

COMPANY  
**Water-Gen**  
water-gen.com

LOCATION  
**Rishon LeZion, Israel**

SOFTWARE  
**Autodesk® Product Design Suite Ultimate**

# The wonder of water

## Water-Gen is creating water supply solutions designed to sustain life in austere environments

Our engineers have always been of the opinion that Autodesk offers an outstanding CAD solution.

—**Arye Kohavi**  
Chairman and Co-CEO



Spring in operational setting filtering water from available sources. © Water-Gen

The water shortage in the world has reached such staggering heights in the last couple of years that it has become a water crisis. According to a statement published by the WHO and UNICEF in 2012, more than 1.8 billion people lack access to clean drinking water. This statistic does not even include the thousands of people who lose access to drinking water in the event of a natural disaster – causing water sources to be contaminated or altogether destroyed. The need to find sustainable solutions to this problem has never been as critical. Engineers and innovators around the world are, therefore, constantly searching for and finding new ways to combat this problem. The team at Water-Gen has created water supply solutions that lead the way in this field.

### World leaders in water supply

For people who have free access to it all the time, water is a profoundly undervalued commodity. For those who find themselves in austere environments – due to remote locations, draught, poverty or natural disasters – clean water is not only valued, it's integral to existence. Water-Gen has made it their business to design and produce water supply solutions for sectors working in areas where local water sources are scarce or unsafe to use. They've also designed their solutions in such a way that it's easy to deploy in areas where water relief is desperately needed. Arye Kohavi, Chairman and

Co-CEO at Water-Gen explains, "Our solutions are designed to operate particularly well in remote environments where resources, including energy, are scarce. With that in mind, our main objective is to design water supply solutions with a particularly high energy efficiency level." Water-Gen has achieved tremendous success in supplying these alternative solutions, focusing specifically on the following two fields of innovation: atmospheric water generation (generating water from ambient air humidity) and small water purification units (purifying water from available sources by means of batteries or other portable energy sources).

The innovative development of these water supply solutions has rendered Water-Gen world leaders in this field. But where did it all start? "Water-Gen was founded five years ago, and was mainly focused on creating solutions for the defense sector. We designed highly efficient units that supply water to troops in the field – significantly reducing their logistical burden," says Kohavi. Designing technologies for the defense sector also means working with very rigid size, weight and energy consumption limitations. This is of course incredibly challenging, but it also results in sturdy and remarkably reliable products that are designed to perform well in very harsh environments. Due to these sought after qualities, Water-Gen realized that there was a very real need for their water supply solutions to be adapted for

The Autodesk Clean Tech Partner Program supports clean technology innovators with design and engineering software they can use to accelerate their development of solutions to the world's most pressing environmental challenges. For more information, visit [autodesk.com/cleantech](http://autodesk.com/cleantech).

commercial, civilian and humanitarian use, “At the end of 2012 we made our products and technologies available to commercial sectors – like mining and oil and gas exploration. But what has been truly significant is realizing what a key role our solutions can play in sustaining the lives of thousands of people in the event of a natural disaster, or in poverty stricken areas in the world,” elaborates Kohavi. As part of the disaster relief response of the Israeli Defense Forces, Water-Gen was able to send their water purifying solution, Spring, to the recent Philippine Typhoon Haiyan disaster. They received feedback that Spring purified all the water successfully and was an invaluable help in a time of great need.

## The water works

Water-Gen has developed two leading-edge water supply solutions. The first is the GEN-350G, an atmospheric water generator unit – also known as a water-from-air unit. This solution does exactly that, it generates water from air. It produces 450 liters per day under conditions of an average temperature of 25°C and 55% relative humidity. What makes this system so unique is Water-Gen’s patented breakthrough technology called GENius™. It results in GEN-350G only requiring 310 Wh per liter of water under these conditions. Kohavi further elaborates on the advantages of this unit, “Firstly, water can be produced at the point-of-use, reducing the logistical burden associated with a convoy of water, as well as the need for consumables like water bottles. Secondly, the source the water is generated from – the air we breathe – is available in abundance.” The unit also comes with an integral water tank that is continuously kept sterile. This makes it possible to conserve safe, premium drinking water for as long as necessary.



Atmospheric water generator for ground model GEN-350G produces 450 liters per day of clean fresh water.  
© Water-Gen

Water-Gen has also created an innovative algorithm which continually optimizes the water production and energy efficiency of the unit according to changes in climate conditions (day-night, seasons, geographic location, etc.).

Alongside this product line, Water-Gen has developed a water purification solution called Spring. It is a compact rechargeable battery operated unit, designed to be carried as a backpack, which purifies water from different water sources available in the field. This unit has also been specially designed to work at a very high efficiency level, currently purifying 180 liters per battery. This efficiency level has been achieved by the development of a unique Energy Recovery element which utilizes the flow of the water in the unit and recycles a large portion of the energy which can then be used to purify more water. Spring also incorporates an automatic shut-off system which “senses” the water quality in the inlet and outlet of the unit. This control mechanism automatically stops all filtration processes when the water quality is so low - due to varying factors – that it is unsafe to purify, thereby protecting the user from unsafe water or if an internal error occurred.

## Software that aids the solution

Behind every great innovation, you’ll find a great set of tools. This is precisely Water-Gen’s sentiment when it comes to Autodesk® software, “Our engineers have always been of the opinion that Autodesk offers an outstanding CAD solution, which is why we are so proud to be part of the Autodesk Clean Tech Partner Program,” says Kohavi. Not only does Water-Gen’s water supply solution boast tremendous efficiency levels, the process of designing and manufacturing the actual units has also been made a lot more efficient due to Autodesk’s Digital Prototyping tool Inventor. “The time it takes to design and model our units is 20% less, thanks to Autodesk® Inventor®,” adds Kohavi. Using Inventor has become an integral part of Water-Gen’s entire process, “Firstly, we use Inventor to design and model each system and its components. After that we prepare drawings of the designed parts in Inventor which we send to our manufacturers. It also enables us to make assembly models – in order to optimize the design – and extract the Bill of Materials (BOM).” When reflecting on the design of Spring, Kohavi delves into further detail as to how Inventor was utilized, “Using Inventor, we designed the system’s envelope which is manufactured in composite materials and done via a process of vacuum forming. We also designed the internal mechanisms and components, which included hydraulic pistons, pumps, the electrical box, boards and jigs. Inventor also enabled us to send some of the components as drawings and others as even as 3D models to our manufacturer.”

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—Arye Kohavi  
Chairman and Co-CEO



Water-Gen’s Spring unit in use in the rescue efforts following the Philippine Typhoon Haiyan. © Water-Gen

## A crystal clear future

Now that Water-Gen is leading the way in the field of water supply solutions, they intend to keep it that way. Every breakthrough in technology they have, they use to form the foundation of their next innovation. Water-Gen has recently discovered the water supply potential in air management systems – like air conditioners and dehumidifiers – when using their GENius™ technology to purify the water previously seen as waste. There seems to be no lack of inspiration for new innovations, and we’re eager to see what Water-Gen comes up with in the future.

## For more information

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