

SoWaDis (Solar Water Desinfection): Operating principle



1. The contaminated water is stored about two meters above the ground. SoWaDis uses gravity and therefore does not require a pump with electricity for operation.
2. The contaminated water flows into the heat exchanger and is preheated to 65° C.
3. The preheated water flows into the solar collector.
4. The water is heated to over 80° C in the collector. In this process step, the water is effectively thermally disinfected by a suitable combination of temperature and residence time in the collector.
5. A thermostatic valve on the collector outlet flap opens when the target temperature (approx. 85°C) is reached. The valve closes again as soon as the temperature drops below the limit. The valve is operated by the thermal expansion of a component, i.e. without current.
6. The disinfected water flows through the heat exchanger and cools down to about 35° C. The heat is used to preheat the water at the inlet collector (see 2). This has two advantages: After a short cooling time at ambient temperature, the drinking water is available and the entire system becomes smaller and more cost-effective thanks to heat recovery.
7. Finally, the disinfected water flows into the drinking water storage tank.



SoWaDis (Solar Water Desinfection): Specifications

Components	Description
Performance	<p>600 Litre/Day (nominal)</p> <p>The average production varies depending on the solar radiation, installation conditions, usage concept, etc. of a location. The daily average of our plants in northern Tanzania is about 400 l/d. The actual production over the year can be estimated with local climate data.</p> <p>A system can be planned modularly from units connected in parallel in order to achieve higher outputs.</p>
Cost for hardware	CHF 3'500, ex-factory Switzerland
Project cost	<p>CHF 2'500 (approx.)</p> <p>Costs for transport, installation, monitoring, training, WASH workshops and coaching.</p> <p>A "safe water school" project has an average total cost of around CHF 6,000.</p>
Field of application	Microbiologically contaminated water (e.g. pond, river, lake, open spring wells, rainwater, contaminated tap water).
Maintenance	<p>Basically, no maintenance is necessary.</p> <p>Optionally, we recommend cleaning the pipes once a year and cleaning the clean water tanks monthly to prevent bacterial regrowth.</p>
Maximum pressure	1 bar
Pressure at the inlet tank	<p>1.5 m/0.15 bar, the gravity tank is usually mounted about 1.5 m above the inlet of the drinking water tank.</p> <p>Depending on the situation on site, there are different ways of getting the water into the upper tank.</p> <p>At some of our sites we have microbiologically contaminated tap water, whereby the pipe can be connected directly to the tank. At other locations we use a manual or an electric pump to transport the water into the inlet tank.</p>
Lifespan	More than 10 years



Components	Description
Dimensions (in cm)	Packed: 210 x 65 x 100, Installed: 300 x 160 x 150
Weight	160kg, inclusive packaging

Last updated October 2017