

Okay, Israel, What Have You Done For Us Lately?

by Hugh Fitzgerald



Here's what:

#1. Making Water From Air

"Israeli startup Watergen, which has developed a technology to make water from air, has been named winner of the Energy Efficiency Product of the Year in the 2020 Smart Home Mark of Excellence Awards at CES in Las Vegas for its GENNY product.

"The annual award, presented during CES by the Consumer Technology Association (CTA), recognizes the industry's top smart home innovations. The GENNY was also awarded a CES Best of Innovation Award in 2019.

"Genny is a "water-from-air" system for homes or offices. Use of the system does away with the need for bottled water, helping cut back on plastic use, the firm said in a statement announcing the win.

"Because GENNY creates water from air, which is an unending resource, the liquid is always available on demand, the company said. In addition, the water produced by the machine is of higher quality than that which runs through the filtration systems that are attached to municipal water lines, and the product also eliminates concerns of corroded water pipes that could lead to higher-than-normal levels of lead in drinking water, the statement said.

“Watergen’s GENNY also works as a home air purifier, circulating clean air back into the room as part of the water generation process, the company said.

“Founded in 2009 by Arye Kohavi, Watergen uses its patented GENius heat-exchange technology to create the drinking water.

“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 proprietary software that operates the devices.”

#2. A Breakthrough In Laser Defense

“Israel’s Defense Ministry announced on January 8 that a breakthrough has been made in using laser beams to thwart aerial attacks.

“According to Israel’s Channel 13, the technological development will enable the long-range targeting and stabilization of laser beams, allowing them to intercept targets at great distances.

“Dudi Auster of the Optitronics Department at the Defense Ministry said, ‘We can finally arrive at an effective laser weapons system that can cut through the iron of rockets and missiles from kilometers away.’

“The system will be tested as early as the second half of 2020 and will then be deployed near the southern border with the Gaza Strip to complement the Iron Dome.

“It was developed by the Defense Ministry in collaboration with Israeli companies Rafael Advanced Defense Systems and Elbit Systems.

“The laser system will cost a great deal less per interception than Iron Dome and is capable of intercepting targets as small as drones and as large as precision missiles.

“Brig. Gen. Yaniv Rotem, head of research and development at the Defense Ministry’s Administration for the Development of Weapons and Technological Infrastructure, said, ‘We are entering a new era of energy warfare in the air, land and sea.’

“‘R and D investments made in recent years place Israel among the leading countries in the field of powerful lasers,’ he added. ‘It will be a force multiplier for the IDF’s defense capabilities, whether it is air defense, border protection or the IDF’s maneuvering capabilities.’

“‘In the future, we would also like to see it airborne on aircraft and even use it as an offensive weapon,’ Rotem said.

“Defense Minister Naftali Bennett commented, ‘The Israeli brain continues to lead to breakthrough innovations. The laser project will make our defense system more deadly, powerful, and advanced.’

“‘This is a significant advance in strengthening the security of the State of Israel,’ he added. ‘Alongside the existing weapons of war, we have added a laser sword against our enemies in the north and south.’

“‘We are moving forward with great momentum, and the message is clear: Israel has tremendous offensive and defensive capabilities,’ Bennett said. ‘Israel’s enemies are better off not testing our patience and capabilities.’

And just a dozen more, abridged for easy reading:

#3. OrCam

"The Jerusalem-based start-up, founded in 2010 by the team behind Mobileye, is leading a revolution for the blind and visually impaired. The company's artificial intelligence wearable devices, equipped with high-quality cameras, seek to change the lives of many by empowering them to read text, recognize faces and more."

#4. ReWalk

"Developed by quadriplegic Israeli entrepreneur Dr. Amit Goffer, ReWalk is a wearable robotic exoskeleton enabling paralyzed individuals with spinal cord injuries to stand and walk again. Providing powered hip and knee motion to users, the company's technology is the first exoskeleton device to receive FDA clearance for personal and rehabilitation use in the United States. Earlier this year, the exoskeleton helped paralyzed veteran Terry Hannigan Vereline complete the New York City Marathon."

#5. Iron Dome

"The Iron Dome air defense system, which first went into production in 2011, has changed and saved the lives of countless Israeli residents under rocket fire. Developed by Rafael Advanced Defense Systems and Israel Aerospace Industries, the Iron Dome intercepted over 700 rockets during 2014's Operation Protective Edge alone. In February 2019, the United States Army purchased two Iron Dome batteries from Rafael to protect troops against aerial threats."

#6. Drone Dome

"Rafael is also the company that has come up with the Drone Dome system, first displayed in 2016, is able to neutralize hostile drones operated by terrorists and criminals. The anti-drone technology was deployed in December 2018 at London's Gatwick Airport by the British Army after unmanned aerial vehicles caused the UK's second-busiest airport to completely cease operations for almost 36 hours."

#7. StemRad

"As the United States turns its attention to advancing space exploration, a radiation protection vest developed by Tel Aviv-based StemRad could play a key role. Founded in 2011 by Dr. Oren Milstein and Daniel Levitt, the AstroRad vest offers personal protective equipment for astronauts to wear beyond low-Earth orbit, mitigating space radiation exposure outside the Earth's magnetosphere. Developed in partnership with the Israel Space Agency and Lockheed Martin, the vest is currently being tested by NASA prior to the launch of manned deep-space missions."

#8. 3D printed heart

Researchers at Tel Aviv University grabbed the attention of the medical world earlier this year when they "printed" the world's first 3D vascularized, engineered heart. The development, using a patient's own cells and biological materials, was hailed as a breakthrough for future engineering of personalized tissue and organ replacement. Within a decade, the researchers hope, organ printers will be located in hospitals worldwide.

#9. Zebra Medical Vision

As the mammoth global healthcare market rapidly embraces innovation, Shefayim-based healthcare start-up Zebra Medical Vision's suite of diagnostic solutions is transforming the world of triage. The company's technology has received four FDA approvals to date, using deep-learning and artificial intelligence to automatically identify medical conditions from patient scans, quickly notifying radiologists and enabling them to both effectively address and prioritize urgent cases.

#10 Revolutionary Antiviral Reusable Facemasks

"As the Wuhan coronavirus outbreak continues to spread, two Israeli companies are finalizing development of revolutionary antiviral reusable facemasks.

"'Israel has technologies that can support controlling this epidemic,' says Liat Goldhammer-Steinberg, CTO of Sonovia in Ramat Gan.

"More than 400 people are reported dead from complications of Wuhan coronavirus, dubbed 2019-nCoV.

"The virus is spread by air and direct contact. The World Health Organization reports approximately 17,00 cases of infection since December 31. Most of the cases are in China. A few have been confirmed in 15 additional countries.

"Because there is no vaccine or treatment for 2019-nCoV, personal protective equipment is an important way to combat the transmission of the virus and avoid a pandemic.

"Disposable facemasks cannot block all pathogens and do not kill them. A used and discarded mask can even become a vector for disease as the pathogens multiply in its fibers.

"That's why washable, reusable masks with anti-pathogen properties could provide a potent prevention tool against the 2019-nCoV and other coronaviruses that have evolved into more severe illnesses, such as SARS and MERS.

"Sonovia's ultrasonic fabric-finishing technology, invented by two Bar-Ilan University chemistry professors, mechanically infuses antiviral, antimicrobial zinc and copper oxide nanoparticles into textiles for facemasks and other protective products.

"Sonovia recently received a European Commission Horizon 2020 grant and the technology has won several prizes in China.

11. BioBee – harmless pest control

"With its headquarters located in a kibbutz in northern Israel's Beit Shean Valley, BioBee is now a multinational company that focuses on biological pest control. Perfecting its biotechnology since 1983 under the guidance of bug lover Akiva Falk, it aims to reduce the use of pesticides in agriculture, using the natural power of insects to make crops safer to eat and their habitat a more secure place to be.

"BioBee runs three projects simultaneously: breeding bumblebees for pollination in greenhouses, using 'friendly insects' like mites, wasps and beetles to attack harmful pests, and reducing the number of harmful insects by genetically modifying their ability to reproduce."

12. Waze – a navigation device with a twist

"When Ehud Shabati first tried using a GPS, he was simultaneously delighted and

disappointed.

“The engineer – a notoriously bad navigator – made it from A to B, but his journey was hindered by traffic and roadworks.

“He looked into other GPS systems and found they were all effective at guiding their users, even in remote locations, but they fell short in the same way: they couldn’t provide traffic information in real time.

“So, Shabati took matters into his own hands. The engineer mapped out his native Israel, first on his own and later with co-founders Uri Levine and Amir Shinar, aiming to make a community-based navigation device that provided road reports on the go.

“Soon, the engineers had built a community of thousands of drivers on Waze, using crowdsourcing to collect incident reports such as accidents and roadworks.