AQUABLASTER®
BIO REMEDIATION SYSTEM [アクアブラスター]

cYc Century Yamakyu Corporation

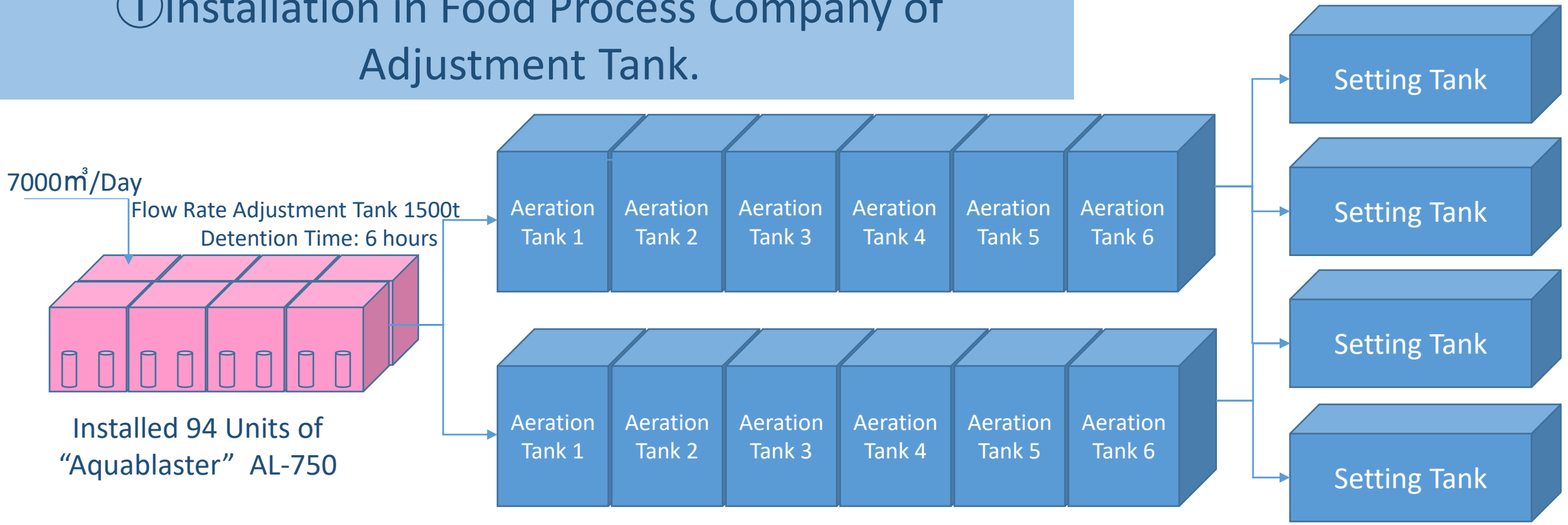
“Aquablaster” Installation Cases

※ This material based on our customer’s voices.

Duck flied into the “Aquablaster” installed Tank...

2018.10

①Installation in Food Process Company of Adjustment Tank.



※Average Numbers of Treatment Rate in Adjustment Tank, before Installation of “Aquablaster”.

Contents	Treatment Rate
BOD	45%
COD	44%
SS	66%
N-hex	53%

※Average efficiency of Treatment in Adjustment Tank, after Installation of “Aquablaster”.

Contents	Treatment Rate
BOD	**80%**
COD	**66%**
SS	**90%**
N-hex	**82%**

After refurbishment of Adjustment Tank, treated by “Aquablaster” for 6 hours, Treatment efficiency increased by 1.53 times. and, residual oil of the Tanks became zero.

Sludge Conversion of BOD 35%→25%

Hydrogen Sulfide 100ppm→ less than 1 ppm

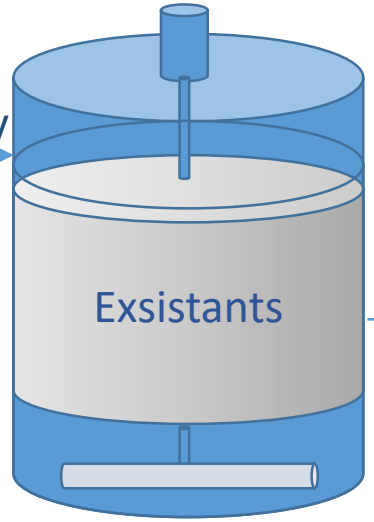
②Installation at Foodstuff Factory

Inflow Load (Parallel)	
BOD	1600mg/L
COD	1000mg/L
S　S	1100mg/L
N-hex	210mg/L

600㎥/day

300㎥/day

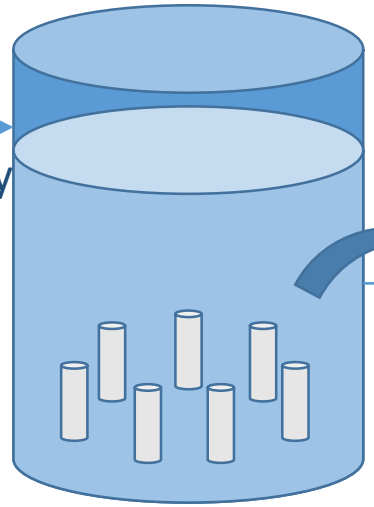
Tank Capacity: 70t



Detention 4.8 hours

300㎥/day

Tank Capacity: 70t



“Aquablaster” installed

Treated Water Quality of Existing Carrier Tank		
Contents	Results	Reduction Rate
BOD	1100mg/L	31%
COD	600mg/L	40%
S　S	1100mg/L	**0%**
N-hex	160mg/L	24%

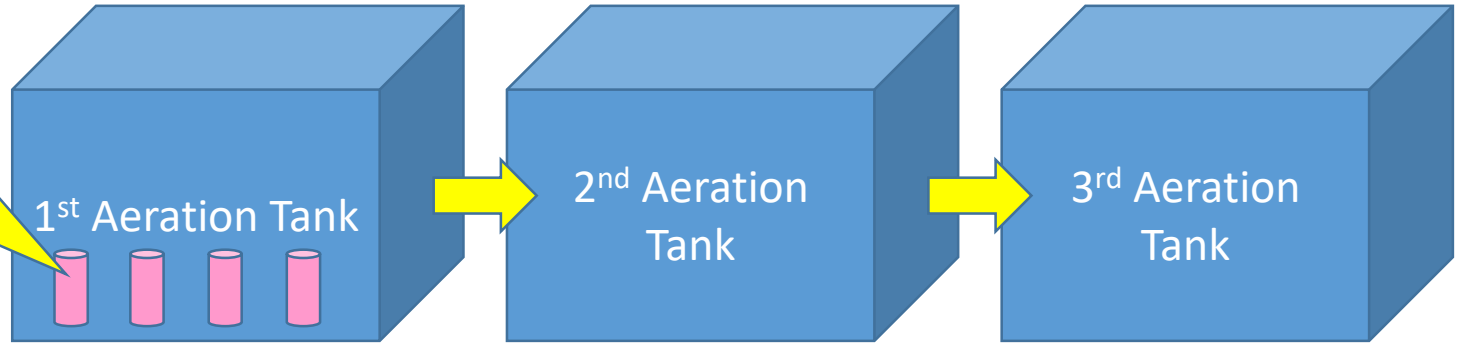
Treated Water Quality after Installation of “Aquablaster”		
Contents	Results	Reduction Rate
BOD	770mg/L	52%
COD	530mg/L	47%
S　S	930mg/L	**15%**
N-hex	150mg/L	29%

Efficiency Rate: 1.24 times

SS Resolution Rate inceased

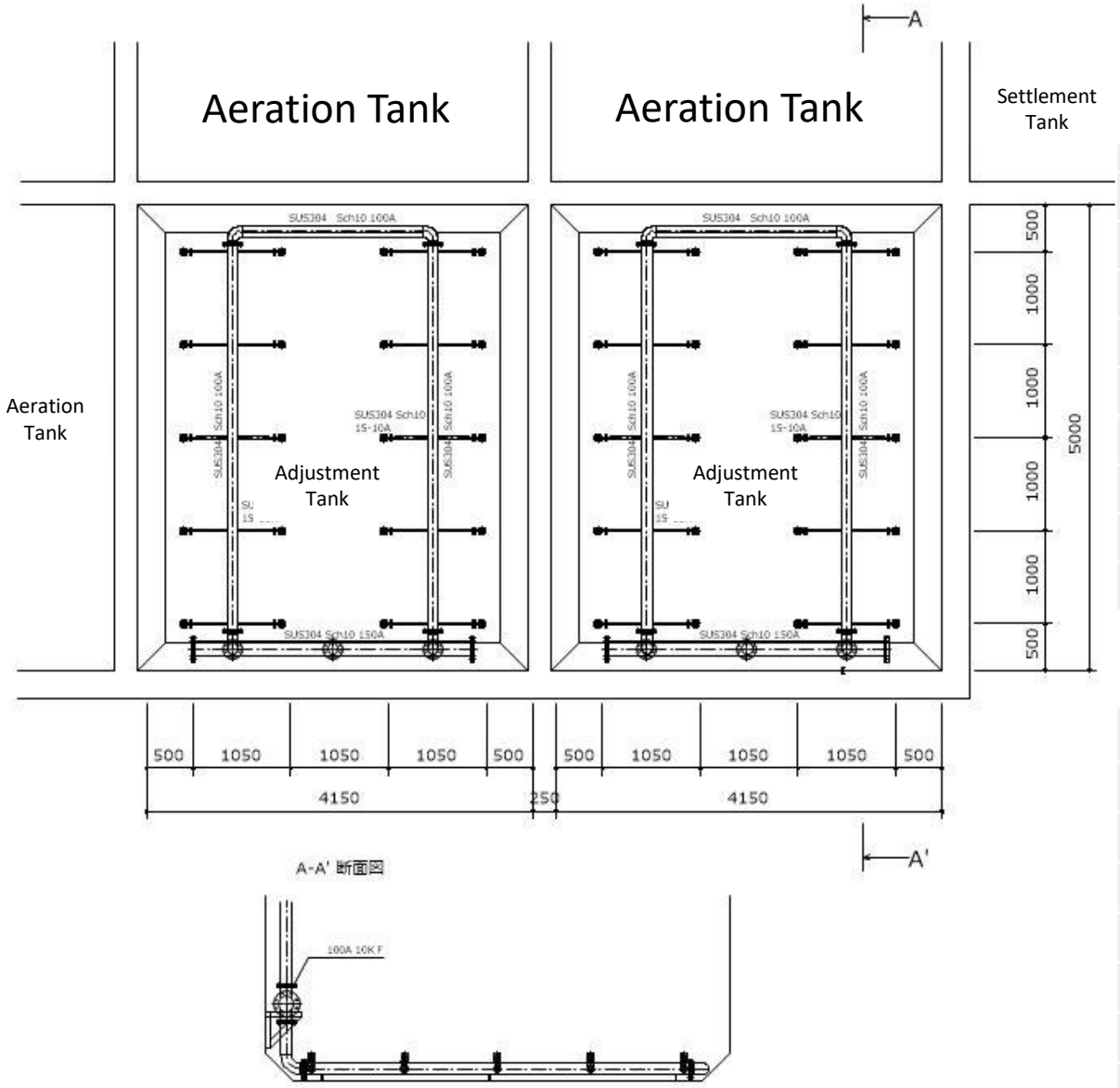
③Replacement of “Aquablaster” in 1st Aeration Tank of Tofu (Bean Curd) Factory

Replaced “Aquablaster” with Conventional Diffusers in the 1st Tank only



Item	Per	Average of 28 times testing before Installation	Average of 24 Times testing after Installation	Comparison	Note
BOD Loading	[t/day]	1.79	2.13	**119%**	BOD Loading: Increased 1.2 times
Sludge Conversion Rate	[%]	54.18	45.17	**83%**	Sludge Convention Rate: Decreased 17%
Aeration Tank①DO	[mg/L]	0.35	0.72	208%	DO: 2.08 Times
Aeration Tank②DO	[mg/L]	0.29	0.65	222%	DO: 2.22 Times
Aeration Tank①MLSS	[mg/L]	11979	8514	71%	MLSS: Decreased 29%
Aeration Tank②MLSS	[mg/L]	11668	8496	73%	MLSS: Decreased 27%
Aeration Tank①Air Volume	[m3/min]	40.05	34.64	**86%**	Air Volume: Decreased 14%
Aeration Tank②Air Volume	[m3/min]	39.71	46.07	116%	Air Volume: Increased 16%
Aeration Tank ①Viscosity	[mPa・S]	15.82	4.65	29%	Viscosity: Decreased 71%
Aeration Tank②Viscosity	[mPa・S]	15.18	4.65	31%	Viscosity: Decreased 69%
Ammonium Nitrate	Own Index	3.45	0.07	2%	Ammonium Nitrate: Decreased 98%
Nitrification Nitrate	Own Index	3.47	1.50	43%	Nitrification Nitrate: Decreased 57%
Water Content in Sludge Cake	[%]	84.24	82.17	98%	Water Content in Sludge Cake: Decreased 2%

④ Improved Example of ”Adjustment Tank” in Salad Dressing Factory



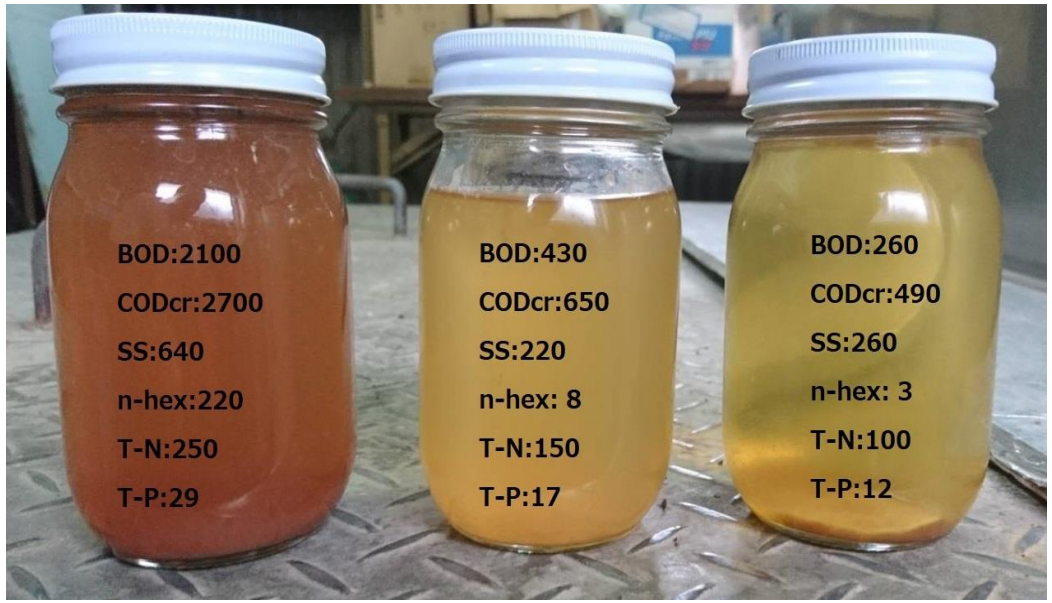
Volume of Wastewater: 250t/day Adjustment Tank: 125t
Detention Time: 12 hours

Before Installation of “Aquablaster” at outlet of Original Wastewater of Adjustment Tank						
	BOD	SS	Nitrogen	Phosphorus	n-HEX	PH
23rd March,10:00	1000	660	48	14		4.8
23rd March, 13:00	1100	770	53	15		4.7
23rd March, 17:00	1700	1200	78	5		4.1
27th March, 17:00	1600	1000	88	21		4.3
28th March, 11:00	2000	1300	100	21		4.8
29th March, 09:30	1000	830	55	13	290	6.4
30th March, 17:00	1400	510	44	11	210	4.7
Average	1400	895	67	14	250	

After Installation of “Aquablaster” at outlet of Original Wastewater of Adjustment Tank						
	BOD	SS	Nitrogen	Phosphorus	n-HEX	PH
9th April, 14:50	350	370	15	2.6	15	6.2
8th May, 8:50	460	150	12	1.9	15	6.2
8th May, 13:30	480	180	14	1.9	19	6.6
Average	430	233	13	2	16	
Reduction Rate	▲69.2%	▲73.9%	▲80.5%	▲85.7%	▲93.6%	

⑤Improved Example in Chicken Processing Factory

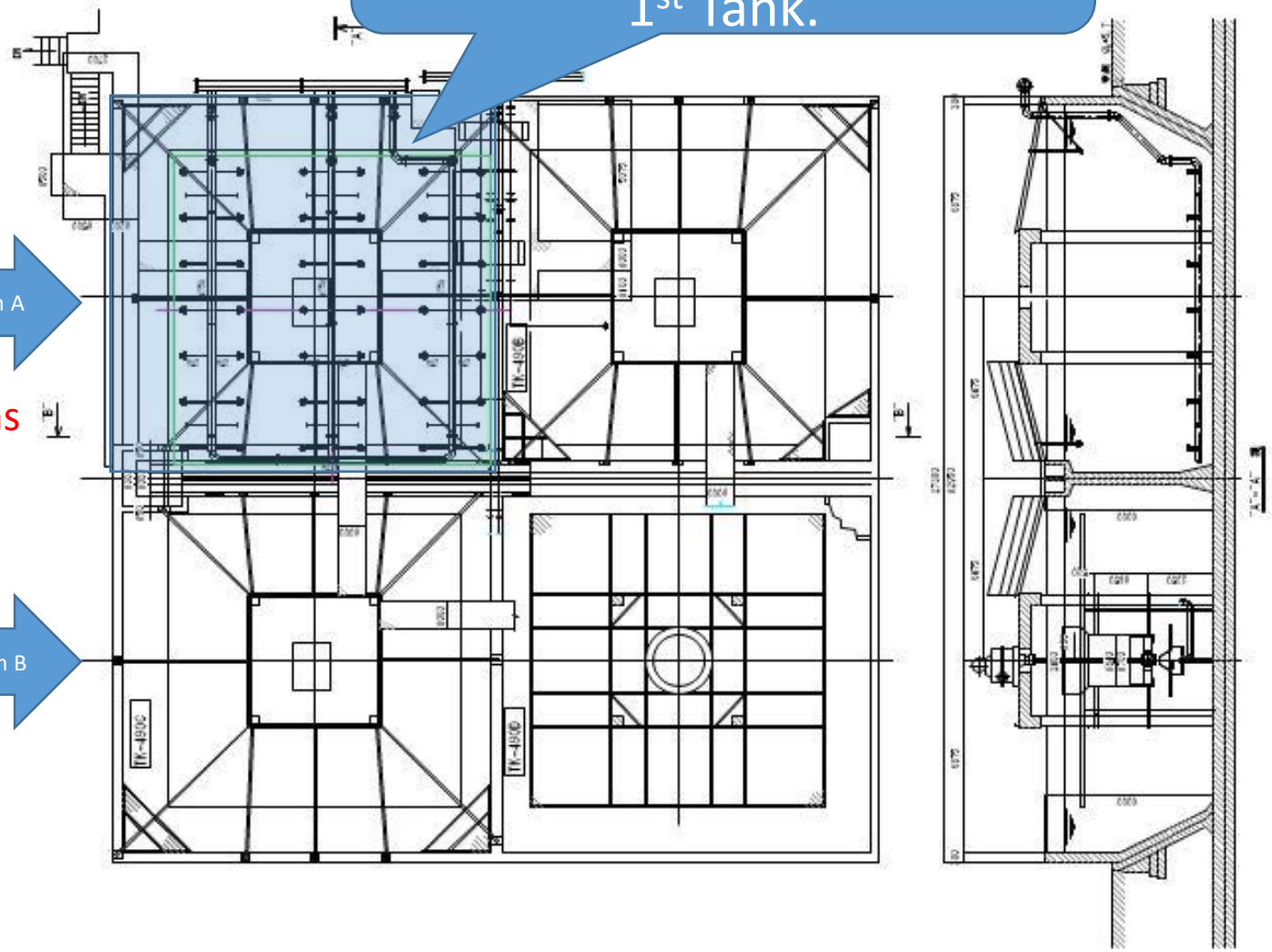
Original Wastewater	Treated Wastewater after 24hours	Treated Wastewater after 48hours



※Treatment by “Aquablaster” Only. Neither Chemical nor Activated Sludge was added.

⑥Improved Example of ”Aeration Tank” at Chemical Factory

Replaced “Aquablaster” with Conventional Diffusers in the 1st Tank.



Against the Aeration by existing Blower & Agitation, “Aquablaster” Installation in one Tank resulted in:

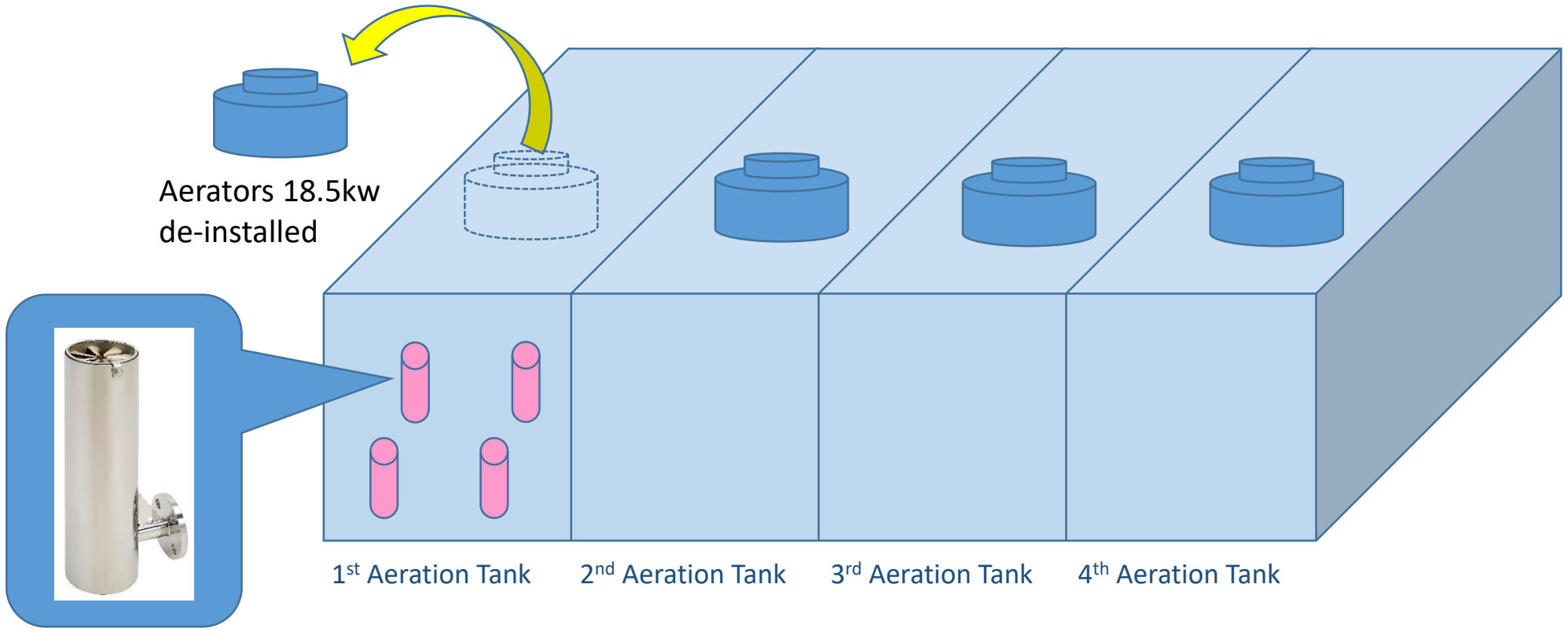
Reduced Sludge per Production

Decreased by 18.8%

Conventional Agitator 55Kw

Completely Stopped

⑦Improved Example of "1st Aeration Tank" at Chemical Factory



30 Units of
"Aquablaster"
Model AL-750
replaced with
18.5kw Blower.

Effect① Phenol： More than 20ppm⇒ Less than 1ppm

Effect② Sludge Reduction by 15～20%

Effect③ Surfacing Prevention of Sludge in Settling Tank

⑧Improved Example of ”Adjustment Tank” at Pharmaceutical Factory

Adjustment Tank of Original Wastewater

“Aquablaster” AS-250 installed

“Aquablaster” AS-250 installed

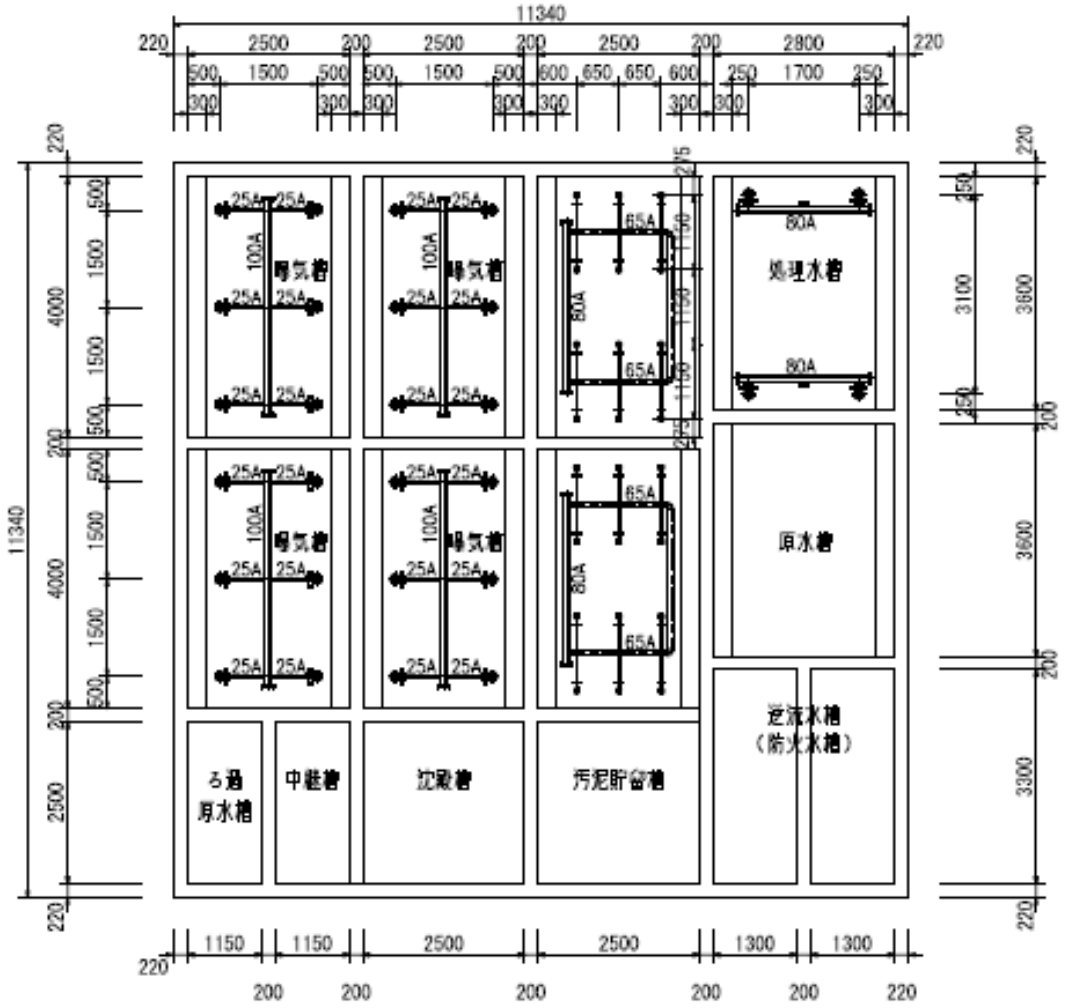
Adjustment Tank of Original Wastewater

【Construction of 1st Phase】
Installed “Aquablaster” AS-250 at all Adjustment Tank
Effect① No Hydrogen Sulfide
Effect② COD decreased 1,000mg/L⇒500mg/L after 10 hours retention in Equalizing Tank as follows:

1st Aeration Tank 2nd Aeration Tank 3rd Aeration Tank 4th Aeration Tank

【Construction of 2nd Phase】
The good result in the 1st Phase was admitted and 32 Units of “Aquablaster” AL-750 were installed into Aeration Tank…
1.5 times of Volumetric Loading

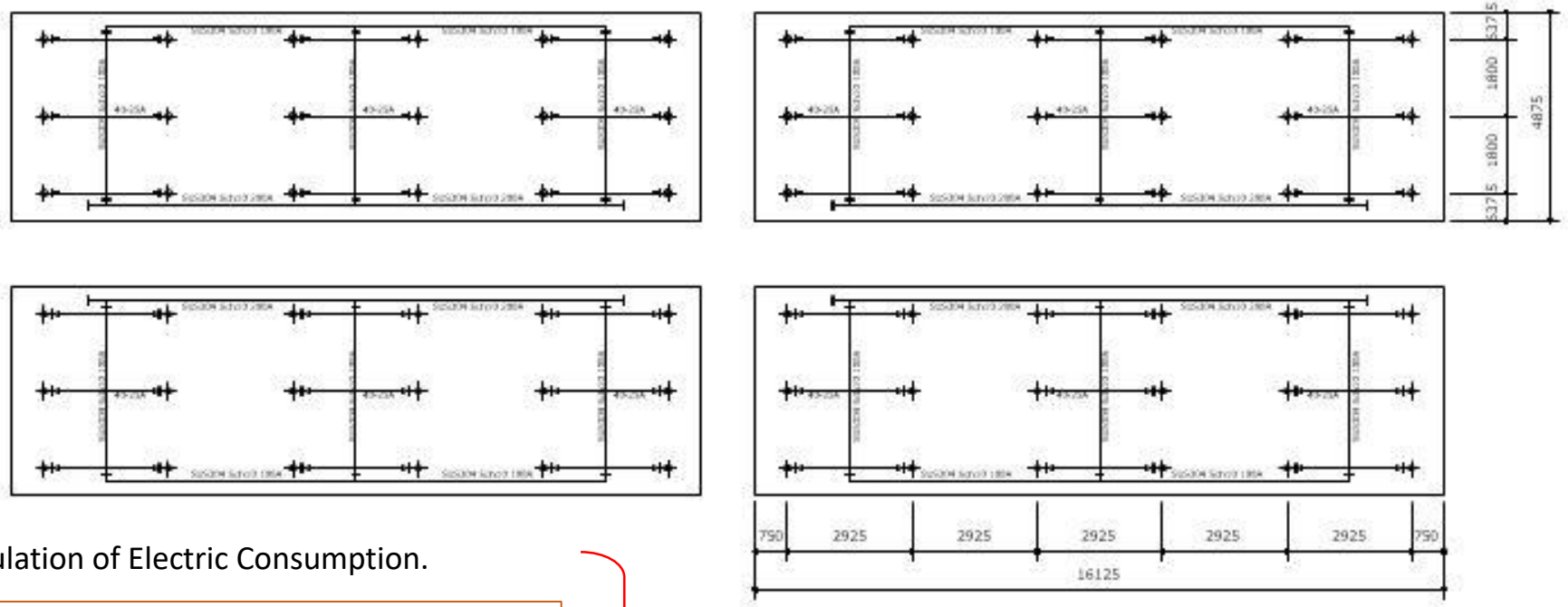
⑨Improved Example of “All Tanks” at Pharmaceutical Factory



As explained in ⑧, Mother Factory of Wastewater Treatment Plant replaced “Aquablaster” Model AL-750 resulted in:

【Result】
Compared with the treatment by Conventional Equipment, Volumetic Loading Rate increased by 1.5 – 2 Times, and led to a repeat order of “Aquablaster”.

⑩Improved Example of ”Conventional Wastewater Inlet→Agitation→Aeration→Agitation→Aeration in Tanks” in Food Additive Factory



Proposed Simulation of Electric Consumption.

Blower 37kw × (30＋20＋25mins) ＝46.25kwh/cycle

Per Day: 46.25kwh × 32 Cycles＝1480.0kwh/Day

1480kwh × 350 Days × 12.5 yen＝6,475,000 yen/Year

Electric Consumption▲19%

Blower 45kw × (30＋20 mins) ＝37.5kwh/Cycle

Per Day: 37.5kwh × 32 Cycles＝1200kwh/Day

1200kwh × 350 Days × 12.5 yen=5,250,000 yen/Year

Strengthened Blowers and increased Air Volume, nevertheless the cost was decreased.

【Report from Customer】
Electric Reduction: about 20% (Reduced 90,000kWh/Year)
Sludge Reduction Rate： about 25%(Reduced 480t/Year)
Chemicals: No Need

⑪Improved Example of Central Kitchen

No need Sludge Treatment Facility

Problem before “Aquablaster” Installation

Foodstuff Wastewater 200m3/day was treated by Activated Sludge & Bio Tips, but Treatment was not good and warned by Government.

Solution

400㎥ Tank decreased into a half of 200㎥, and split the Tanks into 5 Tanks, and installed “Aquablaster” and changed the discharge to Draining from River.

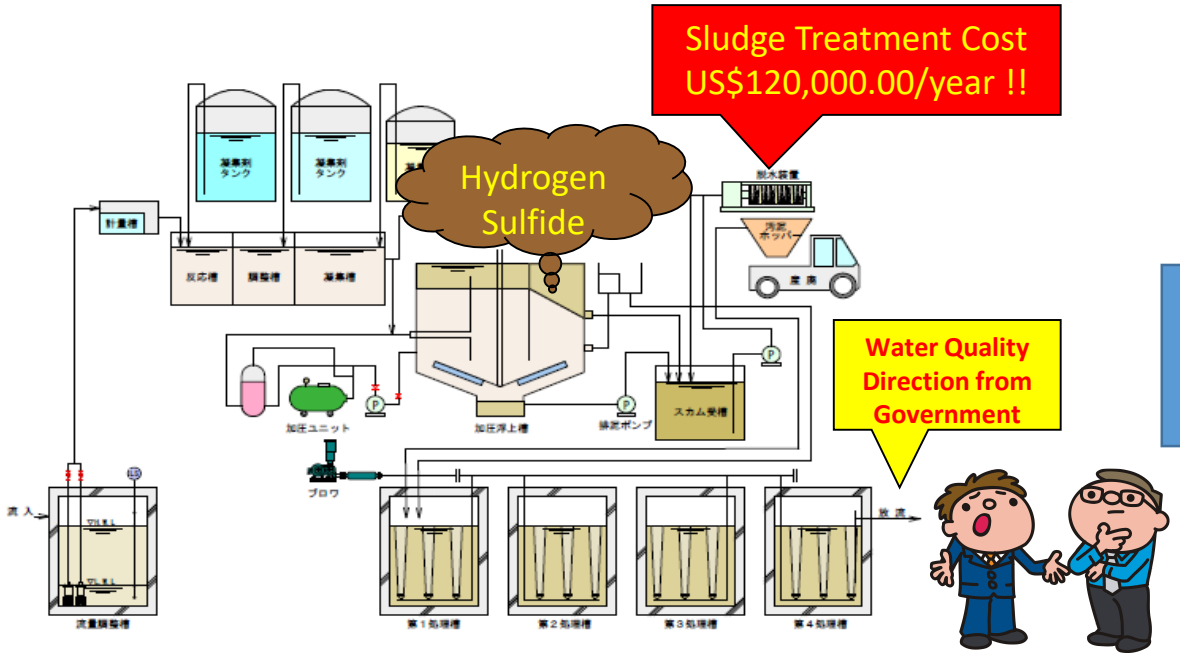
Result

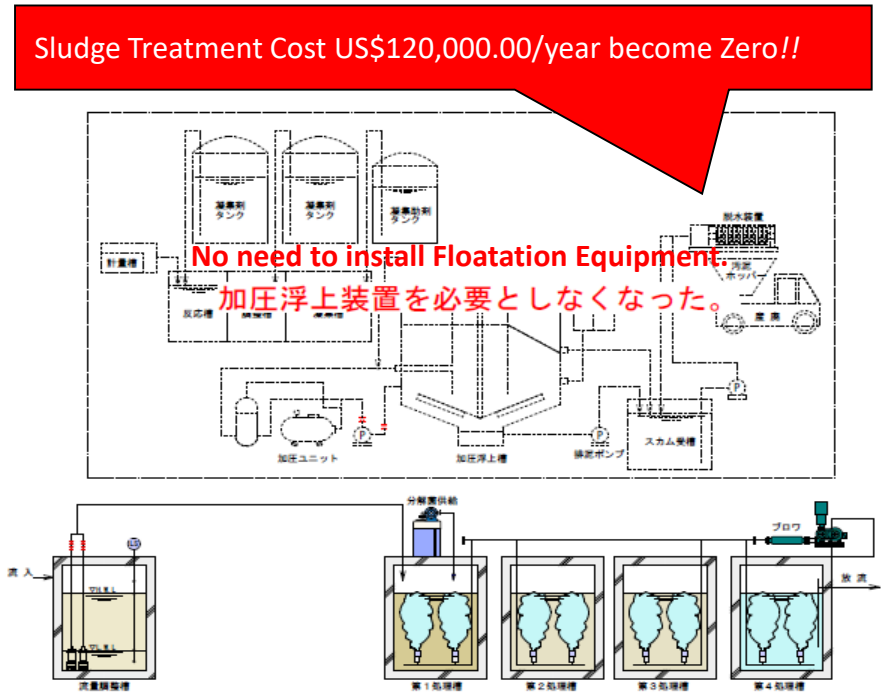
The improvement resulted in: Zero Odor and no Man-Power which reduced the Running Cost by US$150,000.00/year. Aience received another order of Wastewater Treatment for the 2nd Factory.

Repeated Order: 2nd New Factory

2nd New Factory of Wastewater Treatment Plant placed special order of “Aience Innovative System”.

⑫Improved Example of Famous 5-Star Hotel





Original Water

BOD：800mg/ℓ
S　S：600mg/ℓ
n-hex：150mg/ℓ

Treated Water

BOD：120mg/ℓ
S　S：80mg/ℓ
n-hex：10mg/ℓ

Contents	Before “Aquablaster” Installation	After “Aquablaster” Installation	Difference (US$)
Sludge Collection	US$120,000.00	US$0.00	▲US$120,000.00
Chemicals of Flocculant, etc.	US$58,000.00	US$0.00	▲US$58,000.00
Electricty Consumption	US$18,000.00	US$19,500.00	US$1,500.00
Personal Expenses in the Night	US$32,000.00	US$0.00	▲US$32,000.00
Bio	US$0.00	US$12,000.00	US$12,000.00
Regularly Maintenance	US$0.00	US$6,000.00	US$6,000.00
Total	US$22,800.00	US$37,500.00	**▲US$190,500.00**

⑬Improved Example of Canteen Wastewater

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	Installation Company	Details	Problems	Result with “Aquablaster”
①	Kawasaki Food Industries（Green House）	Making Lunch Box of Kawasaki Heavy Industries 12,000 sets/day	Corruption of Flotation Complaint of Odor.	No Fine against Odor. Saved US$120,000.00/year
②	Shimadzu Corporation, Shiga Pref.	Canteen for Employees Wastewater Volume: 8 - 10t/Day	Odor & Against lawful standard.	Cleared the Lawful Standard.
③	Shimadzu Corporation, Head Office（Contractors: Greenhouse）	Canteen for Employees Wastewater Volume: 50t/Day	Increased Volume of Wastewater.	Built Tanks in Underground of Employees Relaxation Place.
④	Nippon Seiko (NSK)	Canteen for Employees 30～40t/Day	Exceeding Standard against Law.	Passed Regulation with Zero Odor.

⑭Improved Example of famous Chemical Factory

Minutes of a Chemical Factory, 11th September, 2018, Excerpt:

1. "Aquablaster" was found the most effective.
2. DO Value was highly improved.
3. Agitation was more effective than expected.
4. MLSS control became stable.
5. Stopped Aeration for 3 weeks but restarted the stable Aeration.
6. Compared Alfa Value with those of competitors Aeration Diffusers and found "Aquablaster" was the best. Other Diffusers were scored 0.5 for Alpha, but "Aquablaster" was 0.7 which was1.4 times.
7. As the result, the conventional Diffusers remained Sludges but "Aquablaster" made its solution with no Odor occurred.

"Aquablaster" has become Specified Products for replacement of Aeration Diffusers in the future Projects.

“Aquablaster” Cost Trial Balance Sheet

Item	Current Condition	Q’ty	Unit	Current Expences	Condition After Installation of “Aquablaster”	Q’ty	Unit	Cost After Installation of “Aquablaster”
Diffusers Exchange Expenses	Service Life ( ) year x ( ) Units		times/( )year	(1 year)	Service Life: More than 10 Years		times/( )year	(1 year)
Expenses of Replacement	Drain/Pull out Sludge x 1/ ( ) year		times/( )year	(1 year)	Drain/Pull out Sludge x 1/ ( ) year		times/( )year	(1 year)
Energy Consumption	( )kw x ( ) hr = A		kW		A x 0.7~0.8		kW	
Sludge Reduction	( )kg x ( ) month = B		kg		B x 0.6~0.8		kg	
Labour Charges	( ) person x ( ) hr = C		hr		C x 0.1~0.5		hr	
Chemical Expenses	( ) kg x ( ) months = D		kg		D x 0.0~0.5		kg	

Moreover…

* Red text is based on the actual value reported by the customer.

Zero Odor Warranty from Hydrogen Sulfide etc.