

Aqua Culture System

Aquatron, Algal culture system, Aquaponics



- Freely customize aquaculture and algal culture system.
- Aquaponics which is combination of aquaculture and hydroponics (plant factory)
- Support fishery facilities from experiment and research to production.



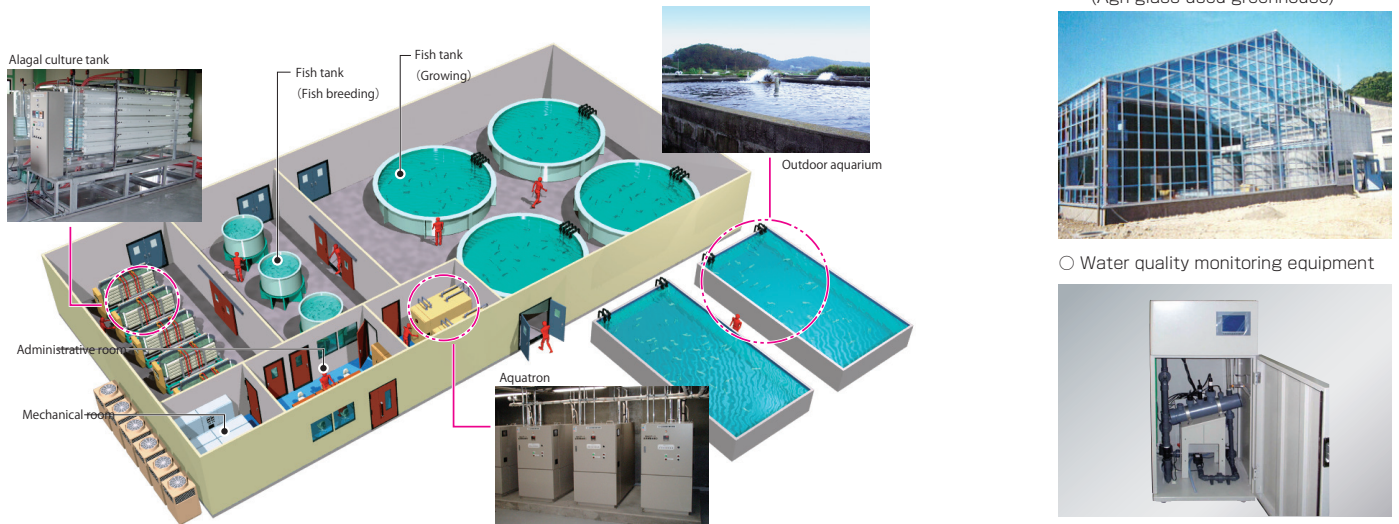
Aquaculture

Aquaculture system

Aquaculture system

Fishery is one of the future food resources. However, with the growth of global requirement it is depleting now. Therefore to changeover fisher industry from fishing to raising is necessarily and urgently. The aquaculture system which can provide marine products safely and securely is an important part in fishery industry. ESPEC MIC Corp. can provide you systems that support not only both seawater and freshwater food resources but also algal on land.

● Figure : Aquaculture system



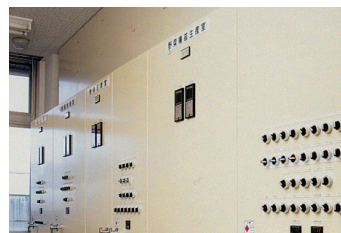
○ Outdoor fish tank (Agri-glass used greenhouse)



○ Water quality monitoring equipment



○ Environmental control system



○ Seawater sterilization equipment (Ultraviolet flowing water sterilization)



○ Seawater desalination unit (RO membrane water treatment)

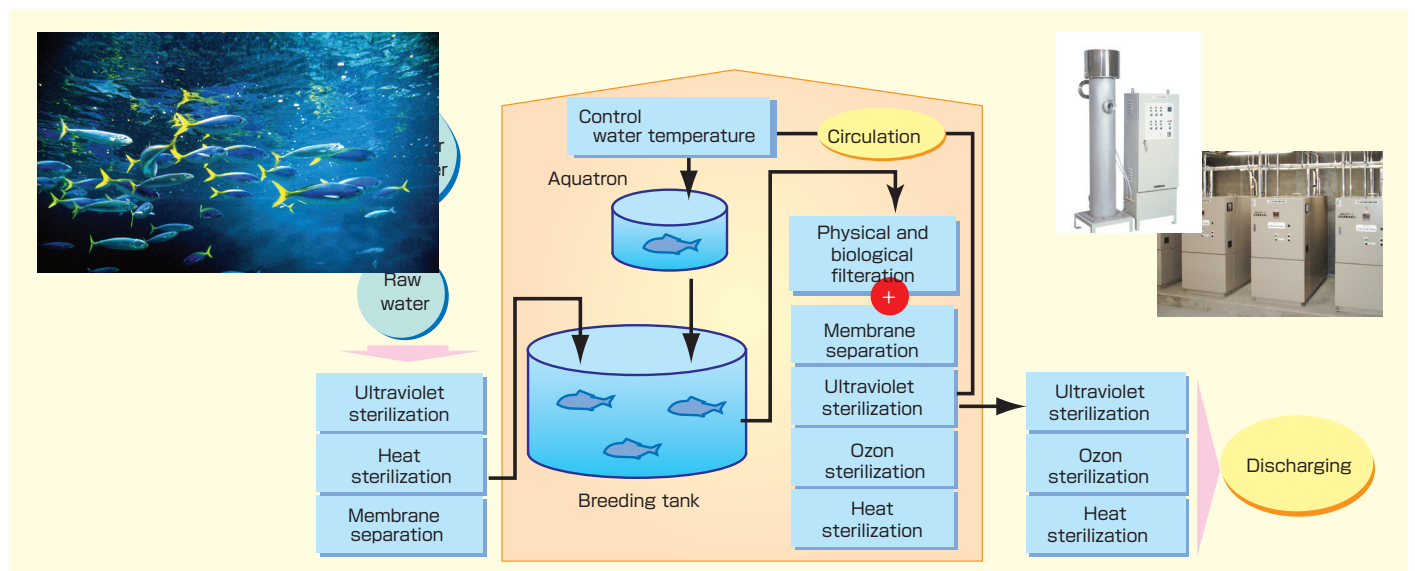


○ Seawater sterilization equipment (UF membrane water treatment equipment)



Water treatment for aquaculture facility

In the aquaculture field, discharged water from facilities for seedling production and disease research requires secure treatment such as sterilization as with agriculture field. In the aquaculture facilities, advanced water treatment technology is required for research of discharged water recycle.



※ This is only an example of specifications in standardized facility. Please contact us for more information.

Aquaculture

Algal culture, growing chamber, container type aquaculture system

TAQN Algal culture/ growing chamber

- TAQN is a prefab growing chamber which can control temperature for culture and growth of algae.
- Multistage nursery shelves are equipped and light source is selectable in fluorescent lamp, LED and CCFL.
- We have various sizes (type 3 to 12) of TAN and also can provide larger size.

Main specification

Model		TAQN
Performance	Temperature range	+5 ~ +35°C ※ 1
	Humidity range	60 ~ 95% RH (humidifying control) ※ 1
	CO ₂	~ 2000ppm
	Light intensity	150 ~ 300 μ mol/ m ² · sec ※ 1
	Wind velocity	up to 0.2m/s (each area of stages)
Structure	Exterior	Colored steel plate
	Interior	Stainless pored plate
	Insulating material	Rigid urethane foam
Air-conditioner	Freezing process	Single stage freezing system (air cooling)
	Thermal process	Heater
	Humidifying process	Ultrasonic humidifier
Light source	Selectable from three band fluorescent lamp, LED and etc.	
Electric power supply	AC200V 3 φ 50/60Hz	

Standard size

Model	Outside (W × D × Hmm)	Inside (W × D × Hmm)	Floor space
Type 3	1800 × 1800 × 2360	1700 × 1700 × 2000	2.9m ²
Type 5	2700 × 1800 × 2360	2600 × 1700 × 2000	4.5m ²
Type 6	3600 × 1800 × 2360	3500 × 1700 × 2000	6.0m ²
Type 9	3600 × 2700 × 2360	3500 × 2600 × 2000	9.1m ²
Type 12	36 × 3600 × 2360	3500 × 3500 × 2000	12.3m ²

※ 1 Range of temperature and humidity, and lighting intensity can vary according to intended use.



TAQF Container type aquaculture system

- We provide unitized required equipment for aquaculture in the maritime container such as air-conditioner, hydroponics and water treatment device.
- Since TAF is a container type plant factory system, It is easy to transport by land and decrease initial cost due to minimum site work.
- We have two types (20 and 40 feet) of TAQF as standard model. It is able to expend such as connection horizontally and stacking.
- For abalone culturing, liveing fish carrying, experiment of aquaculture and test of fish farming.

Specification

Model	TAQF-12A	TAQF-24A
Air-conditioner	Heat pump package air-conditioner + ventilator	
Equipments	Aquarium (FRP, PC and etc.), water temperature controller, ultraviolet sterilizer, filtration treatment device, pump and etc.	
Exterior size (W × D × Hm)	2.4 × 6.1 × 2.6	2.4 × 12.2 × 2.6
Interior floor space (m ²)	11.6	25.2
Electric power supply	AC200V 3 φ 50/60Hz	



○ 20 feet type



○ During the transportation

Aquaculture

Water treatment device

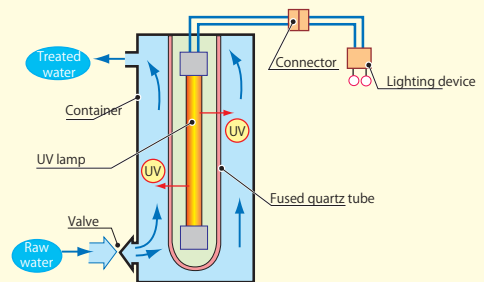
Water flow type UV sterilizer

This device can sterilize bacteria, fungus and algae by using UV ($\lambda=253.7\text{ nm}$) in flowing water.

- It is an internal radiation type device, which's UV lamp is protected by silica tube. The sterilizing ability is improved due to there is no wasted UV light.
- Depending on the application, it can be manufactured from 100 liter/h to 50m³/h (please contact us for more information).



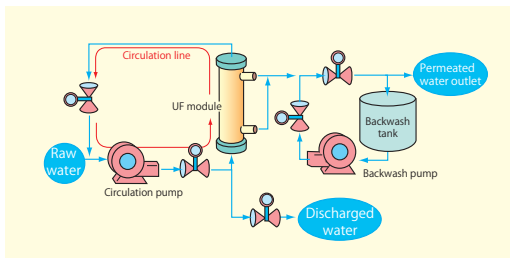
Device configuration



UF membrane water-treatment equipment (ultrafiltration membrane)

It is a water-treatment equipment used ultrafiltration membrane (UF membrane). produces the effect on sterilization and clarifying any water such as nutrient solution for hydroponics, well water, industrial water, river water and seawater.

- Turbidity, bacteria and viruses can be removed by UF membrane.
- Compact is unitized.
- This device can run automatically, and able to run stably for a long period by automatic back-washing function.
- The volume can be customized depending on your requirement.



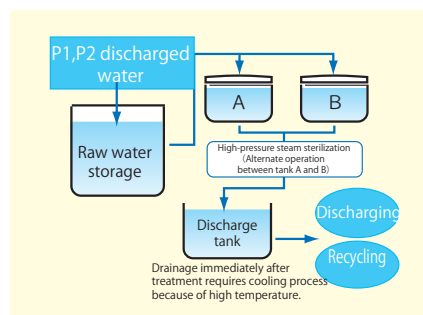
Model	UF-1	UF-2	UF-3
Power	AC100 50/60Hz		
Raw water condition	Water temperature : 5 ~ 35°C Water pressure : 0.1 ~ 0.25MPa pH : 4 ~ 10		
Ambient temperature	5 ~ 45°C		
Standard performance			
permeate flow rate (m ³ /h)	0.5	1.0	2.0
Pressure (MPa)	0.1		
Water temp. (°C)	25		
Extra filtration film	Polypropylene film (PP)		
Number of module	1	1	2



TAO Effluent-high-pressure steam sterilizer

This equipment is sterilizer of contaminated wastewater with high temperature and pressure.

- We offer as an automatic process system, such as from supplying effluent into treatment container to sterilizing and cooling water discharge after sterilizing.
- The treatment container is made in stainless steel (SUS316), which can be used for a long time. Furthermore, for the seawater and unstable pH drainage the container can be made in titanium.
- The container's volume can be customized from 20L to 500L.

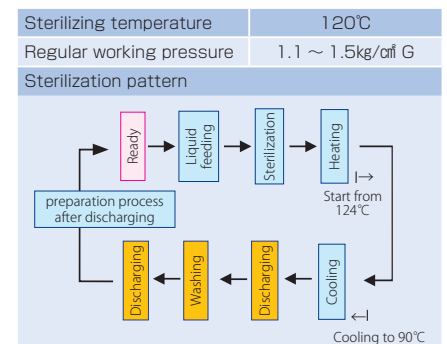


Main unit size of standard container

Small pressure container	First-class pressure container	
20 ℓ	100 ℓ	750 ℓ
30 ℓ	200 ℓ	1000 ℓ
50 ℓ	300 ℓ	2000 ℓ
90 ℓ	500 ℓ	3000 ℓ
		5000 ℓ

※ All this equipment will be customized. Please contact us for specification, price, etc.

Sterilization



- Main use
- Sterilization of wastewater from biohazard facilities (such as genetic modified organism, etc.) and medical facilities.
- Treatment of wastewater which includes pathogens and cells of animal and plant.
- Treatment of various wastewater from food, medical facilities, etc.

Aquaculture

Aquatron / Aquaponics

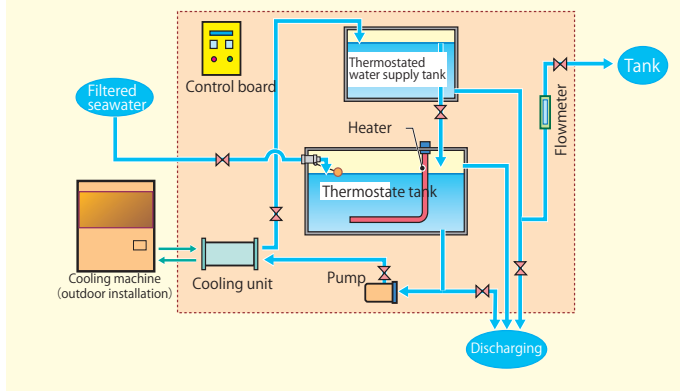
TAQ Aquatron (water temperature control device)

Aquatron is a water temperature control device in experiment and research facilities of seedling and disease of fish and shellfish, and aquaculture facilities on land.

- It is possible to control water temperature with high accuracy from low to high water temperature by our temperature control technology which is cultivated in environmental control field.
- It is a unitized compactly, and it is needed less installation space.
- Depending on amount of water treatment volume, we can offer various types of systems from small to large volume.
- It is also suitable for an aquaculture system which is combined with water tank and filter.



■ Device configuration



■ Specification (example)

Model	All-in-one thermostatic tank unit
Capacity	0.5m ³ /h
Range of temperature control	+15 ~ +25°C ± 1.0°C
Thermostatic tank	200 ℓ × 1 unit
Thermostated water supply tank	100 ℓ × 1 unit
Circulation pump	0.4KW (about 200 ℓ / min)
Unit size	W2600 × D1200 × H2000mm

※ The above is an example. Please contact us for more information.

TBKO Aquaponics

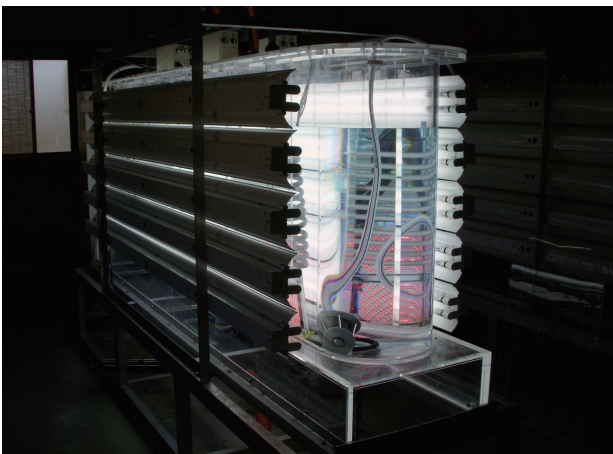
It is a device for cultivation of microalgae such as chlorella and nannochloropsis.

- There are two kinds of systems. Oval type cultivation system is lighted with fluorescent lamp from the side, circular type cultivation system is lighted with metal halide lamp from top.
- Stirring can work stably by supplying air from the bottom.

■ Specification

Model	TBKO-1A (Oval type)	TBKO-1B (Circle type)
Volume of water	1000 ℓ	
Tank	Acrylic	Polycarbonate
Water temperature control	+10 ~ +25°C	
Light intensity	above 200 μ mol	above 100 μ mol
Aeration	above 100 ℓ / min	

○ Oval type



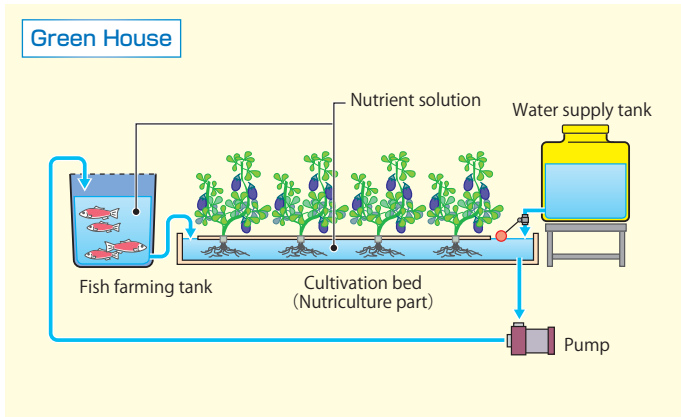
○ Circle type



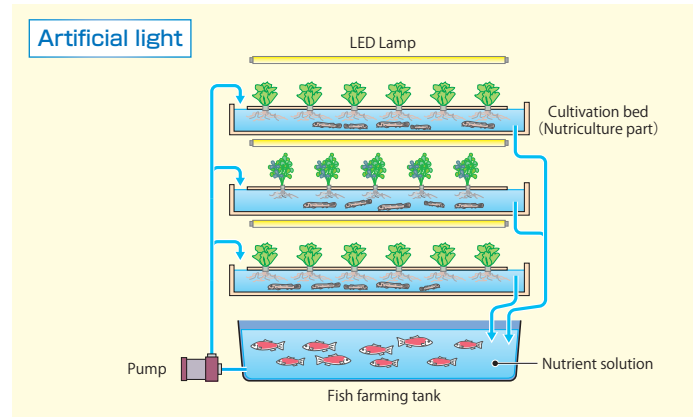
Aquaculture

Aquaponics / Complex facility

Aquaponics is environmental management system that combined both hydroponics and aquaculture. Aquaponics system can recycle waste water and reduce usage of chemical fertilizer by use drainage containing organic matter as fertilizers of plants.



Eggplant × Tilapia

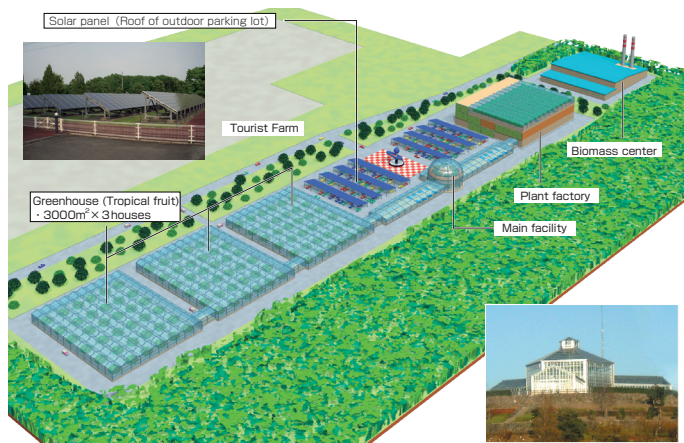


Lettuce, Herb × Loach

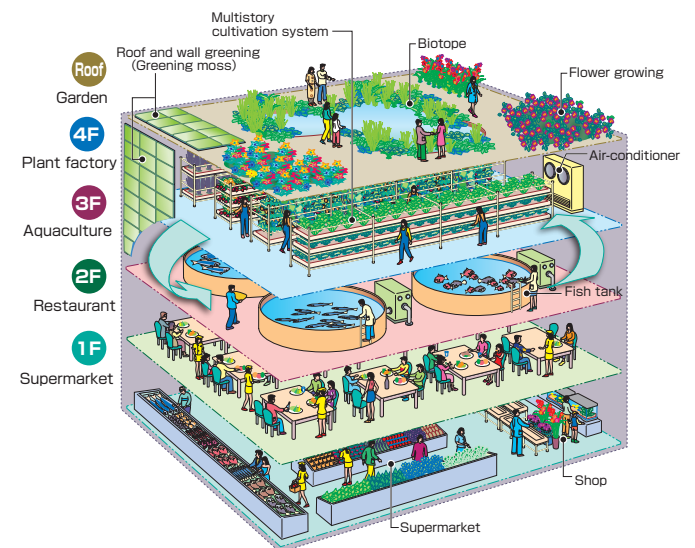
Complex facility

We provide facilities for urban farm (combination of aquaculture and plant factory) and regional developments.

○ Reference image



○ Reference image



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● Please note that specifications and designs may change without prior notice for improvement of products.
● The specification and designs of the products in this catalog are true as of Aug 2019.