

WASRAG

Birmingham 2009

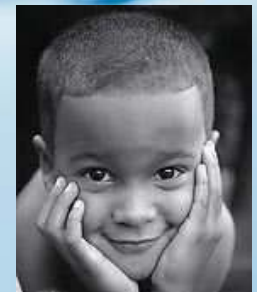


Working with Rotary - SkyJuice project assumptions and overall indicative costs

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Skyjuice Foundation
pure water for every child

Skyjuice technology – Presentation overview

- Skyjuice approach – high quality decentralized treatment
- Where is the real need – “Bottom of the Pyramid”
- Challenges and where do we start- How to fund projects
- Concept solutions where Skyjuice technology is being used - standardization
- Potential to foster “water kiosks”
- Applications and some case studies of community water supply and Rotary projects



Lets examine the problem from a new perspective



Why Hollow-Fiber Membranes?

- Nominal Pore size of 0.04 microns (UF)
- Physical barrier and disinfection strategy in a single step to target :
 - infectious diseases
 - Microorganisms
 - Chlorine resistant pathogens



Membrane is a homogeneous PvdF hollow fibre

Typical membrane performance on key parameters

Parameter	Membrane Filtrate
Turbidity	<0.02 NTU
<i>Cryptosporidium</i>	>6-log reduction
<i>Giardia</i>	>6-log reduction
Coliform	>6-log reduction
Algae	>6-log reduction
SDI	<2.0

Objectives for an affordable community potable water system and/or MDG potable water system- “wish list”

- ◆ Preferably one stop process
- ◆ Can offer “disinfection” capability
- ◆ Low capital cost and “standardised”– affordable per capita basis
- ◆ More importantly must have a low operating cost
- ◆ Simple to operate and maintain
- ◆ Preferably use no power for processing/filtration
- ◆ No chemicals coagulants required
- ◆ No backwash with toxics, spent chemicals
- ◆ Lightweight, preferably rugged construction
- ◆ Preferably could be manufactured in developing countries
- ◆ Long service life no need for consumables or service backup
- ◆ Low skills required for operation
- ◆ Does not require automation and controls (manual operation)
- ◆ Could be relocated and redeployed (non civil based solution)

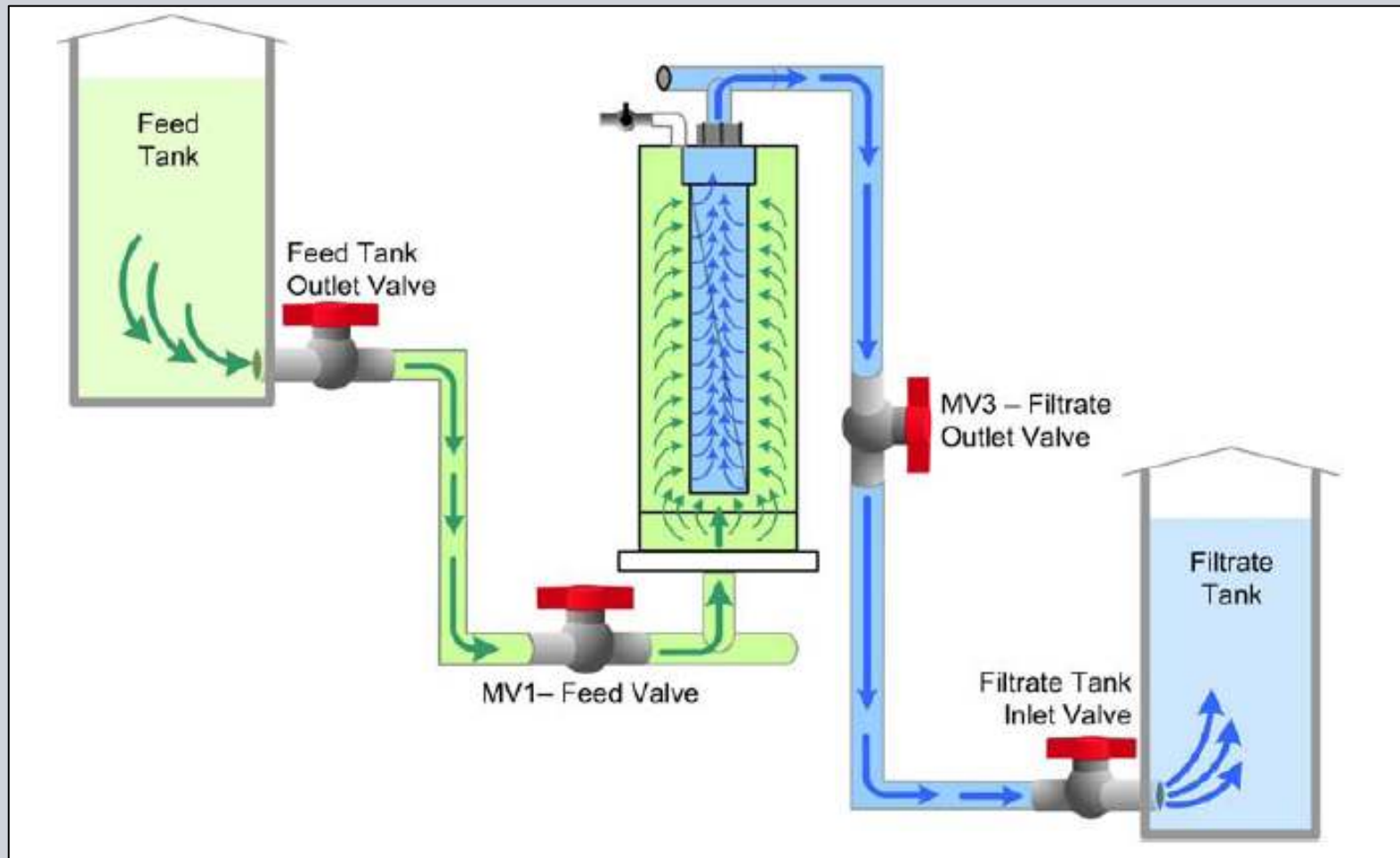
Result: Skyhydrant

- Low cost, lightweight housing, 18 kg (40lb)
- No power required. Gravity fed and manual “spin” backwash. (no liquid or air)
- Uses oxidant tolerant module PvdF
- Single ended “dead end” filtration
- Flow is water quality dependant (500 to 1000 liters per hour)
- Designed to supply 500 -1000 people/day per membrane module
- Most surface water supplies can be used (non brackish) . No pretreatment required
- Scalable design for larger capacities
- Targets “critical” W.H.O. parameters



SkyHydrant is a patented device

Normal Operation – gravity feed without power



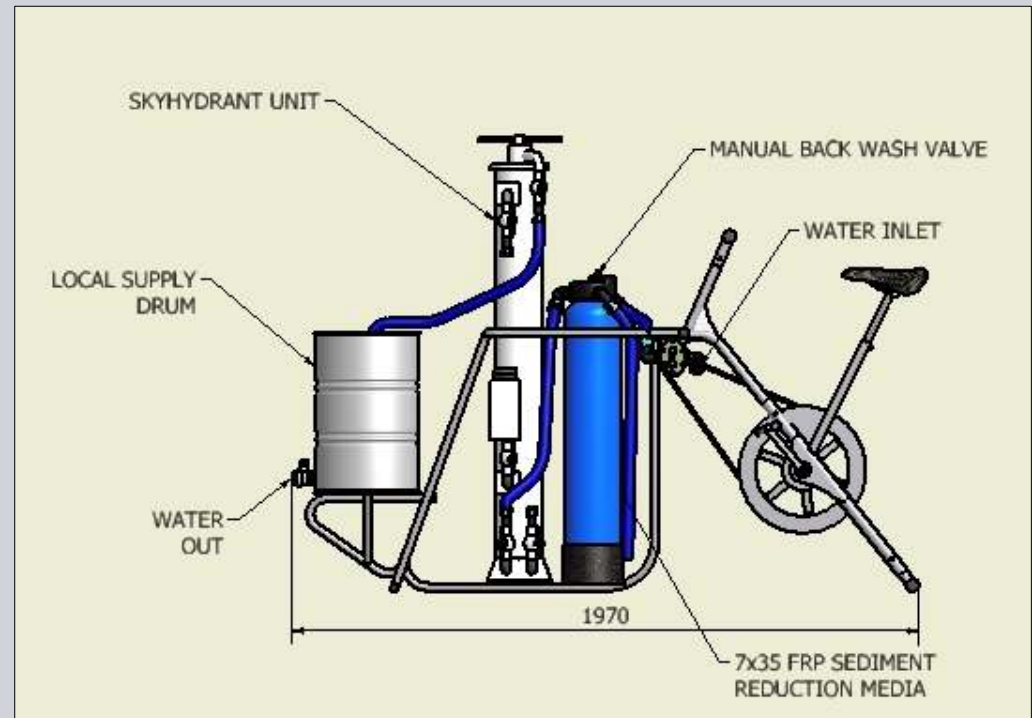
Pre-packaged ROTARY Skytower & Waterbox kits



Skytower project for ASIAWATER India – May 2009



SKYcycle - emergency potable kit - 20 lpm



Typical cost breakdown for a “complete” community water project for 10,000 – 20,000 Litre/day installation

Skyjuice water purification unit	2750
Tankstand, tanks and interconnecting pipework	1750-2500
Hand pumps and supply pipes	250-500
Testing equipment	~100
Containers	200-500
Freight	250-750

Total USD 5500 -7000

Expected 10 year life equates to \$550-\$700 total direct cost per year

Note: 20 litres/Person/Day = Sphere standards equates to say 55 cents to 70 cents per person per year

What are the typical “indirect costs” associated with community water project

Planning and discussion

Internal club fundraising expenses

On site project management (3 – 14 Days)

Associated travel costs

Local customs, clearance and “facilitation” costs

Contingency

Water testing and validation/accreditation

Case Studies – MDG systems and emergency supply

Case 1 Fiji – Savu Savu - Safe Water Kiosk

- Rotary Club of Savu Savu and lower Blue Mountains, Australia
- Rural of population with not potable town water
- School had no treated water and high incidence of WB disease
- Water pollution issues from pigs and feral animals & soil erosion
- Water used for drinking was unfiltered



Case 2 Dhaka - Community Ownership model (Korail Slums)

System:

- 1 units serves approx. 500
- 800 liters/hr production
- Civil structure designed
- 8 person sit-down service area



Sit down water kiosk for 8 people

Case 3 - Philippines - The “mobile water vendor”

- One unit to serve 10 villages within a 25 Km radius
- Local operator moves Skyjuice unit on pushbike
- Sets up unit for village to fill water bottles



Case 4 - Emergency and disaster response scenarios



**Cyclones, Floods, Hurricanes
and Tsunami response**

**Bangladesh
Pakistan (1 & 2)
Oman
Mexico
Peru
Indonesia**

Opportunity to assist with Refugee camps , IDP camps and medium term potable water plants



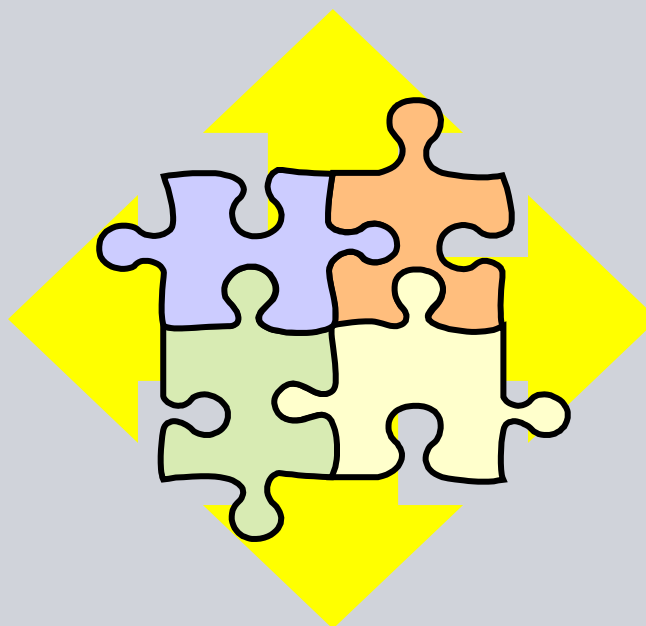
Sri Lanka >150,000 - 4 camps

Pakistan > 10 installations

Case 5 - Potable water for schools, clinics and hospitals - collaborative partnerships



Regional Partners have included:
UNEP, OXFAM, World Vision, W.H.O. ,
Samaritans Purse, Asia Water, Rotary



Over 80 installations:
East Timor
Guatemala
Cambodia
Nepal
Sri Lanka
Philippines
Indonesia – Jakarta





Thank you

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