



Mobile MaxPure solar filters bring pure water to refugees

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The deployment of MMP units in Darfur Refugee Camps has brought clean water and power to displaced people, helping to keep them healthy

[Image Gallery](#) (12 images)

Recently, we reported on Marines and their deployment of [GREENS solar-power](#) for technological devices on the battlefield. Soon after publishing that article, Gizmag was contacted by World Water and Solar Technologies (WWST) and told us about the company's placement of solar-powered water purification units throughout the world, but in particular, in war-torn Darfur, Sudan. Working with the Humanitarian International Services Group (HISG), the company has installed two high-volume Mobile Max Pure (MMP) water filters that use the sun for their power. Each unit can generate up to 3.5kW of solar electric power and provide 30,000 gallons of clean drinking water for the many thousands of civilians living in displaced persons camps. Each filter was placed in a carefully selected location where it could do the most good.

[WWST](#) is a privately-held company, the only one of its kind that delivers potable water powered solely by the sun. It has a number of models and variations that allow units to create solar energy to pump and purify water, run lights, power tools, operate command center equipment and satellite phones. The company's Vice President of Marketing and Project Management, Melissa Burns, says the company has focused primarily on the environmental nexus – where water and solar power meet.

How it works

The physical requirements of the MMP are basic - a water source (canal or well), open space for sunlight to hit the solar panels, water storage for the treated water, and security. The system uses solar panels to generate electricity to power the pump that draws source water through a series of filters and ultraviolet lights and into a holding tank for distribution. The end result is potable (drinking) water – all done without fossil fuels or chlorine. Each system is designed to last around 25 years and can be [deployed](#) in approximately 30 minutes, making it ideal for emergency situations, like Hurricane Katrina.

Burns says that WWST is dedicated to providing disaster, humanitarian and development aid through providing clean water and power – two elements often lacking in places of war and poverty.

Of note, WWST, headquartered at the Technology Center of Princeton in New Jersey, has deployed dozens of the units in the U.S., Iraq, the Philippines, Sri Lanka, Ethiopia, Darfur, Haiti and more. The company's equipment has provided potable water to U.S. Marines and residents in the Euphrates and Tigris River Valleys in Iraq to the displaced people of Darfur, and first responders to Katrina disaster in Mississippi.

For less than 1c per gallon (in the first year, less in successive years) WWST units can provide up to 30,000 gallons per day of drinking water, and also offers enhancements for desalination and global satellite communications.

The solar-powered MMP filtration unit can be customized to create potable water from polluted freshwater, brackish water or seawater sources – even if water conditions change or the system needs to be redeployed to a new location. Additionally, each MMP can operate independently, in series or in parallel. This means the system can continue to operate in the event of maintenance or unforeseen stoppage.

MMP has a three-stage filtration system capable of pumping and purifying up to 30,000 gallons of freshwater, 5,000 gallons of brackish water, or 3,000 gallons of seawater per day.

Burns says that over the course of five years, each system produces potable water for fractions of a penny per gallon which is much more cost effective and more reliable than diesel purification systems or bottled water delivery.

Each [MMP](#) serves as a three-way utility: electricity, water and communications. Burns says that by providing a reliable source of power, MMP can operate a variety of equipment, including the water purification plant, communications modules, tools, sensitive electronics and more.

One of the major benefits of this chemical-free filtration system is its effectiveness in reducing water-borne diseases resulting in a significant decrease in the number of people suffering from water-related illnesses (chlorination devices can be installed if required).

Burns says that military shipments of water and fuel account for well over 75 percent of all convoys, which increases costs and the dangers associated with roadside bombings, etc. By having a solar-powered water purification plant located where needed, this removes much of the dangers for our military personnel.

Most times, the MMPs are left behind for the indigenous population to utilize when the military deployments leave. This enables crop irrigation for increased food security and population health and also provides increased potential for local employment for system maintenance, security, etc.

Maintenance on an MMP unit costs around US\$5,000 per year, which is the unit's only expense because of its total reliance on the solar power for pumping, purification and power (if enabled).

Darfur deployment

Six years of civil war in Darfur have forced more than 2.7 million people from their homes. Many of these people have migrated into crowded Internally Displaced Person (IDP) camps which has over-extended the area's meager water supply. The World Health Organization estimates that 80 percent of all disease is related to inadequate or unsafe water.

Even Darfur's rainy season brings no relief because with so many people living in such cramped conditions, the water does not stay clean for long, and with no clean water water choices, disease spreads quickly through entire villages.

Burns says the MMP unit placed in Nyala, South Darfur, had an immediate impact for the 150,000 people living in IDP camps surrounding the town. The town had been drawing water from a polluted source, but the filter system provided clean water that was so instrumental in curbing recent cholera outbreaks that the local government has taken ownership of the project, and is taking responsibility for the long-term use and success of the filters.

Fallujah District, Iraq

Potable (drinking) water is, arguably, Iraq's most precious and scarce resource, says Burns. Water flowing from a newly installed solar powered water purification units means the difference between health and disease for thousands of Iraqis in the Fallujah District of Al Anbar Province.

Most people receive drinking water from wells or directly from the Euphrates River, which is contaminated. Local authorities say the MMPs will be crucial in preventing diseases like cholera and bilharzia (a parasitic disease that causes diarrhea) that strike vulnerable population groups, especially children. In Fallujah, the system does not require a water distribution network as it is designed as a storage tank whereby people come to the site for water drawn directly from the unit. Burns says some other sites are considering means by which clean water can be delivered to homes via tankers thus extending the reach of this potable water source.

The units – costing around \$1.3 million in equipment and shipping – were donated anonymously following an ePRT Fallujah's Weekly Report article citing the shortage of potable water in the area.

To date, seven units have been installed by the ePRT and Marines of Regimental Combat Team One throughout the Fallujah District. The goal is to install another five units in the next few months.