

Suzuki Sangyo Co., Ltd.

Micro-Bubble Aerator for Advanced Wastewater Processing

- Employs micro-bubble aerator and ozone for water decolorization and recycling

Main Features

- This system employs the Micro Power-S micro-bubble aerator, enabling ozone's high-power oxidation to instantaneously and completely react with produced materials.
- Capable of advanced processing that cannot be done by biological treatment (decolorizing, improving values of residual biological oxygen demand [BOD] and chemical oxygen demand [COD] in wastewater, and effectively utilizing wastewater as recycled water).
- Generates ultrafine air bubbles, high-density groups of which capture suspended solids (SS) for powerful flotation separation at high speed.



Micro Power-S



Pressurized flotation unit with processing rate of 35 m³/h

Technology/Product Overview

Ozone Oxidizing System

After the ozone is sucked into the nozzle of the aerator and mixed with wastewater by a special pump and mixer, it is dissolved to nearly the point of saturation in a high-pressure tank at the rate of 5 kg/cm² (Henry's Law, 180 PPM at 20°C). The system is capable of effectively decolorizing wastewater, performing COD processing, treating wastewater with surfactant, and removing residual organic material. The ozone effect also makes the water recyclable and reusable. The system also performs flotation separation of SS having reacted with the ozone and separates them, as scum, from the liquid.

After the ozone is dissolved to the maximum degree possible (undissolved air is released through the upper part of the aerator), a special control valve reduces the pressure. Then the system instantly generates large quantities of ozone water or ultrafine air bubbles.



Demonstration of ozone-employed decolorization of wastewater at business show

Applications
All factories discharging wastewater
Dye factories, paper/publ factories, food factories,
chemical factories, sewerage facilities, etc.

Energy saving

New energy

Natural energy

Energy recovery

Other

Water pollution prevention

Air pollution prevention

Soil pollution prevention

Global warming prevention

Flotation Separation Performance for Pressurized Flotation Units

Conventional bubble aerators generate air bubbles that are approximately 0.1 mm (100 microns) in diameter and lack uniformity in terms of size. The Micro Power-S micro-bubble aerator generates air bubbles that are approximately 10 μ in diameter, uniform in size, and have huge surface areas. Groups of these high-density air bubbles capture condensed SS and perform flotation separation at high speed.

1. The system instantaneously generates ultrafine air bubbles that are uniform in size.

Additionally, automatic system operation is possible by linking with other systems.

2. The powerful flotation of ultrafine air bubbles improves BOD and COD values and eliminates SS by applying a small, precise quantity of coagulant.



30-kW micro-bubble aerator at textile factory in Shanghai

Installation Examples

- In fiscal 2008, a number of 30-kW pumps for pressurized flotation units were delivered to China and used for decolorization, COD processing, and recycling of wastewater.
- In fiscal 2006 and 2007, pressurized flotation systems employing high-speed high-oxygen biological treatment and ultrafine air bubbles were installed and technological instructions were given at a beer brewery in Vietnam as an official development assistance (ODA) project of the New Energy and Industrial Technology Development Organization (NEDO), Japan.
- The use of ozone for wastewater decolorization was exhibited at the Osaka International Textile Machinery Show (OTEMAS). The efficacy of ozone was demonstrated with a decolorization test of wastewater contaminated with dye. The test results verified that all ozone reacted with unwanted materials, and the wastewater was processed into colorless, odorless recycled water.
- There are numerous cases of pressurized flotation units using micro-bubble aerators being adopted at food factories and dye factories in Japan.

Benefits

- The high-speed or instantaneous reaction between the ozone and the processed substances in wastewater enables treatment in a short period of time. Also, toxic ozone (ozone that is dangerous or corrosive) cannot be discharged until after it has reacted with the processed substances.
- Enables advanced processing of wastewater that cannot be done through biological treatment (decolorization, high-degree BOD, COD, and n-hexane treatment.)
- Efficient reuse of recycled water is made possible due to the effectiveness of the ozone reaction with the final effluent released following biological treatment. This is ideal for companies that use large quantities of water, such as those in China where water-use restrictions have been imposed.
- Generates ultrafine air bubbles, high-density groups of which capture SS for powerful flotation separation at high speed.

Inquiries

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