

2013

The AquaPak® Opportunity



Harnessing the Sun to Benefit Humanity



Frank Husson
Chief Executive Officer
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Dear Future Partner,

Now, international entrepreneurs can build a profitable and socially-proactive business based on the most effective solar water pasteurizer available in the world—all for a cost of just \$2.00 USD per unit when manufactured in developing countries.

In the summer of 2011, the International Network to Promote Household Water Treatment and Safe Sanitation, an affiliation of scientists, universities, corporations and humanitarian organizations established by the World Health Organization, published their report, [*Evaluating Household Water Treatment Options: Health-based targets and microbiological performance specifications*](#). On a 0-9 scale, the pasteurization technology utilized by the AquaPak® Solar Water Pasteurizer scored 9+. Currently, the AquaPak is not only the lowest cost product ensuring safe water; it is available at 10% of the price of its nearest pasteurization competitor.

The need is dire. The market is huge.

One billion mostly rural people currently lack access to clean water sources. Every day, 4,500 children die from drinking unsafe water, most in tropical areas between the Tropic of Cancer and the Tropic of Capricorn.

In June 2011, UN Secretary General Ban Ki-moon, along with UNICEF Executive Director Anthony Lake and others launched the “Sustainable Sanitation: Five-Year Drive to 2015.” The program includes a goal to cut the deaths from unsafe drinking water in half within the next five years. As a result, some of the world’s most powerful forces have refocused their efforts on bringing safe drinking water to the neediest of families.

YOU can help bring health and prosperity to your country, all at an incredibly low cost both to you and your customers by manufacturing the easy-to-use, “goof-proof” AquaPak.

An opportunity for nearly everyone . . .

UN pressure to increase worldwide access to safe drinking water is emerging in the form of grants and loans to health-focused entrepreneurs.

USAID and UNICEF, along with thousands of other non-governmental organizations (NGOs), have money to lend and even grant to entrepreneurs in developing countries. Consider:

- USAID’s Development Credit Authority (DCA) had a portfolio of \$36 million (USD) available to lend to businesses in Kenya alone.
- UNICEF has provided business loans (often distributed through NGOs) in more than 100 countries including: Nepal, Vietnam, Egypt, India and Kenya.
- In 2009, the Grameen Bank lent the majority of 1.1 billion (USD) to small businesses in developing countries.

Approaching these sources with the sound business plan, patent protection, equipment and training opportunities already established by Solar Solutions gives any entrepreneur in a developing country significantly more credibility and tools when competing for grant and loan monies. (Find a list of resources to help you find the governmental and non-governmental organizations currently running business loan programs at the end of this package.)

You can be up and running in about three months

Once your questionnaire (Exhibit F) has been reviewed and accepted, Solar Solutions puts you in touch with the AquaPak equipment manufacturer and raw materials suppliers with whom we've already negotiated the best prices. We help you make the arrangements to attend our hands-on training program in China or San Diego. Finally, together, we ensure communication between you and Solar Solutions is established and open in case you need any guidance during your business's start-up and subsequent operation.

An ideal opportunity. An ideal time.

With International Network to Promote Household Water Treatment and Safe Sanitation's disclosure of the effectiveness of pasteurization and the United Nation's push toward reducing deaths from unsafe drinking water, the first entrepreneurs who take advantage of this humanitarian and potentially profitable opportunity stand to gain the most.

The AquaPak is the least expensive way to provide potable water and clean, healthy bathing water in a tropical setting where river, pond and stream water may be readily available but contaminated by biological pathogens. When manufactured in developing countries, the AquaPak stands to save thousands of individual lives, as well as providing jobs and investment opportunities that can lift the area's overall standard of living.

Solar Solutions is excited to help you build your AquaPak facility every step of the way. Please do not hesitate to contact us via email or phone.

Sincerest Regards,

Sharon Hanson
Business Development Manager
Solar Solutions LLC



A Note from AquaPak Inventor, Frank Husson

To All Concerned,

After 14 years of trips to specialized agencies (governmental and non-governmental), getting third-party, unbiased testing completed and filing patents in 67 countries, I'm thrilled to make the AquaPak available to international entrepreneurs.

For 30-years now, I've been determined to bring safe drinking water to those in tropical areas who depend on water from streams, lakes, rivers and wells. Whether the source of pathogens is a dead animal floating upstream or fecal material from humans, that water is too often contaminated.

I found out quickly that rural people and refugees in developing countries need more than expensive slick technology to keep their children from dying from water-borne viruses, bacteria and protozoa. They need **technology that is as inexpensive, portable and easy-to-use** as possible. They need a technology that doesn't require pricey, hard-to-acquire components or even wood—an increasingly scarce commodity in the developing world.

By 2002, I'd developed the AquaPak for a materials-plus-labor cost of just \$2.00 (USD) per unit when manufactured in developing countries. Families make their biologically questionable water safe simply by filling the AquaPak and setting it out in the sun. The heat-trapping bubble wrap and other carefully developed materials do the rest. The water stays safe for weeks after pasteurization.

When the water inside the AquaPak reaches 65°C (35°C less than boiling), the orange wax inside the sealed detector melts, disappearing from view and signaling the pasteurization process is complete; the water is safe to drink. The AquaPak is a low-tech but "goof-proof" system.

Along with the World Health Organization, the United Nations and many others, I believe **every man, woman and child has a basic right to safe drinking water.**

Currently the lives and potential of one billion individuals are hampered by sickness and needless mortality caused by water-borne biological pathogens. I've developed the product, negotiated with equipment manufacturers all over the world, wrangled with patent agencies and created the "copy exactly" business model.

The rest of the work is up to you. You can get safe, reliable drinking and bathing water into the hands of your relatives, neighbors and countrymen. Call us today to get started.

Very Sincerely,

Frank D. Husson, Jr.
Founder and CEO
Solar Solutions LLC

The AquaPak Opportunity

- A product to be proud of. According to the International Network to Promote Household Water Treatment and Safe Sanitation (established by the World Health Organization) July 10, 2011 report, [Evaluating Household Water Treatment Options: Health-based targets and microbiological performance specifications](#), the pasteurization process utilized in the AquaPak scored higher in effectiveness than:

- Chemical disinfection
- Membrane, porous ceramic or composite filtration
- Granular media filtration
- Solar disinfection (SODIS)
- UV light technologies
- Sedimentation
- Flocculation plus disinfection systems like powders or tablets



- A product that will improve conditions and quality of life in local communities
- A product that will engender good-will among community members
- Potential opportunity for start-up grant/loan money from governmental and non-governmental organizations (see Resources at the end of package).
- Market of 1 billion worldwide
- Alternative water safety methods for cloudy days (contains AquaTab® chlorine tablets)
- Additional filtration systems, (fine-mesh, cloth filter for in-flow and stainless steel and cloth out-flow filters, plus activated charcoal-filter for residual chlorine)
- With product life at one to two years, potential for repeat sales to current customers
- Grommets and handle make carrying easy
- Opportunity to benefit community in a powerful way

Fast return on investment, due to low materials and equipment cost

- No up-front licensing fees
- “Copy exactly” business model is easy-to-initiate and run
- Patents filed in nearly every developing country
- Potential for multiple manufacturing sites
- Large markets: schools, humanitarian agencies, government agencies, businesses
- Potential to market to individuals
- Low cost of \$2.00 (when manufactured in developing countries) deliberately kept in-line with daily wage of workers in developing countries
- No controls on retail or wholesale pricing
- Founded on 14 years of product development, testing, patent-filing, manufacturing and supplier research and negotiation
- Initial and continual support from Solar Solutions LLC
- Hands-on, personalized training at either San Diego or China locations



Frequently Asked Questions

In which countries will the AquaPak work? The AquaPak will work all year long in Tropical countries with rural populations that have access to fresh water, are within 25° of the equator and have a sunny climate.

How exactly does the AquaPak work? The AquaPak converts sunlight into thermal energy, bringing the water temperature high enough (65°C) to denature or “kill” biological pathogens (viruses, bacteria, protozoa) therein.

What if the sky is hazy or even cloudy? The AquaPak works most efficiently when utilized as close to solar noon as possible when the sun is highest in the sky. If conditions are hazy, pasteurization will take more than three hours. Pasteurization will not work on completely cloudy/rainy days.

And if the water doesn’t reach pasteurization temperature but clean water is needed? AquaPak comes with AquaTab chlorine tablets to kill pathogens on rainy/cloudy days.

What if my customers want COLD drinking water? Users can store the pasteurized water over night when temperatures drop. The water naturally cools. Families can set up very simple systems for utilizing both cool and warm water to meet their needs.

What else can the AquaPak provide? At 65°C, the water pasteurized in the AquaPak can be used to brew green tea and other hot beverages. and cooking needs, as well as bathing and personal hygiene needs.



Storage and Transportation Options? The AquaPak provides its own safe storage where water can stay until it is needed. It can be carried by its handle, tied to backpacks, bikes, etc., or carried on a pole for easy transportation.

How does the effectiveness of pasteurization compare to effectiveness of other methods. In July 10, 2011, the International Network to Promote Household Water Treatment and Safe Sanitation, an affiliation established and orchestrated by the World Health Organization, published their report, [Evaluating Household Water Treatment Options: Health-based targets and microbiological performance specifications](#). On a 0-9 scale, safe water technologies rated as follows:

Summary of Table A2.4 from “Evaluating Household Water Treatment Options: Health-based targets and microbiological performance specification,” July 10, 2011, p. 52. The range covers the variety of findings involving bacteria, viruses and protozoa.

Treatment Process	Maximum Removal
Chemical disinfection (Chlorine)	0-6
Membrane, porous ceramic or composite filtration	0 -6
Granular media filtration (e.g. diatomaceous earth, activated carbon)	2-4+
Solar Disinfection (SODIS)	4+ to 5+
Thermal (heat) technologies including heat pasteurization (AquaPak)	9+
Sedimentation	0.5 - 1
Combination treatment approaches (flocculation plus disinfection systems)	5 - 9

(Find the expanded results at [Evaluating Household Water Treatment Options: Health-based targets and microbiological performance specifications](#). In addition to the information above, the report covers both baseline removal rankings and specific scores for each bacteria, viruses and protozoa.)

How much water can the AquaPak pasteurize at one time? Under sunny conditions, one AquaPak can pasteurize 2 to 5 liters of water in 2 to 3 hours.

What if the pasteurized water isn't needed right away? Families can store and transport the water in the AquaPak for weeks without fear of recontamination.

Why is pasteurization appropriate for developing country populations? For thousands of years, people have made water safe by boiling. The problem remains, however, that extreme poverty and the increasing lack of firewood in developing countries has made the acquisition of a heat source difficult and expensive for too many. Therefore, many resort to drinking water straight from contaminated ponds, lakes, rivers and streams.

In 1864, French scientist Louis Pasteur discovered that all water-borne, disease-causing pathogens (bacteria, virus and parasites) could be killed at temperatures of 65°C, a full 35°C degrees lower than boiling.

The AquaPak requires no additional equipment to create safe water. Users simply lay it out in the sun. More, one unit can be manufactured at a price in line with the standard of living of the average citizen in developing countries. Pasteurization makes access to clean, safe water easy and affordable.

How does the AquaPak aid in the sanitation efforts in developing countries. The warmed water is ideal and safe for personal hygiene.

How much money will I need to start the business the first year? A cost breakdown is provided in Exhibit A. Manufacturing equipment comes to \$25,000 USD. Materials cost for each AquaPak is \$1.64 USD. It's up to the entrepreneur to decide initial quantity of AquaPaks to get started.

Since the costs of renting a facility, buying electricity and hiring workers vary from country to country, it is up to the entrepreneur to determine these costs in their country.



How much can I earn as an AquaPak manufacturer?

Because Solar Solutions retains no controls on retail or wholesale pricing, entrepreneurs can price the AquaPak according to local market pressures and opportunities. AquaPak was designed to be affordable for workers in developing countries. With materials' costs for each unit at just \$1.64USD, potential markets are large.

At unit price of \$3.00 US and a throughput capability of 125,000 units per year (per 8 hour shift), a gross profit of \$125,000 results.

Further, Solar Solutions will help connect entrepreneurs with governmental and non-governmental agencies who may be willing to buy AquaPaks in large quantities.

Where do I get the materials and supplies? Solar Solutions has already established competent and competitive supply chains. In our “copy exactly” system, entrepreneurs can start quickly with suppliers we have already evaluated. Local sources once qualified should further reduce the material cost.

What does “copy exactly” mean? “Copy exactly” means that the product is always made with exactly the same equipment, materials, and process: Solar Solutions has:

- developed and tested the product,
- filed patents (in 67 countries, most of them developing),
- had the necessary machinery developed and produces AquaPaks in US and China on this equipment,
- found the most cost-effective supplies and set up supply chains, and
- developed a process to ensure entrepreneurs can make 125,000 AquaPaks per year on a single shift.



Solar Solutions has created a “latch-key” or ready-to-open business model. At the same time, Solar Solutions gives entrepreneurs plenty of opportunity to market, price and operate in ways most appropriate for their community and country.

What type of AquaPak manufacturing training is provided?

Hands-on training on the AquaPak equipment and “copy exactly” processes takes about a week including travel and occurs in either San Diego, California, US or Ningbo, Zhe Jiang, China.

The training itself costs nothing, but entrepreneurs are responsible for travel costs and lodging and meals while at the training premises.

What kind of support does Solar Solutions provide to AquaPak start-up manufacturers?

Beyond initial hands-on training, Solar Solutions is happy to provide ideas and guidance for the lifetime of the business at no cost to the owner. We are happy to provide phone, email or chat support at any time.



More, Solar Solutions can advocate from the United States for the foreign company with governmental and non-governmental organizations, helping the new business overcome concerns and obstacles insurmountable alone. Further, connection with the successful Solar Solutions gives individual entrepreneurs credibility with these entities they may not be able to win on their own. American ingenuity, backed up by a 14-year process of development, testing, patenting and more can go a long way with those in powerful, funding positions in the developing world.

What does Solar Solutions provide to the new manufacturing company:

- patent protection (already covered at a cost of @ up to \$50,000 per country or region)
- supply chain establishment
- the “copy exactly” equipment design and source, supplies and process
- lifetime support
- intensive, hands-on training
- solicitation and advocacy with local and international governmental and non-governmental organizations

Contractually

Because of the critical importance of the WAPI (water pasteurization indicator), Solar Solutions will supply the open-ended WAPI at \$0.30 USD and, for every 100 AquaPaks manufactured, 7% will be supplied by the new company free-of-charge to mothers with newborns through clinics, midwives, religious organizations or however / wherever it is customary in that country.

How can I get started? Are there any qualifications?

Upon ordering all machinery and materials necessary, Solar Solutions will schedule a time for you to receive your training at a location most convenient for you, either China or California.

Please contact us if you should have any questions or need additional information about our AquaPak solar water pasteurizer or this opportunity.

Resources for information, grants and loans

[Evaluating Household Water Treatment Options: Health-based targets and microbiological performance specifications](#) The World Health Organization, July 10, 2011

The International Network to Promote Household Water Treatment and Safe Sanitation
http://www.who.int/household_water/en/ To accelerate health gains to those without reliable access to safe drinking water, WHO established the International Network to Promote HWTS in 2003. The informal network format optimizes flexibility, participation and creativity to support coordinated action.

Grameen Bank, Bank for the Poor: is a microfinance organization and community development bank started in Bangladesh that makes small loans to the impoverished without requiring collateral.
http://www.grameen-info.org/index.php?option=com_contact&Itemid=194

United Nations' Children's Fund (UNICEF) Give Us Credit: <http://www.unicef.org/credit/credit.pdf> How to access to loans and basic services through this organization.

Worldwide Non-Governmental Organization Directory www.wango.org
A clearing house for non-governmental organizations, WANGO helps members partner, share, inspire, and multiply their contributions to solve humanity's basic problems. Get the contact information for non-governmental humanitarian organizations here.

Bill and Melinda Gates Foundation - <http://www.gatesfoundation.org/grantseeker/Pages/overview.aspx>
One of the largest and most dynamic source of funds internationally, the Bill and Melinda Gates Foundation focuses on health issues worldwide. This page provides guidelines for grant seekers to submit a letter of inquiry.

USAID Development Credit Authority
http://www.usaid.gov/our_work/economic_growth_and_trade/development_credit/

Because smaller businesses in developing countries found it difficult to invest in and expand their enterprises, in 1999 USAID established the Development Credit Authority. Since then, more than 267 partial credit guarantees have facilitated over \$2.3 billion of private capital debt financing in more than 64 countries.

Next Steps

If you are excited to bring a profitable and socially-focused business to your area, please return the completed Questionnaire (see Exhibit F) to us via email shanson@solarcleanwatersolution.com or fax to 001 858 695-3807.

We look forward to hearing from you.

Exhibit A

AquaPak Manufacturing Equipment

Crate from China (see Exhibit B for details)	\$ 9,500
Crate from USA (see Exhibit C for details)	\$ 5,500
Source from local supplier	
Furniture	\$ 1,000
Production Area Tables	\$ 1,000
Warehouse Shelving	\$ 1,000
Warehouse Racks for Plastic Rolls	\$ 500
Contingency	<u>\$ 6,500</u>
TOTAL	<u>\$25,000</u>

Exhibit B

Crate from China

<u>Quantity</u>	<u>Description</u>	
1	Nozzle Sealer (with spare parts)	\$ 1,500
1	Full Bag Sealer (with spare parts)	\$ 6,200
2	Plastic Sheet Cutting Tools	\$ 50
1	Metal Screen Sealer (with spare parts)	\$ 200
1	WAPI Cap Cutter (with spare parts)	\$ 200
1	Grommet Punch	\$ 50
	Equipment Total	\$ 8,200
	Crating, Import/Export Service Fee, and estimated shipping	<u>\$ 1,300</u>
	TOTAL	<u>\$ 9,500</u>

Exhibit C

Crate from USA

Quantity	Description	
	<u>Die Cut Press</u>	
2	Cutting Tools shipped from China	(See China Cost Sheet)
1	20 ton press	\$250
1	Modifications	\$100
2	Metal Plates	\$200
1	Extra Hydraulic Cylinder	\$50
1	Plastic Cutting Board 22" x 18"	\$100
		<hr/>
		\$700
	<u>WAPI Sealing Stations (3)</u>	
3	Torch @ \$20 each	\$60
3	Drill (adjustable) @ \$20 each	\$60
3	Vise @ \$15 each	\$45
3	Foot Pedal @ \$15 each	\$45
3	Teflon WAPI holder (chuck) @ \$10 each	\$30
3	Tongs @ \$10 each	\$30
3	WAPI cooling rack @ \$10 each	\$30
		<hr/>
		\$300
	<u>WAPI Testing Station</u>	
1	Vacuum Oven	\$1,650
1	Vacuum Pump	\$150
1	Vacuum Tubing	\$50
1	Hot Plate	\$50
4	Digital Thermometer @ \$10 each	\$40
1	Pan	\$10
1	WAPI Test Holder	\$50
		<hr/>
		\$2,000
	<u>Small Tools and Equipment</u>	
1	1.5 HP Oilless Compressor	\$180
1	1/3 HP Oilless Compressor	\$80
1	Plastic Slitter	\$200
1	IR Thermometer	\$70
1	Tool Set	\$100
1	6" Filter Cutter	\$50
1	1" Filter Cutter	\$20
		<hr/>
		\$700
1	Fork Lifiable Crate	\$300
	Total Equipment and Crate	<hr/>
		\$4,000
	<u>Plastic Film Supplies</u>	
	Clear Polyethylene	To be determined by quantity
	Black Polyethylene	To be determined by quantity
	Bubble Warp	To be determined by quantity
	Estimated Shipping to Port Lagos	<hr/>
		\$1,500
	TOTAL *	<hr/> <hr/>
		\$5,500

* Does not include plastic film, fitments or optional equipment.

<u>Optional Equipment (not included in above estimate)</u>	
Computer with camera	\$500
Phone, fax, scanner, copier	\$300

Exhibit D
 Cost Estimate for AquaPaks Manufactured in Emerging Countries

	Estimated Costs	Footnote
Plastics with UV inhibitor		
Polyethylene Bubble Wrap 15" x 15"	0.180	1
Clear Polyethylene 20" x 15"	0.120	2
Black High Density Polyethylene 20" x 15"	0.140	2
White Polyethylene Back 20" X 15", printed	0.240	2
Foam Insulation 14" x 14" with hole for nozzle	0.120	
Fitments		
Nozzel (Polyethelyene)	0.050	
WAPI Cap (Polypropelene)	0.075	
Filter Cap (Polypropelene)	0.075	
WAPI		
30 mm tube with 65° C degree wax	0.300	
Labor to seal tube (30 seconds)	0.010	
Exterior		
Handle Rod (can be locally sourced bamboo)	0.050	
Grommets	0.020	
Stainless Steel Screen	0.010	
Filters		
6" Roughing Cloth	0.030	
1" Final Filter	0.010	
O-Ring	0.010	
1" Activated Charcoal	0.030	
	<hr/>	
Total Material Costs	1.470	
In Bound Sea Shipping (5 oz.)	0.150	
AquaPak Mfg Labor Cost - 15 minutes	0.300	3
Overhead	N/A	
Total Manufacturing Costs	\$1.920	
	<hr/> <hr/>	

1. Polyethylene bubblewrap with UV inhibitor is sourced from Pregis. Small quantities may be supplied by Solar Solutions LLC subject to availability.
2. Polyethylene are sourced from Southern Film. Limited quantities may be available from Solar Solutions LLC
3. Developing Country Labor @ \$1.20US/hour. In many countries, the labor rate is less than \$1.20US/hour.

Exhibit E

AquaPak Material and Equipment Requirements		
EQUIPMENT	POWER REQUIREMENT	FLOOR SPACE SQ.FT. REQUIREMENT *
Plastic cutting board with circular razor	N/A	16
Cutting Table	N/A	16
Grommet press	N/A	4
Wire mesh press for filter caps	110 V - 3 amps	4
WAPI cap modifier	110 V - 3 amps	4
WAPI sealer (torch and spinner)	110 V - 2 amps	
Nozzel Sealer and controller	110 V - 6 amps	12
AquaPak bag sealer	110 V - 18 amps or 220V	16
Hydraulic press	N/A	16
Hot Plate	110 V - 15 amps	6
Compressor x2	110 V - 15 amps	10
MATERIALS and FITMENTS to manufacture the AquaPak		
Poethylene Bubble Wrap 15"x16"	Polypropelyne WAPI Cap	6" Roughing Cloth Filter
Clear Food-Grade Polyethylene 20"x15"	Polypropelyne Filter Cap	1" Final Filter
Black High Density Food-Grade Polyethylene 20"x15"	Polyethelyne Nozzel	O-Ring
White Polyethylene (Back of AquaPak)	WAPI glass - 30 mm tube with wax	1" Activated Charcoal
Foam Insulation 14"x14"	Grommets	Pipe Handle

*** NOTE:**

At a minimum, triple the amount of square feet to allow for safe work area as well as storage of raw materials and finished product.

Exhibit F

Application Questionnaire for Manufacturing AquaPak®

Contact Information:

Name:
Address:
Phone Number:
Fax Number:
Email:

Current or Previous Business:

Name:
Address:
Phone Number:
Fax Number:
Years in business:
Number of employees:

Current FedEx or UPS number:

Formal Education and Dates:

Experience and Dates:

When do you plan to set up your AquaPak manufacturing facility?

Where do you plan to set up your AquaPak manufacturing facility?

Is this a new or an existing facility?

How many workers to you plan to employ?

Do you have the funds to start your Solar Solutions water pasteurization business? (To manufacture the first 10,000 units it will take approx. \$50,000. Half of that total, \$25,000, would be for the equipment and the other half, \$25,000, would be for the materials and other expenses such as the facility rent, travel for training, etc.)

If you don't have the funds, where or how do you plan to get them?

How did you hear about us?

* * *

Please return your completed questionnaire to us via email or fax:

Thank you,
Sharon Hanson
Solar Solutions LLC
shanson@solarcleanwatersolution.com
fax 001 858 695-3807