AUTARCON
SuMeWa|SYSTEM
SolarPV driven - drinking water treatment
Halle B2, Stand B2.170 Q

Intersolar Europe Munich 2012
Conditions in decentralized drinking water treatment

- 900 Million people do not have access to safe water sources
- 82% of those live in rural areas (UNICEF 2010)

Our vision:

Sustainable self-sufficient supply with safe water for off-grid areas
Conditions in decentralized drinking water treatment

“People are concerned about disinfection by products, heavy metals, and trace substances but still today die of cholera”

“Pathogen removal is of most important concern to assure safe drinking water conditions.”

WHO 2010
Presently available solutions to meet MDGs

Low tech solutions
• Cooking
• SoDis
• Chlorination
• …

Technical solutions
• Membranfiltration (MF, UF, RO)
• UV - Radiation
• …
## Comparison of different drinking water treatment technologies

|                          | Microfiltration | Ultrafiltration | UV | Thermal treatment | SuMeWa|SYSTEM |
|--------------------------|-----------------|-----------------|----|------------------|-------|
| **Disinfection efficiency** |                 |                 |    |                  |       |
| Bacteria                 | +               | ++              | ++ | +                | ++    |
| Virus                    | -/+             | +               | ++ | +                | +     |
| Protozoa                 | +               | ++              | -/+| +                | +     |
| **Removal of particulate matter** | Yes | Yes | No | No | Yes |
| **Decoloration**         | -               | +/-             | -  | -/+              | +     |
| **Residual disinfectant**| No              | No              | No | No               | Yes   |
| **Controllability of water quality** | No | No | No | No | Yes |
| **Handling**             | +               | -/+             | -  | ++               | +     |
| **Maintenance cost**     | Medium          | High            | High| Very low         | Low   |
| **Investment cost**      | Medium          | High            | High| Very low         | High  |
| **Consumption of Energy**| Medium          | High            | High| Very high        | Low   |
| **Running costs**        | Medium          | Very high       | Very high | Very high | Low   |

Source: collection of different sources among them WHO 2008, Röske 2006 and own assumptions
Challenges in off grid water supply

1. Continuous supply residual disinfectant (required by WHO/law)
2. Constant energy supply
3. Reliability of water supply system
4. Simplicity in maintenance
5. Water quality control
Our solution – SuMeWa|SYSTEM

1. Highly efficient utilization of solar energy
2. Direct production of disinfectant from ions of source water itself
3. Residual disinfection
4. Online control of water quality
5. Easy to operate and maintain
AUTARCON – Fields of application

- Infrastructure development
- Disaster recovery
- Sustainable tourism
- Rural municipalities
- Development Cooperation
The SuMeWa|SYSTEM core benefits

- Solar energy supply
- No batteries necessary
- No chemicals necessary
- Reliable production of safe and clean water
- Continuous monitoring of water quality
- Online GSM transmission of operational and water quality parameters
- Very low / no running costs
- Simple to maintain
### AUTARCON – Product portfolio

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<th>SAFE</th>
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<td>Reliable disinfection for existing water supply systems and assurance of residual disinfection</td>
<td>Water quality control in storage tanks / cisterns and assurance of residual disinfection</td>
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Chlorine production with SuMeWa|SYSTEM

Reaction in water: \( \text{Cl}_2 + \text{H}_2\text{O} \leftrightarrow \text{HOCl} + \text{H}_3\text{O}^+ + \text{Cl}^- \)
Maintenance

All maintenance steps can be done by technically unskilled personnel.

Maintenance comprises:
- Rinsing of filters
- Rinsing of pump
- Cleansing of electrolytic cell
- Cleansing of PV-modules
- Cleansing of storage tanks
Pilot plant and test facilities – Pentecoste, Brazil

First Systems developed in cooperation with Universidade Federal do Ceará and ISET e.V.
Reference systems

Brazil, Gambia, Pakistan, India, Ghana, Mexico, Germany
AUTARCON – A success story

365 Landmarks in the Land of Ideas

CLEAN TECH MEDIA AWARD

inter solar award 2011

energy AWARD
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Thank you for your kind attention

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SuMeWa|SYSTEM – Technical data

Independent of external energy supply
• Small PV-Modules (~ 120 Wp)

Water Pumping
• up to 70 m over very long distances
• From any available fresh water source

Water treatment
• Coarse Filtration and Microfiltration
• Automated residual disinfection

Water Storage
• Monitoring of water quality and Online transmission