

Water bottle for bike collects moisture from the air

November 18 2014, by Nancy Owano



Kristof Retezár, an Austrian designer, has come up with Fontus, which was designed as a self-filling water bottle for your bicycle. This device collects the moisture from the air, condenses it and stores it as safe drinking water. Powered by solar cells, the device harvests up to 0.5 liters in an hour's worth of cycling when under the right climate conditions.

The invention could be useful for cyclists on long tours, relieved of the hassle in looking for nearby stores or rivers or gas stations if one had a [bottle](#) that automatically fills itself up. "My goal was to create a small, compact and self-sufficient [device](#) able to absorb [humid air](#), separate water molecules from [air molecules](#) and store water in liquid form in a bottle," said Retezár.

But how does it actually work? The device has a small cooler installed in its center, the Peltier Element. The cooler is divided in two. "When powered by electricity, the upper side cools down and the bottom side gets hot. The more you cool the hot side down, the colder the upper side will get. Consequently, these two sides are separated and isolated from each other. The air enters the bottom chamber at a high speed when moving forward with the bike and cools the hot side down. Moreover, when the air enters the upper chamber it is stopped by little walls perforated non-linearly, reducing its speed in order to give the air the needed time to lose its [water molecules](#)."

Droplets flow through a pipe into a bottle. The bottle can be turned to a vertical position; every kind of PET 0.5l bottle fits.

Retezár needed to test his concept and he did so by simulating different climatic conditions in his bathroom. He modified air temperature and humidity. Over 30 experiments later, he was able to achieve a constant drop-flow of one drop of condensed water per minute. "After developing a functioning inner system, I designed a compact and practical hull which can be easily attached to a bicycle, integrates the [water bottle](#) and can be comfortably handled."

Along with device potential as a bike accessory for longer trips he might also be on to something that could support people living in regions of the world where easy access to water is not available and where air humidity is high. In discussing his project, he said," According to UN statistics,

more than 2 billion people in more than 40 countries live in regions with [water scarcity](#). In 2030, 47 percent of the world's population will be living in areas of high water stress. Water scarcity may be the most underestimated resource issue facing the world today. Every measure to ease this upcoming crisis is a welcome one."



The Christian Science Monitor noted that there are presently some technical hurdles limiting its usefulness. Fontus produces only about a drop of water per minute, which might be hard for cycling on a hot and humid day. It's also a challenge in [cities](#), where [air](#) pollution would render the [water](#) undrinkable. Supporters who like his idea hope that he will find success in order to further refine and develop the device.

More information: www.jamesdysonaward.org/projects/fontus-2/

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