

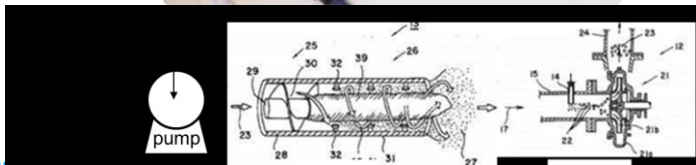


Ultra Fine Bubble Generator & Clewa

Hack International Co., Ltd.

A clean and environmental friendly technology for water treatment

Ultra fine bubble generator



Features

Ultra fine bubble generator

- The product can enhance the amount of dissolved oxygen in water, so it has potential for promoting biological activity of organisms.
- The negatively charged bubbles can boost the nutrient adsorption of plants, leading to higher activity of plant roots and reduction of fertilizers usage.

Overview (Technical principles, actions, etc.)

Ultra fine bubble generator

- ① Air is sucked in by negative pressure of the pump.
- ② The mixer is pressurized and cuts out liquid and vapor simultaneously to produce cavitation effect.
- ③ Bubbles are emitted from the nozzle.

Clewa



Ultra Fine Bubble Generator

Advanced Oxidation Process

Clewa

- The product is a combination of advanced technologies such as ozone, photo-catalyst, UV, and ultra fine bubble.
- The main products are CO₂ and H₂O which are environmental friendly.
- There are less wastes production and the after-treatment procedures can be simplified.

Clewa

The waste water circulates between AOP device and ultra fine bubble generator and finally becomes clean water, Ozone, UV, and fine bubbles can produce OH radicals to oxidize organic substances in raw water,

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Performance /specifications of technology / product

Characteristics of ultra fine bubble

- Negatively Charged
- Self-pressurized
- Increase in surface area
- Reduction of buoyancy

Applications

- Sewage treatment
- Organic synthesis
- Wash the instruments
- Cultivate plants
- Maintain the freshness of seafood
- Boost the blood circulation
- Skin massage
- Academic research

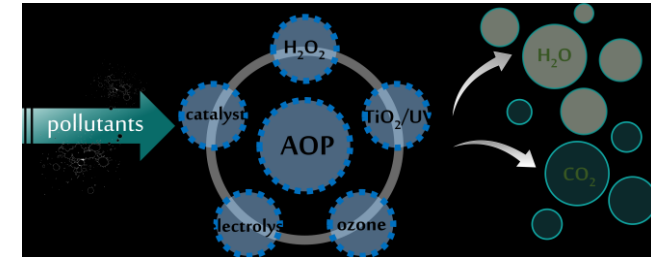
Usage examples / result

Ultra fine bubble generator

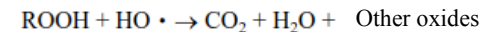
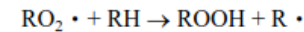
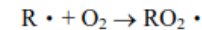
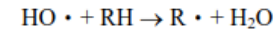
- ① The effect of dissolved oxygen for Cyclamen. –From Nara Agricultural Technique Center
- ② The eggplants become bigger and brighter. Also, fine bubbles improve the odor of soil. –From Kochi, Mr. Shantou
- ③ Through the water purification of fine bubble, the production of pearl oyster increases 20%. –From Mie Ken



Advanced oxidation process



Reactions of OH radical:



RH: organic component

Clewa

Examples of waste water treatment



Waste-oil untreated water

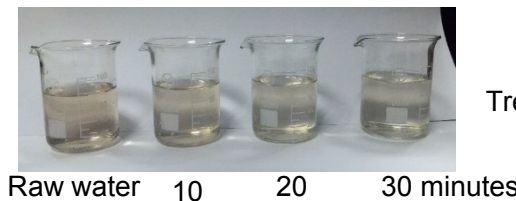
Oil-water Separation

original final

Treated by CLEWA

After precipitation and remove the sedimentation

Textile Waste Water treatment



Treated by CLEWA

Raw water 10 20 30 minutes