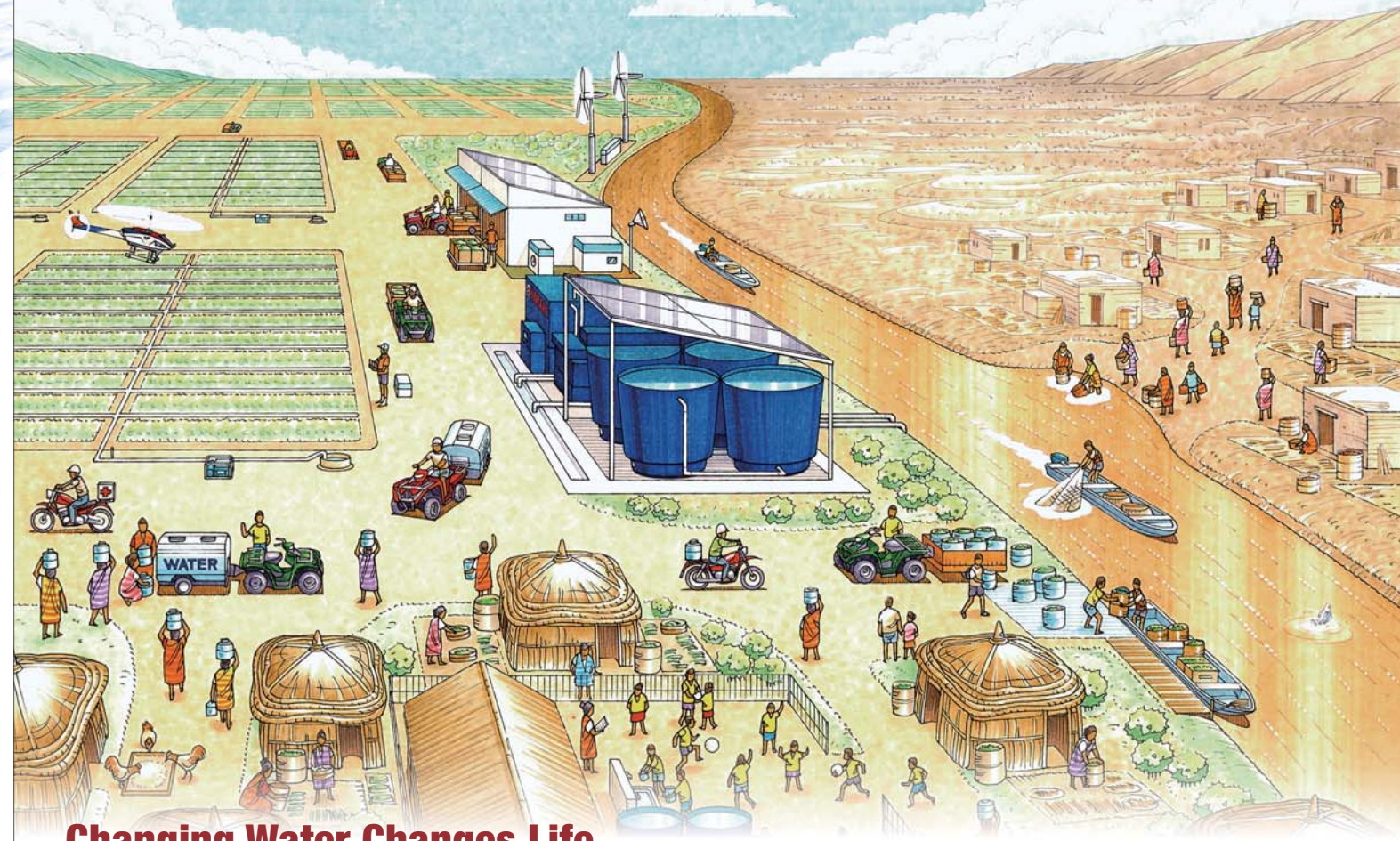


Teaching the importance of drinking clean water



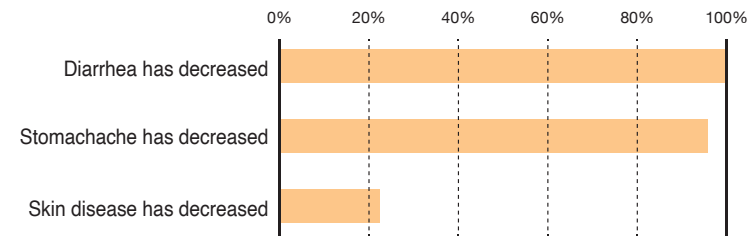
Supporting health with sports and clean water

# SYSTEM Changing lives and developing communities



## Changing Water Changes Life

### ● Hearing results of illness improvement by installing YCW



### ● Liberating from water carriage labor

More time to study at school  
Assisting women's social empowerment



### ● Self-governance Improvement



Water & Ice sales



Delivery service



Charging electronics

Liberating people from water collecting labor will lead to more time for education and production output. Not only but also creating new jobs such as water distribution, and establishment of water committee for better self-governance.





# SYSTEM

The environmentally friendly "slow sand filtration" system

## YCW-008A

8000L/day

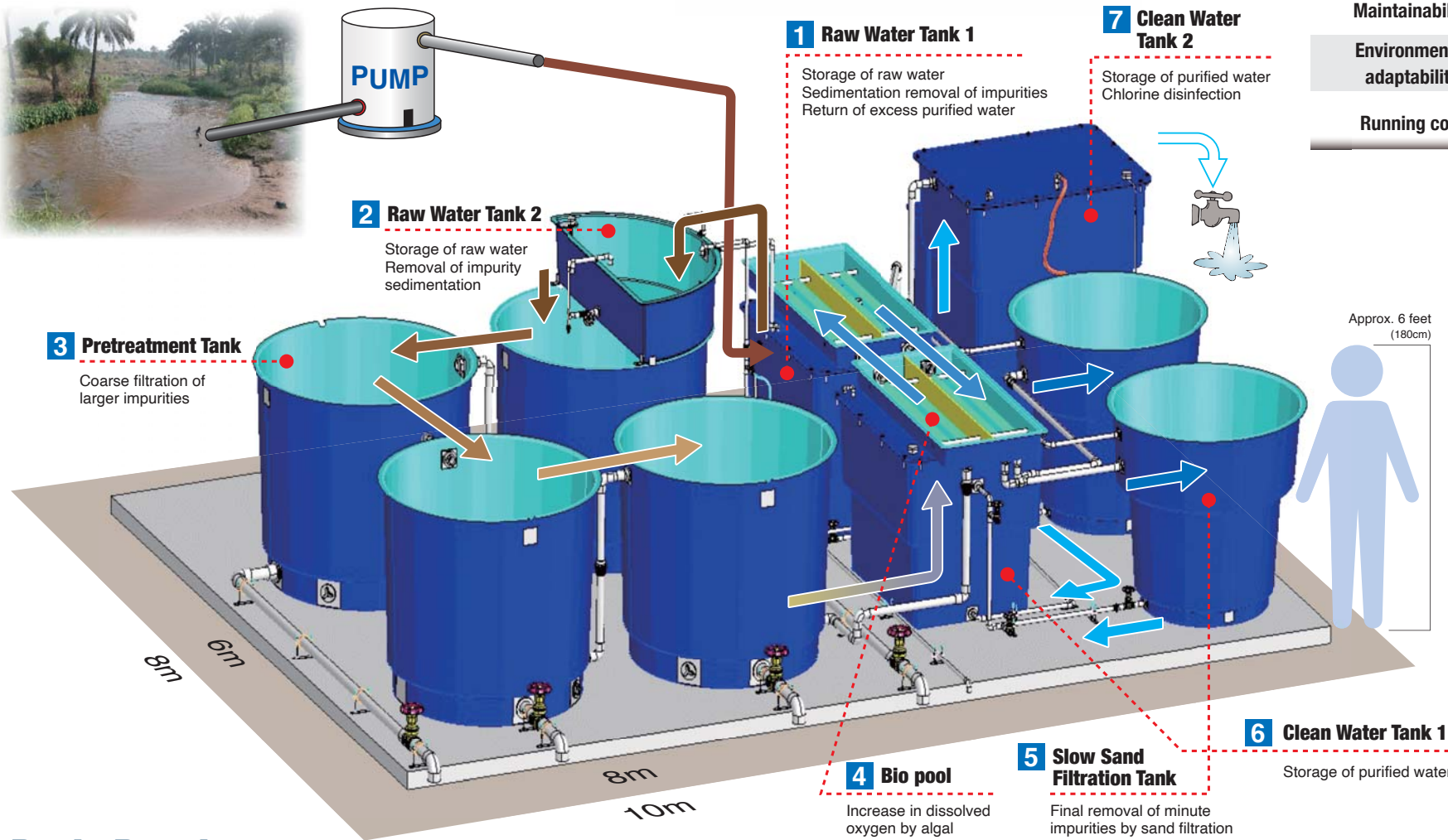


## YCW-002A

2500L/day



## Flow Chart



## Basic Requirements

1	Piping distance from raw water intake to YCW	<b>Within 300m</b> (In case exceeded, will investigate if it applicable with additional water pump.)
2	Elevation difference between raw water intake and YCW	<b>Within 10m</b> (In case exceeded, will investigate if it applicable with additional water pump.)
3	Measurements	<b>YCW-008A : 10m x 8m</b> <b>YCW-002A : 6m x 6m</b>
4	AC Power	<b>Single phase 220-240V*</b>
5	Raw water quality	<b>Raw water shall not contain</b> - sea water, -heavy metals, -agricultural, -industrial wastewater

\*Solar power system can be fitted if no electricity is available.

## Maintenance

<b>Daily Maintenance</b>	Check: water intake, power supply, total system, water flow rate Cleaning: bio-pool, slow sand filtration tank Water quality check: transparency, odor, taste Drain: raw water tank, pre-treatment tank	<b>Everyday</b>
<b>Regular Maintenance 1</b>	Water quality check: pH, residual chlorine Refill chlorine solution	<b>Once a week</b>
<b>Regular Maintenance 2</b>	Sand scrape: slow sand filtration tank	<b>Every 3-4 months</b>
<b>Regular Maintenance 3</b>	Sand scrape: pre-treatment 4th tank, Cleaning: raw water tank, clean water tank, overflow tank and bio-pool	<b>Every 6 months</b>
<b>Water Quality Check</b>	Request water quality check to official organizations according to local regulations	<b>Every 6 months</b>

\*Each item requires approximately one hour.

The Yamaha Clean Water Supply System is a water purification system that adds improvements to the "slow sand filtration" method that has been used in many regions of the world.

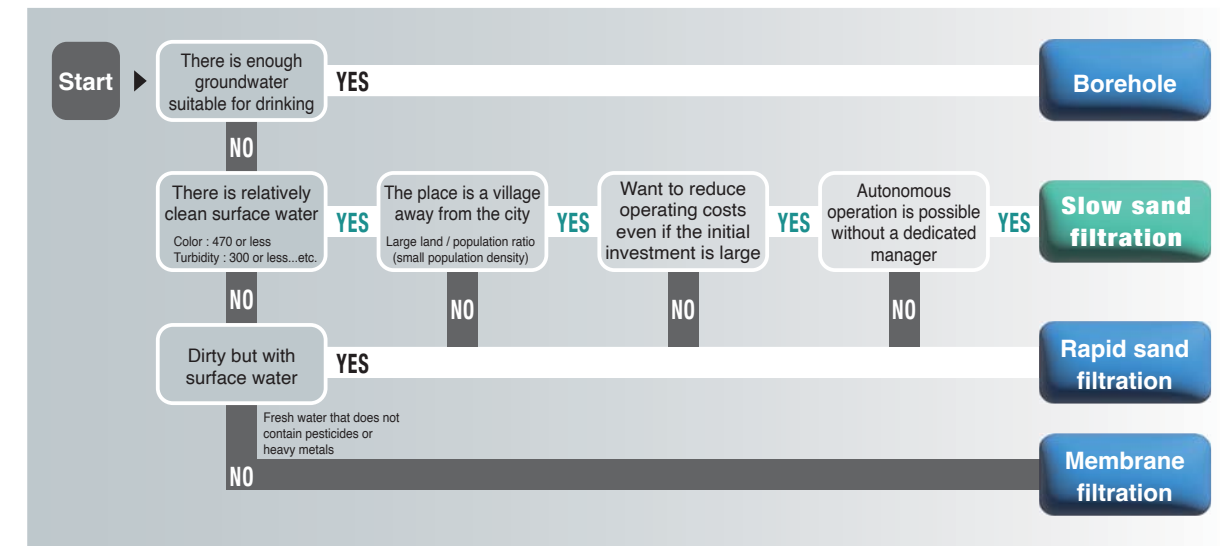
It is an environmentally friendly system because it uses no coagulant chemicals or filters, and it has the capacity to purify 8,000 liters (enough to supply a community of 400 households for 1 day) of surface water daily from sources such as rivers, lakes or ponds.

Another big advantage of the Yamaha Clean Water Supply System is its simple structure and easy maintenance.

## Comparison of water purification methods

Item / water purification method	Borehole	Slow sand filtration	Rapid Filtration	Membrane filtration
<b>Appropriate location</b>	A place with enough groundwater suitable for drinking	Self organized small villages with relatively clean surface waters and adequate land	Populated urban areas and areas with high turbidity water	Anywhere including places with little fresh water and even with arsenic contamination. Public funds cannot cover running costs
<b>Purification performance</b>	★ Have no purification capacity	★★★ Relatively clean water which without fine particles can be purified	★★★★ Water with relatively fine particles can be collected and sedimented	★★★★★ Such as desalination of saltwater and removal of heavy metals, capable of removing ultra-fine particles
<b>Required space</b>	★★★ Small	★ Large	★★ Relatively small	★★★ Small
<b>Initial investment</b>	★★ Relatively small	★ Large	★★★★ Small	★★★★ Small
<b>Maintainability</b>	★★★★ Compatible with local users	★★★★ Compatible with local users	★★ Require specialist and technician	★★ Require specialist and technician
<b>Environmental adaptability</b>	★★★★ No emissions	★★ Raw water emission	★ Emission of sludge containing coagulants	★★ Raw water emission
<b>Running cost</b>	★★★ Affordable	★★★ Affordable	★ Expensive (coagulant)	★ Expensive (membrane exchange, electricity, etc.)

## Determine appropriate water purification method



## Purification Performance

Item	Upper limit for Raw Water	WHO Guidelines for Drinking Water
Turbidity	300 NTU	5 NTU
Color degree	470 CU	15 CU
Iron	1 mg/L	0.3 mg/L
Manganese	1 mg/L	0.1 mg/L
Aluminum	0.4 mg/L	0.2 mg/L
Ammonia nitrogen	3 mg/L	1.5 mg/L
Coli	600 pcs/100mL	0 pcs/100mL
Coliform group	32,000 pcs/100mL	0 pcs/100mL

\*NTU is a turbidity unit defined by WHO Guidelines for Drinking Water \*CU (color unit) indicates apparent colors in units of color degrees

\*TCU (True Color Unit) is the absolute color unit defined by WHO Guidelines for Drinking Water

\*Seawater, pesticides, heavy metals other than the above, organic/inorganic substances, etc. are not subject to purification \*Performance of biological filtration membranes are kept in optimal maturity condition



YCW cannot purify raw water to be safe enough to drink from every rivers and lakes. This is because we utilize water purification system called slow sand filtration, thus water which can be purified is limited. Only raw water which the substance is under the limit as shown in the table, YCW can provide water followed by WHO Drinking Water Guideline.

# YAMAHA CLEAN WATER SUPPLY SYSTEM

## Specifications

YCW has two models as shown in the table. We will propose appropriate specifications according to the size of the village, hospital, school, population and budget.

Model		YCW-008A	YCW-002A
YCW (Water purification system)	Installation dimensions (Concrete foundation)	10m x 8m	6m x 6m
	Water purification methods	Coarse Filtration + Slow Filtration (Sand Filtration + Biological Purification) + Chlorine disinfection	
	Main component	FRP tank + Filter material (sand and gravel) + Control panel + Electric pump + PVC pipe	
	Gross weight	27 tons approx.	7 tons approx.
	Water purification capacity	8,000 liters per day approx.	2,500 liters per day approx.
	Projected benefiting population	About 2,000 people	About 600 people
	Power supply	AC single phase 220V	
	Power consumption	Approx. 5.5 kWh/day	Approx. 1.7 kWh/day
	Number of motorized pumps	4 (Chlorine drip pumps included)	1
	Chlorine Method of supply	Automatic drip using an electric pump	Manual drip by hand pump
Photovoltaic here after PV (Solar power) Generator	Output voltage	50 Hz AC single phase 220V	
	PV modules	3,360W (280W x 12 sheets)	1,120W (280W x 4 sheets)
	Battery	Deep-cycle lead-acid battery 2V-500Ah x 24 series 48V-500Ah (Can handle no sunshine for 3 consecutive days)	Deep-cycle lead-acid battery 2V-300Ah x 12 series 24V-300Ah (Can handle no sunshine for 3 consecutive days)
Logistics: Number of containers (country of shipment)		YCW main unit: 20 ft x 1 (Indonesia) Filter material (sand and gravel): 20 ft x 1 (Japan) PV hardware :20 ft x 1 (Japan)	YCW main unit + filter material (sand and gravel) + PV generator : 20ft x 1 (Japan)

Specifications are subject to change without notice. Due to specification changes, actual products may differ from those pictured or described above. Be sure to read owner's manual before operation.

## After-sales service

In the event of any failure due to defects in our products within one year after delivery or during the period agreed in the sales contract, we shall take measures such as repairs at our own expense. If any other defects occur, the buyer will bear the costs, and either YCW or the local distributors, NGOs, consultants, contractors, etc. under our contract will handle repairs, etc.



**Included parts, etc.** The main body of the water purifier includes the annex parts as shown in the table. Please note that the contents are subject to change without notice.

**Accessories** Measuring spoon, pipette, coliform test kit, sample bottle, measuring cup, measuring cylinder, tester (current/voltage meter), transparency meter, pH test paper, residual chlorine analyzer

**Special tool** Mud scraper (used to scrape out mud that accumulates at the bottom of the pretreatment tanks)

**Spare parts** Raw Water Pump, Clean Water Pump, capacitor/check valve/cap for each pump, orifice plates, O-ring, water level sensor, intake cage, foot valve, Pretreatment Tank inspection window lid, fuses

**Descriptions** Owner's manual and guidebook for setting up water committee



YAMAHA CLEAN WATER  
SUPPLY SYSTEM

<https://global.yamaha-motor.com/business/cw/>



YAMAHA MOTOR CO.,LTD.  
2500 SHINGAI IWATA SHIZUOKA JAPAN

Printed in Japan  
23060G1-d1