The SoWaDis-Project

The Institute for Solar Technologies (SPF) in Rapperswil has developed a solar thermal system to disinfect drinking water. The aim of this technology is to provide fair access to clean drinking water in developing countries using a sustainable and appropriate technology.

The costs of the developed system are comparable to other water disinfection technologies, but in addition it brings along a range of advantages. Within the current project stage SPF is testing first systems in Bangladesh, Mozambique and Tanzania. To make an impact, the wider distribution of the SoWaDis-systems is targeted for the next project phase. It is planned to build water-distribution-points in markets, schools, constructions sites and hospitals. Each distribution unit is run by a local micro-entrepreneur. The production, installation and maintenance of the systems is assigned to a local company.

Overall, the goal of the project it improve the sanitary standard by providing clean drinking water in developing countries. Furthermore, the concept of distribution aims to support local market mechanisms where also the poorest have the chance to participate.
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Facts and Figures

Like in many places also in Mozambique it is mainly the women that are responsible for water collection.

Five million people die worldwide each year due to lack of clean drinking water (WHO, 2008). This number is higher than the one from malaria or aids.

Water does not need to be heated up to the boiling point of 100°C for disinfection. It was shown that 70°C during 5 minutes are enough to inactivate pathogen microorganisms (including bacteria, viruses, protozoa).

The SoWaDis-system is producing 500 liters drinking water per day for an initial investment of 500$. Therefore it is cost competitive to other common water treatment technologies. In addition it brings along a range of advantages:

• SoWaDis is easy to install and very low-maintenance. It works without electricity and supply of materials (no pumps, no supply of chlorine, no replacement of UV-lamps or filters)

• SoWaDis disinfects microbiologically contaminated water by heat. This is one of the safest and most effective ways for water disinfection. Since it is similar to the boiling of water, this method is easily understood and therefore well accepted by its users in developing countries.

• SoWaDis doesn’t depend on the individual’s discipline: the clean water is provided directly by distribution-points.

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Information campaign about water and health.

Project manager Antonio from Helvetas is responsible for the SoWaDis-implementation in Mozambique.

For further information contact
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Technical Functionality

No additional energy, simple operation and very low maintenance are the key-factors of the SoWaDis system.

1. The contaminated water is stored around two meters above ground. The system is gravity driven, therefore operating without a pump using electricity.

2. The contaminated water flows into the heat-exchanger and gets preheated from around 20°C to 65°C.

3. The preheated water flows into the solar collector.

4. In the collector the water is heated up to 82°C. This is the process where the water is thermally disinfected.

5. A thermostatic valve on the collectors outlet opens when 82°C are reached. When the temperature drops below it is closing again.

6. The disinfected water flows through the heat exchanger, cooling down from 82°C to around 35°C and preheating the collectors inlet.

7. Finally the disinfected water flows into the water storage.

Local manufacture of mounting frames for the SoWaDis system.

Solar collector with the tank of untreated water in the background.

Schematic functionality of the SoWaDis system, described in detail in the text below.
Current Status and Outlook

By now a technology has been developed and technically approved in three developing countries. First experiences on social acceptance and implementation-concepts have been gained in these pilot projects.

In a next step it is planned to focus on the distribution of the technology. First it is intended to start with two locations where the concept will be tested. Based on these experiences an international distribution network can be built.

Fernando, manager of the water-grid in Chai Mozambique, installing the water tank.

Vacuum tubes are inserted in the collector by local subcontractor.

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