Sustainable Power and Innovation Provide Clean Drinking Water and Energy

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In many areas in Kenya, access to clean drinking water is lacking. About 88% of the population must travel long distances to get to the nearest source of clean water or is forced to drink contaminated water. Children in particular suffer from waterborne diseases.

SYSTEMS PROVIDE ENERGY-INDEPENDENT WATER TREATMENT

To try to provide a long-lasting solution for the drinking water needs of people in Kenya and other underdeveloped areas, Swiss-based Trunz Water Systems has created an environmentally friendly and energy-independent mobile water treatment plant.

The self-contained units are compact and can produce clean drinking water—removing viruses and bacteria—from polluted freshwater sources, including wells, rivers, and creeks using an ultrafiltration membrane system. Some systems can also purify brackish water and seawater using a reverse osmosis system, removing salt and chemicals without the need for potentially toxic treatment chemicals.

The treatment units come complete with a borehole pump, solar racks, and an optional wind generator, ready for installation (Figure 1) and are designed to be as low-maintenance as possible by incorporating an automatic backflush system. The system capacity ranges from 7,000 to 50,000 L/d depending on raw water quality.

One of the main benefits of the units is that they use very little energy and they are solar- and wind-powered. With the assistance of a wind turbine, the units can deliver any excess electricity to power lights and computers, or can recharge small appliances.

FROM CONCEPT TO REALITY—REAL PEOPLE BENEFIT

Trunz recently carried out a demonstration project at an orphanage in Diani, Kenya, approximately 35 kilometres south of Mombasa. The facility houses about 22 children and the staff members, all of whom are familiar with the problem of contaminated water. At the orphanage, the staff is charged with caring for the basic needs of the orphans and neglected or abandoned children. Its mission includes improving the children's health, and one of the main ways this is carried out is by providing clean drinking water for their daily needs.

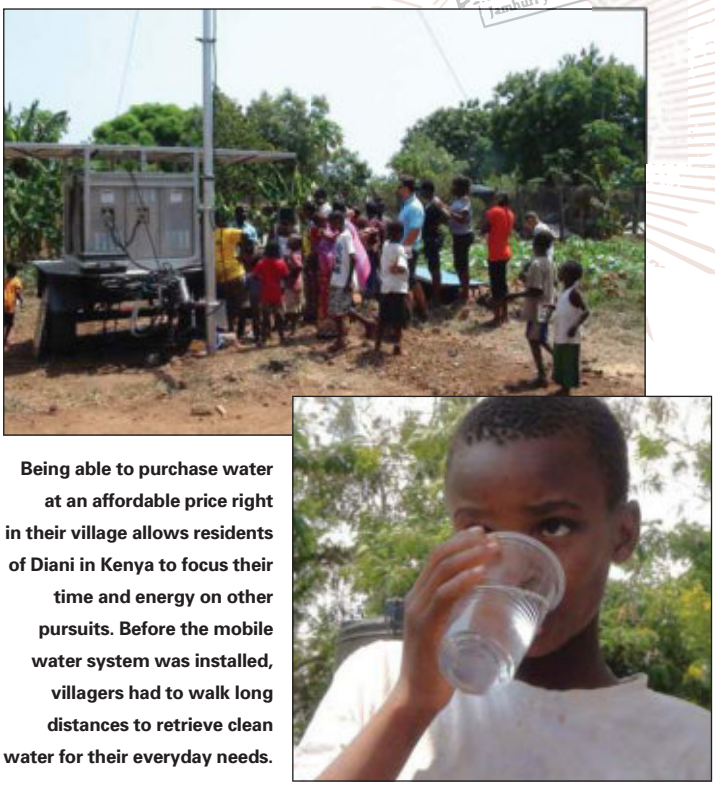
To demonstrate the effectiveness of the units in providing germ-free

Clean drinking water flows from the water trailer that was set up outside an orphanage in Kenya to demonstrate that these systems can independently provide water and energy in virtually any setting.

drinking water, a water trailer equipped with a Trunz Water System 200 was installed at the orphanage. The mobile water treatment plant is mounted on a trailer powered by renewable energy independent of any power source and is run by the solar panels and a wind generator. This plant was able to supply the orphanage with 15,000 L/d of drinking water.

In order to also provide local residents outside the orphanage access to clean drinking water, a small watershop was opened. Residents can buy 1 litre of drinking water for two Kenyan shillings (KES)—approximately $0.01 per litre. This is about ten times cheaper than the current lowest price for water, which is sold in stores in 20-litre tanks. One fourth of the watershop's earnings (0.5 KES per litre) is being reinvested in the children's education, for example, for school fees. The plant not only generates enough energy to operate the water system, but it also provides enough extra energy to illuminate the security lights in the children's village.

—Ralph Hangartner is chief executive officer, co-founder, and co-owner of Trunz Water Systems. He has more than six years in the field of decentralized drinking water and solar energy supply and has worked in the environmental industry for more than 20 years. Since the company's inception, he has led a team of engineers to develop, distribute, and install independent water treatment and energy systems. He may be contacted at water@trunz.ch.



Being able to purchase water at an affordable price right in their village allows residents of Diani in Kenya to focus their time and energy on other pursuits. Before the mobile water system was installed, villagers had to walk long distances to retrieve clean water for their everyday needs.

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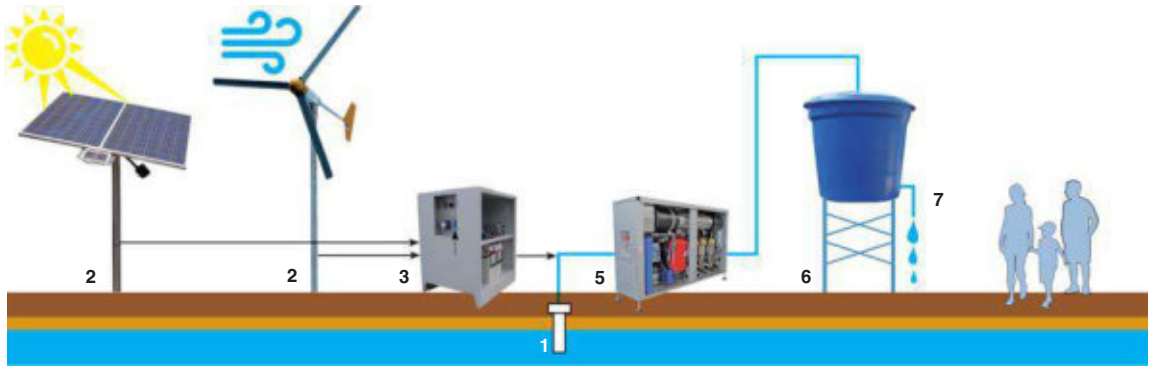
FIGURE 1 Decentralized drinking water treatment solution powered by renewable energy



1—Water source and feed pump
2—Photovoltaic solar power plant with wind generator
3—Solar power center
4—Access to power for additional devices
5—Water treatment or desalination system
6—Water tank
7—Drinking water

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