

## Micro/Nano bubbles

improves water pollution, strange odors, and large amounts of blue-green algae.

Significantly improved CIP cleaning capacity for food and beverage production lines

YJノズル 標準型



ノズル出口→

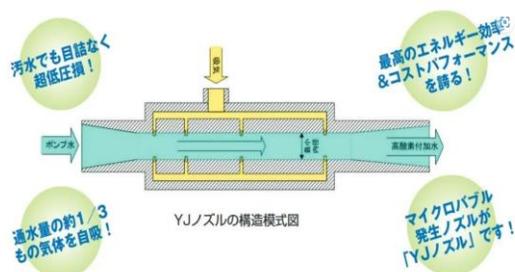
←ノズル入口

YJノズル inline型



ノズル出口→

←ノズル入口



Our Nanobubbles are just a few hundred nanometers or smaller.=ultra-fine size, it has an extremely effective effect in that it can enter any place and purify and revitalize it. These nanobubbles are generated from [the YJ nozzle](#).

It has been confirmed that micro/nano bubbles have a higher dissolution rate of dissolved oxygen than normal bubbles, other bubbles dissolution efficiency is more than 10 times higher than that of ordinary bubbles (generated by an aeration device, etc.). BUT nano bubbles do not rise to the surface of the water immediately but remain suspended in the water for a long time.

*Send us your flow rate L / min, we will send you nozzle information.*

# Maintenance FREE and Cost reduce Feature of YJ nano nozzle

## ① Maintenance free with no sludge clogging

The biggest feature is the large-diameter straight structure, which was previously impossible. It has an ultra-low pressure drop structure and a large water flow diameter, so there is no need to worry about it becoming clogged with sludge, and it is maintenance-free.

## ② The highest level of energy efficiency

30% of the water flow rate can be mixed with gas, the highest level in the industry. It has achieved the highest level of energy efficiency and can be used not only for industrial purposes but also for general wastewater treatment and cleaning.

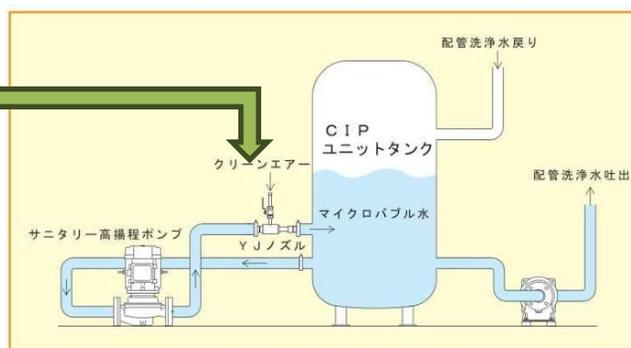
## ③ Contributes to cost reduction

The amount of chemicals used for colloidization can be significantly reduced, which also contributes to reducing running costs.

## ④ Effective if used in combination with an ozone gas generator.



\*YJ-21特注サニタリーヘルール仕様



*Send us your request of system , we will reply you with Proposal.*

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## Improve Cleaning



④ More effective when used in combination with an ozone (O<sub>3</sub>) gas generator



When combined with an ozone gas generator, ozone microbubbles and nanobubbles can be created, and more powerful OH radicals can be efficiently generated in water. It can perform intense organic matter decomposition without relying on microorganisms and is inexpensive.

⑤ Can be used in wide areas of water

Efficiently aerobizes large bodies of water such as aeration tanks, adjustment tanks, and lakes.

Since they have a higher internal pressure than normal bubbles and stay in water for a longer time, they can improve and maintain dissolved oxygen (DO value) with high efficiency even in vast bodies of water.

*Send us your Chiller , A/C info, we will reply you with ROI.*

# Abundant sizes

A wide range of sizes is also a major feature of YJ nozzles. Pump flow rate can be handled up to 30~5000 (L/min).

This is a size that was only possible because of YJ nozzles.

ノズル形式	接続径 〔インチ〕	ノズル内径 〔mm〕	参考ポンプ 出力〔kW〕	最小ポンプ流量 〔L/min〕	参考自吸空気量 〔L/min〕
YJ-6	3/4	6	0.4	28	15
YJ-9	1"	11	0.4	80	25
YJ-15	1"1/2	15	0.75	150	50
YJ-21	2"	21	1.5	300	80
YJ-32	2"1/2	32	3.7	680	240
YJ-40	3"	38	5.5	1100	300
YJ-52	4"	52	7.5	1800	600



揚程 1 2 m時、上記仕様表以上の流量のポンプを接続して、ご使用ください。

※ポンプ流量は揚程 1 2 m時の流量になります。

以上

・上記仕様は予告なく変更する場合がありますので予めご了承ください。  
(標準材質：SUS304)

・ノズル形式はYJ-83：接続径6"まで取り揃えております。  
・材質はSUS304以外も製作可能です。 例) 樹脂製：PVDF製(フッ素系)



Send us your spec of cleaning system for us.

# How to be used

<p>Cyanide treatment</p>	<p>Oxidation reaction by ozone + micro/nanobubble (hereinafter referred to as O3+MB) Cyanide compound Raw water 1.3mg/L→&lt;0.1mg/L</p>
<p>● High-efficiency aeration in wastewater treatment and sewage treatment conditioning tanks, aeration tanks, and the electrifying effect of micro-nano bubbles to reduce chemical injection and flocculants, and sludge volume reduction effects <a href="#">Click here for an ozone wastewater treatment system.</a></p>	<p>Just by throwing it into the reaction tank of the flocculation sedimentation device or flotation separation device, the amount of chemical injection, flocculant, and sludge generation can be significantly reduced. <a href="#">Click here for "Chemical injection and flocculation sludge reduction device = 50% or more reduction of chemicals and sludge"</a> <a href="#">Click here for the "microbubble generation nozzle for floating separation"</a> that can be installed at the inlet of the existing pressurized tank ( SS, Norheki, BOD, Scum, Sludge Reduction)</p>
<p>●Lake purification (removal of blue-green algae, abnormal growth of algae), purification of rivers and dam lakes (restoration of ecosystems by improvement of bottom hypoxia, improvement of decaying sediment), reduction of odors such as underground pits (measures against offensive odors)</p>	<p><a href="#">Click here for "Examples adopted by the Ministry of Land, Infrastructure, Transport and Tourism in the Enga River Estuary Weir Water Quality Conservation Project"</a></p>
<p>●Sterilization of ballast water using ozone microbubbles and nanobubbles, reduction of COD and BOD, neutralization treatment with carbon dioxide gas, etc.</p>	
<p>● Promote the cultivation of marine products and agricultural products, maintain freshness Bioactive effects (very effective in combating diseases and promoting the growth of aquaculture products such as oysters) Another major feature of microbubbles is that they have an excellent effect on promoting the growth and maintaining freshness of agricultural products</p>	<p>Of course, the bioactive effect can be seen with air microbubbles, but an even greater effect can be achieved by connecting an oxygen generator (PSA) to the intake part of the YJ nozzle and generating oxygen microbubbles.</p>

# How to be used

<ul style="list-style-type: none"> <li>● Sterilization and bleaching with high-concentration oxygen water and ozone water, mixing nozzles for high-speed oxidation reactions</li> </ul>	
<ul style="list-style-type: none"> <li>●● Various cleaning applications Significant improvement in CIP cleaning capacity of food and beverage production lines (We have succeeded in removing thermocoagulation proteins by using custom-made sanitary rules on the actual production lines of a major dairy beverage factory, and have succeeded in reducing the cost of alkaline chemicals. )</li> <li>● It can also be applied to cleaning electronic parts and mechanical parts.</li> <li>● For degreasing and cleaning car body steel sheets before painting!</li> <li>● Significant cost reduction by reducing cleaning agents such as alkali</li> <li>● Negative electrification of fine bubble (microbubble) water, OH radical action, etc., promote the peeling of dirt, sterilization, and decomposition of organic matter, thereby enhancing the cleaning effect. It is a non-chemical cleaning function water that is in line with the times.</li> </ul> <p><a href="#">Click here for a microbubble generator for cleaning</a></p>	<p>By incorporating the YJ Cleaning System, a fine bubble (microbubble) generator for cleaning, into the CIP cleaning unit of a food and beverage factory, it is possible to completely remove residues such as thermocoagulation proteins that could not be removed with conventional alkaline chemicals and hot water alone, greatly improve the cleanability of the line, and significantly reduce the amount of alkaline chemicals used. Ultra Fine Bubbles) are playing a major role in real industrial processes. Of course, the cleaning performance of micro-nano bubbles is not limited to this food field.</p> <p>In a variety of sectors, including electronics, steel, shipbuilding, automobiles, and machinery, YJ nozzles boast the greatest energy efficiency and can handle any huge plant.</p> <p>According to experimental data from the Industrial Technology Center, ultrasonic cleaning with water treated with fine bubbles (microbubbles) with this device has further improved the cleaning effect.</p>
<ul style="list-style-type: none"> <li>● Various high-efficiency ozone sterilization in water purification plants, sewage treatment plants, etc.</li> </ul>	
<ul style="list-style-type: none"> <li>● Prevention of the occurrence of bacteria, limescale (scale), slime, algae, etc. in cooling towers Measures against odors and foul odors Inactivates bacteria and viruses (also effective against algaekillides, Legionella bacteria and carp herpes)</li> </ul> <p><a href="#">Click here for "Microbubble generator for cooling towers"</a></p>	<p>By installing a microbubble generator YJ nozzle and a compatible pump in the circulation piping of the cooling tower, it is possible to improve the performance of the cooling tower, reduce maintenance, and reduce chemical costs.</p> <p>If it is difficult to install it in piping, it can also be installed in a cooling tower.</p>
<ul style="list-style-type: none"> <li>● Line mixer for gas dissolution process (also hygienic)</li> </ul>	
<ul style="list-style-type: none"> <li>● Mixing steam microbubbles and nanobubbles with water and applying them to steam mixers</li> </ul>	

## Case Studies



<a href="#"><u>Major chemical factory</u></a>	<p>Power costs have been drastically reduced to less than 1/3, and we have succeeded in ultra-energy saving and CO2 reduction.</p>
<a href="#"><u>Automobile-related coating Company S Painting line cleaning drainage</u></a>	<p>The BOD of 3,000 mg/l of sewage in the paint booth has been significantly reduced to 60 mg/l</p>
<a href="#"><u>Paint shop (separation of paint residue, chemical-free pouring)</u></a>	<p>Succeeded in surfacing and separating paint scum without a killer agent, making it non-adhesive, and making it odorless.</p>
<a href="#"><u>Raw material manufacturer Company N Wastewater treatment and cleaning facilities</u></a>	<p>The amount of bentonite chemicals used has also been halved, and costs have been reduced. In addition, we succeeded in reducing costs by halving the surplus sludge from activated sludge treatment (halving industrial waste costs).</p>
<a href="#"><u>Reduced grinding time</u></a>	<p>Shortened processing time, increased cutting depth, reduced warpage, and increased wheel life</p>
<a href="#"><u>Dairy plant (CIP cleaning, odor control)</u></a>	<p>Measures against offensive odors, reduce load, and improve cleaning effects</p>
<a href="#"><u>Chemical Plant Company I, Wastewater Treatment and Cleaning Equipment</u></a>	<p>Reduction of COD</p>
<a href="#"><u>Pickle factory</u></a>	<p>Succeeded in reducing excess sludge to zero</p>