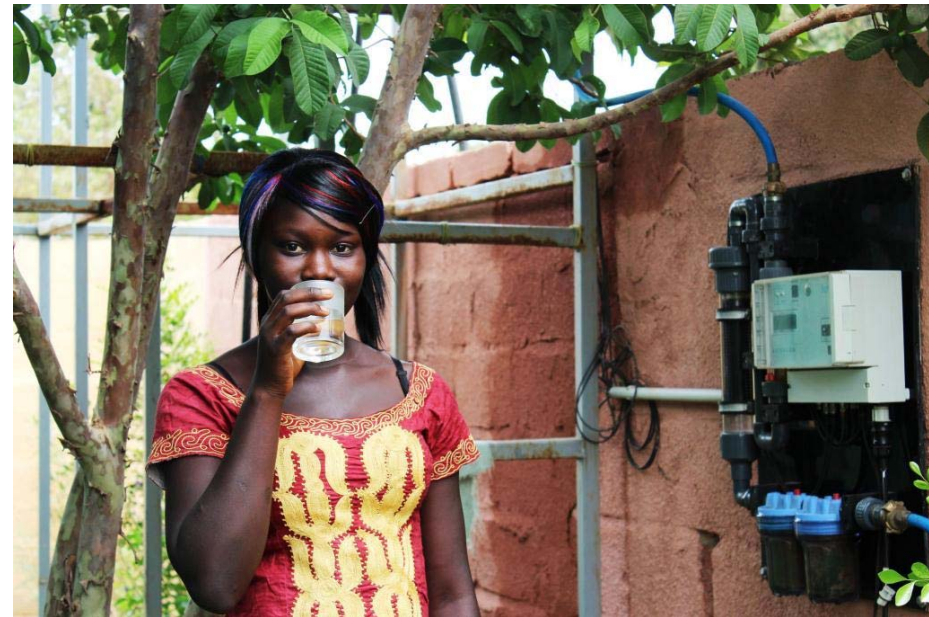

AUTARCON

SuMeWa|SYSTEM

SolarPV driven - drinking water treatment

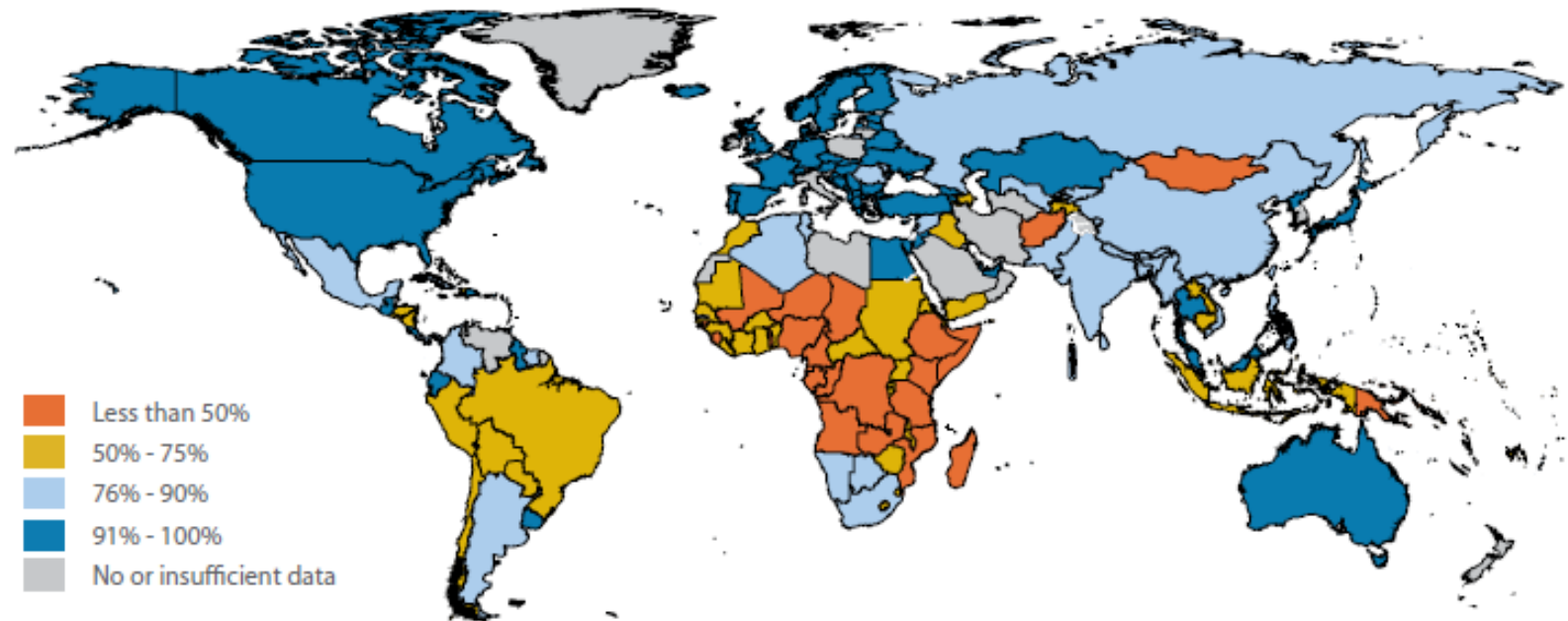
Halle B2, Stand B2.170 Q

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

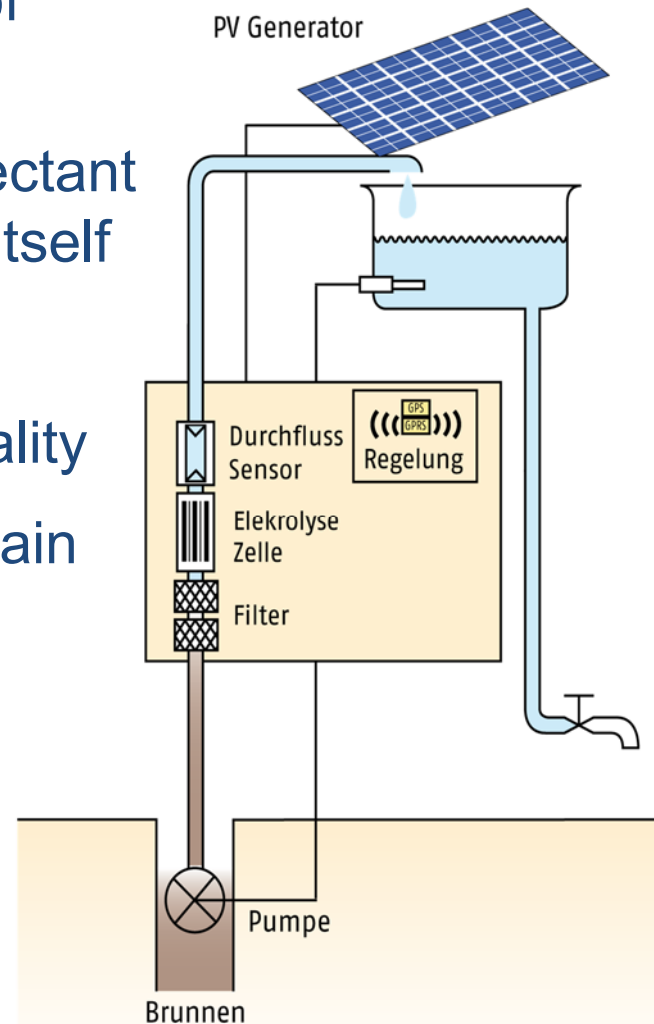
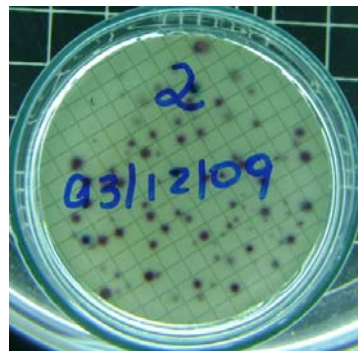
Challenges in off grid water supply

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 screenshot shows the AUTARCON website homepage. At the top left is the logo for 'Deutschland Land der Ideen' with a row of colored dots and the text 'Ausgewählter Ort 2011'. To the right is the 'AUTARCON' logo with the tagline 'Pure. Simple. Solid.' and a world map icon with a 'Choose a language' dropdown. Below the header is a navigation menu with links for 'News', 'Product', 'Areas of application', 'Company', and 'Contact', along with a search bar. The main content area is divided into two columns. The left column features a large image of a water tower in a rural setting, with the text 'Decentralized drinking water supply' above it. Below the image is a 'Welcome to AUTARCON' section with a sub-heading '| Decentralized drinking water treatment with SuMeWa|SYSTEM' and a short paragraph. The right column contains a 'News' section with two items: one dated 29.04.11 about a nomination for the Intersolar AWARD 2011, and another dated 20.04.11 about a visit to Intersolar Europe. Both news items include small images of award banners and '[more]' links.

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

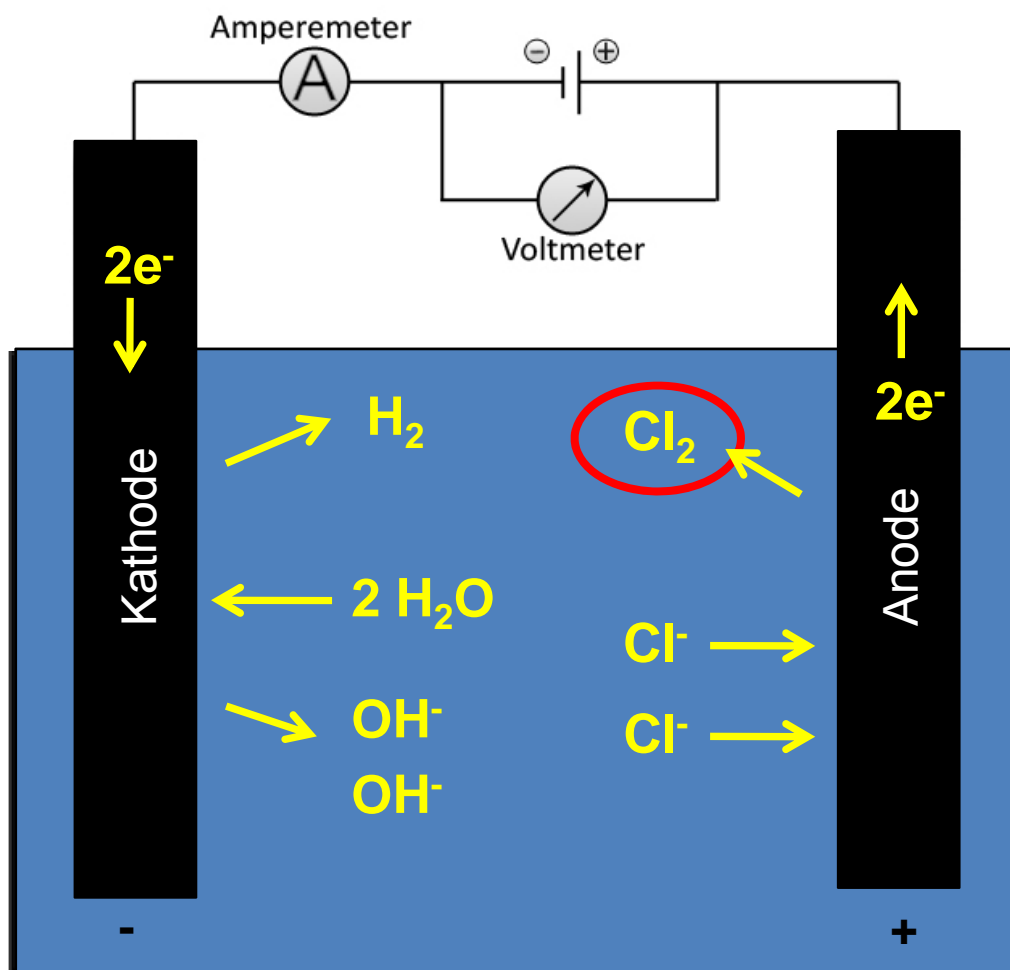


AUTARCON – Product portfolio



| SuMeWa BASIC | SuMeWa SAFE | SuMeWa ADVANCED | SuMeWa COMPLETE |
|--|--|---|--|
| Reliable disinfection for existing water supply systems and assurance of residual disinfection | Water quality control in storage tanks / cisterns and assurance of residual disinfection | Reliable drinking water disinfection for contaminated fresh water sources | Solar powered water treatment for contaminated fresh water sources and online monitoring |

Chlorine production with SuMeWa|SYSTEM



Ersteller: Niko Lang

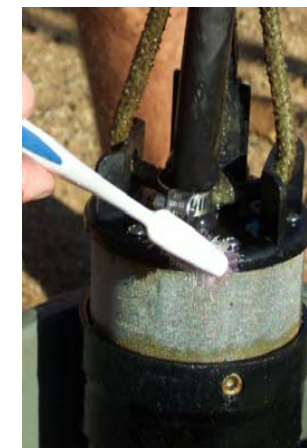


Maintenance

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

Partners



AUTARCON – A success story



365 Landmarks in the Land of Ideas



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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

