

BOREAL LIGHT AFFORDABLE SOLAR WATER DESALINATION

**KfW
AWARD
2019**
GRÜNDEN



سقىا الإمارات
UAE WATER AID





Committed to social business

and decent access to hygiene drinking and irrigation water.

Boreal Light GmbH is a Berlin based company specialized in renewable energy solutions for water treatment facilities. The company designs and manufactures affordable solar water desalination and filtration systems for off-grid communities around the globe. Systems manufactured by Boreal Light are capable of delivering high quality hygiene drinking, irrigation, fish farm and sanitation water from any kind of high saline

and polluted water resources. Powered fully by solar, simplicity of the design and affordability of the cost of the systems manufactured by Boreal Light are the three great competences the company is proud of.

Winture and **Waterkiosk** are the two registered trademarks for systems and services offered by Boreal Light.



Winture Planet Cube is a robust water desalination system developed by us. It is able to produce drinking and irrigation water directly from high saline water sources - 100% from solar energy. It is designed to perform under the harshest climate conditions in the remotest parts of the world. The standard Winture solutions provide from 100 liters up to 30,000 liters of hygiene drinking water per hour.

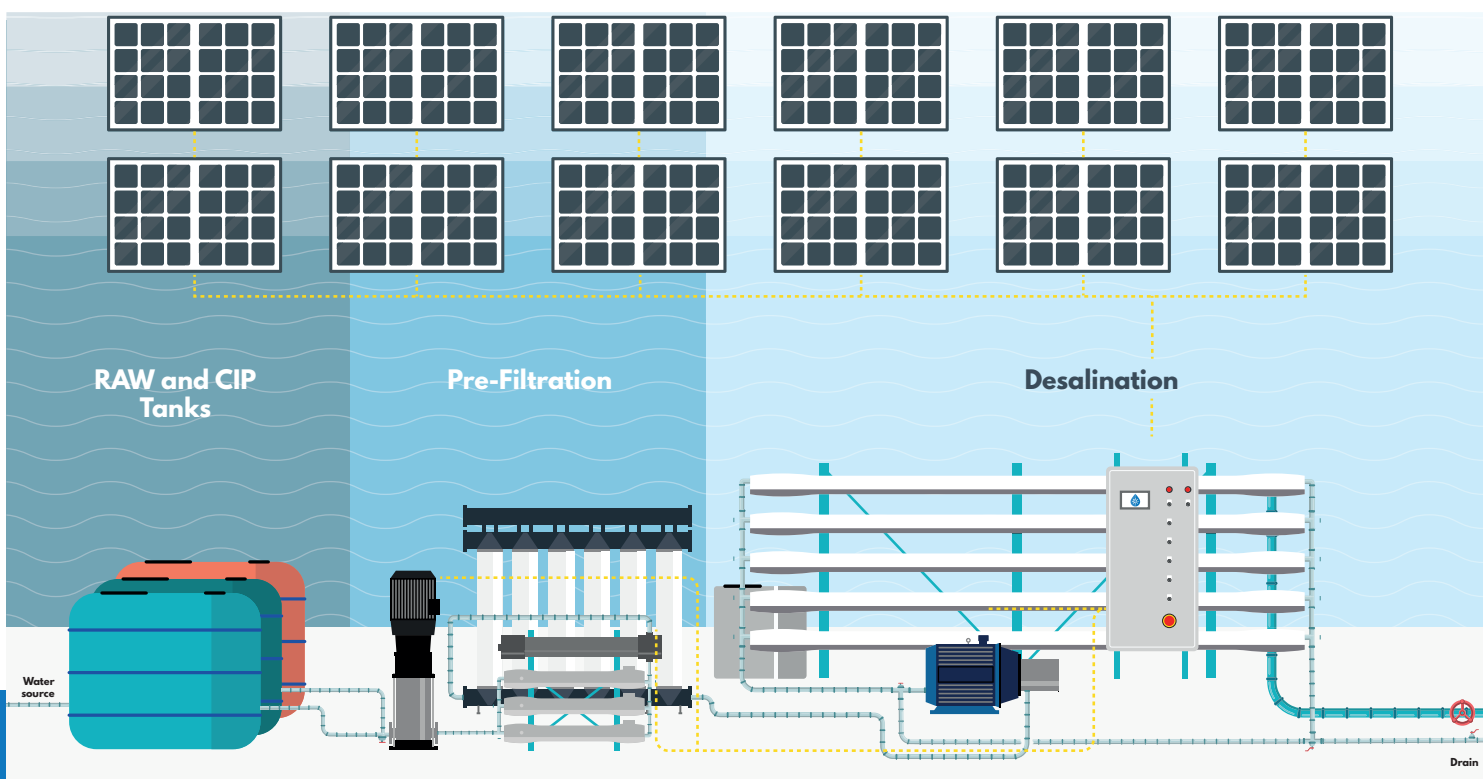




In the process, 99% of the total dissolved solids (TDS) are removed from the intake contaminated resources and drinking water free from organic and inorganic contaminants, bacteria and viruses is delivered. The concept behind the design is to have an independent off-grid system, capable of working

outdoor for long time with the lowest possible maintenance services. Winture requires no diesel generator or grid connections to work. All components are designed to work with DC electricity input from solar panels. A relatively small solar array provides enough electricity for the system to run. The stand-alone

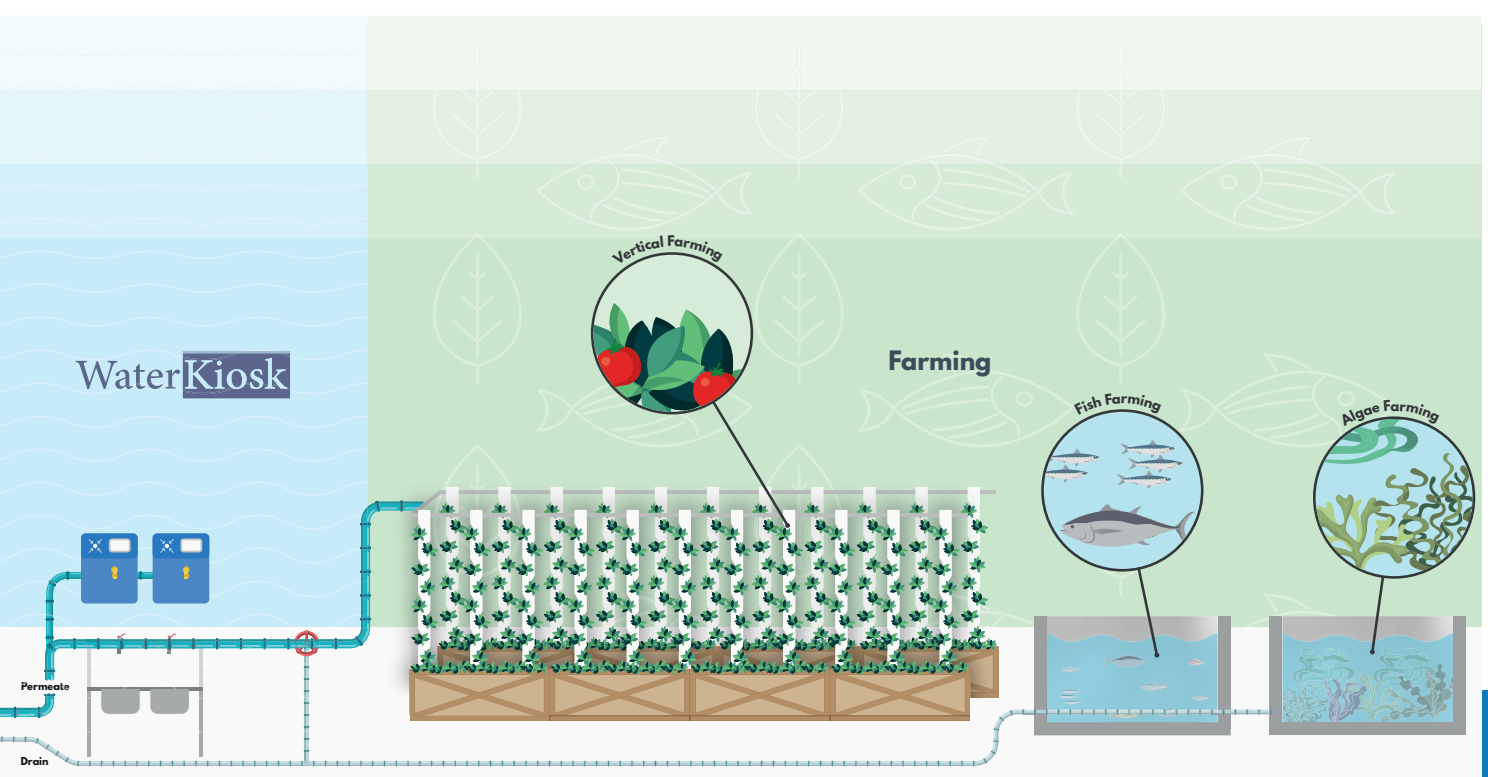
character makes it an ideal solution wherever access to clean water is an issue. The operation of Winture Planet Cubes installed around the globe, is under 24/7 live surveillance from Boreal Light GmbH's monitoring office in Berlin to guarantee the greatest performance of our systems.



The Systems runs **100% on solar energy**. No external power source or power buffer is needed, resulting in the perfect island solution.

A variety of **pre-filtration methods** is taking all non-dissolved particles out of the water. A UV lamp as well as possible ozone treatment is killing 99,9% of all viruses and bacteria.

A **high pressure pump** is pushing the water through reverse osmosis membranes, where the dissolved salts are separated from the water.



The **permeate water** has drinking water quality. It can either be filled by hand, with a Water-ATM System or be distributed by piping systems.

An attachable vertical farming plant is automatically irrigated with the **high quality permeate water**.

The chemical-free **drain water** is usable for fish farming of salt water fish, as well as algae farming.

The integrated approach

At Boreal Light our commitment to provide water to off-grid communities is not limited to drinking water supply.

While providing drinking water is letting people survive, offering them irrigation water is what makes them prosperous. Winture's integrated approach is offering an affordable all-in-one smart irrigation solution added to the Winture Planet Cube solar desalination system to offer ir-

rigation water and fertilizer to farm lands. A variety of sensors constantly analyze characteristics and communicate with Winture's main controller. The smart controller then runs the drip irrigation system and releases the right dosage of fertilizers plants may need.

The Plug&Play characteristic of Winture solutions assures farmers in the most remote parts of the world to have a minimum of hassles and difficulties over installing the machine, running such a technology and taking care of the maintenance. In addition farmers deal with any kind of pollution at their intake water. Winture removes all salts, chloride, fluoride, bacteria and viruses out of any kind of seawater, high brackish water, surface water and even municipal wastewater.



“Having an integrated drinking water, irrigation water and electricity supply solution for farmers and villagers around the globe is a key to increase their resilience against the growing climate change impacts. ”

— Dr. Hamed Beheshti



- 1 Raw water
- 2 Desalination machine
- 3 Solar array
- 4 Drinking water
- 5 Irrigation water
- 6 Sanitation
- 7 Fish farm
- 8 Easy Maintenance





An Ideal Island Solution.

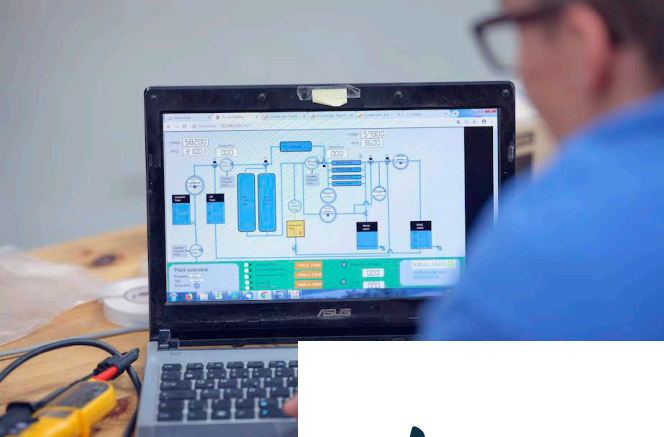
Winture systems are modern, and at the same time simple solutions of Boreal Light GmbH for any of off-grid communities struggling with their supply of water and electricity. Being entirely powered by solar energy makes Winture a flexible solution, well-tailored for the needs of its target market.

From Sea To Glass!



Winture® solutions provide from 100 liters to up to 30,000 liters of hygiene drinking water per hour. Winture® removes 99% total dissolved solids (TDS) from the intake contaminated resources, and delivers drinking water free from any organic and inorganic contamination, bacteria and viruses.





24/7 Service

A mixture of remote monitoring/management and local representation of technical teams assures communities that they are not left alone! Boreal Light GmbH's eyes and hands stay with our clients wherever they are.

Community Projects



Boreal Light is deeply considering local community making an engagement into all its projects across the world. Creating 3 permanent jobs and 10 value added jobs in each of the single projects create huge local impacts into the host communities.





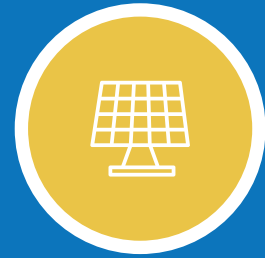
Simplicity

Simplifying a technology that is always known to be complex! A plumber with a wrench and a screw driver can take care of over 70% of the maintenance!



Affordability

Carefully designed for low-income communities with all their needs and requirements. Reducing the cost of access to drinking water by 90%.



Off-Grid

Fully off-grid solution, running on solar energy with no need of expensive battery banks or diesel engine.

General Specification

Capacity	from 1,000l/h up to 30,000l/h
Structure	Containerized/Skid
Chassis Material	Aluminium
Filtration Technology	simplified reverse osmosis (RO)
Membrane	low pressure RO membrane
Membrane Life	three - five years
Raw water source	Seawater, brackish water, surface water, wastewater
Water Delivery	Tap/Bulk/Drip irrigation
Contamination	Organic and inorganic, fluoride, chloride, salinity up to 50,000 TDS.
Quality of Produced Water	TDS: 50 ppm - 300 ppm
Pre-Filters	5 x 5µm micron pre-filter/ 1 x activated carbon filter/ 1 x sand filter / ultra filtration
Disinfection Unit	2 x UV sterilization
Power Supply	Hybrid (solar, wind)
Backup Batteries	2 x 100Ah 12V VRLA
Controlling System	Remote Monitoring / 36 elements, Digital
Performance Monitoring	24/7 remote monitoring, 3G, 4G, SMS intake water quality & volume, outgoing water quality & volume, solar panels voltage, tanks status, system pressure



Hospitals

Winture Planet Cube+ is a tailored-design version of a solar water desalination system manufactured by Boreal Light GmbH for hospital applications. While the machine treats general pollutions, the add-on of the hospital version is having ozone disinfection for both reservoir and wastewater of the infection department, making sure no bacteria and viruses remain in the out-flow.



Farming

While drinking water brings life to people, that is the irrigation and water supply for farming that makes unprivileged communities prosperous. Here is where Winture Planet Green steps in as an add-on to Winture Planet Cube. The Planet Green places sensors in the farm. Sensors communicate with Winture's main controller and inform the system when and how much water is needed to be released to the drip irrigation network connected to the machine.



Wastewater

Industry wastewater, such as apparel factories, mining industries, biogas plants and etc. carries high loads of hazardous minerals, and heavy metals in their effluent. Winture Planet Cube can treat the wastewater for reuse or safe release into the environment while not adding any electricity consumption to the facilities' processes.



Sea Water

Winture Planet Cube is an easy solution capable of treating any kind of seawater and brackish water resources. The technology has been tested for salinity up to 48,000 PPM of Red Sea! Simplicity of the design and affordability of the cost makes Winture an ideal solution for any kind of water supply services for both village and urban communities. Each module of Seawater Winture Planet Cube produces from 1000 to 20,000 liter per hour.

At Boreal Light we are not only a technology company, but a social business.

We care beyond technology: Social business and following SDGs are getting the same attention as the perfection of our machines.





We care beyond technology.



Example Project

Water supply by the desert Wajir WaterKiosk®

Wajir WaterKiosk® is located in the interior most part of Wajir County. Residents walk long distances in search of water for their domestic use. Due to the insecure situation in this region, it has become a challenge for many to walk home in the scorching sun with the water they fetched, making water collection a difficult task.



WaterKiosk® has built a desalination plant to assist the residents of easily accessing fresh hygiene drinking water. The plant serves more than 400 homesteads with hygiene drinking water, powered by a 9kW solar array. This plant saves the residents' time and money for its availability and affordability.

Country, region
Kenya, Wajir County

Impact achieved
access to drinking water at affordable rate to the public



KENYA



Technology transfer
solar-powered water treatment plant for the production of clean drinking water by modified reverse osmosis



Water is **life**.

Water is **job**.

Water is **us**.







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