



■ WOTA BOX and shower

A PORTABLE WATER RECYCLING SYSTEM

A small venture company in Japan has succeeded in automating water treatment technology to purify used water using unique water quality sensors and AI technology, which will help solve water shortages and a range of other issues affecting the planet.

UMEZAWA AKIRA

Water is an indispensable resource for human life. However, by 2050, the world's population is expected to top 9.7 billion, 40 percent of whom will suffer from severe water shortages. One technology that may save this critical situation is the WOTA BOX, developed by a Japanese venture company.

The WOTA BOX is a water recycling system with six purifying filters which function to allow water to be reused many times. Shaped like a box, the latest model (as of February 2021) is 82 cm wide, 45 cm deep and 93.3 cm high. Weighing 82 kilograms, it is fitted with wheels so is easy to transport,

making it a truly portable device. Using the company's unique water quality sensors and AI deep learning, safe and clean water is recycled automatically. When a special shower kit is connected, the recycled water can be used to take showers anytime, anywhere. The system can be connected

to a dedicated hot water unit to supply hot water from 37 to 50 degrees Celsius.

The WOTA BOX was developed by WOTA CORP., a venture company started in 2014 by students from the University of Tokyo. Since its founding, the company has consistently developed equipment and systems to solve social issues related to water. Ichihashi Shotaro, Executive Officer and Chief Community Officer, explains the features of this water recycling system.

"Essentially, we have developed a compact system that replaces the equipment of a large water treatment plant. An autonomous decentralized water circulation system uses sensors and AI to analyze the quality of used water, and based on the results, quickly and automatically determines the type of filter to be used for purification, the water pressure to be applied to the filter, and the chlorine or ultraviolet sterilization to be used. We succeeded in making a compact device equipped with such a system. This water quality control technology allows 98 percent of wastewater to be reused, and the water to be purified of contaminants such as sand, dust, odors, bacteria and viruses to a level that meets the water quality



■ WOTA BOX

standards for public bathrooms set by the government.”

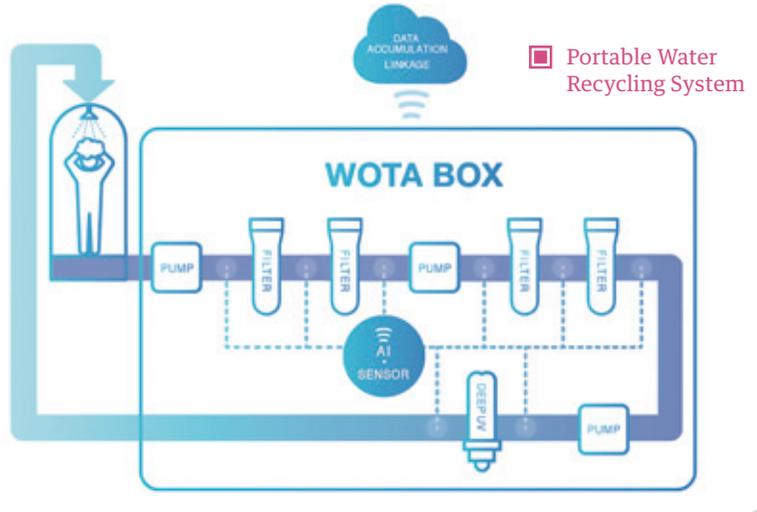
The data collected from the sensors on water flow rate, nature of impurities, and other aspects is sent to the server through the network and AI learns from it. The results are then fed back to each device, enhancing the efficiency of water treatment. In other words, the more it is used, the more it accumulates performance data and the better it performs.

Normally, one person needs around 50 liters of water to take a shower. The WOTA BOX can use water 50 times more efficiently, reducing the amount of water needed to take a shower to a mere one liter per person. At the prototype stage, it was initially envisaged that the system would be used mainly in leisure settings such as camping grounds and sporting events. However, since the July 2018 Western Japan Heavy Rains it has come to be used in many disaster areas. To date, more than 20,000 people have used the WOTA BOX to take showers at evacuation centers set up when disasters have occurred in various parts of Japan.

“The huge typhoon that hit the Japanese archipelago in September 2019 caused rivers to overflow in Nagano City, about an hour and 40 minutes from Tokyo by bullet train, and other areas in Nagano Prefecture, severely damaging water treatment facilities and forcing some 20,000 residents to live in evacuation centers for up to two months. We brought in fourteen WOTA boxes to help evacuees with their bathing needs, and received a great deal of positive feedback. One person, for example, commented



■ WOTA BOX + Outdoor Shower Kit



■ Portable Water Recycling System

how much they had appreciated being able to take a shower near the evacuation center as a leg disability had meant they had not been able to get to the bathing facility, while another remarked that being able to spend some time alone in the shower room had made them feel calmer. We were happy we were able to make a difference.

Japan’s water supply facilities, developed rapidly during the period of high economic growth, are now deteriorating and the need for a major upgrade is looming. Ichihashi envisions two approaches to this issue.

“The first is to create autonomous decentralized water circulation systems and promote their widespread use. Collecting rainwater in homes and offices and circulating it using a WOTA device eliminates the need for water pipes to be laid from large treatment plants

to individual homes. The second is to reduce the operation and management costs of water treatment plants. Automating the work performed by technicians through the use of sensors and AI technology leads to substantial cost reductions. I’d like to see our technology used to help solve the problem of water shortages both in Japan and around the world.”

The widespread use of this technology has the potential to solve problems associated with water shortages across the globe. 🇯🇵

■ A flood-damaged town

