

Extracting water from air, Israeli firm looks to quench global thirst

Water-Gen, controlled by Russian-Israeli billionaire Michael Mirilashvili, eyes mass assembly of water-producing units by year end



[1]

Water-Gen Ltd., an Israeli company whose technology captures humidity in order to make drinking water out of air, is not likely to experience the cash-flow squeeze that afflicts many fast-growing companies.

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That's because Russian-Israeli entrepreneur and billionaire Michael Mirilashvili, who is also the vice president of the World Jewish Congress, bought control of the company last summer, and because it has high-profile advocates. Prime Minister Benjamin Netanyahu mentioned it in an interview with CBS's "60 Minutes" about Israel's high-tech prowess. At the AIPAC conference last month, Harvard Law professor and Israel advocate Alan Dershowitz took the stage to showcase its technology^[4]. In September, the company presented its solution^[5] at the United Nations.

Not bad for a firm that employs some 30 people, mainly engineers, in the central Israeli city of Rishon Lezion. It was set up in 2010 by entrepreneur Arye Kohavi, a former combat reconnaissance company commander in the Israeli Army who previously set up a firm that developed e-learning software.

"Whatever it needs, we will finance," said Maxim Pasik, the executive chairman of Water-Gen, in an interview at the Herzliya offices of Beer Itzhak Energy Ltd, when asked about financing options for the firm's growth. "Water-Gen's potential is endless. Water from air is the next source of water for the world." Beer Itzhak Energy is the unit of Mirilashvili's business that bought a 70 percent stake in Water-Gen.



[6]

Water-Gen's executive chairman Maxim Pasik with Prof. Alan Dershowitz last month in the Water-Gen booth in the AIPAC village (Courtesy: Water-Gen)

Water covers 70 percent of Earth, but only three percent of the world's water is fresh, and two-thirds of that is unavailable for use, according to the World Wide Fund for Nature. As a result,

“some 1.1 billion people worldwide lack access^[7] to water and a total of 2.7 billion find water scarce for at least one month of the year,” the WWF says. At the current consumption rate, by 2025, two-thirds of the world’s population may face water shortages, the WWF estimates.

Roughly 1.2 billion people^[8] — almost one-fifth of the world’s population — live in areas of water scarcity, according to the United Nations Department of Economic and Social Affairs.

Water from air, not from a stone

After the biblical exodus from Egypt, Moses made water for the people of Israel in the desert by striking a stone. Now Water-Gen is striking water from air.

The technology, developed by Kohavi with the help of engineers, uses a series of filters to purify the air. After the air is sucked in and chilled to extract its humidity, the water that forms is treated and transformed into clean drinking water. The technology uses a plastic heat exchanger rather than an aluminum one, which helps reduce costs; it also includes a proprietary software that operates the devices.

The atmospheric water generators developed by Water-Gen allow the production of 4 liters of drinking water (one gallon) using 1 Kilowatt of energy, Pasik said.

Other atmospheric water generating devices^[9], by comparison, consume three to four times more energy, or effectively three to four times less water per energy unit^[10], he said. This makes Water-Gen cheaper than similar solutions offered by other companies. The price of the water depends on the price of electricity.



[11]

Water-Gen’s large scale water generator (Water Gen)

Water-Gen’s water is still more expensive than desalinated water, Pasik admitted, but is the best and cheapest alternative for when desalinated water cannot be used because of bad infrastructure. For developed markets, Pasik said, the Water-Gen solution is much cheaper than

mineral and purified water in bottles, and avoids the use of plastic bottles which are an environmental hazard.

“If pipes are damaged, you cannot drink the water because of pollution. Underdeveloped countries have a lot of problems with their water infrastructure. In developed countries, like in Michigan, California and Illinois, the pipes are very old,” Pasik said. “In the US the infrastructure definitely will be changed, but it is a matter of time. In the meantime, we can provide the alternative solution for drinking water. People may shower with pipe water, but can drink water from our products.”

The company’s devices come in three sizes: industrial, medium and one for home or office use. The more humid the environment, the more water can be produced, said Pasik.

So, while the smaller home units can supply an average of 15 liters of drinking water a day, in India, because of the high humidity, the same unit can make 30 liters of water. The medium-sized device, producing 450 liters a day, is targeted at hospitals and schools, while the larger units can produce 3,000 liters (both amounts can also be doubled in India). The bigger plants can also be linked to one another and feed into existing water grids, supplying some 25 million people if needed, Pasik said.



[12]

People lining up for water in an informal settlement outside of Johannesburg, South Africa (Courtesy)

The company has also developed a battery-operated solution that can make drinking water from air in areas without electricity. Using a reverse osmosis process for filtration and

purification, the device has a water purification capacity of 1,200 liters a day, so it can serve villages or areas that need water in emergency or rescue situations.

“Water-Gen has a significant cash repository which may allow for expedited expansion and growth,” said Tel Aviv-based Zirra.com Ltd., in a report on the company, adding that the company’s solution meets a “clear need of an audience which is seeking higher performance alternatives.” Zirra is a research firm that analyzes private companies using artificial intelligence and machine learning technologies.

Even so, Zirra said, distribution of Water-Gen’s units will require “a large scale logistic operation which could weigh heavily on the company’s cost structure.”

A shift in strategy

Water-Gen is currently setting up a pilot project in Miami-Dade County, Florida, Pasik said. In March this year, residents of the county were told to boil their tap water before using it after a minute-long power outage at North Miami Beach’s Norwood Water Treatment Plant may have caused contamination.

Pasik said there is a lot of interest from the US federal government about its products as well. Arab countries are interested too, he said, declining to elaborate further.

When Mirilashvili bought his stake in Water-Gen the company was focused on creating water-purifying units for armies globally. “We changed that strategy. We are gearing our devices for civilians where the need is huge,” Pasik said. “We plan mass production by end 2017.”

The software and the plastic heat exchanger — which are in essence the brain of the product — will be manufactured in Israel, and the company is planning to set up joint ventures with local partners in countries around the world to produce its water making machines.

“Our partners will be federal and state governments, emergency organizations worldwide, together with local partners,” Pasik said. Pricing will differ per model, he said, preferring not to give a price indication for the products.

At the end of March, Water-Gen signed accords^[13] in India and Vietnam, two countries that have faced water shortages. The deal in India was with the Asian giant’s second-largest solar company to produce purified water for remote villages in the country. The accord in Vietnam is with the Hanoi government to set up water generators in the Vietnamese capital.



[14]

An Indian woman and her daughter carry a bucket of water in the streets of Pushkar Rajasthan (Liron Almog/Flash90)

Water-Gen will also continue to work on products suitable for militaries, and has developed a 12-kilogram portable water purifier that works with a standard army battery to provide potable water from any local, non-saline source, with the capability of coping with biological and chemical contaminants, Pasik said. The device has a water capacity of 58-63 gallons of water per battery.

On the hunt for game changers

Born in Kulashi, Georgia, in 1960, Miralashvili studied at St. Petersburg Medical School in Russia and graduated as a pediatrician in 1983. But he didn't work in the profession and instead joined the family business, whose interests spanned real estate projects and casinos. After immigrating to Israel in 2009, Miralashvili is now a dual citizen of Israel and Russia and his global business interests span real estate, casinos, high tech, diamond and gold mines, healthcare and media companies.

After Mirilashvili's father was kidnapped in 2000 and later released by the kidnappers, Mirilashvili was jailed by a Leningrad District Military Court for the abduction of those responsible for the kidnapping. But Mirilashvili, who denied any involvement in the affair, contested the charge, and turned to the European Court of Human Rights in France. He won the case and was subsequently released.

Besides overseeing his business empire, Mirilashvili has also devoted his time to a number of philanthropic activities for Jewish causes around the world and in Israel and is active in promoting human rights, according to his biography on the World Jewish Congress website. He has also in the past served as the chairman of ZAKA, a voluntary emergency response program in Israel.

In 2013 Mirilashvili was ranked the sixth-richest ^[15]Israeli by the local financial website TheMarker, with a net worth of \$2.5 billion-\$3 billion. His business interests in Israel include the Kitaim venture capital fund, Beer Itzhak Energy and the Hoshen Argaman diamond firm.



[16]

Water-Gen's Spring unit for soldiers in the field (Courtesy)

Water-Gen is one of the two investments of the 56-year-old Mirilashvili in Israel, Pasik said.

Beer Itzhak Energy has also invested in the Israeli startup Vertical Fields^[17], which designs and builds modular vertical gardens and fields for walls of buildings and highways.

The billionaire's companies are doing due diligence on some six other firms in Israel, Pasik said, for investment purposes.

"We are looking to invest in companies that have the potential to become game changers," Pasik said. "Water-Gen is a game changer."

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