
elemental
water makers
Desalination.
Powered by renewable energy.

Water. Challenge of the century.

Water scarcity is rapidly increasing.

Already today, 4 billion people are affected by water shortages. Water is part of everything we do; the food we eat, the energy we consume and the products we use. By using more water than we receive, our aquifers, rivers and lakes are disappearing. Water shortages result in pressure on the supply of food and production of goods, leading to migration and possible conflict. With an increasing population and climate change accelerating water scarcity, water to me is the biggest challenge for humanity in the 21st century.

As water experts and cleantech specialists, it's our mission to be part of a sustainable solution for water scarcity. We believe it's possible to move from scarcity to abundance by implementing proven solutions with a positive, long-term impact.

Sid Vollebregt MSc, Managing Director

Desalination using Earth's abundant resources.

How can water be scarce if 70% of the Earth's surface is covered by water? With only a small fraction fresh water and even a smaller fraction accessible for consumption, the key to water access lies in the sea. Desalination is the obvious solution, with reverse osmosis as the preferred technology. However, this industry is energy and fossil intensive, resulting in high expenses. Conventional desalination accounts for 1% of the global electricity consumption, contributing to the acceleration of water scarcity by its emissions.

The obvious solution is desalination powered by renewable energy. However, this involves the challenge to couple a constant reverse osmosis process to fluctuating solar, wind or wave energy. This barrier resulted in high water expenses and limited water quality in the past. Enter Elemental Water Makers, providing solutions since 2012 to ensure affordable, high-quality fresh water, using unlimited resources. Join us in solving fresh water scarcity, using only the sea, sun, earth & wind!

Reinoud Feenstra MSc, Technical Director


Securing fresh water today.
Without limiting tomorrow.

We do reverse osmosis.
Without the downsides.

Powered by nature with solar, wind, wave or your energy.

Reverse osmosis has been used for decades to provide drinking water from seawater. We provide efficient reverse osmosis technology powered by the sunshine, the wind, the waves or your energy.

Desalination without the huge energy bills.

Reverse osmosis can be quite energy intensive, leading to high operational expenses. We enable affordable water by realizing energy efficient solutions powered by renewable energy sources available on-site.

A nightmare to maintain and operate? Not anymore.

Membrane fouling, rusty components, an empty water storage in the morning, these worries are in the past. Through constant operation and automated fresh flushes, the membrane lifetime is maximized. All components in contact with salt water have been carefully selected to resist corrosive environments and have a minimum of maintenance. Operation becomes stress-free through remote monitoring, control and automation.

Save up to 70% on water expenses

Enjoy big savings by avoiding the use of electricity, attractive return on investment.

Sustainable using unlimited resources

Utilizing the abundant resources of the sea and sun. Avoiding emissions as no fossil fuels are involved.

Reliable & independent water supply

Independent on the availability and price of electricity, with a reliable water supply throughout the year.

Stress-free operation & remote monitoring

You can check-in on your water supply, anywhere, anytime. No more surprises thanks to automated messages.

Water for all.

Numerous applications.
Ready to quench your thirst.

Water is a part of everything we do. Reliable access to high-quality water is crucial for any resort, community, private development, municipality, government or industry.

Utility expenses of a resort can be quite significant. The utility companies charge high water rates to resorts. A private desalination solution contributes heavily to the electricity bills. What if the water supply could become good for your wallet and for the Earth?

Today, 1 in 9 people lack access to safe water. Women are disproportionately affected, as they are often responsible for collecting water. It's also a matter of health; every 90 seconds a child dies from a water-related disease. What if we can improve health and enable empowerment & education? It's time to break the cycle of poverty for communities.

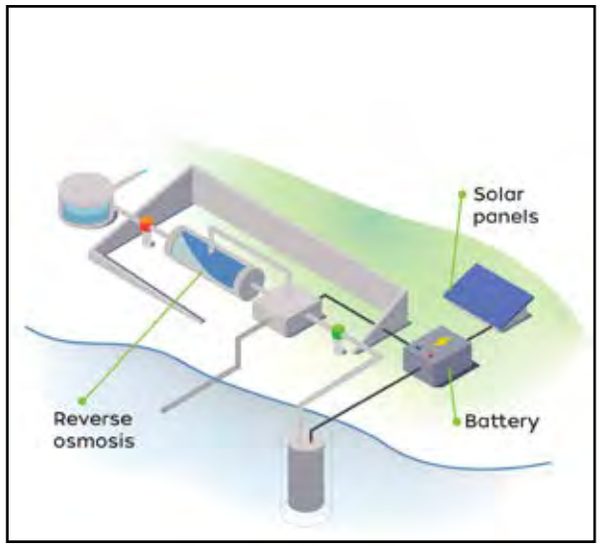
Municipalities or utility companies are responsible for the water supply. Efficient desalination technology lowers the operational expenses and opens the door to decrease the region's water tariffs. Decentralized water supply avoids transportation losses, unwanted tapping or sending trucks. It's possible to realize sustainability and water goals through desalination by renewable energy.

Water is the passion of island owners and the playfield for architects and developers. It's an essential part of the stunning vistas and key to privacy. But it also creates an expensive sustainability issue. Cutting electric cost entirely and using remote monitoring, fresh water is delivered without concerns. Fresh water has never been so easily obtainable or this free of guilt.


When it comes
to water quality
no one can afford
to compromise.

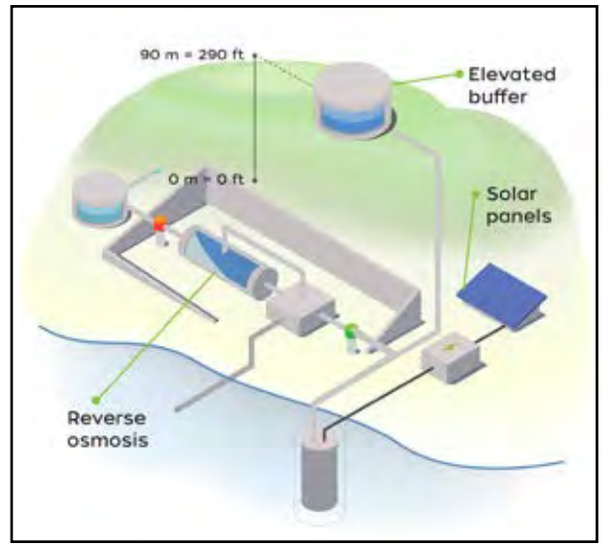
Up to 1000 m^3/d. Starting at 1.0 $/$m^3$.

Up to 260k gallon/d. Starting at 0.38 ¢$/gallon.



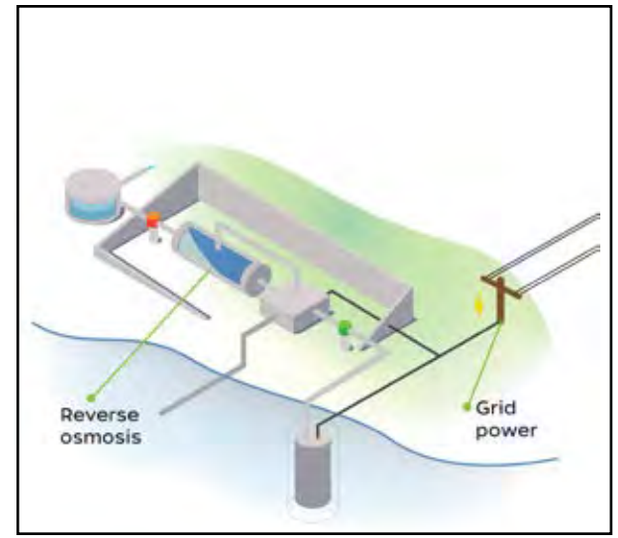
Works everywhere:
Plug & play unit.

- Solar energy Reverse Osmosis
- Minimized battery storage
- Rapidly deployed
- Grid-tied version possible
- Water production during the day
- Containerized, plug and play



Elevation available:
Let gravity do the work.

- Solar energy Reverse Osmosis
- Uses gravity assisted storage
- Lowest operational expenses
- Makes use of natural elevation
- 24/7 water production
- Reduced brine salinity



Energy source available:
Efficient water maker.

- Efficient Reverse Osmosis
- Uses your energy supply
- 3x more efficient vs. trad. RO
- Generator or (mini) grid
- 24/7 water production
- Compact or containerized

Dutch expertise. Global impact.

A proud tradition of water engineering.

The Dutch are well known for their water skills. Water is in their genes, with a history that revolves around water adaptation. Bring in the Dutch!

Private Retreat
British Virgin Islands

Water Station
Philippines

Eco Resort
Canary Islands

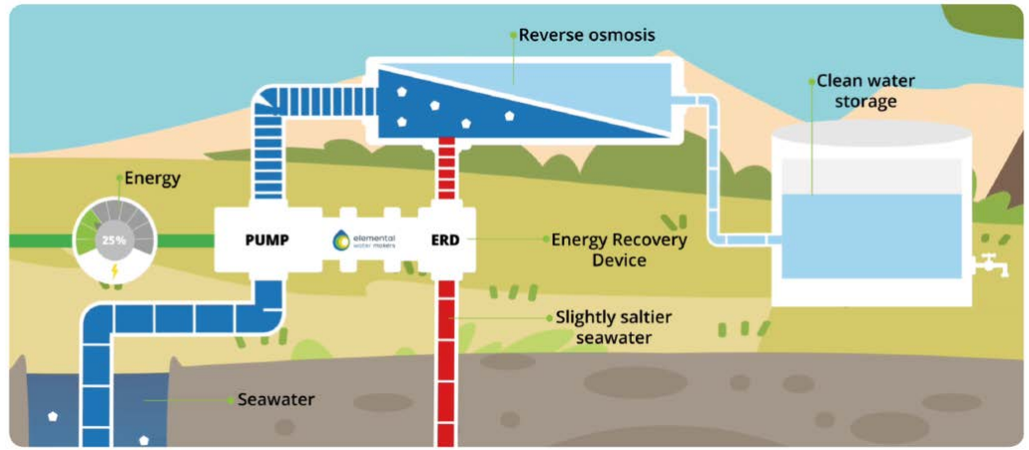
Community
Madagascar

Energy recovery technology.

We re-use to reduce the required energy up to 75%.

Traditional desalination uses a lot of energy, making it expensive.

With 97% of all water on Earth being salty, the key to solving freshwater scarcity lies in the sea. However, traditional small-scale reverse osmosis technology uses a lot of energy, making desalinated water expensive. Fossil-fuels used for desalination contribute to climate change, which accelerates freshwater scarcity, making matters worse.



Reliable & affordable water by innovative Energy Recovery Technology.

By re-using the saltier water flow of the reverse osmosis process, we are able to reduce the amount of required energy up to 75%. In large desalination plants, this is already mainstream. We have made this unique technology available for small-scale desalination, allowing us to work with much less energy. Our energy recovery technology is maintenance-free.

Solar energy integration for sustainable off-grid water.

To ensure off-grid clean water at places where energy is either expensive or unavailable, we have developed the desalination technology to benefit solar energy. This means no fossil-fuels are required for its operation, making it a truly sustainable solution by only using unlimited resources of the sea & sun.

Traditional versus our technology.

Expensive

Energy-intensive, resulting in expensive water

Dirty

Fossil powered, contributing to climate change, leading to more water scarcity

Complex

Considered high-tech, only feasible for large scale, not easy to maintain

Affordable

Saves up to 70% on water expenses by efficient technology

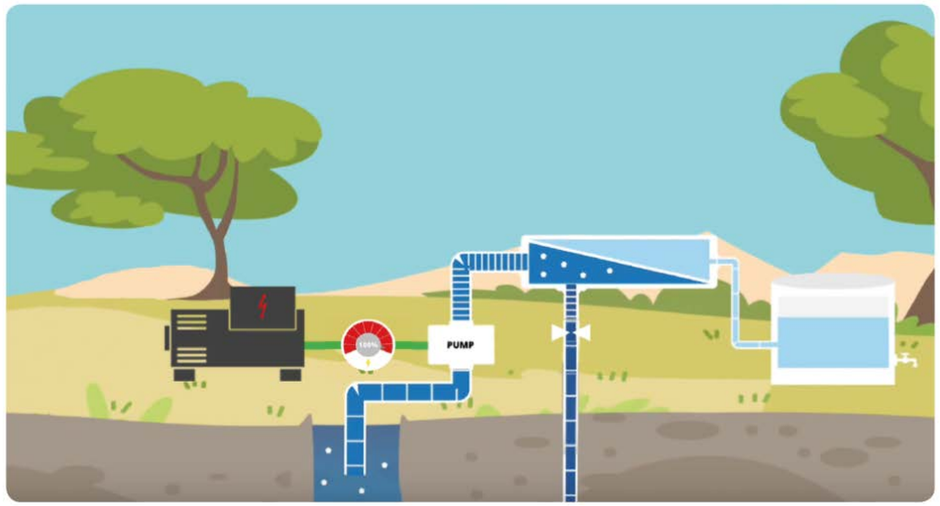
Sustainable

Utilizing abundant resources of the sea & sun, no fossil fuels

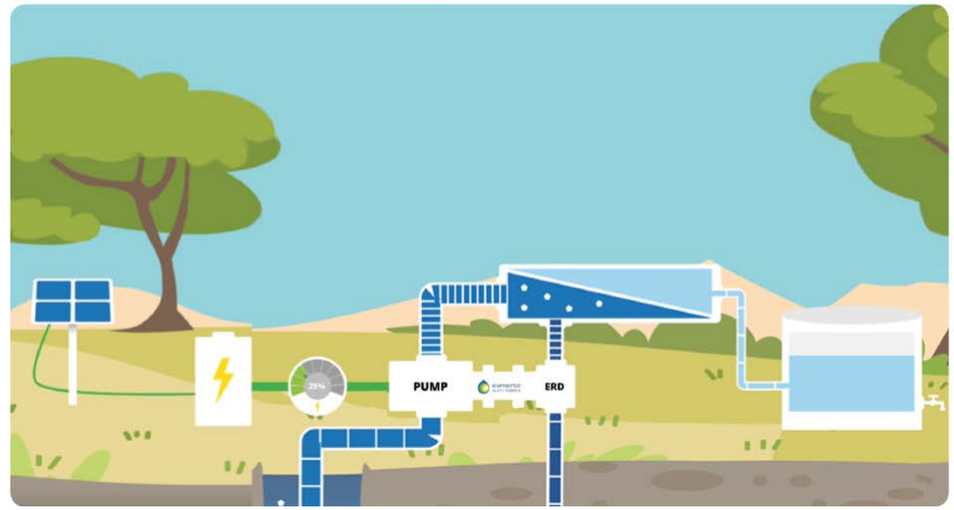
Stress-free

Easy operation by automation, durability and remote monitoring

Traditional desalination uses up to 10 kWh / m³.



We use under 3 kWh / m³ & integrate solar energy.



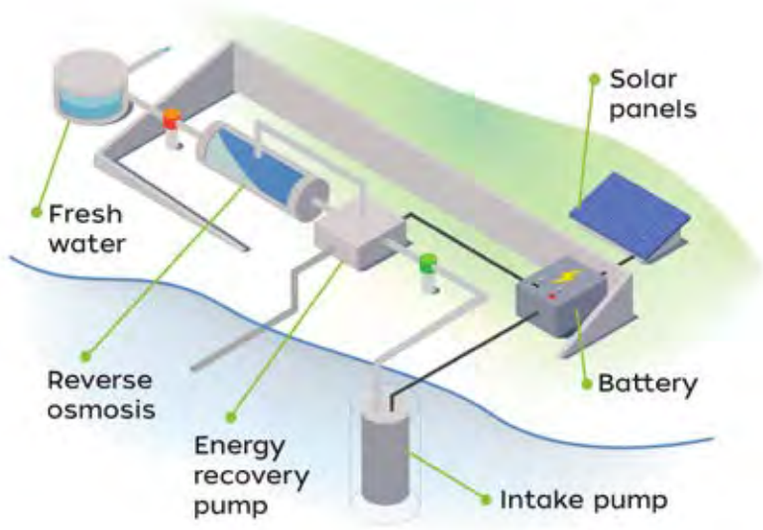
Solar desalination plug & play.

Works everywhere: Plug & play unit.

To enjoy a reliable independent water supply at any location, we have a solution that works everywhere. Combined state-of-the-art solar panels and battery technology allows efficient reverse osmosis while minimizing battery size. The batteries used require no maintenance, are suitable for warm climates and enjoy a long lifetime.

This plug & play off-grid solution is containerized allowing for rapid deployment, making it very suitable for disaster relief applications. The solar panels are placed on top of the container. As an alternative, all components can be integrated at preferred locations, to avoid impact on existing infrastructure and limit the footprint. The high-efficiency reverse osmosis is equipped with remote monitoring for control and designed for simple operation. All components are purpose-built to survive corrosive environments and ensure a long life-time.

The production capacity can be doubled using a hybrid version, that runs on solar energy during the day and uses an existing energy supply during the night to reduce the payback time even more. The solution is available from a few m³ up to millions of liters of potable water per day.



Footprint indication	5 m³/day 1,320 gallon/day	50 m³/day 13,200 gallon/day	200 m³/day 52,840 gallon/day
Solar panels m² (ft²)	19 m² (205 ft²)	190 m² (2,050 ft²)	760 m² (8,180 ft²)
Battery capacity kWh	9	90	360
Container type ft	8 ft	40 ft	2 x 40 ft

Philippines.

Water kiosk using plug and play solution.

4 kW
solar panels

11 m³/day
fresh water

43 %
total savings

11 t/yr
CO_2 savings

"There are four major issues in the provision of potable drinking water in Southeast Asia: water cost, quality, access, and environmental impact. Working with EWM technology we are able to invest locally into decentralized water production solutions that overcome each of these challenges. Starting in the Philippines, regions where we operate can now enjoy affordable high-quality water that has been produced using a sustainable method, in line with our vision."

John Jadczak
Managing Partner NXTLVL Water

Financial case: plug & play.

A community gaining access to safe & affordable water.

The problem

The community relies on water that is trucked in on a daily basis. The results is a questionable quality upon delivery and a high water tariff of 6 $/m³. Lacking an alternative, the people are forced to spend a majority of their limited income on water, without the assurance of good quality and sufficient availability.

The solution

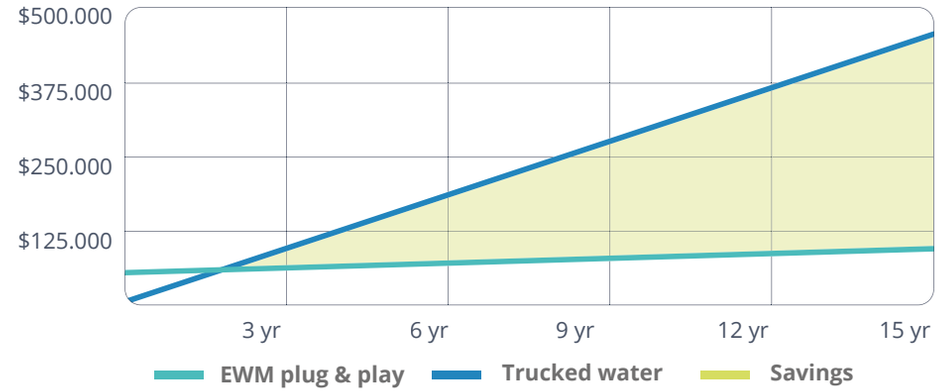
This changes completely when a decentralized solution of Elemental Water Makers is put in place. It's a plug & play desalination unit which can be operated to produce 5 m³/d fully solar energy driven off- grid. There is also the option to produce 11 m³/day in hybrid mode making use of grid or generator power during the night. The solution allows the people to enjoy savings on the water expenses of 75% and total savings of over 300.000 $. The solution's payback is 2.5 years.

The benefits

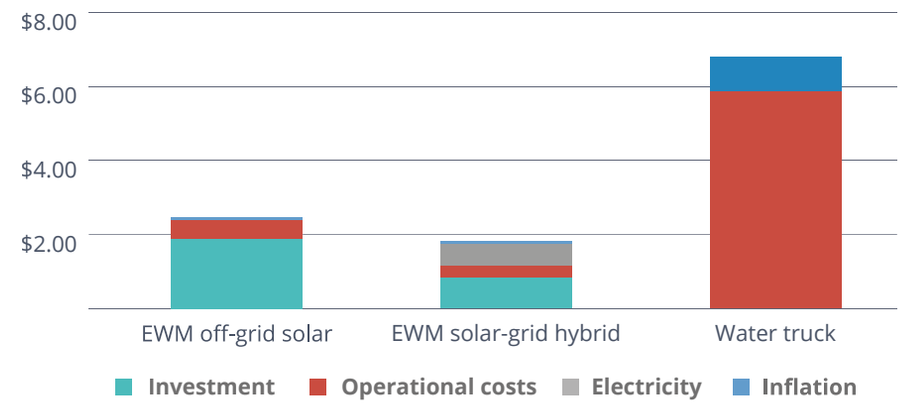
The community now has high-quality potable water on-site, without the dependency of water trucking and associated carbon emissions, saving 10 ton CO_2 per year. The solution leads to empowerment, jobs and possibilities for education.

Assumptions: costs including installation and training | Yearly inflation of 2% | Trucked water price: 6 $/m³ | Local electricity price: 0.3 $/kWh | Water intake available | Financial lifetime 15 yrs | Technical lifetime >20 yrs | OpEx include consumables, spare parts and membrane replacement.

Water expenses



Water tariff in $/m³




Over $300.000
in total savings.

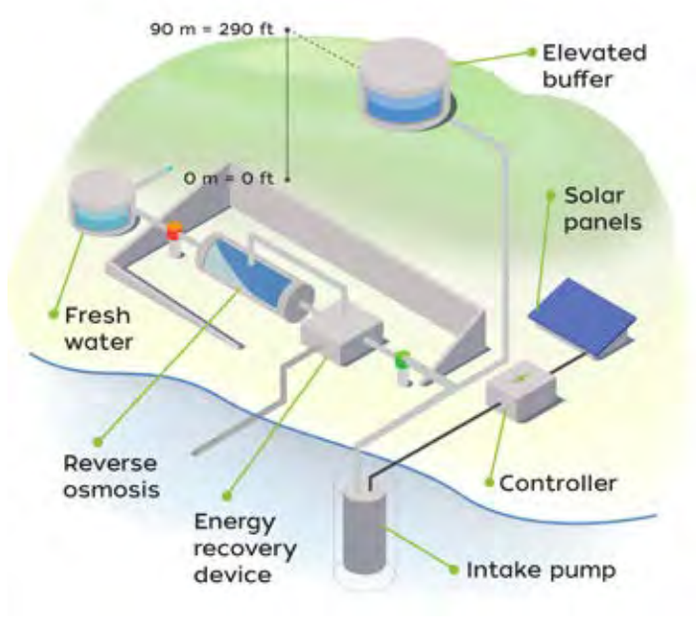
Solar desalination using gravity.

Elevation available: Let gravity do the work.

We turn seawater or brackish water into affordable fresh water, 24 hours a day, without the use of expensive energy. Our off-grid solution directly uses solar, wind or wave energy to fill a buffer tank on a hill with seawater. Through the force of gravity, the reverse osmosis process receives its required feed: pressurized seawater. We make sure the water buffer always contains water to enable constant water production, resulting in lowest cost of water. The waste energy of the reverse osmosis process is re-used to reduce the required elevation with 80% to 90 m or 290 ft for seawater.

The buffer tank can be easily constructed using a corrugated, galvanized, coated steel tank with liner that is suitable for corrosive environments. A concrete cistern or basin are suitable alternatives.

We use the forces of nature at its best for an independent guilt-free water supply. By avoiding energy conversion losses, batteries & frequent maintenance, savings up to 70% can be realized. The bigger, the better, as water cost come down with size of production. Sizes start small and go up to millions of liters per day.



Footprint indication	10 m³/day 2,640 gallon/day	100 m³/day 26,400 gallon/day	1.000 m³/day 264,000 gallon/day
Solar panels m² (ft²)	64 m² (690 ft²)	640 m² (6,900 ft²)	6.400 m² (69,000 ft²)
Desalination unit m² (ft²)	7 m² (75 ft²)	25 m² (270 ft²)	150 m² (1,615 ft²)
Elevated buffer m³ (US gallon)	100 m³ (26,410 gal)	1.000 m³ (264,100 gal)	10.000 m³ (2,641,000 gal)
Buffer diameter m (ft), h = 3 m	6,5 m (21 ft)	20,6 m (68 ft)	65,1 m (214 ft)

British Virgin Islands.

Private retreat using gravity.

"For years, me and my family struggled with high electricity bills. Now we enjoy guilt free water at lower costs. I would recommend Elemental Water Makers without hesitation."

P.A. Serini,
Owner Diamond Reef Ltd.

12 kW
solar panels

12 m^3/day
fresh water

63 %
total savings

25 t/yr
CO_2 savings

Financial case: gravity.

A resort cutting water expenses.

The problem

The resort receives its piped water from the island public utility company and faces a commercial rate of 5 $/m³. With a consumption of 50 m³/day, the water expenses weigh heavily on the resort's operational expenses. Some days, there is no water available and some days, the quality doesn't meet the high resort's standards.

The solution

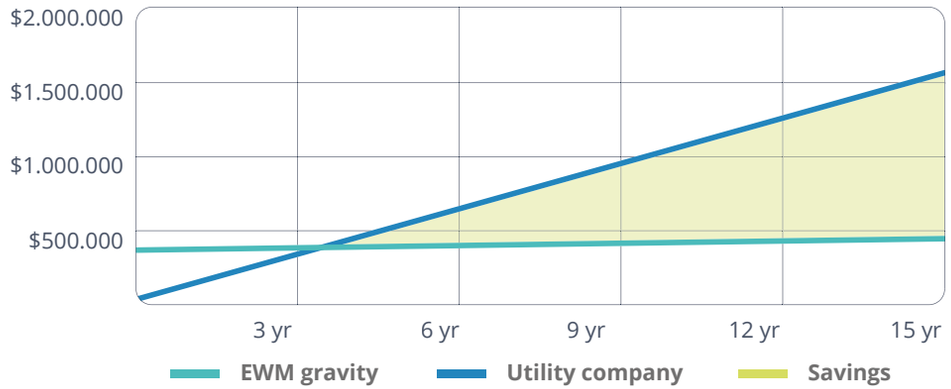
Enter Elemental Water Makers. Through investing in the Gravity-assisted solution, 70% savings on the water expenses will be enjoyed, resulting in over 1.100.000 $. The solution's payback is within 4 years.

The benefits

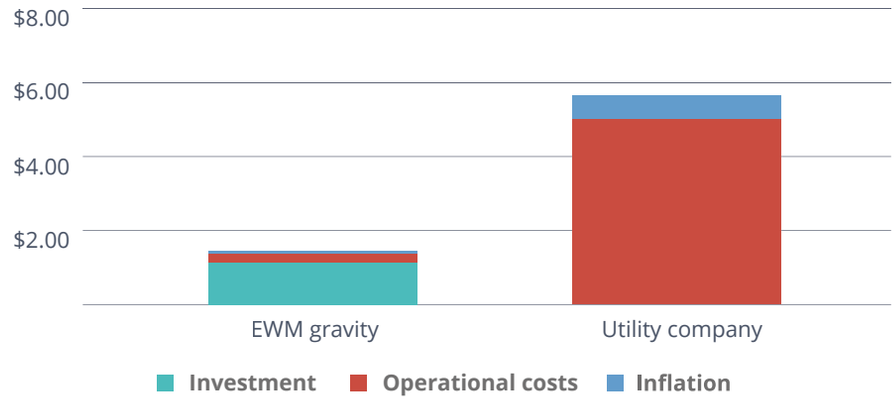
Besides these financial savings, the resort has become independent on the availability and price of energy, provide high-quality water to their guest, save 100 ton CO_2 per year, enjoys stress-free operation & remote monitoring and offer their clients a sustainable experience.

Assumptions: costs including installation and training | Yearly inflation of 2% | Local water price is 5 $/m³ | Water intake available | Financial lifetime 15 yrs | Technical lifetime >20 yrs | OpEx include consumables, spare parts and membrane replacement.

Water expenses



Water tariff in $/m³



Over $1.000.000 in total savings.

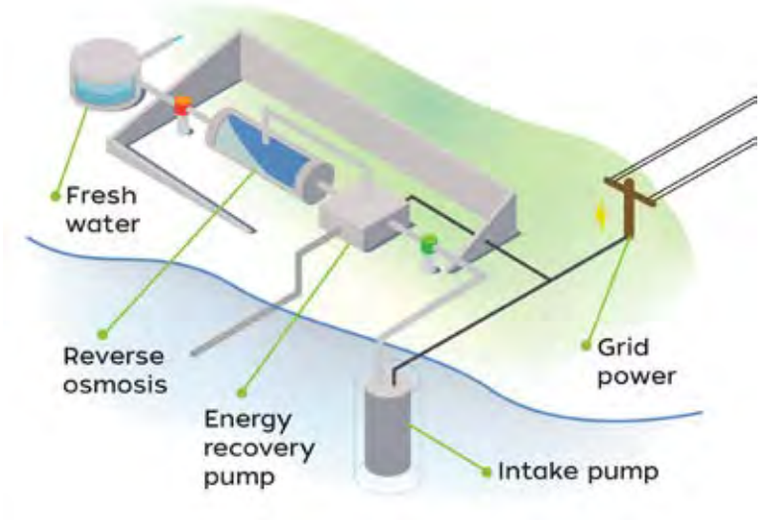
3x more efficient desalination.

Energy available: Get our efficient water maker.

We understand that water and energy are not always considered at the same time. If you already enjoy renewable energy or currently have an affordable energy solution in place, we can hook you up with an energy efficient desalination solution that's easy to operate and maintain.

Especially for small-scale solutions, energy efficiency is often lacking. To avoid high electricity bills, our efficient reverse osmosis units operate around 2.7 kWh/m³ or 10 kWh/1,000 gallon energy consumption for seawater. Traditional desalination solutions can consume over 3x more energy.

The compact & user-friendly units are designed for corrosive environments and the energy recovery device is maintenance free. GSM monitoring is available for remote control and an automated fresh flush system is included. Sizes start small and go up to large capacities. The units are available in different voltages, phases and frequencies to meet the local power supply.



Footprint indication	5 m³/day 1,300 gallon/day	22 m³/day 5,800 gallon/day	400 m³/day 105,680 gallon/day
SEC kWh/m³ (kWh/kgal)	4 kWh/m³ (15 kWh/kgal)	2,7 kWh/m³ (10 kWh/kgal)	2,2 kWh/m³ (8.3 kWh/kgal)
Nominal power kW	0,8	2,5	36,7
Weight kg (lb)	44 kg (97 lb)	120 kg (265 lb)	Varies per solution
Size l x w x h in m (inch)	0,7 x 0,4 x 0,4 m (29 x 16 x 16 inch)	1,2 x 0,6 x 0,7 (47 x 22 x 29 inch)	40 ft container

Canary Islands.

Eco resort using efficient desalination.

"A special thanks to Elemental Water Makers who joined forces with Lanzarote Retreats to achieve their sustainability goals. The Dutch team made it possible for our eco-village to become independent on water. We are naturally powering the desalination unit by harnessing the wind & sun. I hope Elemental Water Makers will continue to encourage the rest of the world to do the same."

Tila Braddock
Owner Lanzarote Retreats

22 kWh
used per day

9 m^3/day
fresh water

70 %
total savings

18 t/yr
CO_2 savings

Financial case: efficient RO.

A private island enjoying guilt-free water.

The problem

The private island has a water demand of 9 m³/day due to landscaping and private use. The rain is not reliable and sufficient enough, leaving no alternative for desalination. Two options are available, which first appears to be an easy decision as the standard reverse osmosis (RO) solution is about 30% cheaper in purchase price.

The solution

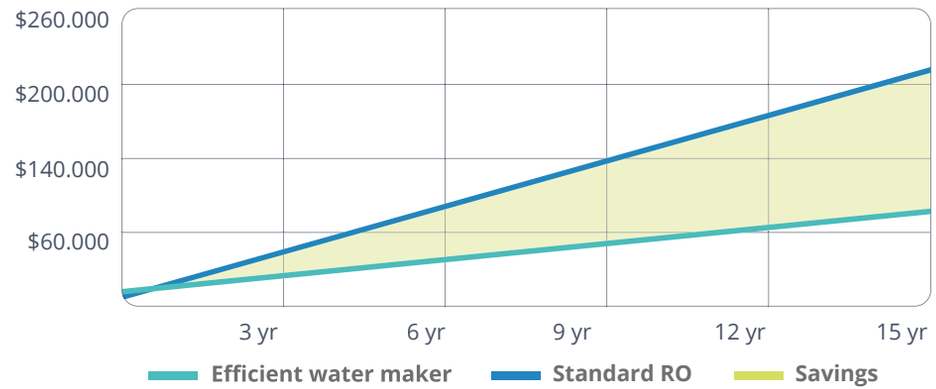
Luckily, the energy efficiency is considered before making a decision. By choosing the 3x more efficient water maker offered by Elemental Water Makers, water savings of 55% are realised, equal to 112.000 $. Despite the 30% higher purchase price the payback is still less than 1 year, as energy generation on the island is expensive with 0.3 $/kWh.

The benefits

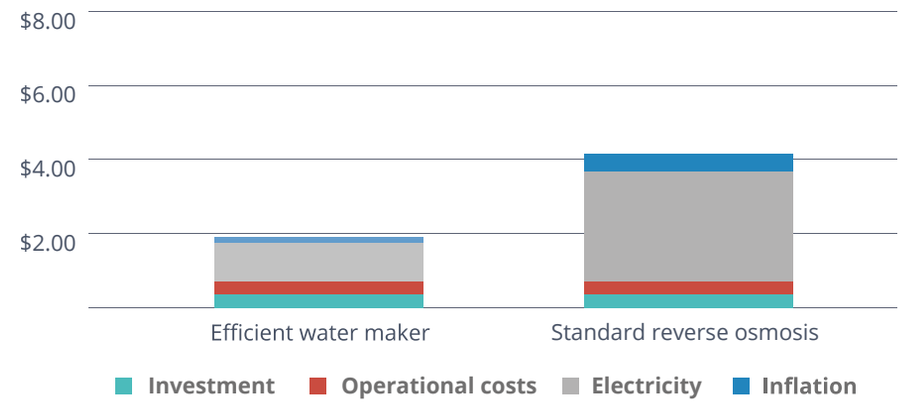
The compact desalination solution allows the private island owner to enjoy high-quality water on-site, with stress-free operation & remote monitoring, whilst still saving 18 ton CO_2 per year. This is a solution for future generations.

Assumptions: costs including installation and training | Yearly inflation of 2% | Reference RO energy consumption: 10 kWh/m³ | Water intake available | Financial lifetime 15 yrs | Technical lifetime >20 yrs | OpEx include consumables, spare parts and membrane replacement.

Water expenses



Water tariff in $/m³




Over $100.000
in total savings.


The security of clean water is priceless.
Yet we make it really affordable.

Real time. Peace of mind.

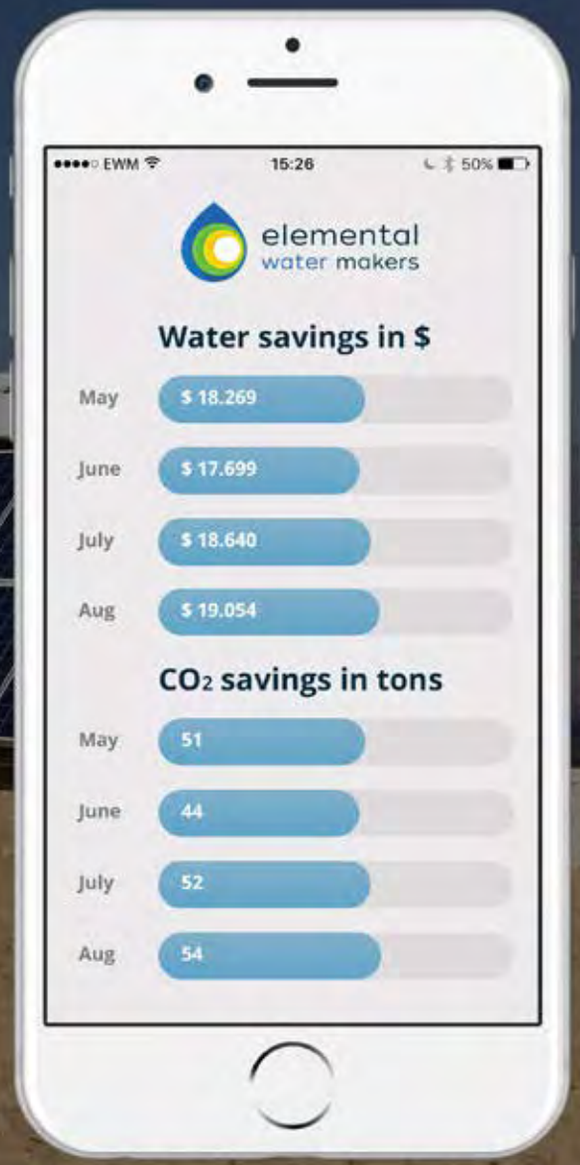
Just water. No worries.

An empty water storage; a troublesome surprise. Such experiences will be a thing of the past using our real-time monitoring solutions. You can check-in on your water supply, anywhere, anytime.

Good for the Earth.
Good for your budget.

Securing fresh water today, without limiting tomorrow.

We believe that reducing expenses will always play an important role in the decision making and therefore strive to provide the most cost attractive renewable energy driven desalination solutions for fresh water production. At the same time, we want to deliver a long-term sustainable solution for the water supply. Therefore we provide solutions that utilize renewable energy sources. We also understand that offering a care-free fresh water supply is important, while providing an outstanding level of service and reliability.



A truly sustainable solution by overcoming the brine issue.

To prevent environmental impact and to assure a long lifetime of the reverse osmosis membranes, we operate on a lower recovery ratio than standard desalination units. This means the brine flow concentration does not differ much from the original source water salinity, minimizing its impact. It doesn't influence the water costs, due to the extremely high energy efficiency of our energy recovery technology. Local regulations are always taken into account for the brine flow and no chemicals are being used during operation. By avoiding negative impact, desalination of seawater by the sun becomes a sustainable source of freshwater for generations to come.

Elemental Water Foundation.

Providing clean water for the ones that need it most.

People without access to safe water live in rural areas.

Today 1 in 3 people or 2.2 billion people around the world lack safe drinking water. The large majority of these people live in rural areas in developing countries, where economic interest is limited, development aid is often lacking and problems are ignored. Our founders consider it of utmost importance to enable clean water in a sustainable way for everybody. Water is a human right, not a privilege.

The Foundation that powers change.

The Elemental Water Foundation is a certified & independent non-profit organization that enables safe and affordable water by realizing projects that provide water for people that face water scarcity in developing countries. The Foundation has been established by our founders and several other like-minded individuals. The organization is dedicated to helping the rural communities get safe access to affordable drinking water using the sea and sun by financing water projects.

The community of Madagascar overcomes water scarcity.

Madagascar is one of the least developed nations in the world, and the 3,000 inhabitants of the village of Efoetsy, located on the dry south-western coast, have been struggling with declining rainfall over the past years. Especially women and children, who bear the responsibility of securing water for their households.

Thanks to the work of the Elemental Water Foundation, the community now operates and maintains its drinking water supply of 15,000 liters/day, together with a local NGO, to ensure the sustainability of the project over time. By distributing and selling the water for a price that matches the ability of the community, it's ensured that value is added to the community and that maintenance can be covered for years to come.

Madagascar.

Sustainable water kiosk in rural community.

"The community in Madagascar now obtains drinking water by the sea using only the sun by Dutch sustainable off-grid desalination technology. Madagascar is one of the least developed nations in the world, and the 3000 inhabitants of the village of Efoetsy, have been struggling with increasing water scarcity over the past years. Thanks to the work of the consortium, they now have daily access to 15,000 liters of affordable clean drinking water year-round using the naturally available resources of the sea and sun."

Elemental Water Foundation

11 kW
solar panels

15 m^3/day
fresh water

80 %
total savings

15 t/yr
CO_2 savings

Join us.

Work with us. Benefit from unlimited resources.

Water is not an exact science, it's almost an art. Add energy to the equation and two completely different fields of expertise are required to merge, without causing a short-circuit. Without proper pre-filtration, the membranes will quickly have to be replaced. Without the correct energy supply, the motors won't be able to turn. As a system integrator with patented technology, this is where we thrive, creating tailored solutions to fit your needs.

01

Expert intake

Our engineers analyse your daily water demands, the project location and information regarding potential infrastructure. We get a basic understanding of your situation.

02

Free and non-binding offer

Using rough assumptions we quickly estimate your potential savings and payback time and provide you with a free offer to discuss.

03

Design and planning

Once we are on the same page, we will design your custom project solution and plan the installation together.

04

Professional installation

Through close collaboration and clear communication, the water supply solution will be up and running in no-time.

05

Maintenance training

A training for operation & maintenance is provided and support will be available for troubleshooting.

Let’s make clean water using abundant resources.

Solving fresh water scarcity using only the sea, sun, earth and wind.

As a global yet flexible organisation, we collaborate with preferred civil work partners, architects, developers, suppliers, and contractors. We meander our ways to work together to find the optimum form of collaboration and methods of financing.

As a result, we received the 1st prize of the Mohammed bin Rashid Al Maktoum Global Water Award of the Deputy Ruler of Dubai. Out of 138 organisations active in desalination, we were chosen as the winner for our scalable and mature solutions.

With water in our nature, innovative technology and a team of dedicated specialists, we continuously strive to provide our customers with outstanding quality and service.
Contact us today for a free feasibility study.

Solar Impulse Efficient Solution

Global Clean Water Desalination Alliance

ImpactCity

TU Delft

eit Climate-KIC

Elemental Water Foundation

Mohammed bin Rashid Al Maktoum Global Water Award 2017

FINALIST Dutch National Icon 2019

SELECTED Solar Impulse Efficient Solution 2019

TOP 50 Financial Times Top Entrepreneurs 2018

WINNER MBR Global Water Award 2017

SELECTED Sustainable 100 2017

FINALIST Water Innovator of the Year 2016

FINALIST Finalist TED-x Amsterdam Award 2016

FINALIST Oxfam Novib Award 2014

WINNER Energy Efficiency Award 2012

WINNER Royal Dutch Water Award 2012

Elemental Water Makers HQ

Elemental Water Makers B.V.
Hellingweg 9a
2583 DZ The Hague
The Netherlands

www.elementalwatermakers.com
info@elementalwatermakers.com

Worldwide Offices

Caribbean
caribbean@elementalwatermakers.com

Central America
centralamerica@elementalwatermakers.com

South America
southamerica@elementalwatermakers.com

SE-Asia & Pacific
seasia@elementalwatermakers.com

Africa
southafrica@elementalwatermakers.com