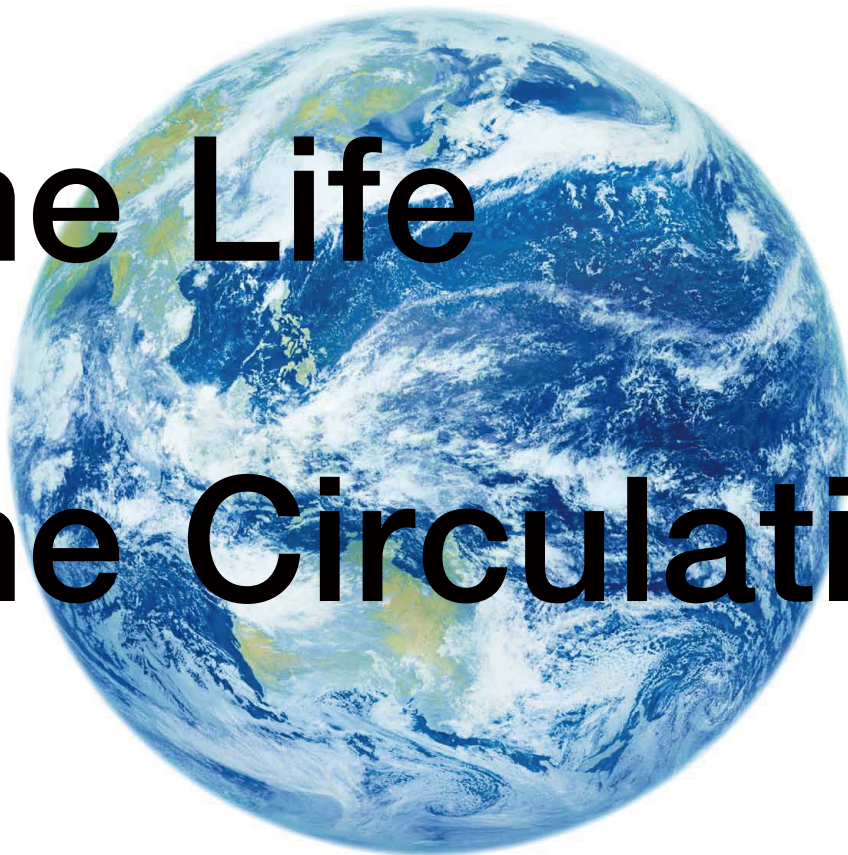




**One Planet**

**One Life**

**One Circulation**





# City, Water, Life

## Achieving Water Circulation for Better Use of Urban Potential

Once upon a time, the city of Edo, old capital of Japan boasted the world's largest population of two million people. It was a model "Eco City" harnessing trailblazing recycle system with carp swimming in waterways, people enjoying thoroughly-installed waterworks, human waste completely recycled. This way of making a city represented Japanese spirit just as our action to nature in country village forest, "Satoyama."

We will continue handing down to our children such DNA of the Japanese mind by blooming it with modern technology. As the western-style urbanization progresses in our land, water circulation has been worsening ever more. In the midst of those circumstances, we have set our corporate mission as restoring water circulation as close to that of nature as possible.

Toshikogyo Co., Ltd. are committed to be involved in the whole process of urban water circulation from supply to drainage and help people to enjoy better, comfortable and ecological life in our own way.

# Think Global, Act Local



Photo is by the courtesy of "Kenja" (Wiseman) TV <http://www.kenja.tv>

## Greetings

We at Toshiokogyo Co., Ltd. strive to achieve prosperity and progress of our three parties; our valued customers, society and environment at large and ourselves, through pursuing our business of water environmental engineering.

How should we live our lives?" This question leads directly to the question of "What should a corporate mission be?" Toshiokogyo Co., Ltd. has constantly been engaged in water environment in cities since its founding in Meiji 42nd or 1908. Ever since several years before the millennium, we have cast a question to ourselves: What should a company like ours inheriting our own roots take on to exist in these times and in the future? After many rounds of soul searching and thought process, we have come to a conclusion and here is our corporate mission. That is "Restoring Water Environment."

We have come to believe that it is nothing but the pursuit of three goods of customers, society at large, and ourselves that needs to be done as our business evolution of our new era.

It goes without saying that among all values, the starting point of standard is "life at present." At Toshiokogyo, we want to conduct our business to be good to "life at present."

You may have heard the story of one drip of humming bird in the wildfire. We want to know our place and do our very best to fulfill such place. We will endeavor to be better today than yesterday, and better tomorrow than today, proceeding to self-actualization through our daily job. Furthermore we do hope that this is going to be a booster for the self-evolution of all the people related to our enterprise.

Our corporate vision, "Co-existence, Co-Prosperity, plus Co-Evolution" is a crystal of our beliefs stated herein. We keep this backbone deep in our heart in the execution of daily jobs.

President &CEO  
Tajiri Yasuo



# Ultimate Water Reforming Technology born out of the Nature of Japan

Water reforming device, THE BIOWATER was developed recreating nature of Japan rich in water resources. Water from the rain soaking through the earth touches mineral crystal. Purified water gets back to the surface of the earth. This whole process is now recreated by a fantastic device. This device contains a special ceramic fan made of heated artificial mineral crystals. We use no filter. We add nothing to water. Nor we deduct nothing from water. We are simply recreating nature's wisdom. Once tap water passes this device, water's character is modified to become natural water like "Iwashimizu" or "fresh and clear water trickling out of rocks." Installation is a very simple procedure – just to set it directly to your water supply pipe. Water pressure propels the ceramic fans inside the device, requiring no electricity, saving the maintenance costs. The nature's mechanism of Japan has blessed us with an ultimate water reforming technology, something we can pride ourselves on to our next generation.

## THE BIOWATER Ω

Japan Water Works Association (JWWA) authentication Number Z-92

Mountable diameter of pipes ranges from 40mm to 125mm. Diameter size come from 190mm to 250mm and length is from 580mm to 1,100mm. Weight is from 10kg to 30kg. For more details, please refer to the specification sheet. Purchased material of SUS304 is common to all types.



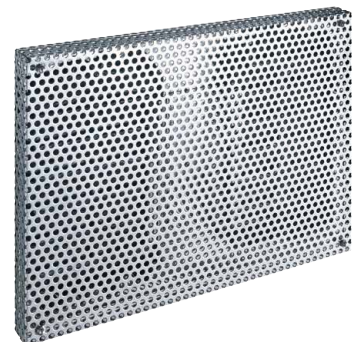
### BW•1-2-3

This water reforming device is for home and shop use. Mountable diameter is 13mm, 20mm, 25mm, and 32mm.(two items parallel.) Size comes in 80mm in diameter x 240mm.in length. Weight I 1.5kg. Exterior material is ABS resin.



### BW Punch Box

This water reforming device is for use in water tanks. Depending on the size of the water tank and the water retaining time, you can adjust the number of sheets to be applied. Outside material is SUS304. Water reforming power is one cubic meter per four hours per sheet. Size is 340mm x 250mm x 30mm.



# THE BIOWATER enhances the Power of Water.

## ◎Life Activating Power

Cut flower lives longer. Animals and plants grow faster.  
[Please refer to the left photograph.]

## ◎Antifungal Power

Effective microorganisms or favorable bacteria are activated to contain the growth of common bacteria, coliform, O157 or Legionella bacteria.

## ◎Antioxidant Power

Power is enhanced to remove active oxygen which causes aging and disease.

## ◎Cleansing Power

Cleansing power is strengthened from micro dust in manufacturing precision parts to washing clothes at home.

## ◎Environment Cleanup Power

Even waste water contains good amount of gases, activating aerobic bacteria leading to the reduction of sludge and other pollutants. This lessens environmental burden.

## ◎Water Reform Keeping Power

Effect of water reforming is maintained for a long period. Laboratory test demonstrated an effective period of over 10 months. In the field test, it was confirmed to be effective after 5 years of use.  
[Please refer to the right photograph.]



### Cut flower is robust again.

We put a bouquet of dracaena in BW reformed water, then roots started to grow from the cut stem in 2 months. After a year, the stem grew thick. After a year and a half, roots grew to the size nearly three times as large as the stem as the photo shows.



### Reforming power is maintained for 5 years.

(Water was filled in 2007, photo was taken in 2012.)  
The photograph shows the well water (hardness of 500ppm) used by Okinoerabu Jima China-cho Municipal Floral Hotel. Right bottle contains well water after flowing through THE BIOWATER and left bottle before flowing through BW. BW processed water is clear even after 5 years from intake. BW unprocessed water remained clear for 10 months but turned white thereafter.



EARTH BIOECOLOGY



# THE BIOWATER



## Elan Vital -Portable Water Reforming System- changes tap water this much!

Elan Vital is a portable water reforming device. By simply putting it in a bottle, tap water transforms itself into tender "Iwashimizu" rock-produced clear water.

Chlorine in tap water remains effective for a long time while its odor or bitterness is gone. Antibacterial and antioxidant effects are enhanced to make water good, safe and healthy. Reforming sustainable period is prolonged and long-term preservation of water is now possible. Time required to reform is one hour per one liter as a rule of thumb, but the longer the time is the milder the water becomes. It works on well water or other natural water as well as tap water.

<http://www.elavita.jp>

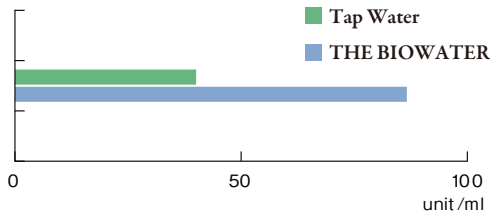


### Example



# Proven Water Reforming Effect of THE BIOWATER

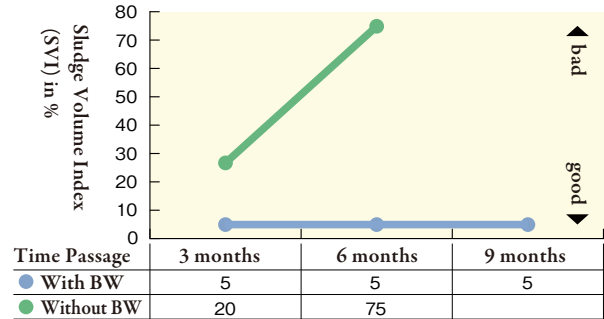
**[Proof 1] Antioxidant power was strengthened by 2.15 times.**  
 superoxide, a kind of active oxygen was artificially created. Add reformed water to it and measured the reduction of superoxide by ESR (electron spin resonance) method.



While tap water contained superoxide equivalent enzyme of 40 units per milliliter, while reformed water contained 86 units, **a 2.15 times antioxidant power**

(measured by Japan Institute for the Control of Aging.)

**[Proof 2] Sludge of septic tank was reduced significantly.**  
 superoxide, a kind of active oxygen was artificially created. Add reformed water to it and measured the reduction of superoxide by ESR (electron spin resonance) method.



This result was measured in the septic tank of Mr. N's residence in Odawara-city, Japan during 1999 ~ 2000. Chart was prepared from the data monitored by "Izumo" Suiji Kanri (Hydraulic Management) Center.

**Growth Rate of Sludge in 6 Months before installing BW**  
 ⇒ 375% (from 20 to 75 in SVI)

**Growth Rate of Sludge in 6 Months after installing BW**  
 ⇒ 0% (from 5 to 5 in SVI)



**[Proof 4] Scale peeled off by itself.**

■ Ebara Food Industries Tochigi Plant  
 Splashing water droplets from the washing equipment of the assembly line build up scale, being attached to the equipment. **THE BIOWATER enabled the white scale to peel off by itself in 5 months of use.**



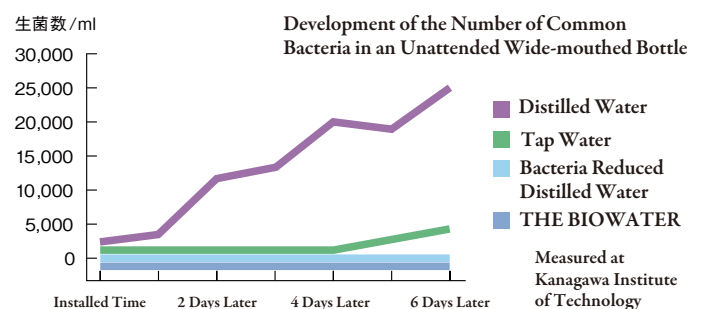
Photo taken June 30, 2008



Photo taken November 30, 2008

**[Proof 5] Water did not go bad.**

Water reformed by THE BIOWATER does not grow common bacteria. After the passage of one week, **no mold is found in the BW reformed water.**



Measured at Kanagawa Institute of Technology

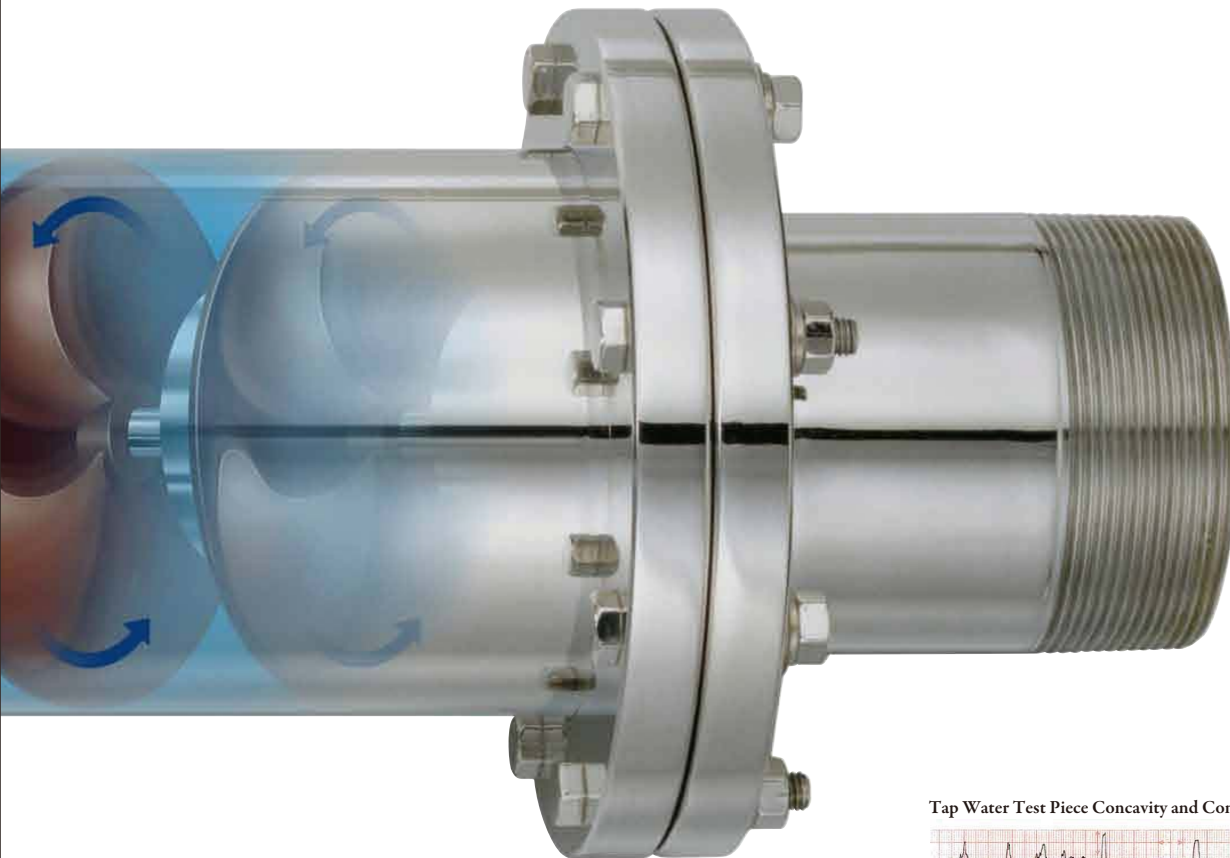
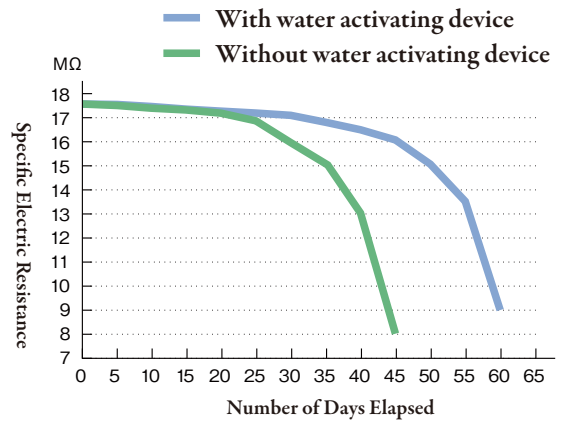


### [Proof 3] Extended Life-Span of Ion Exchange Resin

▪ JVC Kenwood Corporation (formerly Japan Victor Corporation)  
Kurihama R&D Center

We measured the life-span of ion exchange resin with THE BIOWATER and that without.

Useful life of ion exchange resin with THE BIOWATER was 62 days whereas that without BW was 45 days. **In the case of installing THE BIOWATER, operating life of ion exchange resin was extended by approximately 38%. See the chart.**

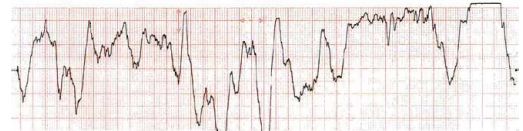


### [Proof 6] Rust and Decay Prevention of Water Supply Pipes

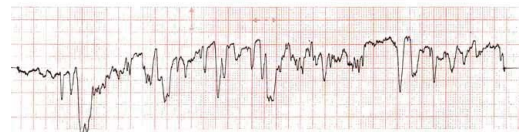
■ JR Takasaki Station

Please find the three line graphs from our field test data from our funded research with Japan Railway (JR) Takasaki Station. We compared the roughness of the bare metal after scraping the corroded portions from the test piece. Test piece in which BW unprocessed water flowed had severe roughness while the test piece in which BW processed water flowed had smooth surface. In the comparison of corrosion mass per area of the test pieces, **BW processed water showed less than half the amount of that of BW unprocessed well water and less than one third of that of BW unprocessed tap water. This confirms the corrosion control effect of THE BIOWATER.**

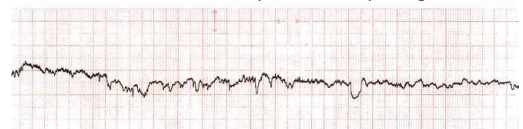
Tap Water Test Piece Concavity and Convexity (BW unprocessed)



Well Water Test Piece Concavity and Convexity (BW unprocessed)



Mixed Water Test Piece Concavity and Convexity (BW processed)





Database from Installed Cases

# THE BIOWARER



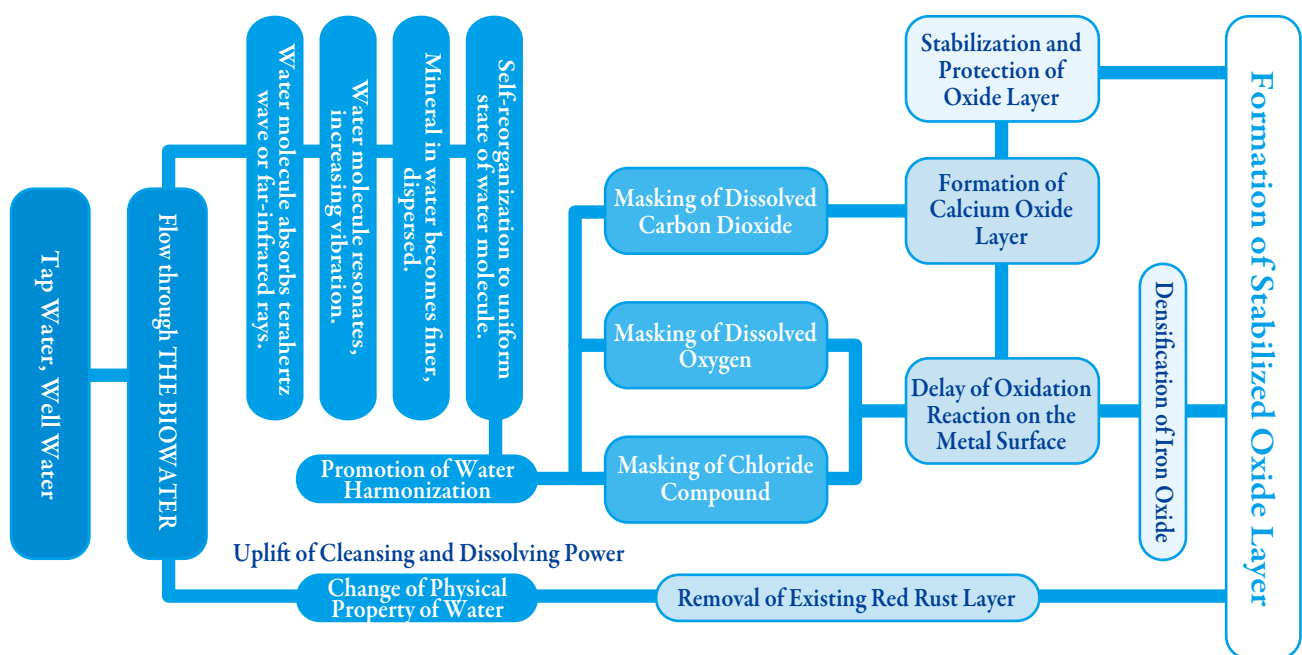


# Oxide Layer Method

Ordinary “Red Rust Measures” treats the water supply pipe in some way or another. On the other hand, our “Oxide Layer Method” using THE BIOWATER is a method to stop the red rust formation on water supply pipes by reforming the flowing water itself. “Reformed Water” promotes the peeling of existing red rust and improves the pipe clogging. At the same time, it forms black rust and avoid the deterioration of pipes. As a pretreatment, you may want to cleanse the pipe beforehand with hydrogen peroxide solution or pressurized air to further increase the effectiveness of the method. “Oxide Layer Method” enhances the grade of water itself on top of preventing water supply pipe from degrading. Furthermore, our method brings about such benefit as bacteria prevention, enhanced cleansing power and a host of additional effects on top of anticorrosion.

## Mechanism of Oxide Layer Method

Inside the water reformed by THE BIOWATER, a special mechanism works where the process of oxidation takes place slowly as the chart demonstrates.



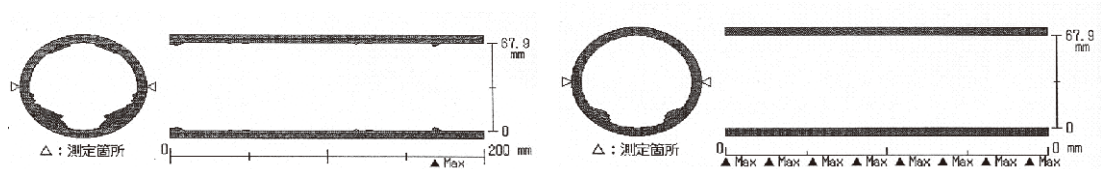
No iron corrodes in water. The issue here is what kind of rust is formed. Rapid oxidation produces red rust. Slow oxidation produces black rust. Black rust prevents red rust from forming. “Fight rust with rust!” is the main concept behind such products as “weather proof steel” or “COR-TEN Steel.” Our “Oxide Layer Method” is a technology applying the same concept to water supply pipes. Once black rust which is magnetite or ferrous-ferric oxide is produced, it forms a layer coating the inner surface of the pipe, halting the degradation of the pipework. Furthermore, there exists a special type of microorganism called “Iron Bacterium” , which is deeply involved in the formation of rust. What is great is that water reformed by THE BIOWATER restrain the generation of iron bacteria as well. As the chart shows, once we reform the water by THE BIOWATER, the physical feature of the water is changed in a way to start the process of “red rust peeling and removal while forming black rust” , protecting the pipework.

## Proof of the formation of Magnetite or Black Rust

Test Period:	October 9, 1998 through December 13, 1999
Outline of the Building: Size, Structure:	RC(Reinforced Concrete), 5 Stories
	Date Built: February, 1969 ( 30 year old structure at the time of test)
	Water-Supply Pipe Type: GP Pipe (Uncoated Steel Pipe)
Place & Type of Installed BW:	1 Unit of BW-Ω-50 on the intake side of Roof-top Tank
	1 Unit of BW-Ω-50 on the outlet side of Roof-top Tank
	7 Units of Punch Box inside the Roof-top Rank
Test Method:	① Qualitative Analysis of Rust Components on the Water-Supply Pipe using Fluorescent X-ray
	② Blocking Ratio of Water-Supply Pipe Gamma Beam Pipe Diagnostic Device
	③ Measurement of Remaining Thickness using Ultrasonic Thickness Gauge
	④ Water Quality Test (check of Iron Content for nine times)

### 《Blocking Ratio of Water-Supply Pipe》

October 2, 1998 **9%**      May 26, 1999 **3%** ⇒ 67% reduction in 7 months



### Quantitative Analytic Data (In Weight Percentage)

We conducted quantitative analysis of the rust components to confirm the development of the black rust after installing THE BIOWATER.

Type of Iron	October 19, 1998	December 13, 1999	Growth in 1year and 2months
Fe+++ (trivalent iron) Ferric Hydroxide Fe(OH) <sub>3</sub>	49.0%	50.3%	1.3%
Fe++ (bivalent iron) Ferrous Hydroxide Fe(OH) <sub>2</sub>	6.7%	7.3%	0.6%

Rust has two components. They are bivalent iron and trivalent iron. The ratio between bivalent iron and trivalent iron is 1 to 2, the resultant rust is deemed Fe<sub>3</sub>O<sub>4</sub> or ferrosferric oxide. Chart above shows that bivalent iron is 0.6, while trivalent iron is 1.3 and their ratio is approximately 1:2.

## Preventive Measures against Scale and Red Rust for Water-Supply Equipment

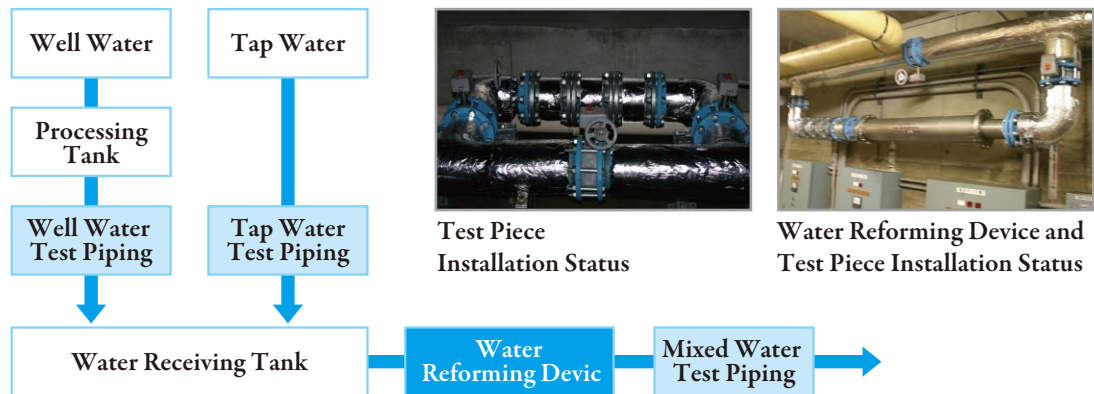
At JR Takasaki Station, tap water is mixed with well water for its water supply. As a result, scale has become a problem. We installed THE BIOWATER and observed the progress for a year. After one year of observation, we obtained the evidence that scale growth was constrained.

Test Period: September 2008 through August 2010

Test Method: We set test pieces to BW unprocessed tap water, BW unprocessed well water, and BW processed mixed water. We then observed and analyzed the status at the time of installation, 3 months after, 6 months after, and 23 months after installation.

Equipment Used: THE BIOWATER  $\Omega$ 100, Punch Box 16 sheets.  
Overview of the test piece Installation is as shown below.

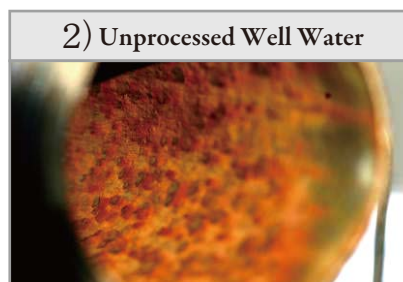
### Test Overview Chart



### Follow-up observation after 3 months regarding red rust decay of water supply pipe



Corroded product covers the entire surface of the test piece. It is iron oxide with rough structure easy to peel off.



Corroded product is finer than that of unprocessed tap water, sticking tightly to bare metal. This corroded product covers the entire surface like that of unprocessed tap water.



Electric resistance welded point has fine rust but other part has no corroded product. The situation is completely different from that of those two other cases.



## Data to Measure Corrosion Wastage [CW]

The resultant corrosion wastage after acid washing the rust of the test piece was measured and shown below. Relative speed of corrosion is 63 for unprocessed well water, and 30 for BW processed mixed water as compared with 100 for unprocessed tap water.

Type	Initial Mass(g)	Surface Area(cm <sup>2</sup> )	Mass after 6 months (g)	Corrosion Wastage (g)	Corrosion Wastage per unit area (g/cm <sup>2</sup> )	Corrosion Wastage Speed Ratio	Corrosion Progress Speed Ratio
Unprocessed Tap Water	1289	508.6	1258	31	0.0695	3.44	100
Unprocessed Well Water	457.2	197.8	449.6	7.6	0.03842	2.17	63
BW Processed Mixed Water	1285	508.6	1276	9	0.01769	1	30

In general, well water with high degree of hardness is believed to be effective against corrosion. One can confirm the difference of a significant degree not caused by the hardness of water but by the existence of BW processing.

## Data from Fracture Testing (by measuring test piece after 23 months by roughness gauge)

※ Below please see the data of measuring roughness of the bare metal surface after acid cleansing the test piece.

### Measuring Roughness of the Test Piping

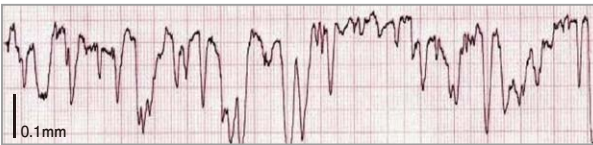
#### Unprocessed Tap Water



#### Cross-Sectional Surface of the Piping of Unprocessed Tap Water



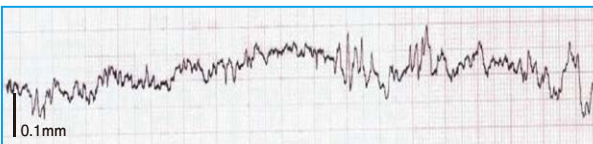
#### Unprocessed Well Water



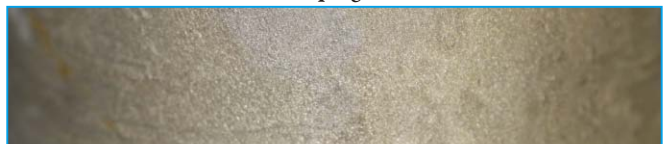
#### Cross-Sectional Surface of the Piping of Unprocessed Well Water



#### BW Processed Mixed Water



#### Cross-Sectional Surface of the Piping of BW Processed Mixed Water



## Result of Measuring Roughness [after 23 months]

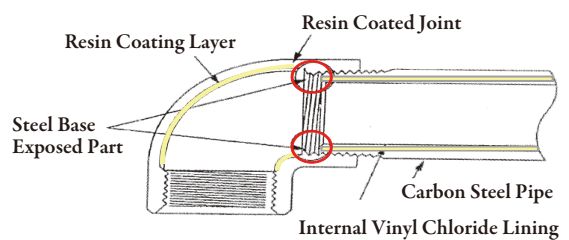
Test Piping	Concavity and Convexity from Standard Point (mm)	Height of Adjacent Hill and Valley (mm)
Unprocessed Tap Water	-0.3 ~ 0.3	0.03 ~ 0.5 mostly
Unprocessed Well Water	-0.27 ~ 0.09	0.03 ~ 0.2 mostly
BW Processed Mixed Water	-0.115 ~ 0.1	0.01 ~ 0.05 mostly

Above data from the roughness gauge verifies that the test surface has a severe asperity for the tap water test piece and the corrosion waste exists on the entire test surface. In the case of well water, the roughness is seen although it is not as severe as in the case of tap water, showing corrosion waste on the entire surface of the test piece. On the other hand, in the case of BW mixed water, the degree of roughness is small. One can see a slow progress of corrosion on the entire test surface.

□ Kotesashi Heights Condominium Tower J in Tokorozawa City, Saitama Prefecture

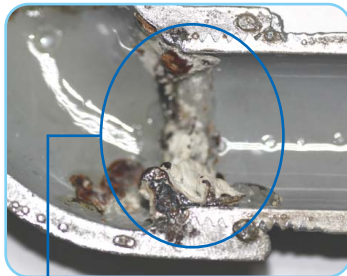
This building was completed in February, 1985. In 2004, nearly 20 years after completion, they researched various engineering methods to prevent degradation of water-supply pipes. After one-year of field test, they installed THE BIOWATER on August 30, 2005. The type of water-supply pipe is internally-coated lining steel pipe or VLGP pipe. This type of pipe has vinyl protection inside but the pipe end exposes bare metal, allowing the progress of red rust. Furthermore, pipe end allows the water to get through, inviting corrosion of the iron which leads to leakage.

Red rust spreads from the red circled positions.



① Rust at the Joint ② Rust spread between Vinyl Coated Layer and Bare Metal  
What happened to those two kinds of rust 5 years from installation is shown below.

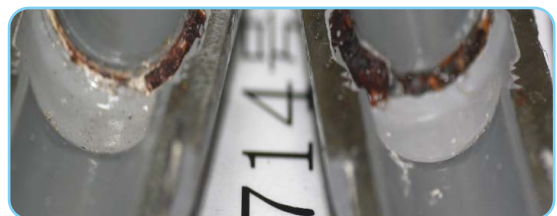
① Rust at the Joint



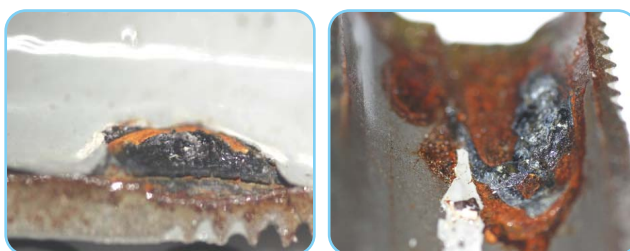
Calcium Layer and Black Rust at the Joint

Bare metal exposed section developed white calcium under which solid black rust was formed. It should be noted that not only black rust but also calcium layer is formed on top. You may recall calcium corrosion control method. By installing THE BIOWATER, one can expect the corrosion control effect by black rust and calcium at the same time.

Furthermore, after removing calcium layer the black rust underneath is formed as if it were artificially welded to surround the bare metal portion.



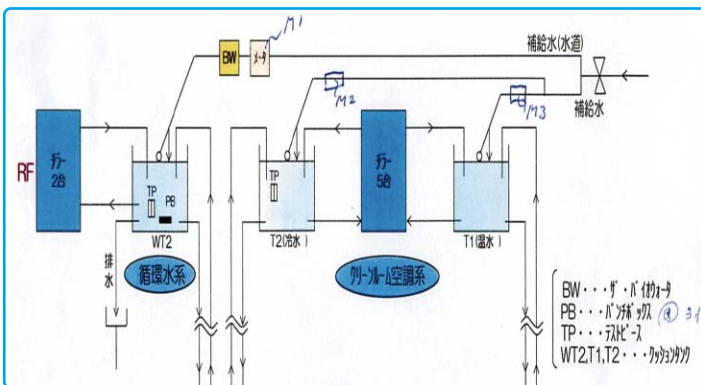
② Rust spread between Vinyl Coated Layer and Bare Metal



Water penetrating to the gap between vinyl coated layer and bare metal caused degradation of the pipe. We came across cases like this occasionally and in all such circumstances they turned to be black rust, putting a halt to the degradation as shown in these photos.

Test Period: April 24, 2007 through April 24, 2008

Test Overview: We processed the water in cushion tank (WT) in the circulatory water system by THE BIOWATER. We compared the result with that of unprocessed control tank (T2) of the clean room ventilation system. We put test piece in each tank for comparison.



Test Piece Used.

We prepared two kinds of test pieces. Test piece 1 was soft iron thin sheet, while test piece 2 was joint of GP pipe after removing the zinc plating. We put 5 sets of each test piece in both tanks.



Test Piece 1



Test Piece 2



The picture of setting Test Piece 1 and 2

Comparison of Test Piece 1 after one month as of May 4, 2007



Condition after removing rust

Comparison of Test Piece 2



WT Tank (THE BIOWATER installed)



Condition after removing rust



WT Tank (THE BIOWATER not installed)

Big difference existed between BW reformed water and BW unprocessed water in the rust formation and corrosion level. Reformed water had smooth and even rust overall, while the rust of unprocessed water is uneven. After removing the superficial rust, We observed a big contrast between them.

Rust of THE BIOWATER reformed water had a thin layer of rust on the bare metal. Metal layer remains to be smooth. On the other hand, rust of unprocessed water had gouged surface where the superficial rust was removed. Bare metal was corroded. In time, hollows are inevitable.

This test piece is actually used for water-supply pipe as carbon steel tube. In the case of BW reformed water, easy-to-peel thin membrane-type rust was merely formed. In one-year inspection, no sign of pitting corrosion was seen. Meanwhile, for unprocessed water rough rust like hump was formed. This rust is hard and not easy to peel. Inner side of the pipe saw progress of obstruction due to this type of rust layer.

Above result confirmed the effectiveness of THE BIOWATER in preventing water-supply pipe in that the form and quality of rust developed differs completely whether we use THE BIOWATER or not.



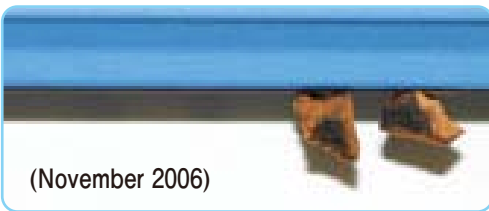
Oxide Layer Method:

### Case 5

□ Shotoku Seisakusho in Kawasaki City



Pipe wall has black rust after installing BW

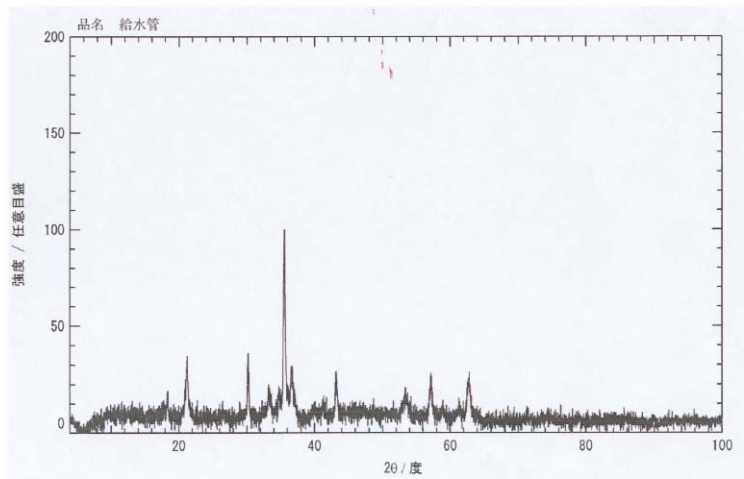


(November 2006)

Black substance sticks to magnet bar proving the matter is black rust or magnetite.

#### Florescent X-ray Analytic Data

One year and two months after installing acid layer method



Oxide Layer Method:

### Case 6

□ Seki Cleaning Shop, Katsushika Ward, Tokyo Metropolitan Government



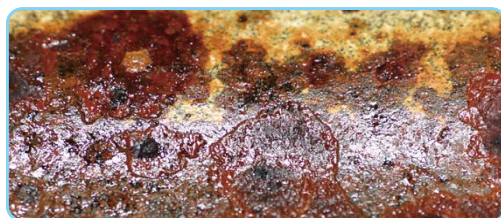
(November 2007)

THE BIOWATER was installed in 1997. After 10 years of use, the pipe was removed. As the picture shows an exquisite layer of black rust overspread the entire inner wall of the GP pipe. This protective shield put an end to the degradation of the pipe, never causing leakage.

Oxide Layer Method:

### Case 7

□ Shikaoi Junior High School, Hokkaido Prefecture



Calcium Covering underneath Iron Rust Layer    Rust Layer Bottom and Bare Metal

After four (4) years from installing THE BIOWATER, we observed the pipe and found calcium covering underneath iron rust layer as we can see from the photograph in the center. We conducted acid cleansing and eliminated the red rust. We now observed black rust clusters that put an lid to the holes of the bare metal as seen in the photograph on the right.



# Antibacterial Effectiveness

Anti-bacterial Effectiveness:

## Case 1

“After a week, no common bacteria appeared while tap water had them from four days after.”  
Says Assistant Professor Jun Sawai at Kanagawa Institute of Technology.

Date of Test: March 23, 2000

Specimen: ①THE BIOWATER Reformed water ②Tap Water ③Purified Water  
④Bacteria-Reduced Purified Water

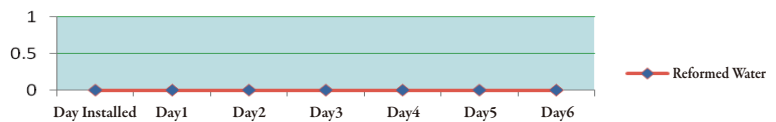
Test Method: We set two bacteria-reduced beaker for the above 4 types of specimen, 500ml each.  
Every day, we sampled small amount from each specimen, then measured the common viable bacteria count according to colony counting method. For culture, we used agar media made by Eiken Chemical Co., Ltd.

### Test Results (Unit: viable bacteria count/ml)

Type of Water	At time of Installation	1 day after	2 days after	3 days after	4 days after	5 days after	6 days after
①BW Reformed Water	0	0	0	0	0	0	0
②Tap Water	0	0	0	0	0	3,000	8,000
③Purified Water	500	1,000	13,000	14,000	21,000	20,000	26,000
④ Bacteria-reduced Purified Water	0	0	0	0	0	0	0

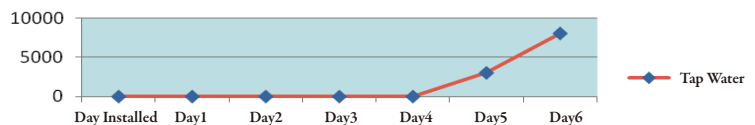
#### ①BW Reformed Water

No bacteria were determined.



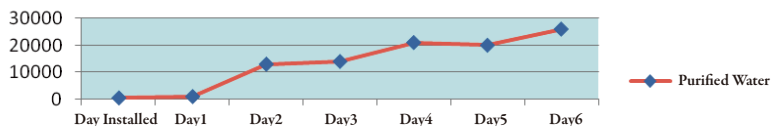
#### ②Tap Water

Bacteria started from day 5.



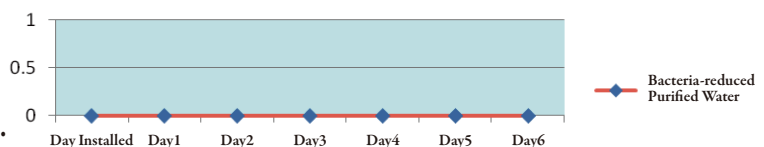
#### ③Purified Water

Bacteria started immediately.



#### ④Bacteria-reduced Purified Water

No bacteria were determined.



□ “Antibacterial power against legionella is approximately 5 times that of tap water. Against O-157 bacteria, it is approximately 4 times that of tap water.” Says Ritsuko Kikuchi, researcher at Kitasato Research Center for Environmental Science.

## Data for Antibacterial Effect against Legionella and O-157

Date of Test: July, 2000

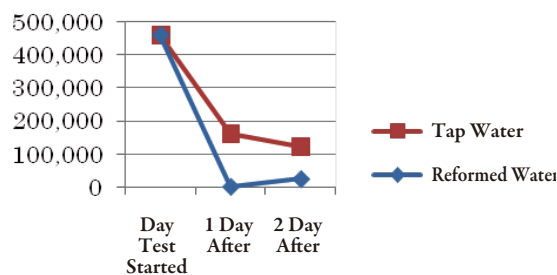
Test Water: ① Tap Water ② THE BIOWATER Reformed Water

Test Method: We put ① and ② into one liter glass bottle each. We then infused legionella and O-157. Each bottle was left untouched three (3) meters apart. We measured the colony count of each bacterium in the test water three (3) times; right after capturing, one day after, and two days after.

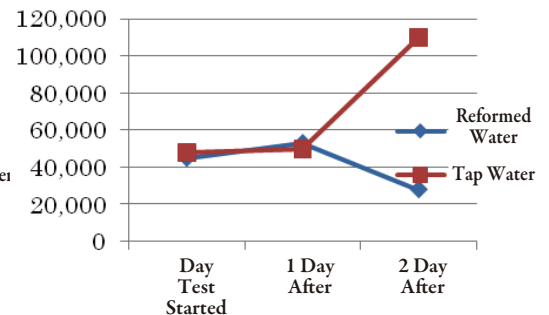
Test Result (Unit: CFU/ml)

	Test Water	Day Test Started	One Day After	Two Days After
Legionella ATCC#33153	Reformed Water	460,000	700	24,000
	Tap Water	460,000	160,000	120,000
O-157 ATCC#35150	Reformed Water	45,000	53,000	28,000
	Tap Water	48,000	50,000	110,000

○Changes of Legionella Bacteria Counts



○Changes of O-157 Bacteria Counts



	Test Progress
Legionella ATCC#33153	Date of Start: No difference Reformed water: Rapidly reduced on Day 1. Reduced to 5% of the start on Day 2. Tap Water: Reduced to 35% on Day 1. Reduced to 26% on Day 2.
Observation	Reformed water is showing 5 times antibacterial power of tap water.
O-157 ATCC#335150	Date of Start: Reformed water showed immediate reduction by 6%. Reformed Water: 17% increase on Day 1. 47% decrease from previous day on Day 2. Tap Water: 4% increase on Day 1. 120% increase from previous day on Day 2.
Observation	Reformed water shows approximately 4 times antibacterial power of tap water.

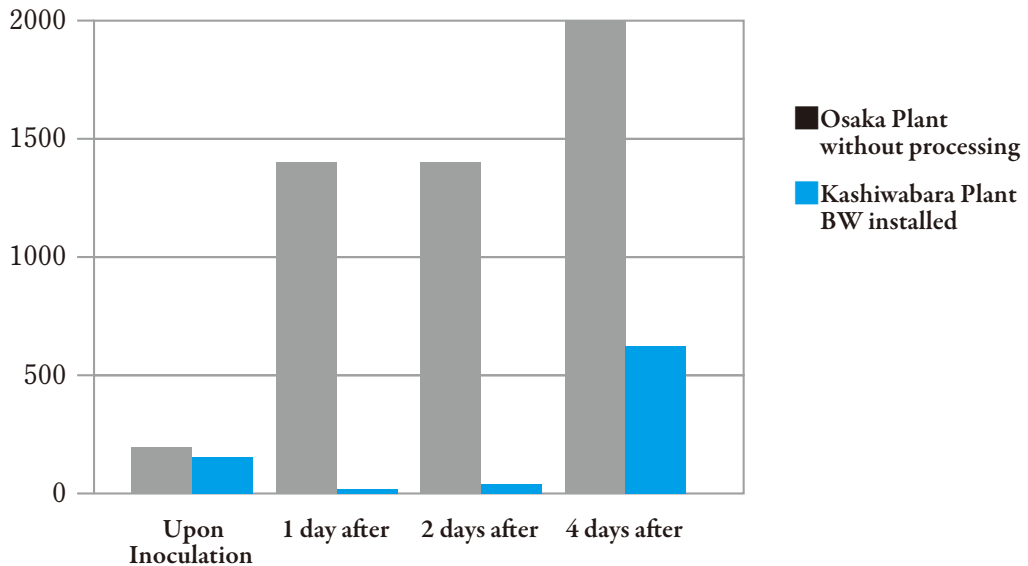


□ Aquapia\* in Osaka Prefecture

\*Ice maker since 1930

We confirmed an anti-bacterial effect even in ice making from pure water.

## Comparison of Plant Data caused by THE BIOWATER



	Upon inoculation	1 day after	2 days after	4 days after
Osaka Plant Ice Plant Water 36°C	196	1400	1400	2000
Kashiwabara Ice Plant Water 36°C	155	21	41	624

(Unit: CFU/ml)

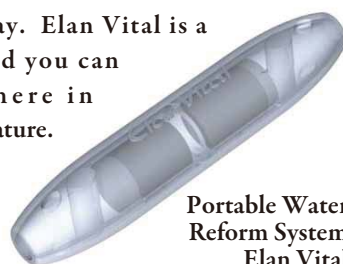
□ Kanagawa Industrial Research Center\*

\*Prefectural Research Organization

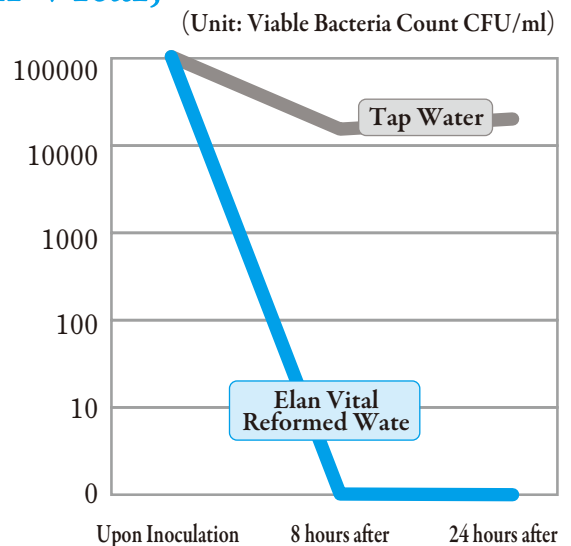
Anti-bacterial Power of Technology

## Laboratory Data of Elan Vital, Sister Product of THE BIOWATER

Bacteria started to decline right after the inoculation of coliform. It reduced to almost zero level in 8 hours. It did not increase even after a day. Elan Vital is a reliable friend you can carry anywhere in normal temperature.



Portable Water Reform System  
Elan Vital



□ 2 Companies in Tohoku [ Co. A, Co. B ] and 1 Company in Kansai [N Iron Works]

## Measurement of the Changes in Water Quality of the Soluble Cutting Oil

Questionnaire to Compare BW Reformed Water and Tap Water

Test Period: August 5, 2008 through November 28, 2008.

A senior engineer with more than 20 years of experience in metal processing measured it at 1 pm every Tuesday and Friday.

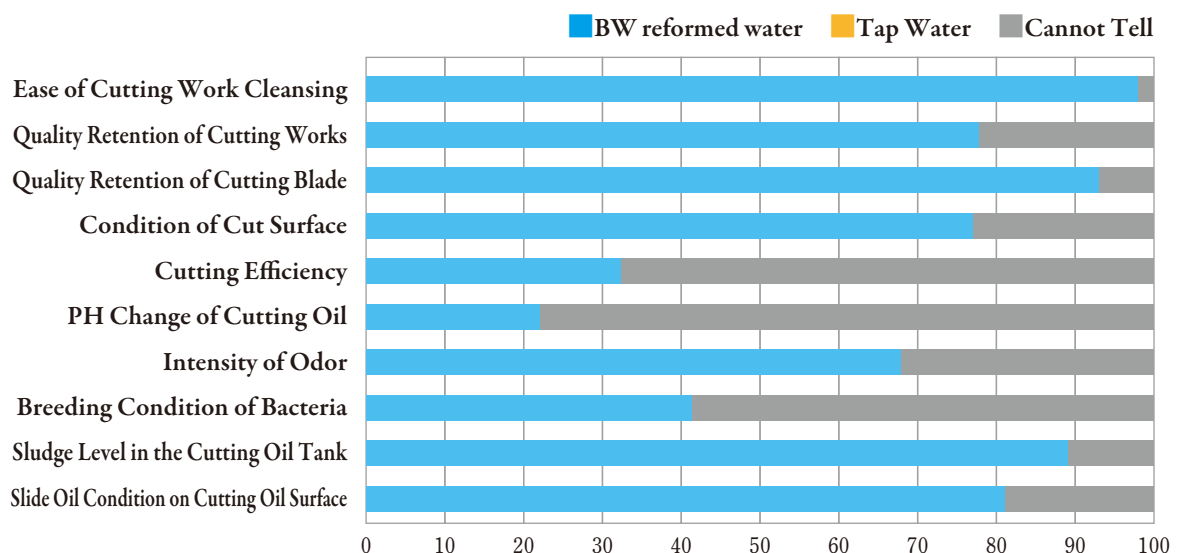
Machine Used: CNC machine tools included Matuura Machining Center, Mori CNC Lathe Machine, Mazac Machining Center, Okuma NC Lathe Machine

\*CNC=computerized numerical control NC=numerical control

Measurer responded to eleven items after measurement as follows.

Checked Item	BW is better.	Not Sure	Tap Water is better.
Stains around Machinery	80.9%	19.1%	0%
Slide Oil Condition on Cutting Oil Surface	89%	11%	0%
Sludge Level in the Cutting Oil Tank	41.3%	58.7%	0%
Breeding Condition of Bacteria	67.7%	32.3%	0%
Intensity of Odor	45.4%	54.6%	0%
PH Change of Cutting Oil [agent degradation& useful life]	22%	78%	0%
Change of Cutting Efficiency	32.4%	67.6%	0%
Condition of Cut Surface	76.8%	22.2%	0%
Quality Retention of Cutting Blade	93%	7%	0%
Quality Retention of Cutting Work [rust after 3 weeks]	77.8%	23.2%	0%
Ease of Cleansing Cutting Works	98%	2%	0%

### Change of Cutting Process depending on the Water Quality of Soluble Cutting Oil



□ Matsubara Trading KK Tulip Farm in Fujimi City, Saitama Prefecture  
Water Fungus Control Effectiveness in Hydroponic Culture



Tulip Bulb for Hydroponic Culture

Disposal Loss Rate of 13% Up to Now

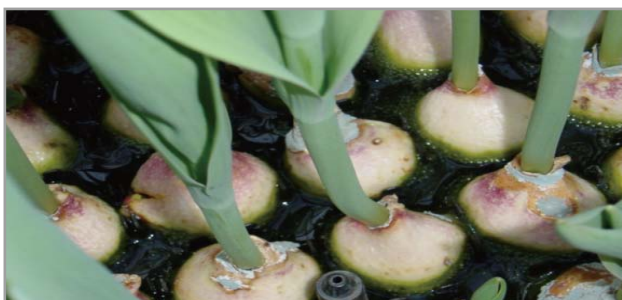
13% was broken down to 1 to 2% at purchase, 3% from fungi during preservation, 3% from sprouting or rooting defects, and 3% from budding.

So they reformed the water for this hydroponic culture using THE BIOWATER.



All the bulbs sprouted, which had never happened before.

They grew steadily and they achieved nearly 100% yield.



Furthermore, fungi attached to the bulb disappeared entirely! [The object looking like scab in the photograph is dead fungus, which naturally peel off the bulb by shipment.]





# Countermeasure against Scale

## Mechanism of Scale Peel-off and Prevention by THE BIOWATER

Scale is a phenomenon resulting from deposition of calcium carbonate (CaCO<sub>3</sub>) or of silicon dioxide (SiO<sub>2</sub>) on the inner surface of the pipework or of the water supply equipment. Mechanism of scale peel-off or its prevention from attachment using water reformed by THE BIOWATER is as follows.

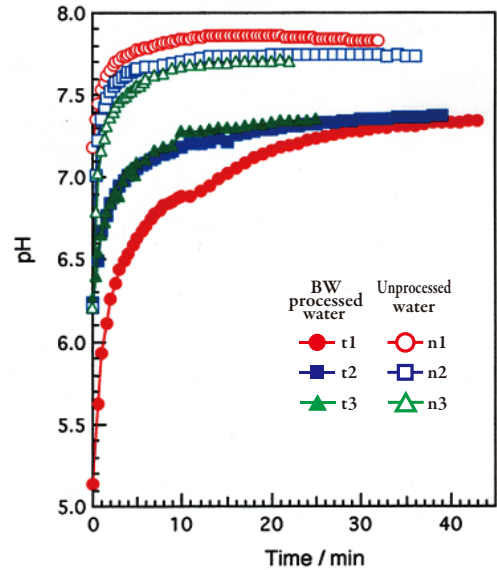
### On Calcium Carbonate [CaCO<sub>3</sub>]

#### In case of Unprocessed Water

In most cases, cold or hot water is pressurized by pump and then sent to kitchen facilities. Because of this high pressure, a large quantity of gas is dissolved in the water. Open the valve, and the pressure is reduced to a normal level, you will see the dissolved gas evaporating, creating a lot of air bubbles.

#### In case of THE BIOWATER Reformed Water

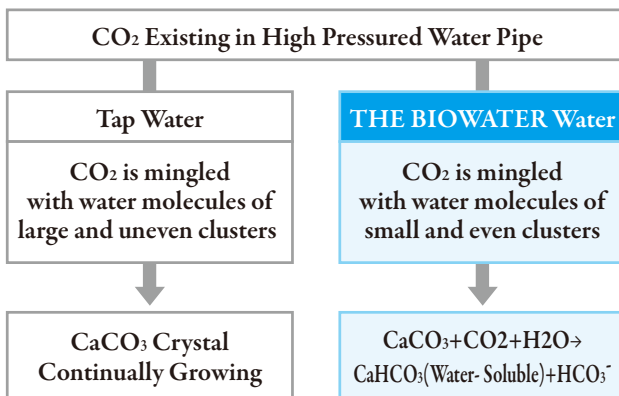
On the other hand, in the case of cold or hot water reformed by THE BIOWATER, the dissolved gas is not vaporized. Instead, the gas is either incorporated in the sequence of water molecules ( clathrate hydrate) or preserved in stable condition among the similarly sized particles of water molecules. This is clear in that the normal "alkali shift" seen in ordinary water is restricted in the case of THE BIOWATER reformed water as shown in the right-hand chart.



Time change of pH for processed and unprocessed water  
t1~t3 processed water at different times  
n1~n3 for unprocessed water

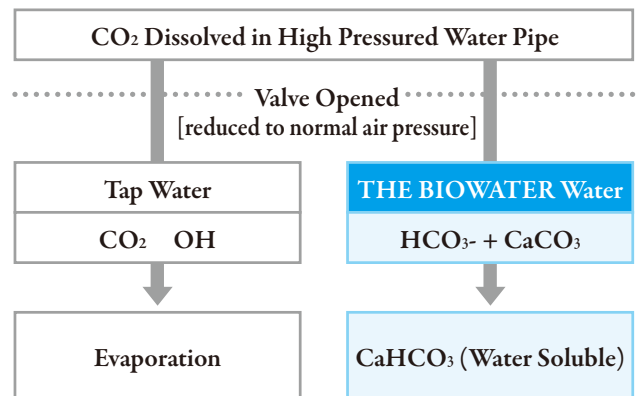
### BW Water Scale Peel-off Phenomenon

[Before opening the valve of the water-supply pipe]



### BW Water Scale Peel-off Phenomenon

[after opening the valve]



In the reformed water where carbon dioxide is dissolved in a large quantity even after opening the valve, alkali shift which is caused by the vaporization of CO<sub>2</sub> and generation of OH<sup>-</sup>. On the other hand, bicarbonate ion [HCO<sub>3</sub><sup>-</sup>] in the water starts chemical reaction with calcium carbonate [CaCO<sub>3</sub>] to generate calcium bicarbonate [CaHCO<sub>3</sub>]. This calcium bicarbonate is water soluble and starts to erode and melt the calcium carbonate which is attached firmly to the pipe as scale. This results in the phenomenon where the scale peel-off in the normal water pressure takes place. (See above chart.)



calcite crystal



aragonite crystal

In the reformed water, scale is formed as a deposit of calcite crystal (granular crystal.) calcite crystal is hard to be attached as scale and even if it is attached, it is easy to be wiped off. On the other hand, in the unreformed water, aragonite crystal (needle-like crystal) is deposited. It has a property to stick firmly as scale.

## Against Silicon Dioxide (Silica) or SiO<sub>2</sub>

### Case of Unreformed Water

Silica forms gelled coating by laterally connecting hands. This gelled coating accumulates one after another to form a solid scale, which continues to build up inside the pipework.

### In case of THE BIOWATER Reformed Water

In the BW reformed water, a phenomenon that water molecules surround silica or SiO<sub>2</sub>. This hampers silica from connecting hands laterally, hindering the formation of gelled coating, preventing solid deposited layer of scale.

(See the chart below.)

#### Case of Unreformed Water



#### Gelled Deposit Layer

It is hard to peel off because it is solid.

Cross-Sectional View of Scale



#### Case of BW Reformed Water



#### It is flat and gelled coating is sporadic

This makes it easy to peel off.

Cross-Sectional View of Scale

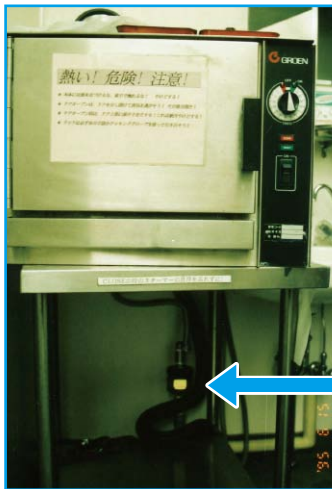


□ Hishizen Caterer Nishi-Shinjuku Shop ( "Bento" lunch-box catering in Tokyo)  
THE BIOWATER 1/3 Peeled off Scale in Boiler Inner Pipe in two Weeks.

### Field Test to Remove Scale

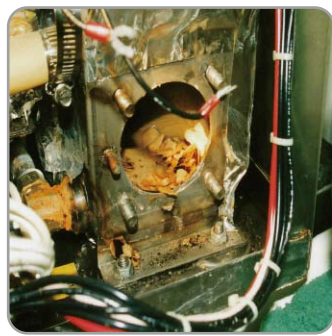
Test Date: June 15 though June 29, 1995

Place: Installed THE BIOWATER 1/3 to Hyper Steamer Equipment

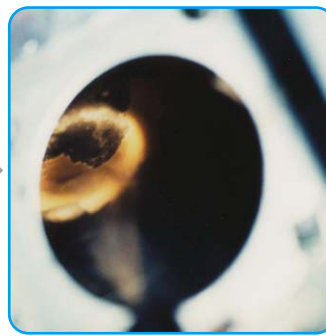


THE BIOWATER 1-2-3

One third of THE BIOWATER 1-2-3



June 15, 1997  
[Before Installation]  
Inside is full of scale.



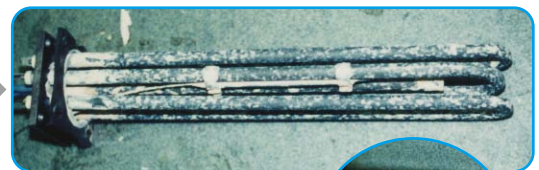
June 29, 1997  
[Two Weeks after Installation]  
Scale has been peeled off.



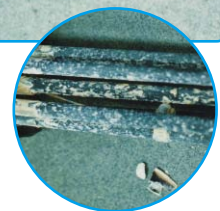
Scale from Within



June 15, 1997  
[Before Installation]  
Scale is stuck firmly all over.



June 29, 1997  
[Two Weeks after Installation]  
Scale has started to peel off smoothly.



Peeled off scale



□ Hitachi Computer Equipment Co., Ltd. - Odawara City, Japan  
All the scale disappeared after four months from installing THE BIOWATER.

## Field Test to Remove Scale

Test Period: July 15, 2000

Point Installed: Boiler Water-Supply Pipes and Supplementary Pipes etc.  
in the plant premises


2 months later: Scale prevention effect was evident in three spots; inner part of the boiler water-supply pipe, inner wall, and inspection opening.

4 months later: Scale was completely controlled and existing scale started to be removed.

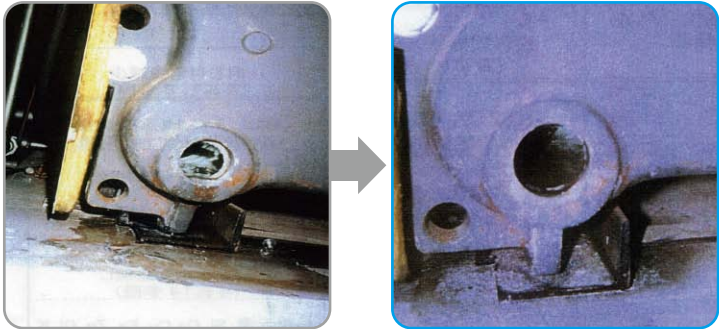
(Note: Above change was confirmed by Odawara Custom Manufacturing Service Co., Ltd, a third-party engineering company.)

Original Water ( Well Water)

THE BIOWATER1-2-3



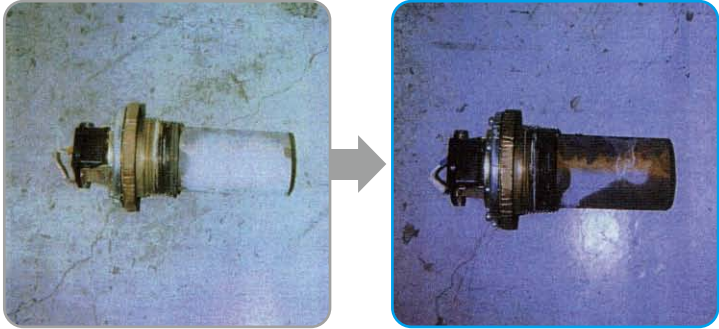
Observed from inspection opening of the boiler.



July 15, 2000  
We can see scale deposition.

November 18, 2000  
Scale is mostly peeled off.

### Scale Attachment Situation on Low Water Level Boiler Shutoff Equipment



September 15, 2000  
Scale is attached.

November 18, 2000  
Scale is peeled off for the most part.

## □ Hotel Diamont (in Niigata Prefecture) Two Cooling Towers

## Scale Peel-off Test Data

Test Date: April 15 through October 22, 2002

Water Inspection Institution: Bousei Co., Ltd. (Shinagawa Ward, Tokyo) took water on October 17, inspecting the specimen on October 22, 2002.

Test Method: We installed THE BIOWATER and two sheets of Punchbox (PB hereafter) to one of the two cooling towers of identical conditions.

We analyzed for each tower the following two respects

- ① scale attachment situation ② salt chamber of cooling agent.

## Test Results:

Cooling Tower 1 (with no BW processing)



Cooling Tower 2 (with BW & Punchbox Immersion)



## ① Scale Attachment Condition

As seen from the photograph, scale is naturally peeling off from the filler of the cooling tower with BW and Punchbox. As long as this continues to be used in this way, detachment of the existing scale proceeds with no new ones created and attached.

## ② Water Quality Test of Cooling Agent

Total iron value reduced to a large degree from 0.85ppm to 0.11ppm. This is because the occurrence of red rust was restrained.

Hardness rose dramatically from 136.5ppm to 273.0ppm. This is because the detachment of scale initiated the melting of calcium carbonate.

This test proved that THE BIOWATER has a superb effects of anticorrosion and scale detachment.

水質分析表

株式会社 望洋  
〒141-0031 東京都品川区西目黒3-10-404  
TEL03-5456-8901 FAX03-5456-18900

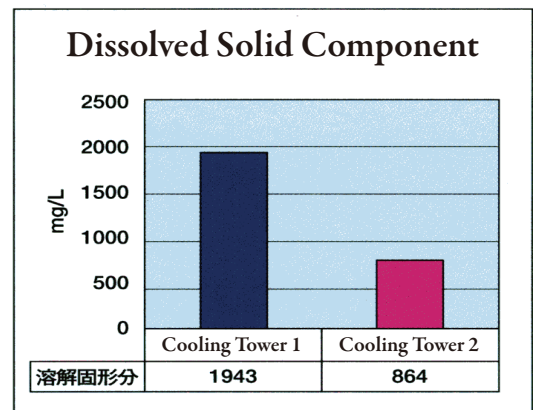
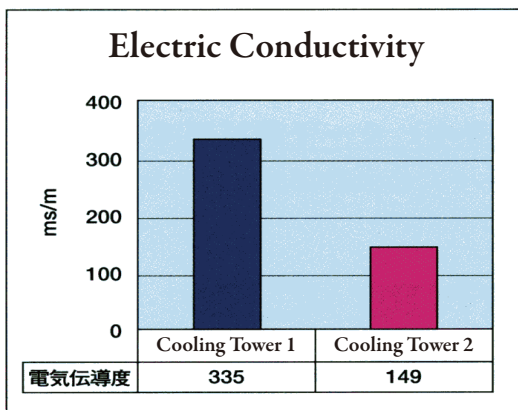
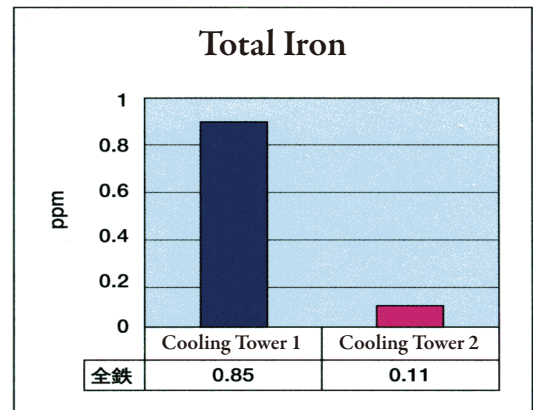
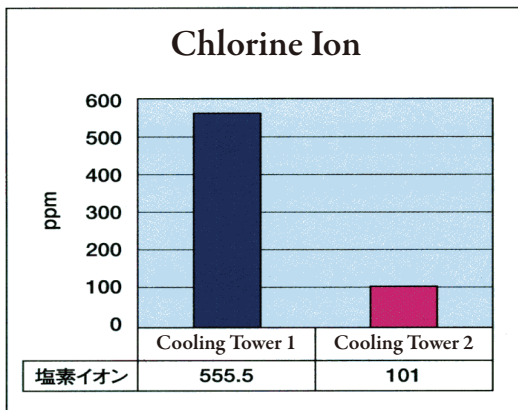
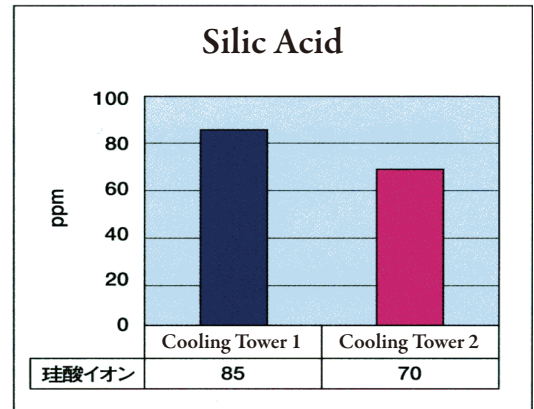
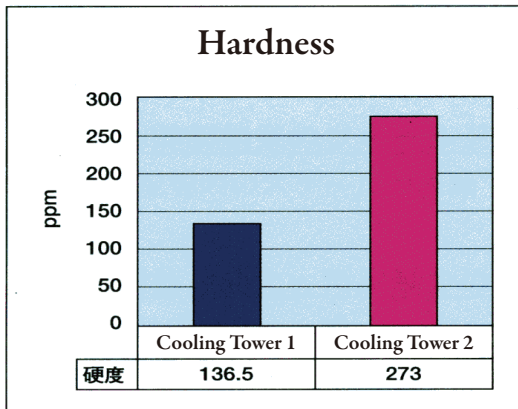
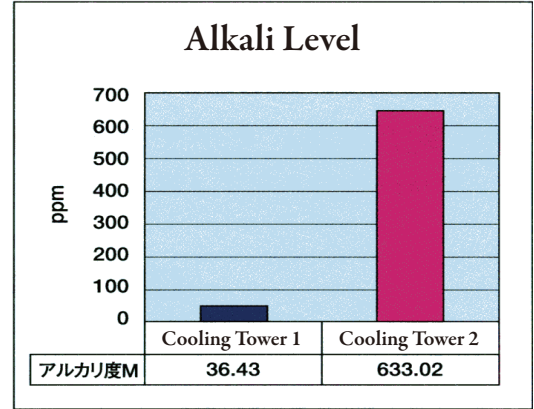
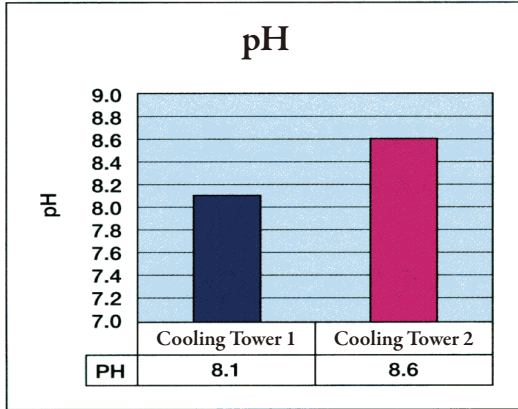
販売店  
新潟市小野上町法隆寺  
有明株式会社 外力キ産業  
TEL025-266-1422

分析月日平成 14年 10月 22日  
分析責任者 鳥飼 増代(印)

項目	使用箇所	1		2		管理目標値
		採水/製品	冷却水	冷却水	冷却水	
試料採取月日		月 日	10月 17日	10月 17日	月 日	
試料採取時刻		時 分	時 分	時 分	時 分	
外観			無色透明	無色透明		
水素イオン濃度 (pH)			8.1	8.6		8.0~8.6
アルカリ度 (CaCO <sub>3</sub> ) (ppm)	P			10.12		100>
	M		36.43	633.02		
硬度 (CaCO <sub>3</sub> ) (ppm)			136.50	273.00		700>
塩素イオン (ppm)			555.50	101.00		500>
硫酸イオン (ppm)			85.00	70.00		
全鉄 (Fe <sup>2+</sup> /Fe <sup>3+</sup> ) (ppm)			0.85	0.11		
無リン酸有効成分 (ppm)						25~50
リン酸イオン (ppm)						
電気伝導度 (ms/cm)			335.00	149.00		300>
溶解固形分 (mg/l)		0.00	1943.00	864.20	0.00	2000>
沈殿物			茶褐色	茶褐色		
所見						

\*) 測定は25℃にて換算

## Graphs of Data for Water Quality Analysis







# Sewer BOD\* and Sludge Reduction

\*Biochemical Oxygen Demand

Sewer BOD and Sludge Reduction:  
**Case 1**

Residence of Mr. N in Kouzu, Odawara City, Kanagawa Prefecture  
Sharp Decline in Sludge of Septic Tank from 80% Level, Water Clarity Sharply Rising

## Data of Septic Tank Sludge Reduction by THE BIOWATER

Checked by Izumo Water Hydraulic Control Center K.K. (Chigasaki City, Kanagawa Prefecture)

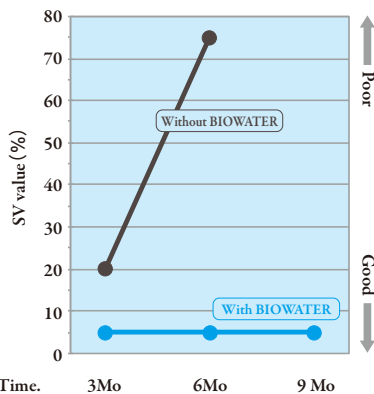
Before installing THE BIOWATER, the active sludge in the septic tank was on the increase in the range of 20% to 80% level in a matter of 3 months. After BW installation, it showed a sharp decline to merely 5%. Water clarity in the septic tank surged from the average of 9.3cm before installation to the average of 16cm post installation. Dissolved oxygen level which activates sludge eating aerobic microorganism was also on the increase.

### Change of Septic Tank Sludge SV Value (Sludge Deposition Rate) and Clarity

Measured Date	SV Value (%)	Clarity (cm)	DO Value mg/l) *
November 10, 1999	70	6	3.3
February 9, 2000	20	11	4.0
May 6, 2000	80	11	3.3
November 28, 2000 Installed THE BIOWATER			
August 10, 2001	5	18	6.0
November 12, 2001	5	14	6.0
February 8, 2002	5	16	6.0

\*DO Value: Dissolved Oxygen Value

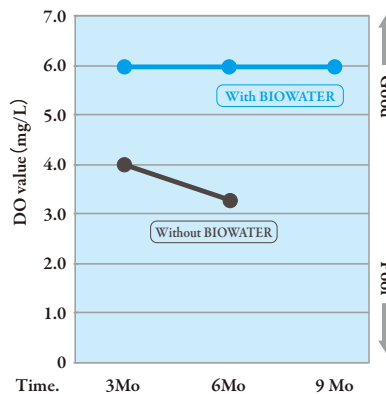
Time Change of SV Value



Time.	3Mo	6Mo	9 Mo
With BW	5	5	5
Without BW	20	75	70

Months after Pickup

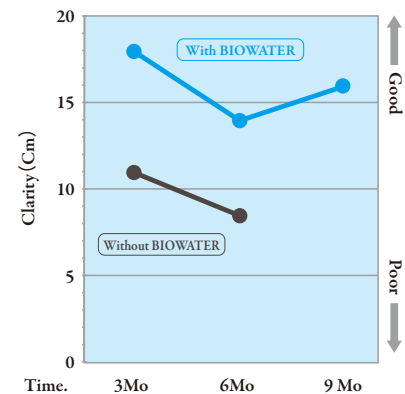
Time Change of DO Value



Time.	3Mo	6Mo	9 Mo
With BW	6.0	6.0	6.0
Without BW	4.0	3.3	4.0

Months after Pickup

Time Change of Clarity



Time.	3Mo	6Mo	9 Mo
With BW	18.0	14.0	16.0
Without BW	11.0	8.5	11.0

Months after Pickup

□ Food Processing Plant (Yokohama City) of Yokohama Reito K.K.  
Sludge declined by 60% in 5 months from installing THE BIOWATER

Test Date: June 10, 1999 through January 12, 2000

## 1. Water Quality Test Results

Inspection Agency: Odawara CMS on the premises of Hitachi Ltd.,  
Storage Systems

		May 27 [pre-BW]	Aug.10 [1st Test]	Nov.10 [2nd Test]	Jan.12 [3rd Test]	5 Months Change
Raw Water [Clear Supernatant Liquid]	PH	4.3	4.5/4.9	5.6/6/6	5.8	
	SS	188	138	35	52	62.3%
	COD	151	84/94	59/44	105	25~11.7%
	BOD	189	180	140	194	7.8%
	n-Hexane	53	19/26	10	13	31.6~50%
Aerated Water	PH	3.6	6.6/6/4	7.0/7.2	7.5	
	SS-Supernatant Liquid	138	132	7	1	99.2%
	SS-Stirred Suspension	-	6075	-	-	
	COD-Supernatant Liquid	299	63	9/10	10	84.1%
	COD-Stirred Suspension	950	2216	-	-	
	BOD-Supernatant Liquid	303	12	1	17	41.6%
	BOD-Stirred Suspension	1374	716	-	-	
	n-Hexane	380	32/88	38	6	81.2~93.1%
Final Effluent	PH	6.8	7.0	7.1/6.8	7.0	-
	SS	24	5	1	1	80%
	COD	51	18	8/14	7	61.1%
	BOD	54	3	3	1	66.6%
	n-Hexane	-	Less than 1	Less than 1	Less than 1	

### Observation of the Water Quality Data Analysis

- ① All indicators showed continued improvement for final effluent during the 5 months period from Aug.10 to Jan.12.
- ② **Major improvement was confirmed for BOD by 67%, COD by 60%, and SS by 80%.**  
We consider this is because bacteria activated by THE BIOWATER reformed water enhanced sewer water processing power.
- ③ We also confirmed the effect to remove urinary stones in men's toilets in the plant.

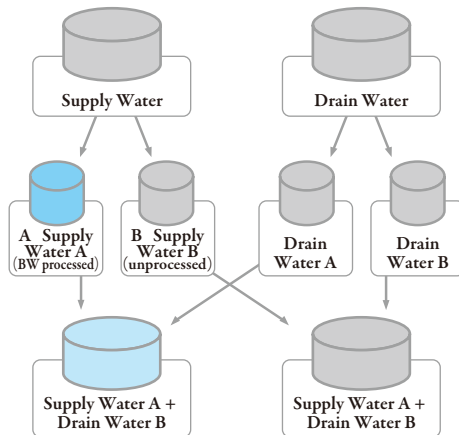
### Annual Comparative Data of Sludge Reduction by THE BIOWATER

68% reduction of excess  
sludge was confirmed.

Sludge Withdrawal	Volume (t)	Sludge Withdrawal	Volume (t)
July, 1998	3.7	THE BIOWATER was installed on June 10, 1999	
October, 1998	3.7		
January, 1999	3.7		
March, 1999	3.7	October, 1999	3.1
May, 1999	5.0	March, 2000	3.3
Total before Installation	19.8	Total after Installation	6.4

Data from Yokohama Reito Co., Ltd.

### 1. BOD Laboratory Test Method



- ① Feed-water and sewer water was sampled for one liter each at Maruzen K.K. Saitama plant.
- ② We halved feed-water into two 500ml parts, calling them A and B. The same was done for sewer water. Then we reformed feed-water A by THE BIOWATER.
- ③ We mixed feed-water A and sewer-water A. We also mixed feed- water B and sewer water B. Mix ratio is one to one because of 500ml each.

- ④ We measured BOD level for BW processed water and unprocessed water using 20°C 7 days culture method.

### 2. Test Results [Three Times]

March 17, 2010	April 15, 2010	June 21, 2010
unprocessed water→ 210mg per liter	unprocessed water→ 182mg per liter: BW	unprocessed water→ 38mg per liter
BW processed water→ 179mg per liter	BW processed water→ 178mg per liter	BW processed water→ 32mg per liter
Approximately 19% reduction in BOD	Approximately 5% reduction in BOD	Approximately 16% reduction in BOD

We confirmed **average of 13% reduction in BOD** over the comparative test of three times. As shown in test method ③ in this test, sewer water is thinned by half. In practice, however, the sewer water is reformed in its entirety, so we expect that double of the test; **approximately 26% in BOD reduction.**

### 3. Mathematics of Cost Reduction

- Pre BW Introduction [year 2008]
  - Sludge Withdrawal Volume: approximately 197m<sup>3</sup> per year [14m<sup>3</sup> x 14 times]
  - Sludge Withdrawal Cost: approximately 2,620,000 yen per year [180,000 to 190,000 yen for each withdrawal x 14 times]
- Post BW Introduction
  - Sludge Withdrawal Volume: approximately 146m<sup>3</sup> per year
  - Sludge Withdrawal Cost: approximately 1,940,000 yen per year
- Comparison for BW Introduction [1m<sup>3</sup> = approximately 13,300 yen]
  - Approximately 51m<sup>3</sup> reduction in sludge withdrawal volume per year or
  - Approximately 670,000 yen cost reduction per year**





# Enhancing Cleansing Power

Enhancing Cleansing Power:

## Case 1

□ Odawara CSM Co., Ltd.

Solvent Degrading Speed was Reduced by Half, Cleansing Power of Pure Water was Enhanced.

### Evaluation of Installing THE BIOWATER to the Package Board Pure Water Cleansing Device

Odawara CMS is the storage business arm of Hitachi Ltd. Below is the effective analysis data of THE BIOWATER. Below is the exact report from the company without any editing on our part.

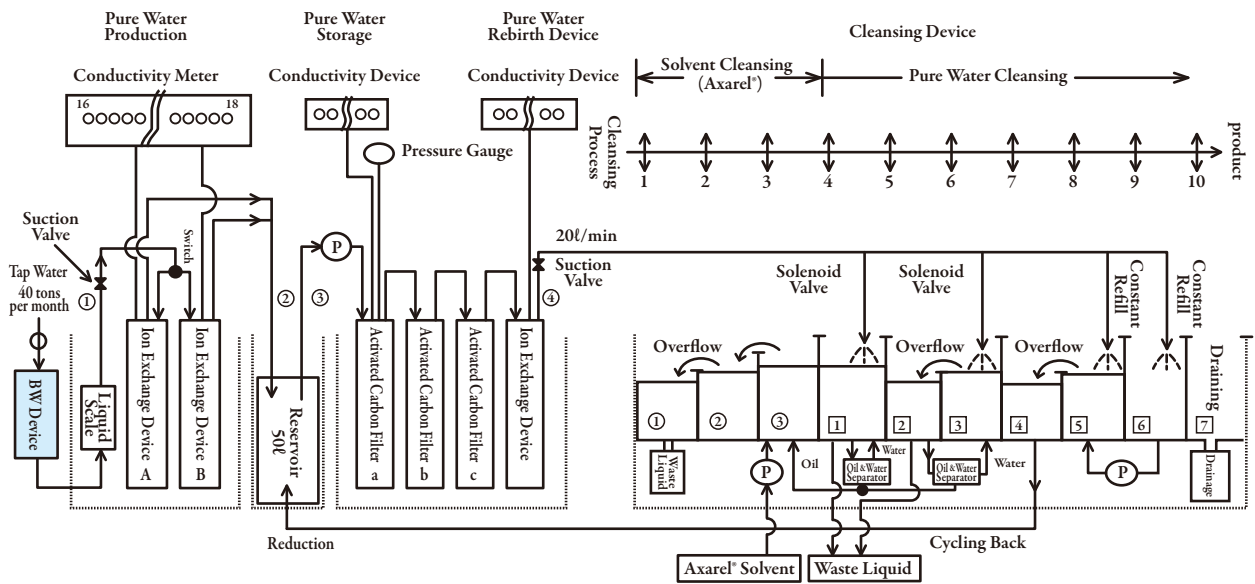
“As shown below, after the installation of THE BIOWATER, degrading speed of solvent cleansing liquid was halved, enhancing the cleansing power to a large degree. Scale (composed of needle-type crystal of silica and calcium) was not formed at all. In 2 weeks from installing THE BIOWATER those effects took place.”

### Evaluation of installing THE BIOWATER to the Pure Water Package Board Cleansing Device by Odawara CMS Co., Ltd.

Evaluation below was conducted on July 12, 2000 by Hiroyasu Nakajima, certified environmental measurer at Odawara CMS.

Objective	Evaluation Item	Evaluation Method	Result of Evaluation	Evaluation
Cost Reduction of Supplies	Enhancing Longevity of Ion Exchange Resin	Pure Water Conductivity Monitor (Conductivity Analyzer)	Under Evaluation (Observed Tendency of Stability in Pure Water Conductivity)	
	Enhancing Longevity of Solution Cleansing Agent	Flux Density Monitor (Liquid Chromatography)	Degrading Speed of Solvent Cleansing Agent was Halved.	Good ◎
Improvement of Cleansing Efficiency	Improvement of Product Cleansing Power	Observation of Product Surface (SEM, FT-IR)	Under Evaluation (No Problem by Visual Judgment)	
	Improvement of Pure Water Cleansing Agent	Analysis of Pure Water Cleansing Layer Oil and Water Divider (Fluorescent X-ray, SEM, EDX)	Detected a large amount of metal components (Cu, Pb, Fe, Cr etc.) Handa Ball (Solid Component), confirming the enhancement of pure water cleansing power	◎
	Cleanliness Enhancement of Cleansing Layer	Analysis of Attached Substances to the Filter Tank of Pure Water Cleansing Layer (SEM, EDX)	There were a few filter tank attachments. No silica or calcium needle-shaped crystal deposited seen in case of no BW equipment.	Fair ○

Pure Water Substrate(Package Board) Cleansing Device by Odawara Custom Manufacturing Service Co., Ltd.



Enhancing Cleansing Power:

Case 2

☐ Copier Maker X Cleansing Power Improvement

100% Yield for Heat Roll was constantly achieved!

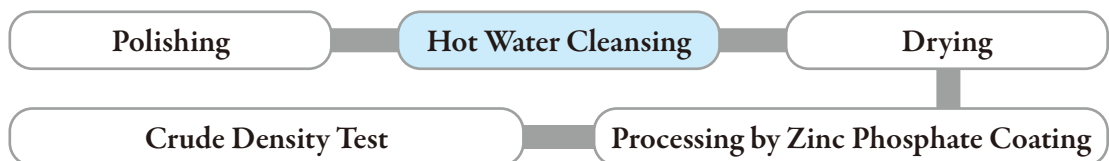
Heat roll is considered the heart of office machines like copiers. This is because heat roll needs to be perfectly circle so that the printed surface will not have thick and thin ink spots. For this to be ascertained, all the heat rolls are checked before completion and delivery. At times, hand polishing is done. Yield of this product has been increasing 1% per year but it stopped at 95%. So they started to reform the water and the yield of 100% was constantly achieved.



[Heat Roll]

A device to fix toner to the memory media by heat and pressure for copier and printer.

We installed BW1-2-3 and Punch Box to hot water cleaning machine.



Pre BW Installation: Yield of 95%

Post BW Installation: Yield of 100%



# Longer Life for Ion Exchange Resin

Longer Life for Ion Exchange Resin:

## Case 1

Japan Victor Corporation  
Life of ion exchange resin is longer by approximately 40%.

**Overview:** This test was conducted at Kurihama Research Center of Japan Victor Corporation. We installed THE BIOWATER to the immediate front of Ion Exchange Resin and measured the difference in longevity against the one without BW. The following is the summary of the test report sent from Japan Victor Corporation. [Wordings are as reported in the original document.]

**Purpose:** To confirm how much longer the useful life of the ion exchange resin will get when it is equipped with THE BIOWATER 1-2-3.

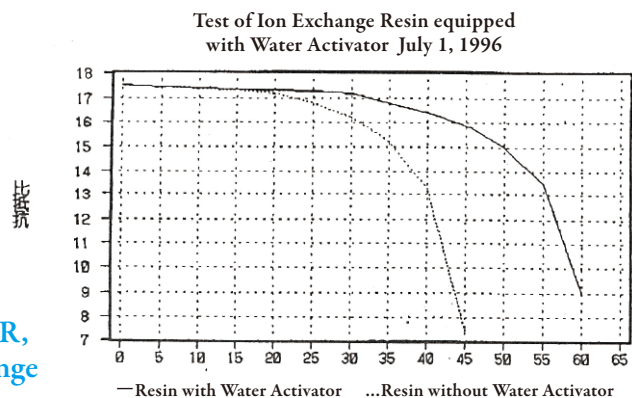
**Test Conditions:** ① Ion Exchange Resin: C-40S, containing 40 liter of resin volume, made by Nippon Rensui Co.  
② Water Activator: THE BIOWATER 1-2-3, ceramic water activator, made by Toshi Kogyo Co., Ltd.  
③ Measuring Instrument: KD-32 made by Kurita Water Industries Ltd.  
④ Test Period: April 4, 1996 through June 22, 1996

**Results:** Useful life with water activator was 62 days, 17 days longer than the 45 days with no water activator. [See the chart below.]

### Analysis:

THE BIOWATER Installed	Life
Yes	62 Days
No	45 Days

When we installed THE BIOWATER, life extension effect to the ion exchange resin was a longer life of 38%.



[Note 1] Normally, useful life of ion exchange resin is tested by molybdc acid method measuring silica volume in the water in circulation. The volume of silica is judged by the strength of fluorescent color which is caused by the reaction of molybdc acid and silica. In this test, the total volume of silica remained unchanged before and after flowing through THE BIOWATER. However, nearly 20 % of silica did not react to molybdc acid. This is because 20% of silica was clathrated or hydrated and did not bind with molybdc acid. It is because the creation of silica coating which reduces the life of ion exchange resin was restrained due to the reformed water. Control of scale creation resulted in longer life for the ion exchange resin.

[Note 2] Clathrate formation means “locking up in a cage.” Water molecule group forms polyhedral grid structure and lock up other molecules. Locked up molecules are kept from chemical reaction of displacement or chemical combination. This is also called “hydration.”



- Yanagisawa Seiki Yugen Kaisha Kawasaki Plant  
Longer Life for Ion Exchange Resin

### Case of Wire Cut Electric Discharge Processing Machine

Processing Machine Type: Sodick AQ300L

Test Period: April 15 through September 30, 2010

Test Method: We used BW device to reform the tap water to be used for processing liquid of 40 liters. We provided additional supply of BW reformed water when the processing liquid was not full. We compared the useful life of ion exchange resin when we used BW reformed water with the case when we did not.



#### Results

① Before using BW reformed water, the useful life of ion exchange resin was 1400 hours, while after using BW reformed water, it became 2924 hours, **approximately doubling** the ion exchange capability.

② Movement of Movable wire guide became stabilized, completely eliminating the phenomenon of malfunctioning. This resulted in the major reduction in down time of the machine during unattended operations.

#### [Other Cases]

- Kawashima Seisakusho K.K. Yamagata Plant [Yamagata Prefecture]:  
Life extended to 1.5 times.
- Sannou Seiko [Kanagawa Prefecture]:  
Life extended to 1.5 times, reducing the frequency of cable disconnection which enhanced operational efficiency.



# Enhanced Anti Oxidative Power

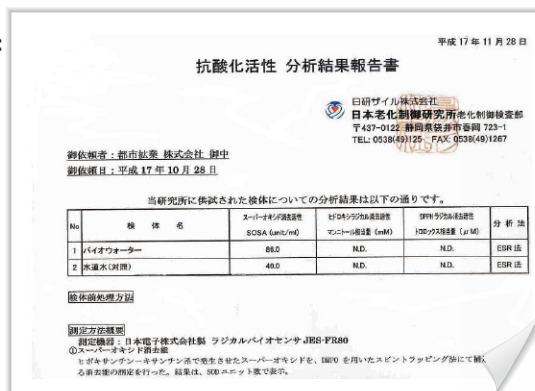
Enhanced Anti Oxidative Power:

## Case 1

□ Data of Removing Active Oxygen by THE BIOWATER Reformed Water  
Anti oxidative power was enhanced to more than double the tap water.

- Overview:** Purpose of this is to measure which has more anti oxidative power between THE BIOWATER reformed water or tap water
- Measurement Date:** October 28, 2005
- Measuring Party:** Japan Institute for the Control of Aging (JaICA) Test Department
- Measurement Method:** We artificially produced super oxide, which is a type of active oxygen. We then compared which erased more super oxide by electron spin resonance [ESR] method between the case of adding BW reformed water and the case of adding tap water.

Measured Result:



Specimen	Super Oxide Erasing Activity [unit/milliliter]
BW Reformed Water	86.0
Tap Water	40.0

Results are shown in conversion to enzyme volume called SOD [super oxide dismutase]. It means that the higher the indicator is, the more super oxide is erased or more superior anti oxidative power it has. As the table above indicates, tap water erased 40 units while BW reformed water erased 86 units. **Test result shows that BW reformed water has 2.15 times the super oxide erasing activity of tap water.**

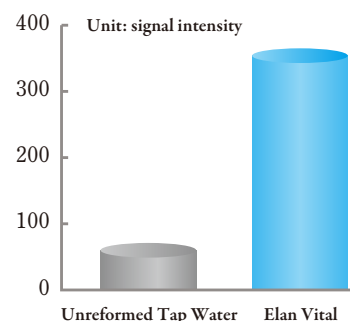
Enhanced Anti Oxidative Power:

## Case 2

□ Measurement by Kanagawa Dental College  
Case of Sister Product, Elan Vital Six times more antioxidant!

**Superoxide Erasing Activity**  
[measured by electron spin resonance method]

Reformed water has approximately six times superoxide erasing activity. Superoxide is deemed to cause disease and aging.



<http://www.toshikogyo.com>

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