BLUEWIN

◆ *a Family Group working for*

■ ***Using Micro-bubbles New advanced Technology for most kinds of Water purification, Wastewater, Swage, Algae treatment with the shortest time, lowest cost, and highest efficiency.***

By *Green Advanced Technology & Dynamic venture company*

RAPID WATER, WASTEWATER TREATMENT USING MICRO-BUBBLES FOR MOST KINDS OF

WWTP, WTP & ALGAE

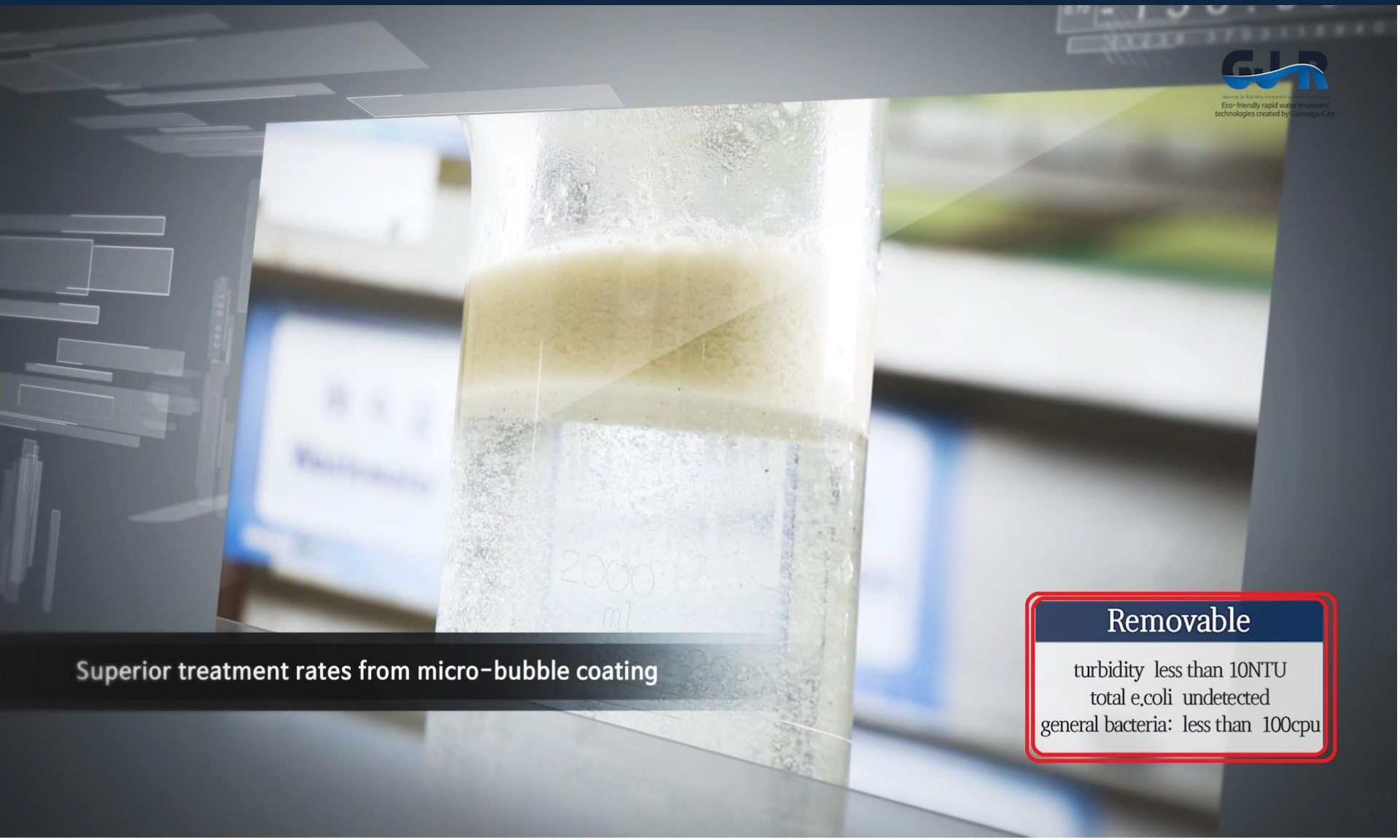
40times FASTER~

Minimized treatment times, Minimal footprint

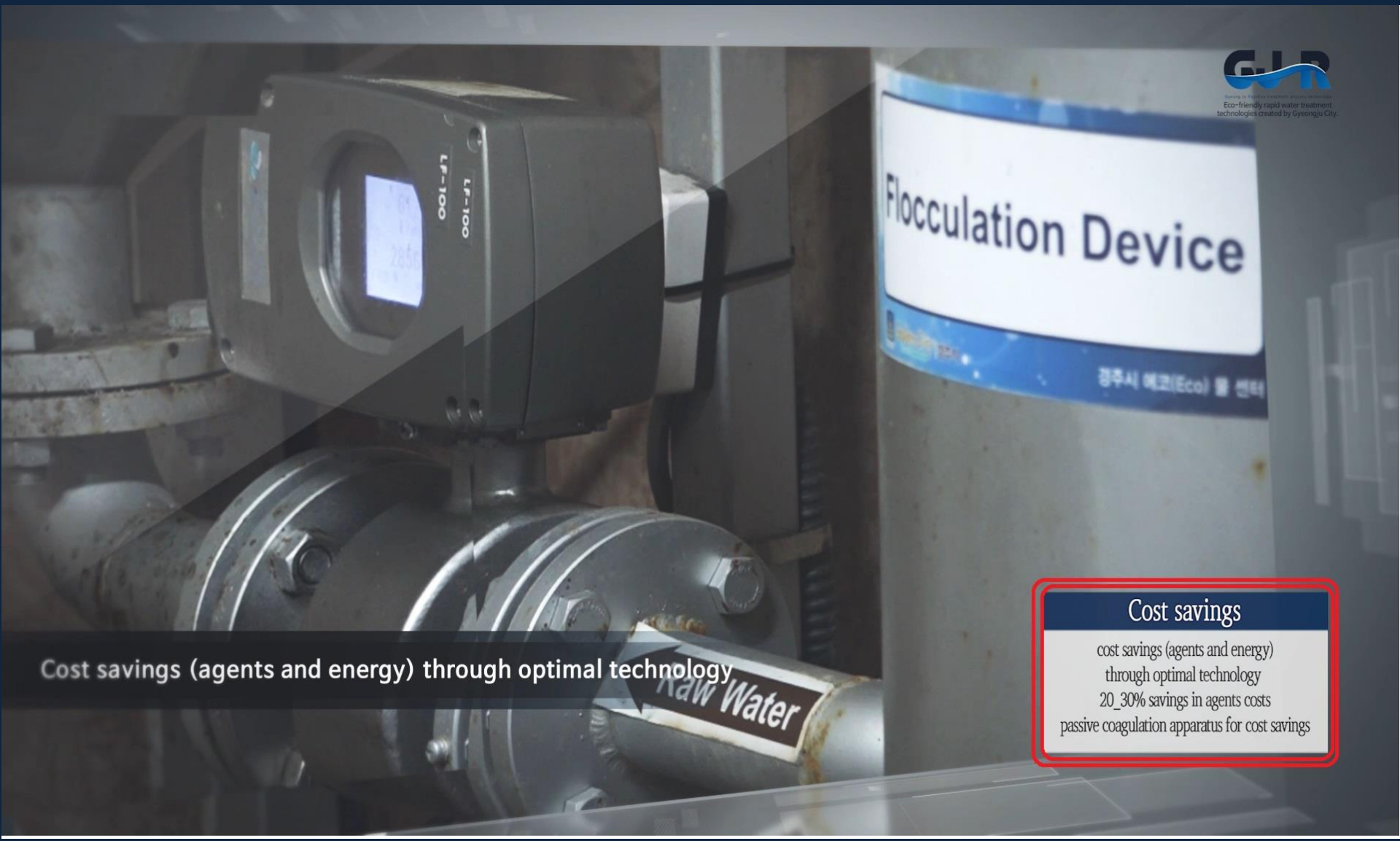
Rapid

30 Minute / 48㎡
(Treatment capacity: 1,000㎥/day)

Very high SS removal rate~



High efficiency @Ultra low cost

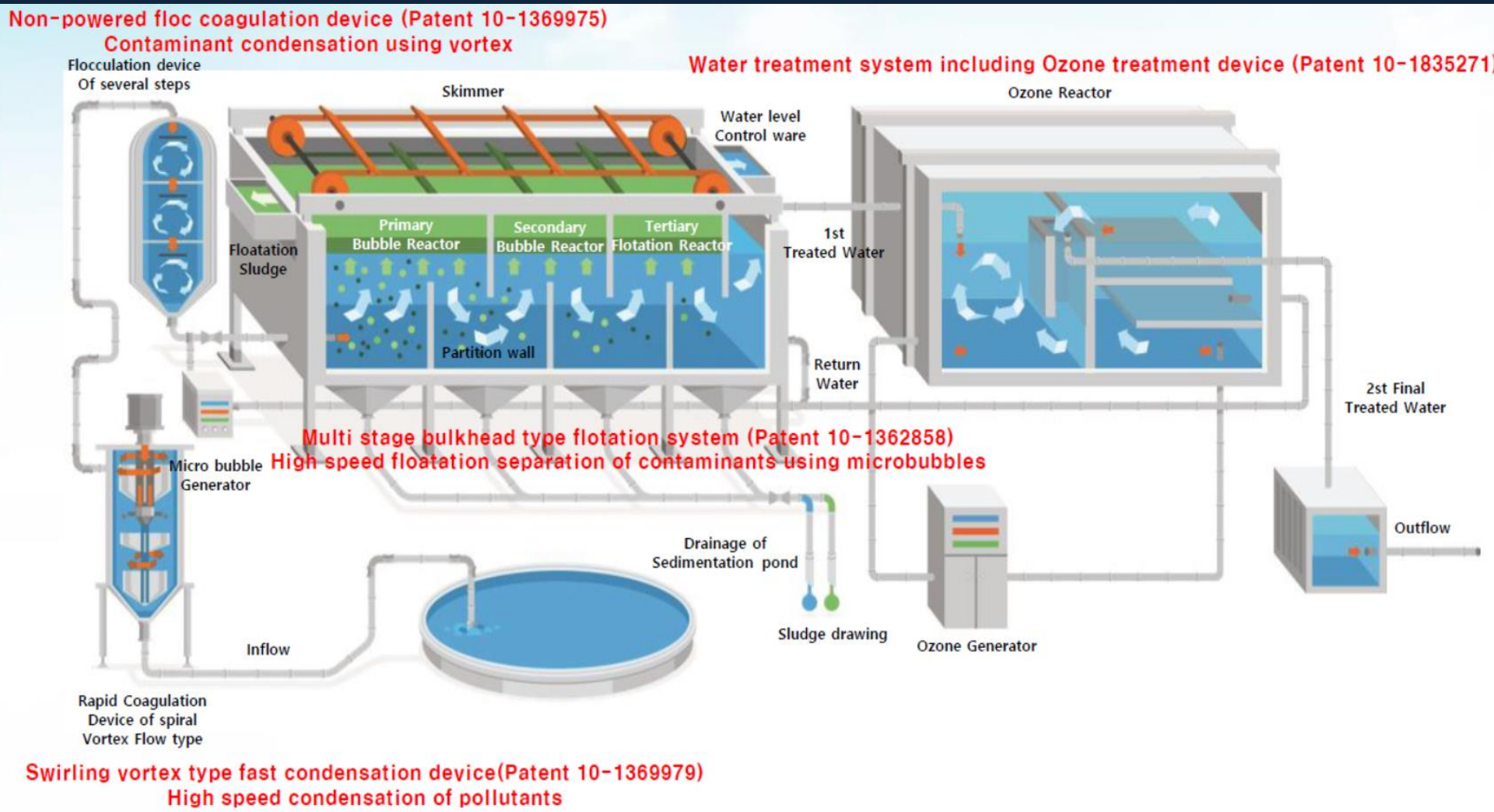


Semi-permanent green technology without replacement

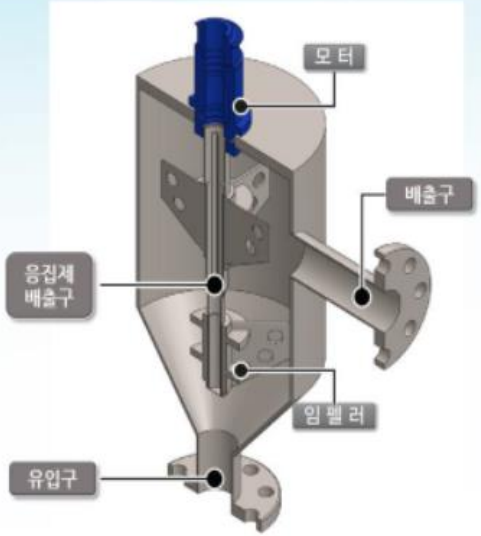
From Mobile to Plant-All types of water treatment, Wastewater treatment, Sewage treatment, Algae removal technology

MICRO BUBBLES TREATMENT FLOW SHEET

Diagram of technology



Rapid Coagulation and Flocculation



<Rapid Coagulation device>

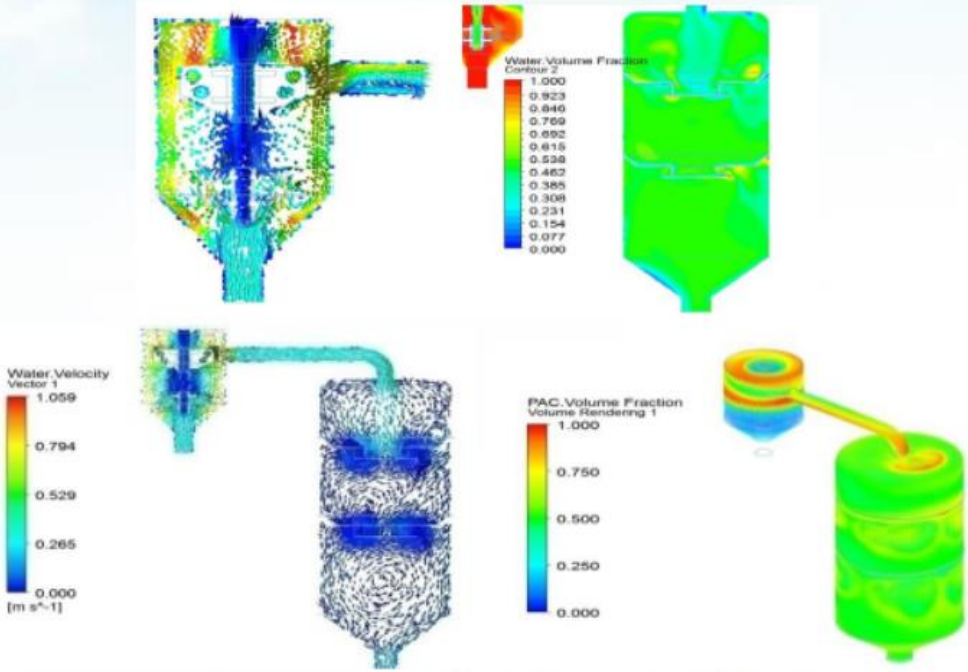
The top and bottom impeller are crossed, so have different fluid flow at the top and bottom.

And each wing has 4 holes.

+

Coagulant is injected into the impeller shaft

Vigorous turbulence formation and rapid mixing 10 second coagulation and chemical reduction technology



Computational Fluid Dynamics(CFD) of
Rapid Coagulation device and Flocculation device

Rapid Coagulatio device Volume Ratio of
Raw water and Chemical 0.56 : 0.44
Flocculation device 0.5 : 0.5(green)

Admixture Efficiency Nearly 100%
(General mixing efficiency less than 70%)

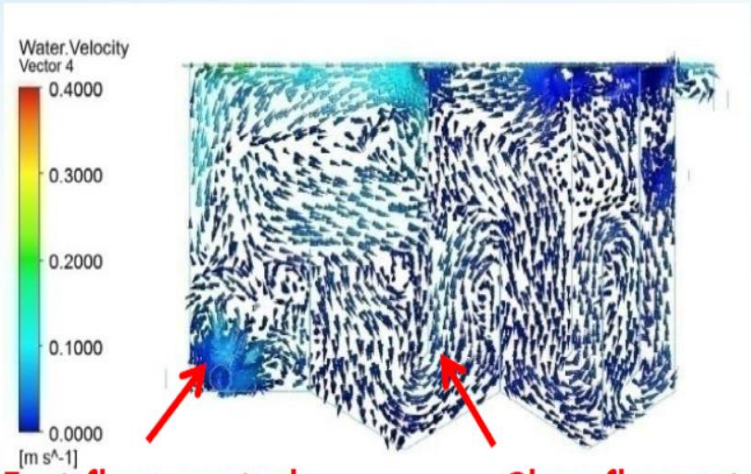
Key Technology

Characteristics of Technology

- Rapid processing of coagulation in less than 10 seconds
- Reduction of chemical input by 20~30%
- Minimization of the power cost using the Non-powered Flocculation device
- No odor generation due to the In-line Type

Characteristics of Micro Bubble Device

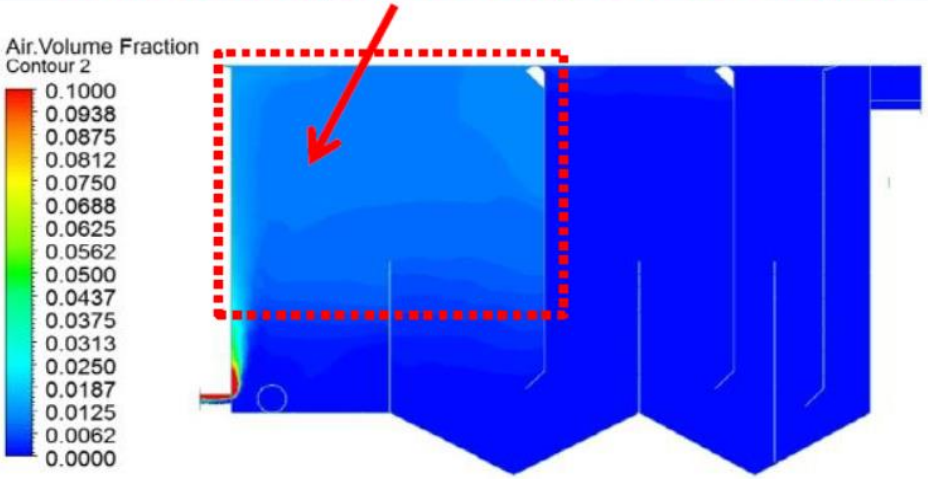
- High-efficient Splitter type (Minimizing operation cost)
- Top-tier at producing Bubble in Korea
- Good scalability(Maximizing capacity)



Fast flow control (Inflow distribution pipe)

Slow flow rate (Floatation speed increase)

Maintain high-density bubble layer



PROCESSING

< Coagulation >

< Micro-bubble Floatation >

< Ozone Treatment >

< Out flow >

Semi-permanent amazing system: BIG ADVANTAGES

01. COMPACT

ONE-TOUCH Control SYSTEM

Automatic control and
User-friendly(cumstumizing)
operation

02. RAPIDITY

Shortest time in Korea
for treating raw waste water directly

Less amount of land, ease of
commercialization

03. REMOVAL

Stable Operation and
high quality water

Verified technology

04. ECONOMIC

Less power and less chemical
by Process Innovation

Minimizing operation cost and maximizing
eco-friendly brand image

REFERENCES, OPERATING SITES

International joint localization project(Indonesia)

- Purpose : Movable drinking water supply to the world's Largest market
- Capacity : 100Ton/Day(Maximum 600 people drinking water supply)
- Period : 2016. 12 ~ 2018. Currently
- Budget required : U$ 600,000
  (Environmental industrial technology institute 70% and Enterprise 30%)
- Place of installation : Indonesia Jakarta PDAM

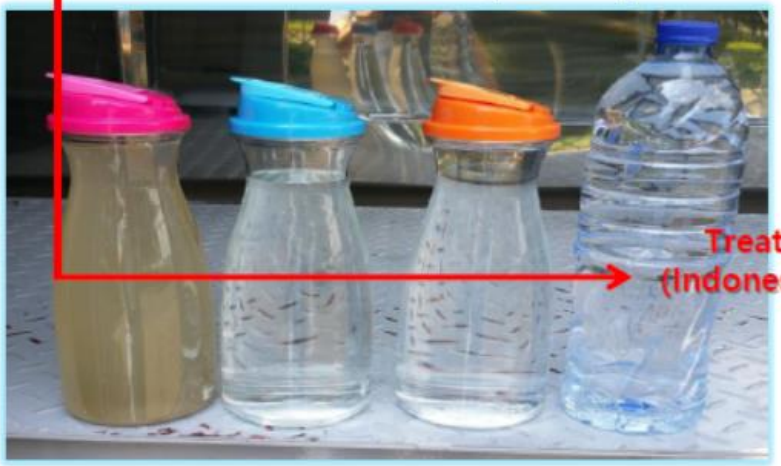
REFERENCES, OPERATING SITES

International joint localization project (Indonesia)

< Contaminated River (Jakarta) >

Rapidity water Treatment

< GJ-R Process>



< Raw water, Treated water >

aetra

HASIL ANALISA AIR

JENIS SAMPLE : [FLUSHING / COMPLAINT / INVESTIGASI / SAMPEL BARU]
NO. : 01/WQLI/VIII/2017
TANGGAL PENERIMAAN SAMPLE : 18 Juli 2017
TANGGAL PENGUJIAN SAMPLE : 18 Juli 2017
KETERANGAN :

No.	PARAMETER	SATUAN	HASIL ANALISA J1	HASIL ANALISA J2	STANDAR AIR MINUM 492/2010	METODE
1	Turbidity	NTU	0.954	0.226	5	SNI 06-6989.25 : 2005
2	T Coliform	no/100ml	0	0	0	IK/01/IK/066
3	E coli	no/100ml	0	0	0	IK/01/IK/066
4	Conductivity	mg/L	372	366		SNI 06-6989.1 : 2004
5	Chloride	mg/L	55.28	51.78	250	SNI 6989.19 : 2009
6	Colour	TCU	1.898	1.497	15	SNI 6989.80 : 2011
7	TDS	mg/L	229	225	500	IK/01/IK/079
8	Organic Matter	mg/L	3.25	<2.32	10	SNI 06-6989.22 : 2004
9	Total Hardness	mg/L	97.40	102.53	500	SNI 06-6989.12 : 2004
10	[illegible]	mg/L	0.079	<0.010	0.3	SNI 6989.9 : 2009
11	Manganese	mg/L	0.040	0.019	0.4	SNI 6989.5 : 2009
12	[illegible]	mg/L	42	41	250	IK/01/IK/065
13	Nitrite-NO_2	mg/L	0.015	0.030	3	IK/01/IK/062
14	Temperature #	°C	27.4	27.3	Sat. Udara ± 3°C	IK/01/IK/089
15	pH #		6.87	7.36	6.5 - 8.5	IK/01/IK/079
16	Free Chlorine #	mg/L	0.69	0.65		IK/01/IK/074

Keterangan :
* Coret yang tidak perlu
# Dianalisa di laboratorium lokasi

ALAMAT :
J1 : Air yang diambil dari tangki setelah mesin aetra
J2 : Portable water / purifier water

< Satisfy of Indonesia drinking water standards >

REFERENCES, OPERATING SITES

International joint localization project (Indonesia)

Raw water	1st Treatment	2st Treatment
Turbidity 70.9	MBF Reactor 0.15	Profile Tank 0.07

REFERENCES, OPERATING SITES

On-site facility operation

- Capacity : 1,000Ton/Day
- Start Operation : 2017. 7. 1 ~
- Site : In Daehyun sewage treatment plant
- Purpose : Post-treatment due to excess capacity and Sewage treatment during rainfall
- Water Quality : Operation average

(Unit : mg/L)

Target	SS	BOD	COD	T-N	T-P	E-Coli
Inflow	20.4	24.0	15.5	8.24	0.75	174,400
Outflow	2.0	2.1	4.2	5.013	0.12	500
Efficiency	90.2	91.3	72.9	39.2	84.0	99.7

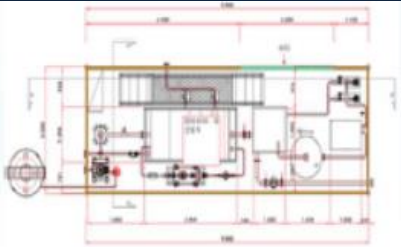
REFERENCES, OPERATING SITES

On-site facility operation

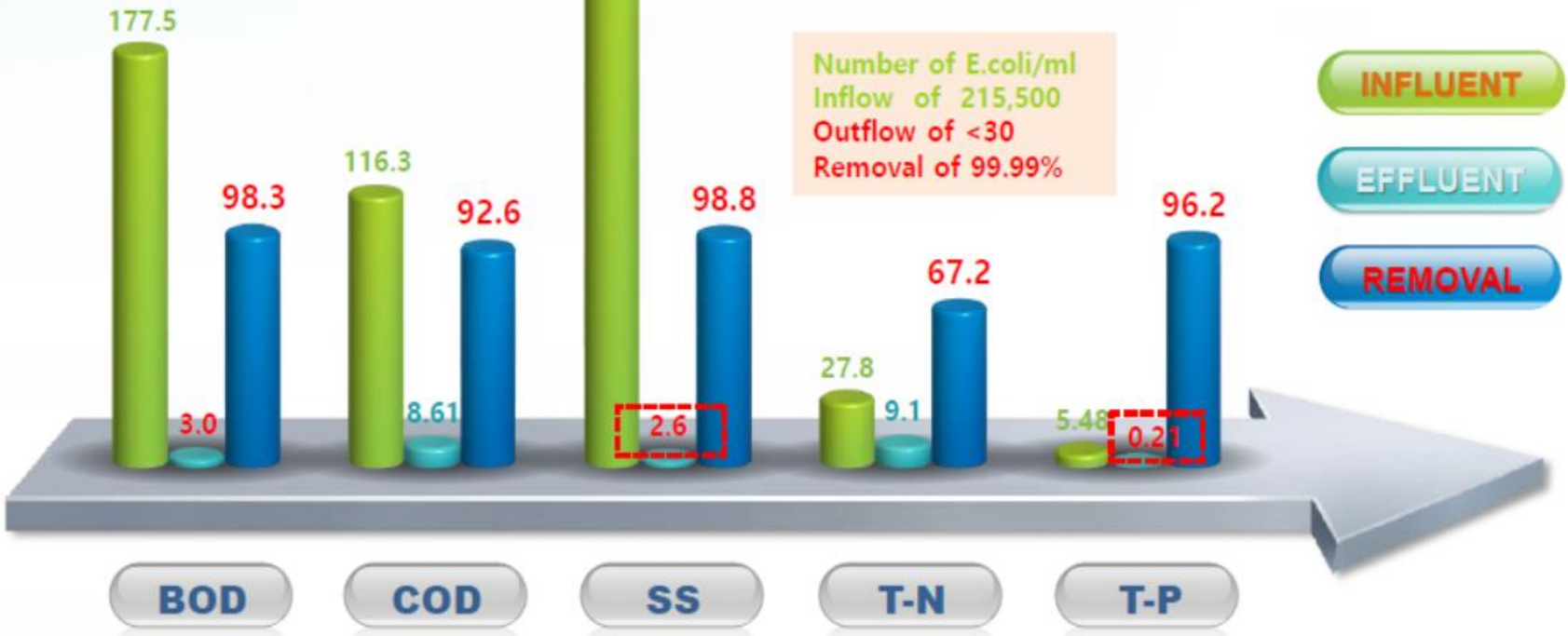
- Capacity : 14,000Ton/Day
- Production Period : 2017. 7. ~ 2018. 5.
- Cost : $6.6 million (GJ-R Process $2.6 million)
- Site : Namyangju-si Jingun sewage treatment plant
- Purpose : Sewage recycle water treatment → Direct discharge

RESULTS DATA SHEET of WASTEWATER

Direct discharge after sewage direct treatment
Satisfied with discharged water quality standard
DO concentration more than 12mg/L



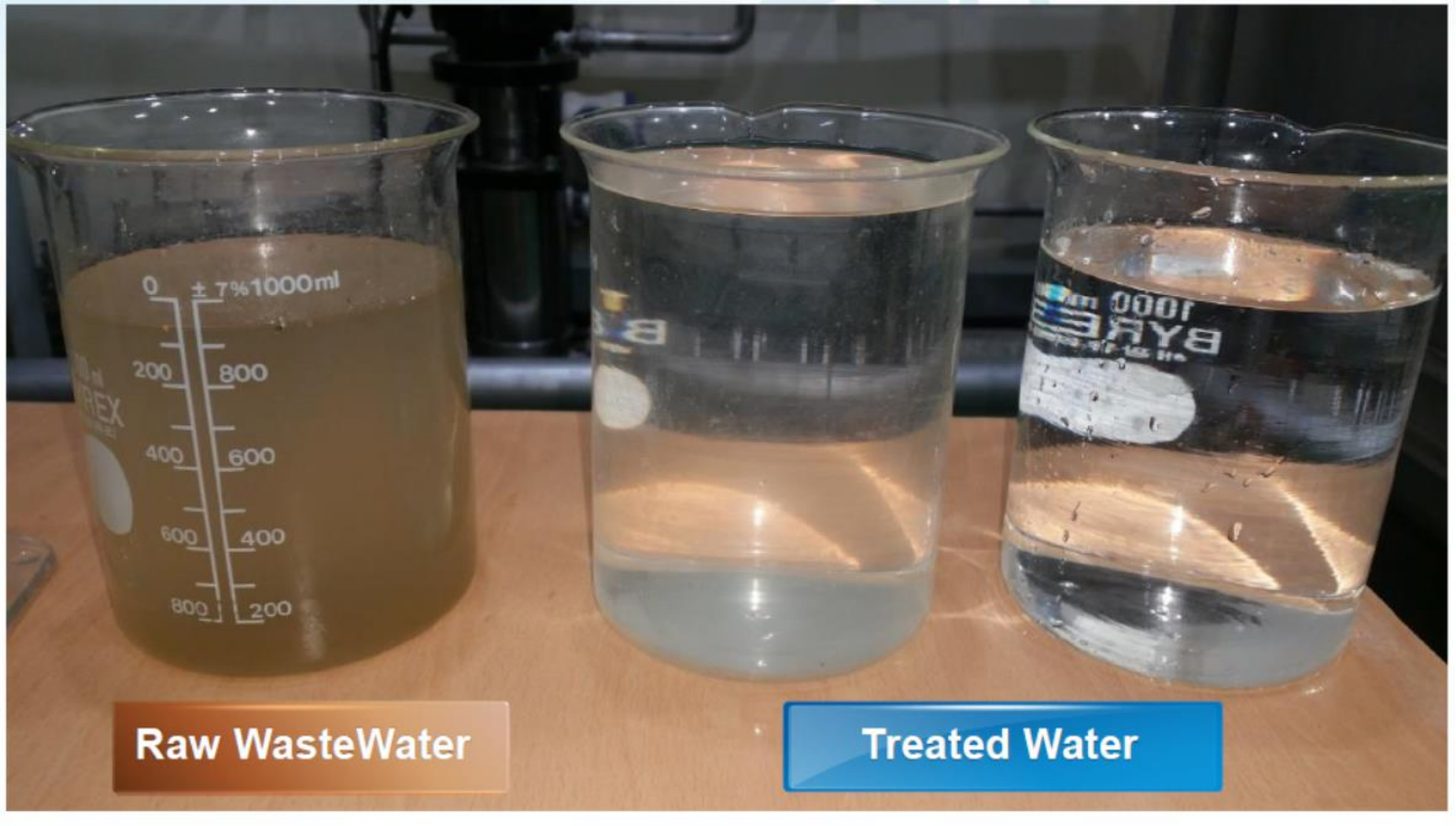
Number of E.coli/ml
Inflow of 215,500
Outflow of <30
Removal of 99.99%



Running Conditions

Q = 100㎥/day Q_R = 40% HRT = 60min VS = 150m/day Dosing Rate = 12ppm
2Stage Dosing Agitation Speed= 250rpm Micro-Bubble Pressure = 10kg/m²

RESULTS DATA SHEET of WASTEWATER



RESULTS DATA SHEET of WASTEWATER

- Capacity : 150Ton/Day
- Start Operation : 2017. 6. 1 ~
- Site : Daehyun sewage treatment plant
- Purpose : Waste water treatment
- Water Quality : Operation average

< Facilities View >

(Unit : mg/L)

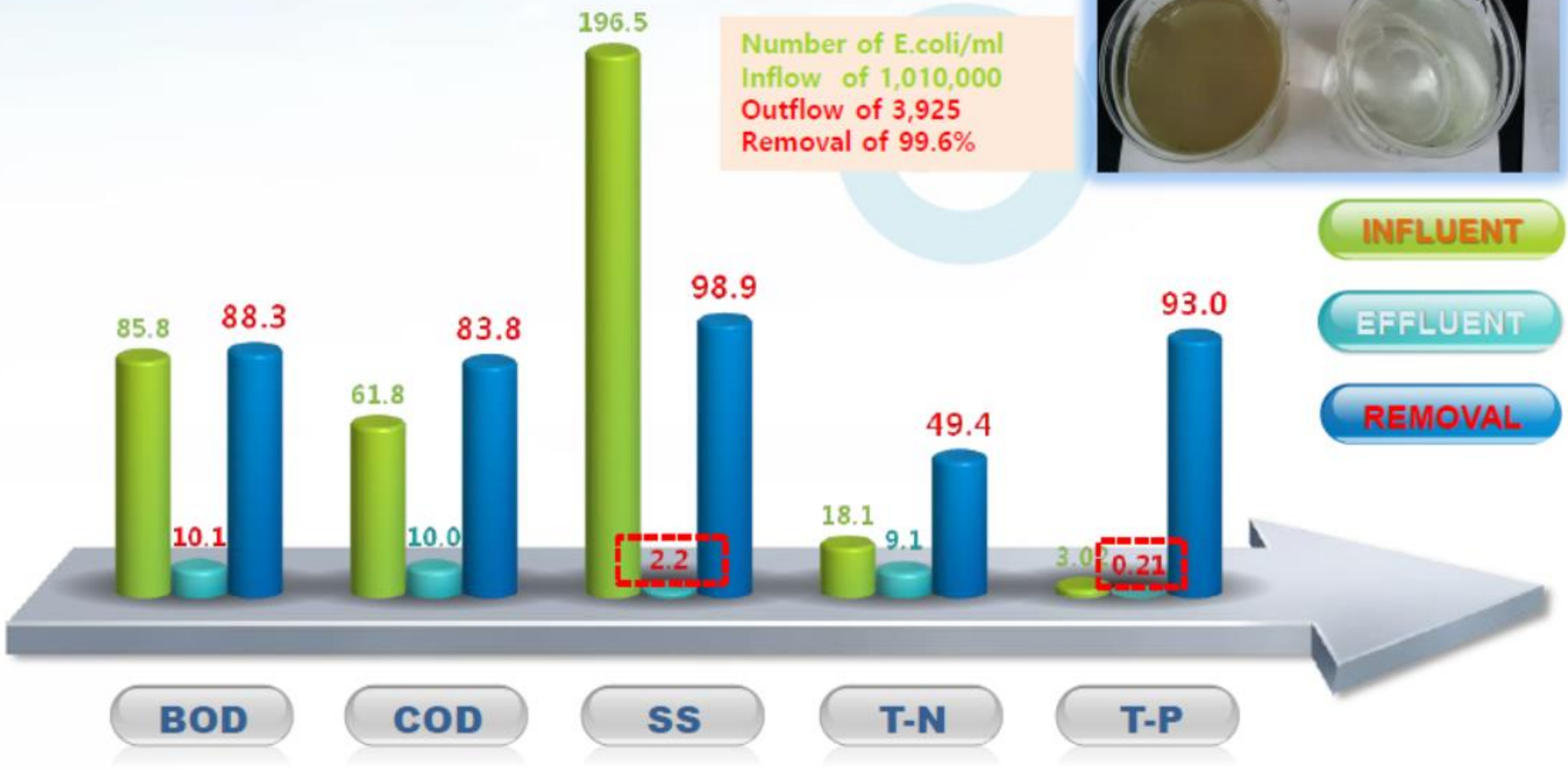
Target	SS	BOD	COD	T-N	T-P	E-Coli
Inflow	296.7	65.1	100.1	24.09	5.15	123,400
Outflow	3.4	1.6	4.0	6.68	0.06	0
Efficiency	98.9	97.5	96	72.3	98.8	100

※ 3month average of official agency data

< Automation System >

Sewer Overflows (Rain Season

Number of E.coli/ml
Inflow of 1,010,000
Outflow of 3,925
Removal of 99.6%



Running Conditions

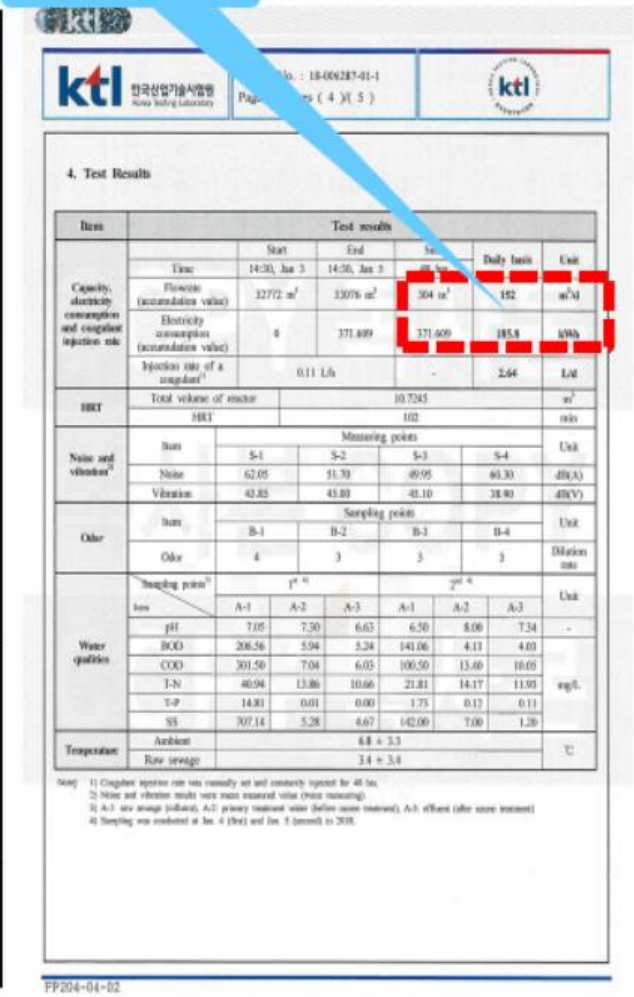
Q = 100㎥/day Q_R = 40% HRT = 15min VS = 300m/day Dosing Rate = 10ppm
2Stage Dosing Agitation Speed= 180rpm Micro-Bubble Pressure = 10kg/m^2

OPEX: OPERATING COST COMPARISON CHART

1. Electricity comparison

Division	GJ-R	SBR	A_2O
Total Power consumption	- Flow adjustment pump 0.75 kW - Microbubble device 4.0 kW - High speed coagulation device 0.75 kW - Scum skimmer 0.4 kW - Chemical pump 0.03 kW - Ozone generator 1.5 kW - Circulating pump 0.65 kW Total : 8.1 kW	- Flow adjustment pump 0.75 kW - Return/Surplus pump 0.75 kW - Blower 5.5 kW - Phosphorus removal reactor stirrer 0.75 kW - Semi-batch type stirrer 0.75 kW - Supply fan 2.2kW - Exhaust fan3.75kW Total : 14.5 kW	- Flow adjustment pump 0.75 kW - Flow reactor stirrer 1.5 kW - Flow reactor blower 2.2 kW - Anaerobic tank stirrer 0.75 kW - Anoxic tank stirrer 0.75 kW - Internal return pump 2.2 kW - Chemical pump 0.015 kW - Supply fan 2.2kW - Exhaust fan 3.75kW - Aeration reactor blower 5.5 kW - Return pump 2.2 kW - Discharge pump 1.5 Kw Total : 23.3 kW
Annual power cost calculation	Contract power : 0.197kW x $6.38 x 365day = $459.15 Usage power : 135.7kW x $0.07 x 365day = $3,357.48	Contract power : 0.362kW x $5.13 x 365day = $676.77 Usage power : 242.8kW x $0.07 x 365day = $5,832.92	Contract power : 0.559kW x $5.13 x 365day = $1,045.62 Usage power : 391.7kW x $0.07 x 365day = $9,410.90
Total annual power ration	$3,816(36.5%)	$6,512(62.2%)	$10,462(100%)

1.2KW/m^3


ktl 한국산업기술시험원

4. Test Results

Item	Test results					
Capacity, electricity consumption and coagulant injection rate	Time	Start: 14:30, Jan 3	End: 14:30, Jan 5		Daily basis	Unit
	Flowrate (accumulation value)	32772 m^3	33076 m^3	304 m^3	152	m^3/d
	Electricity consumption (accumulation value)	0	371.609	371.609	185.8	kWh
	Injection rate of a coagulant[1]	0.11 L/h		-	2.64	L/d
HRT	Total volume of reactor	10.7245				m^3
	HRT	102				min
Noise and vibration[2]	Item	Measuring points: S-1	S-2	S-3	S-4	Unit
	Noise	62.05	51.70	49.95	60.30	dB(A)
	Vibration	42.85	45.80	45.10	38.90	dB(V)
Odor	Item	Sampling points: B-1	B-2	B-3	B-4	Unit
	Odor	4	3	3	3	Dilution rate
Water qualities	Sampling point[3] / Item	1st[4]: A-1	A-2	A-3	2nd[4]: A-1	A-2	A-3	Unit
	pH	7.05	7.30	6.63	6.50	8.00	7.34	-
	BOD	206.56	5.94	5.24	141.06	4.13	4.03	mg/L
	COD	301.50	7.04	6.05	100.50	13.40	10.05	
	T-N	40.94	13.86	10.66	21.81	14.17	11.93	
	T-P	14.81	0.01	0.00	1.75	0.12	0.11	
	SS	307.14	5.28	4.67	142.00	7.00	1.20	
Temperature	Ambient	6.8 ~ 3.3						℃
	Raw sewage	3.4 ~ 3.4						

Note) 1) Coagulant injection rate was manually set and constantly injected for 48 hrs.
2) Noise and vibration results were mean measured value (twice measuring).
3) A-1: raw sewage (influent), A-2: primary treatment water (before ozone treatment), A-3: effluent (after ozone treatment)
4) Sampling was conducted at 1st. 4 (thu) and 1st. 5 (present) in 2018.

FP204-04-02

PORTABLE SERVICE
FOR EMERGENCY SEWAGE, ALGAE REMOVAL

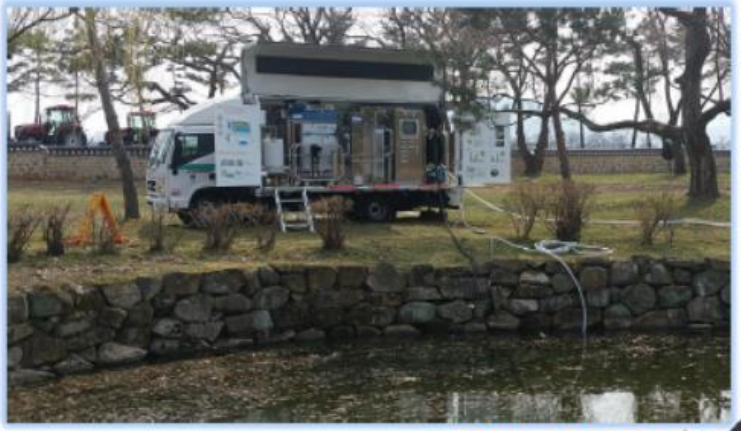
- Purpose : Emergency sewage treatment and algae removal etc.

Demonstrated on-site by producing movable rapidity treatment vehicle

- Algae removal Period : 2016. 02 ~ 2017. 01(1year)
- Cost : U$ 500,000

Filed Move

Vehicle Install



Treatment

GYEONGJU is Korea

REFERENCES

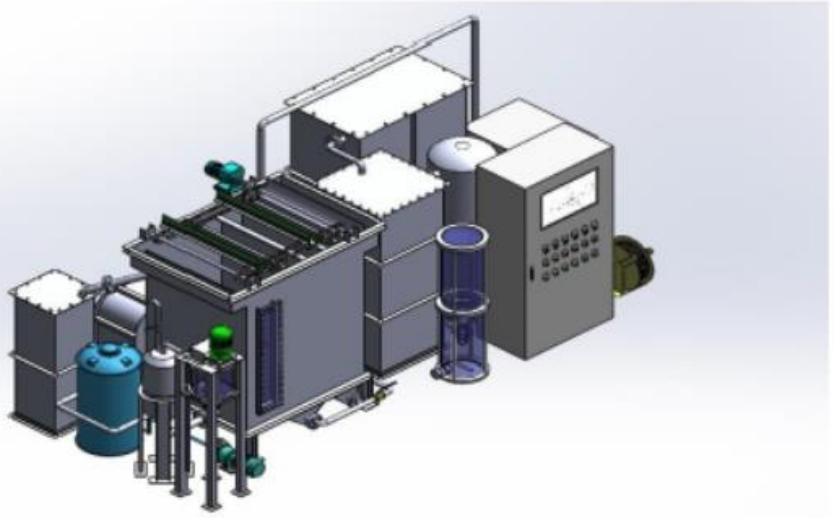
OVERVIEW

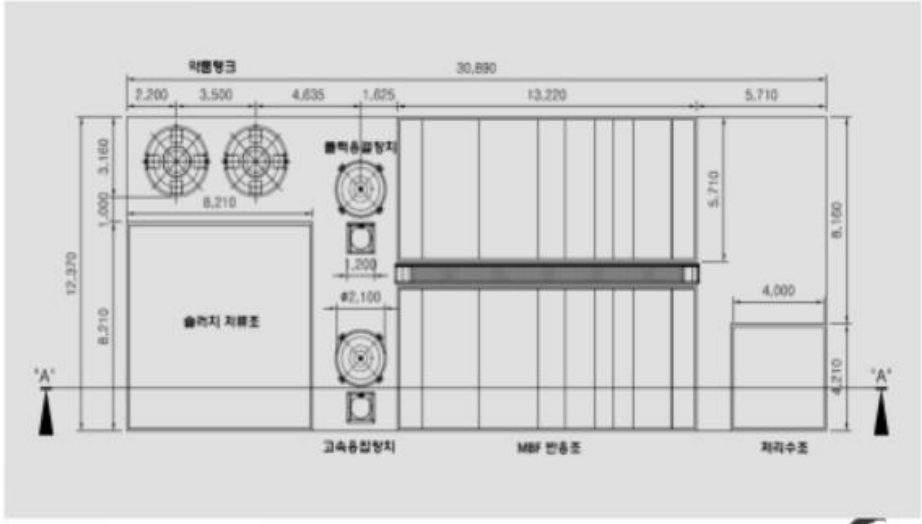
OPERATING SITES, REFERENCES(LOCAL)

Business	Application Field	Processing capacity	Progress Situation
Daehyeon-ri sewage treatment plant	Sewage	150Ton/day	Operation
Daehyeon-ri sewage treatment plant	CSOs and Filtration	1,000Ton/day	Operation
Imdang Station`s Sphere of influence wastewater reusing plant	Wastewater Reusing	120Ton/day	Operation
HallaSan 1100 hill resting place	Sewage	50Ton/day	Operation
Halla Yeongsil resting place	Sewage	100Ton/day	Operation
Daebon-3ri sewage treatment plant	Sewage	100Ton/day	Operation
Dongsan sewage treatment plant	Sewage	100Ton/day	Operation
Namyangju-si Jingun sewage treatment plant	Recycle Water	14,000Ton/day	18.05(Test Run)
J Industrial estate wastewater reusing plant	Wastewater Reusing	50Ton/day	18.04
Y-si sewage treatment plant	Sewage	100Ton/day	18.02
J-si resort treatment plant	Sewage	1,800Ton/day	18.07
Y-si waste leachate	Wastewater	200Ton/day	18.06
G-do Urban development corporation	Wastewater	50, 150Ton/day	19.07

OPERATING SITES, REFERENCES(OVERSEAS)

Business	Application Field	Processing capacity	Progress Situation
Indonesia international supporting business	Moving Drinking Water	100Ton/day	Operation
Indonesia Surabaya	Drinking Water	100Ton/day, 1,000Ton/day	Technical proposal
Sanepar Water and Sewage Corporation of Brazil	Sewage	200Ton/day	Under Contract(MOA)
Hinabra pilot facility of Colombia	Sewage	518Ton/day	Technical proposal
Buga of Colombia	Sewage	21,600Ton/day	Technical proposal





COMPANY PROFILE

FINANCIAL STATE

Setting day-Validity Period :Dec/31/2016~Apr/22/2018

Financial standing for past 3years

- Credit standing: BBB-
- Cash Flow : CF2(B)
- Turnover: U$68.2mil/year ave.

Bank Information

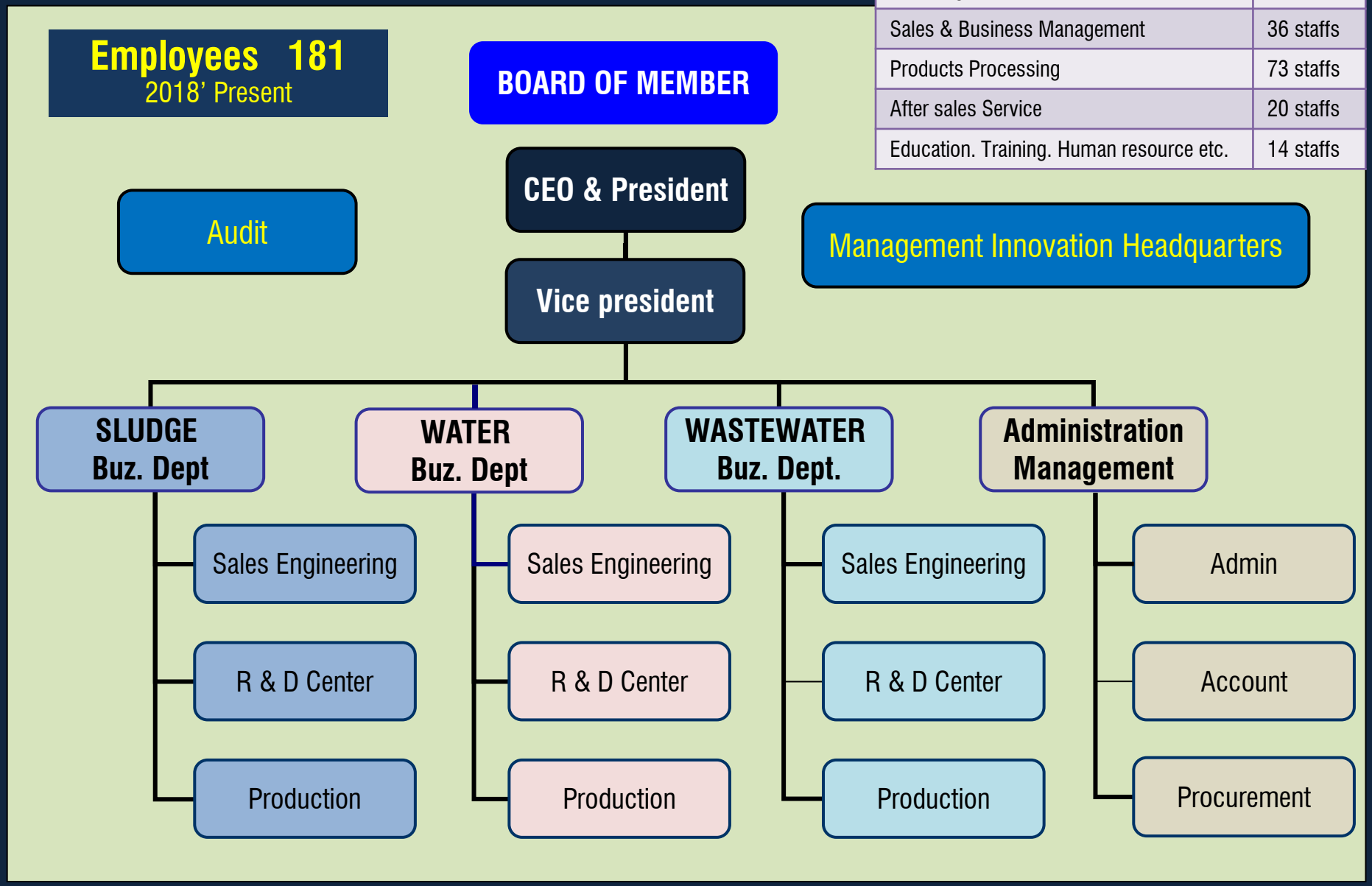
- Industrial Bank of Korea
- KOREA.

Credit Rating Authorized Agency

NICE평가정보 주식회사
NICE Information Service Co., Ltd.

ORGANIZATION

R&D Engineers	38 staffs
Sales & Business Management	36 staffs
Products Processing	73 staffs
After sales Service	20 staffs
Education. Training. Human resource etc.	14 staffs



AWARDS & PRIZE

Year	Contents
1999	Commendation of SMBA
	Commendation of the National Tax Service
2001	Busan Venture Company Excellence Award (Busan Metropolitan city)
2003	Commendation of Ministry of Science and Technology
2004	Commendation of the Prime Minister
2005	Excellence Prize for Busan Excellent Small Business
2007	Awarded U$3mil export and commendation of KITA
2008	Presidential Citation
	Awarded U$5mil export
2009	Worker-company win-win concession negotiation practice enterprise certification (Ministry of Labor)
2011	Selected as a good company to work in our region (Ministry of Knowledge Economy)
	Busan Employment Grand Prize (Busan Metropolitan city)
	Certified as world-class product of SCM film (Ministry of Knowledge Economy)
2012	Selected as proud Small and Medium Businessman(SMBA)
	Acquired Green Technology Certificate (Ministry of Environment)
	Awarded U$10mil Export
	Awarded Excellence Prize for Busan Export Award (Busan Metropolitan city)
2013	Received the Bronze Tower Order of Industrial Service Merit
	Selected as Excellent Employment Company in Busan
2015	Selected as World Class 300 company
	Awarded Busan Industrial Grand Prize

CONTACT POINT

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SNS: KAKAO ID: bluesky1965 WeChat ID: antoniokim65 WhatsApp ID: 821052318920 We are always ready to reply within 24hours & Serve for you		

THANK YOU