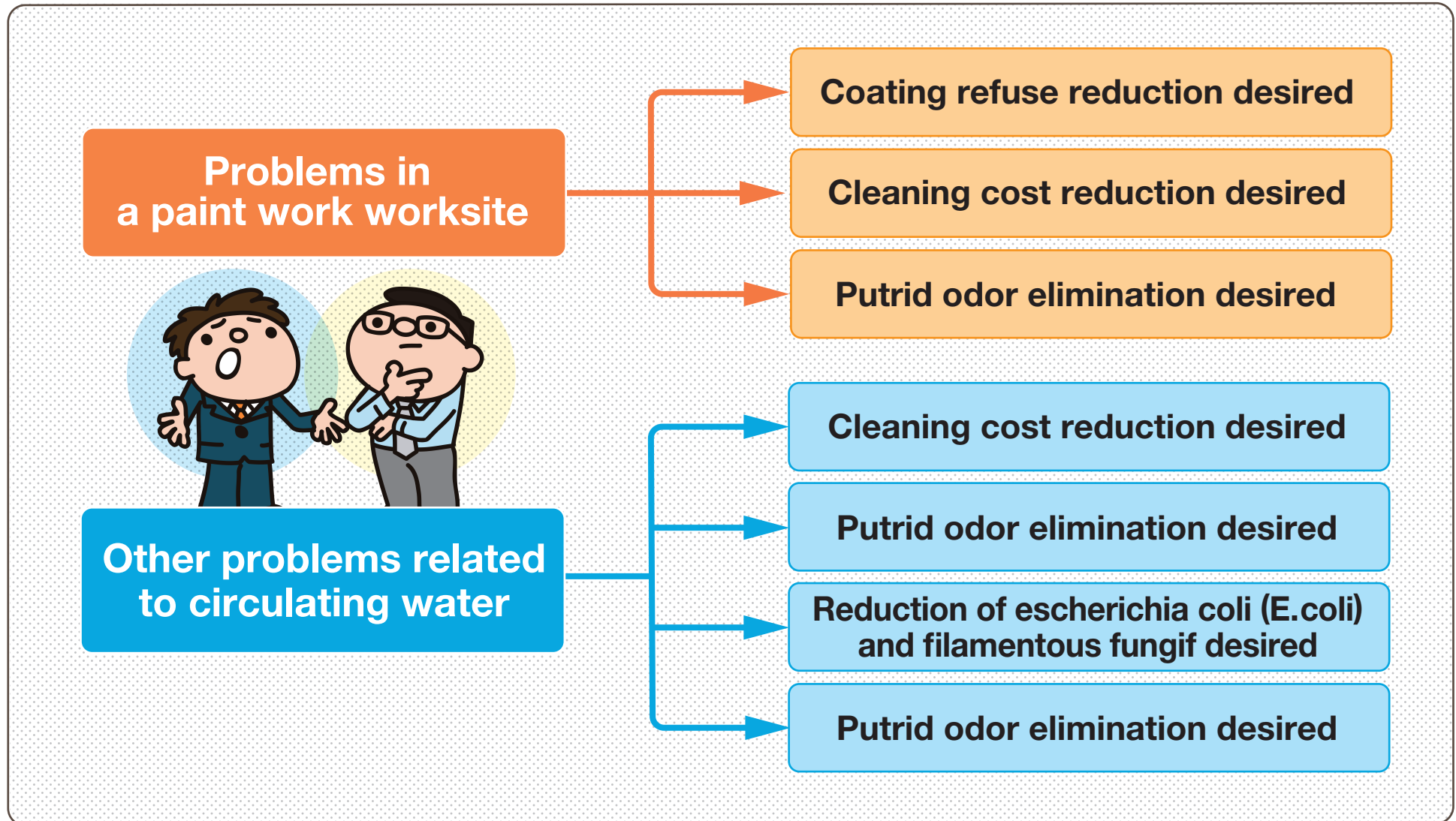


4 | Circulating water purification and maintenance system

- Implementing environmental measures that reduce cleaning and industrial waste disposal costs and generate profits



■ Are you having any of the following problems?



■ Circulating water treatment device supply example



Vehicle paint shop

Supplied: October 2005

Pit circulating water treatment

Putrid-smelling sludge reduction

Cleaning frequency
15 times to 3 times



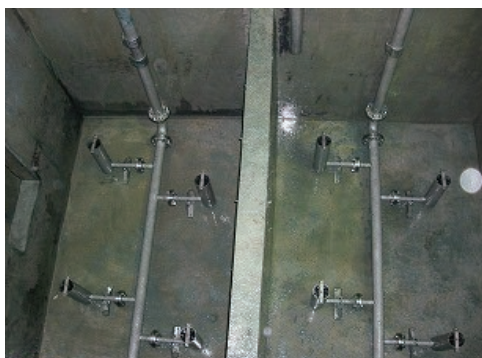
Agricultural machinery paint shop

Supplied: February 2007

Paint booth

Putrid-smelling sludge reduction

Sludge reduction rate: 50%



Heavy machinery paint shop

Supplied: July 2006

Putrid-smelling sludge reduction

Cleaning frequency

Cleaning frequency
10 times to 1 time



Railway car paint shop

Supplied: August 2005

Paint booth

Putrid-smelling sludge reduction

Cleaning frequency
1 month to 6 months



Home electrical product paint shop

Supplied: December 2007

Putrid-smelling sludge reduction

2-month sludge volume reduction

SS1100 to 360mg/L



Body parts paint shop

Supplied: August 2005

Paint booth

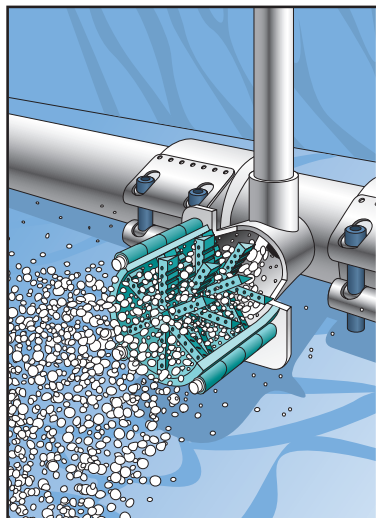
Putrid-smelling sludge reduction

Cleaning frequency
1 month to 4 months

Putrefaction prevented to reduce cleaning and industrial waste disposal costs



"Aquablaster diffusion pipe", which is a very tough air diffusion device and capable of treating coating refuse as well, is effective for a concentration pit where the water depth is high.



"Sludge Eater diffusion pipe", which generates horizontal jet water streams, is effective for a paint booth where the water depth is low.

System benefit

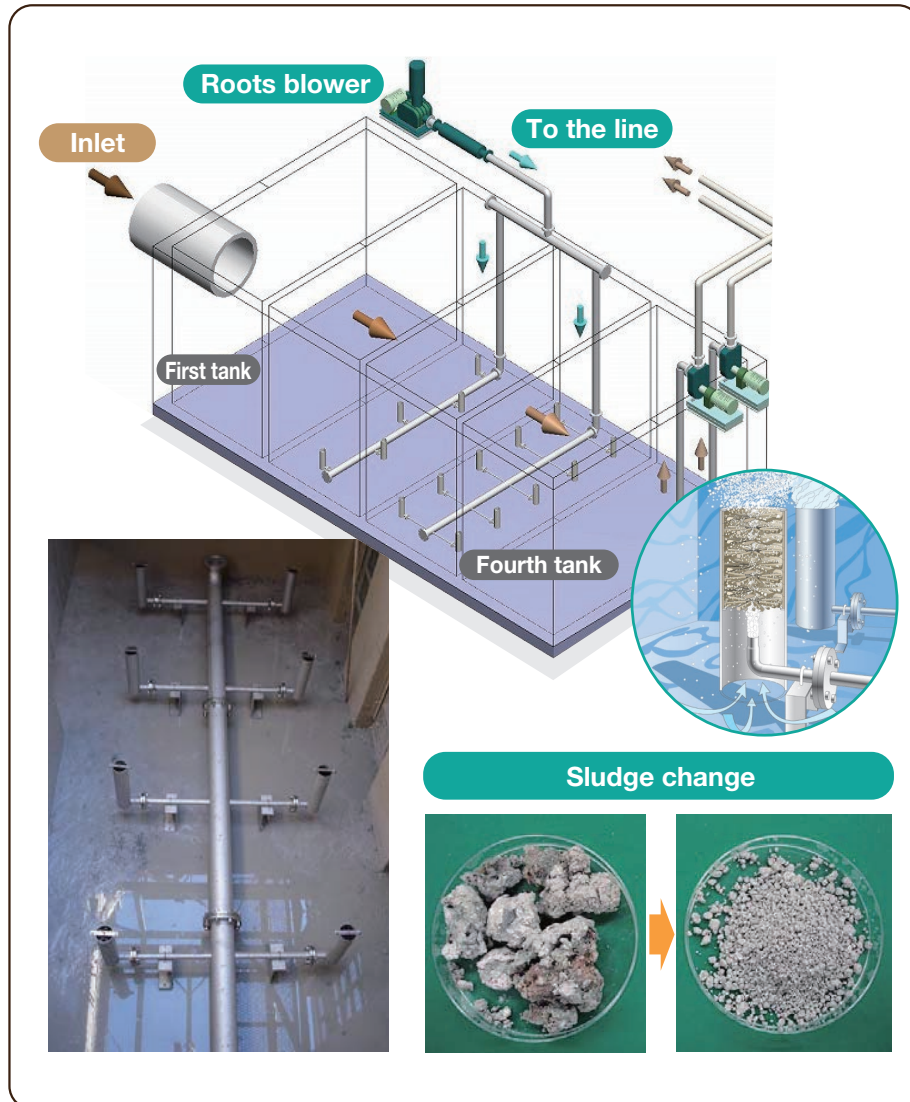
- Reduced cleaning frequency
- Shortened cleaning time
- Lower sludge viscosity
- Reduced volume of generated sludge
- Easy maintenance
- Putrid odor elimination
- Reduced bad bacteria count
- Reduced LCC



Cost of industrial waste disposal reduced!!

Vehicle paint line circulating water purification example

Aquablaster diffusion pipe



Cost reduction amount for vehicle factory, company A

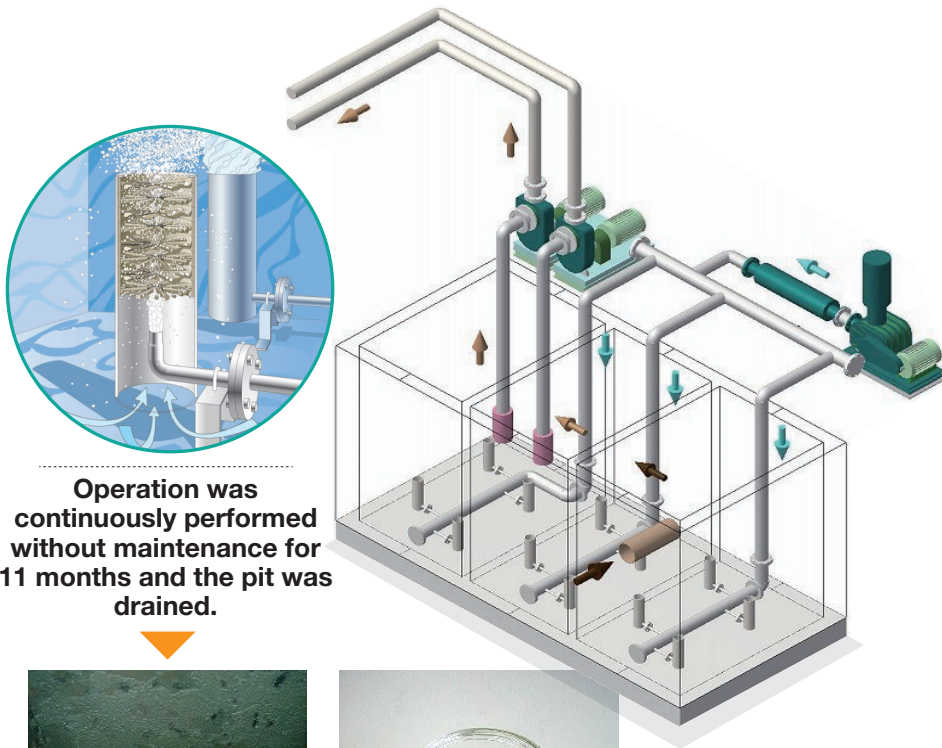
	Before installation	After installation
Cleaning cost	4,500,000	900,000
Cost of industrial waste disposal	9,900,000	1,320,000
Cost of wastewater treatment	840,000	168,000
Cost of electricity	0	1,944,720
Cost of activators	0	2,400,000
Total	15,240,000	6,732,720
Cost reduction amount	Costs reduced by 8,507,280 yen per year	

Vehicle factory Paint circulating water water quality change (Unit:mg /L)

	Circulating water replacement guidelines	Raw water	After 1 month	After 2 months	After 4 months
BOD	-	270	1100	1960	1440
COD	-	140	1560	2220	3130
SS	2000	100	156	1710	1900
N-Hex	-	24	24	56	26
PH	-	6.7	6.7	6.3	6.1
Viscosity m/S	10.0	1.0	1.5	8.0	6.9

Construction machinery paint line circulating water purification example

Aquablaster diffusion pipe



Operation was continuously performed without maintenance for 11 months and the pit was drained.



Circulating water after 11-month continuous operation without water replacement

* See the data on the right.

Cost advantages

	Before implementation	After implementation
Cleaning cost	2,400,000	400,000
Cost of industrial waste disposal	1,800,000	300,000
Cost of electricity	0	289,000
Total	4,200,000	989,080
Annual cost advantage	3,210,920-yen reduction	

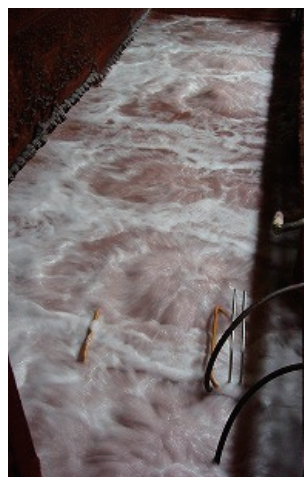
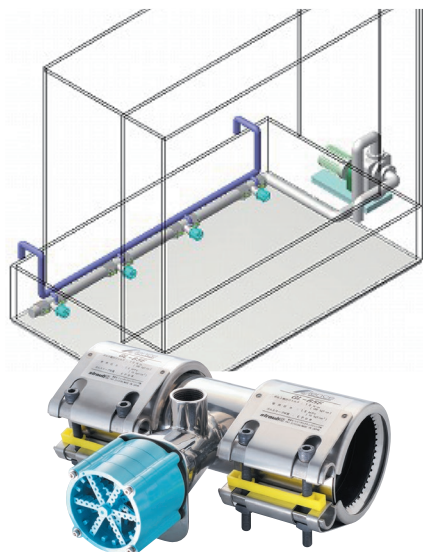
Construction machinery paint shop Paint circulating water water quality change (Unit:mg/L)

	Raw water	After 1 month	After nine months	After 11 months
BOD	Fresh water	180	2400	1100
COD		17	80	71
SS		84	1200	1200
N-Hex		13	1	8.6
PH		7.1	7.2	7.1

*SS: 2,000mg/L was considered as a guide for water replacement. However, without the level exceeding that value, continuous use for 11 months instead of cleaning on a monthly basis could be successfully achieved.

Paint booth circulating water purification data

Aquablaster diffusion pipe



■ Supplied: October 2005/January and May 2006
▶ 12 sets in total supplied

Railway car paint shop Paint circulating water water quality change (Unit:mg /L)

	Raw water	After 1 month	After 2 months
BOD	11,000	670	1,500
COD	4,900	640	940
SS	21,000	130	110
N-Hex	14	3	3
PH	7	7	6
General bacteria	8,300	5,600	20,000

* The introduction of the Sludge Eater diffusion pipe lead to a 40% sludge reduction as well as extending the water replacement frequency from every month to every six months.



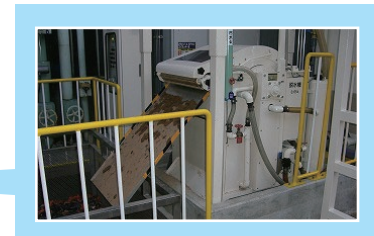
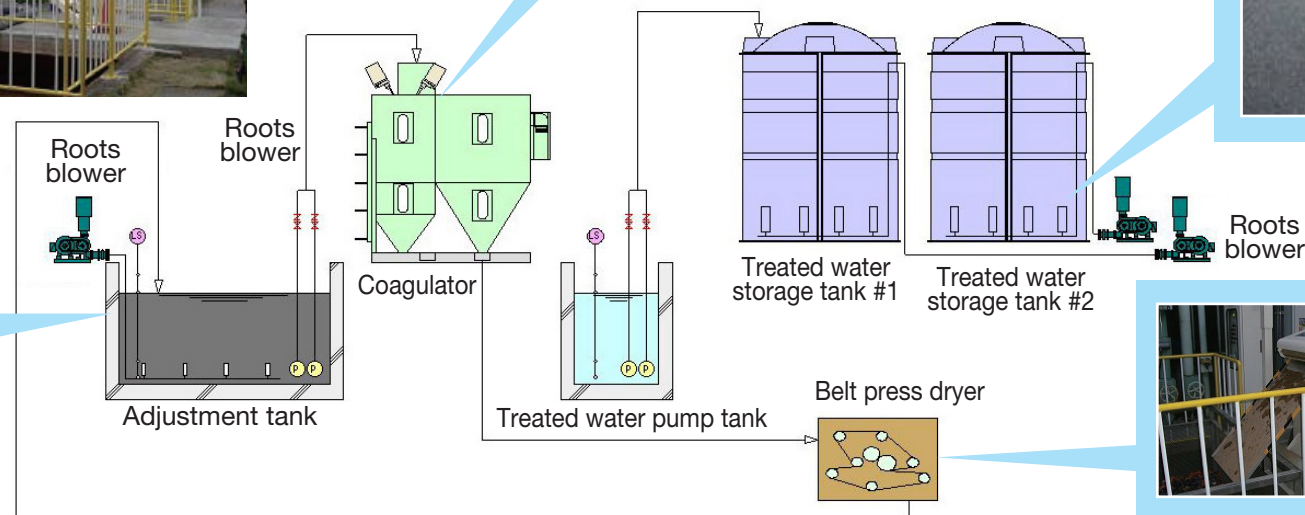
■ Supplied: January and August/2006 ▶ 4 sets in total supplied

Major delivery destinations	Area	Supplied quantity
Vehicle parts manufacturing plant	Fukuoka Prefecture	16 units
Railway car manufacturing plant	Yamaguchi Prefecture	4 units
Motorcycle manufacturing plant	Hyogo Prefecture	4 units
Subcontracted paint shop	Hyogo Prefecture	4 units
Vehicle parts manufacturing plant	Shizuoka Prefecture	1 unit
Lighting fixture manufacturing plant	Hyogo Prefecture	1 unit

■ Circulating water closed purification system for water-based paint

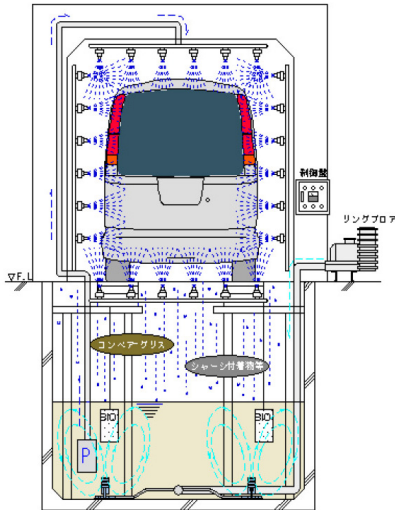
Aquablaster diffusion pipe

A circulating water closed system was built for a booth for water-based paint, which is believed to be difficult to be treated with water.



Vehicle roof leak inspection circulating water purification example

This is an example of circulating water purification applied to a production line for checking whether water gets into a vehicle in the vehicle inspection process.



Cost advantages per location

	Before implementation	After implementation
Cleaning cost	6,000,000	300,000
Cost of electricity	0	388,944
Total	6,000,000	688,944
Annual cost advantage	5,311,056-yen reduction	

* For information, the maximum water usage amount per location was reduced from 4,000t to 100t, and even the minimum water amount per location was reduced from 1,000t to 50t, achieving 95% or more reduction.

Circulating water data

	Raw water	After 1 month	After 2 months
BOD	19.0	8.7	5.6
COD	11.2	25.7	18.0
SS	85.0	28.7	13.6
N-Hex	7.2	12.0	4.5
PH	6.8	7.1	7.5

* Also from the above data, it can be seen that water used for a few months is cleaner than the water after replacement. This shows that after introduction, water which could be used only for one week before can be circulated and continuously used for as long as half a year to one year.

Photo of installation



State of operation



Supplied:
October 2005,
and thereafter,
introduced at three
locations.

Before implementation



After implementation



Supplied:
October 1999,
and thereafter,
supplied at three
locations.

■ Item-based comparison with other products

	Aquablaster diffusion pipe	Nano bubbles	Ozone	Ultraviolet rays
Water stirring capability	YES	MAYBE	MAYBE	NO
	Even for clean water, putrefaction advances if it is not moving at a minimum of five cm or more per second. If water is dirty, it must move more. Therefore, to purify circulating water, it is very important to produce powerful streams in the entire tank so as to prevent stagnation.			
Capability to stop bad bacteria	YES	YES	MAYBE	MAYBE
	To keep down bad bacteria counts (such as filamentous fungi and anaerobic bacteria), the best way is to activate aerobic bacteria and let them prey on bad bacteria. Moreover, by having aerobic bacteria disassemble organic matter, nutrients will be reduced and the number of aerobic bacteria will be reduced naturally as well. The bacteria killing capability of ozone or ultraviolet rays can be confirmed on a small scale such as when wastewater is in a beaker, but it has little effect on actual wastewater.			
Oxygen dissolution efficiency	YES	MAYBE	MAYBE	NO
	To activate aerobic bacteria as above, 3.0mg/L or more dissolved oxygen is necessary over the entire tank. Aquablaster itself has high oxygen dissolution efficiency, and such a capability works only when oxygen is dissolved in the entire water tank. Therefore, the powerful stirring power of the Aquablaster is required.			
Air bubble diameter	YES	YES	—	—
	Aience's core business is industrial wastewater treatment; Aience therefore does not stick to the matter of air bubble diameters but places importance on the business of treating wastewater. From numerical values for oxygen dissolution efficiency, it is said that even nano bubbles are probably generated when using Aquablaster. However, it is also said that even the University of Tokyo cannot prove up to 10μ air bubbles. Therefore, Aience does not advertise nano bubbles for this product.			



<https://www.aience.co.jp/en/>
