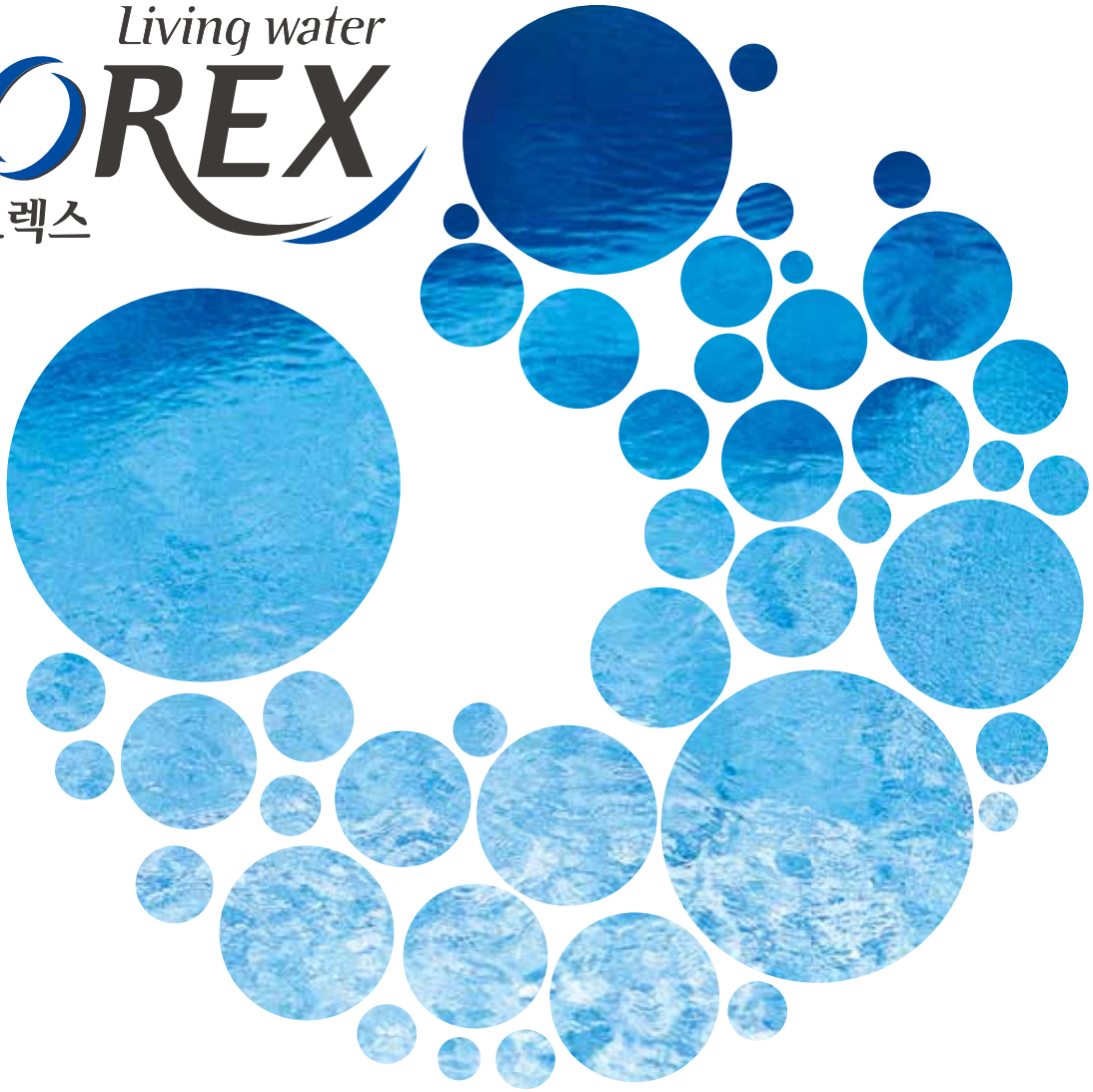
www.iorex.co.kr

Living water

IOREX

이오렉스



The world's best Anti-fouling water treatment system

Prevents the formation of rust, scale and slime to effectively manage the pipes.

The Start of a Healthy Life

IOREX Co., Ltd. is the leader in supplying clean water to all of us.

Water is the source **and basis of life**

On Earth, water is the most abundant and one of the most important resources for humans. Throughout history, humans have conquered the waters, even though in a highly developed civilization, water is an obstacle that is still difficult to overcome. Water is an essential element to all forms of life. Since the growth of civilization and the consequential increase in need for water are the causes of environmental pollution, the conservation of water is becoming more and more important. IOREX Co., Ltd. is a company that deals with this problem. In 1995, work began on developing an economical and eco-friendly 21st Century water treatment system. After several years of research, IOREX was finally released. Since its launching, IOREX Co., Ltd. has devoted utmost efforts for research and development and innovation in techniques in order to become a world-class company specializing in Water Treatment System.

CEO Jo Tai Hyun

The world's best Anti-fouling Water treatment system


KC(Korea Certification)


KC(Korea Certification)


Korea patent


Innobiz

Received a Prize from the director of S&MBA

Certificate of Promising Export Firm

Kotra global brand


PCT


US Patent

ISO 9001

ISO 14001

FDA

USA NSF Certificate


Chinese Patent


GOST-R


GOST-Sanitation


Poland Certification

Certificate of approval

2002
- Established KOREA J-TECH Co.,Ltd
- Obtained ISO 9001:2000/KSA 9001:2001 Certificate

2003
- Applied for patent in China(Application#:03146057.7)
- Applied for international patent(App. No.:PCT.KR03/02229)

2004
- Developed Japanese(Osaka, Fukuoka) and Taiwanese market
- Excellent Korean Products Special Exhibition, Shanghai, China
- Registered IOREX and IOREX logo and trade mark
- Developed market in the CIS region(Uzbekistan-Tashkent, Kazakhstan-Almaty)
- Registered with FDA, USA

2005
- Obtained Russian GOST Mark(the only one for a water treatment facility)
- Selected as a prospective export S&MB

2006
- Registered patent in China
- Registered patent in the USA

2007
- Developed market in Russia(Moscow, Vladivostok)

2008
- Hannover Messe, Germany
- Developed North American market(LA, Dallas, Toronto)
- 2008 Korea-China-Japan Industrial Exchange(Osaka)
- Opened Seoul Office
- Changed name from Korea J-tech Co., Ltd. to IOREX Co., Ltd.
- Registered patent in Korea
- 2008 Water Korea 'International Water Supply and Drainage Exhibition'(SETEC)
- Performance certified by S&MBA, Korea

2009
- Selected as an excellent product by PPS

2010
- Participated at the 2010 Germany Hannover Trade Show
- Appointed as KOTRA guaranteed brand; nominated as an export prospective enterprise
- Participated at the Housing Expo in KazBild Kazakhstan
- Awarded with a prize by the Minister of Environment Department

2011
- Attended the Water Control Symposium and Exhibition in Jeju
- Attended the Water Technology Conference in Kangwon province
- Participated at the Korea Public Procurement Expo
- Participated at the 5th Water and Health Forum in Daejeon
- Attended the Water and Sewerage Exhibition
- Attended the 2011 Water Industry Future Vision Forum

2012
- Participated at the 2012 ENTECH Hanoi in Vietnam
- Sent an economic mission to the Azerbaijani Republic and Georgia
- Applied for international patent
- Obtained KC(Korea Certification) Mark
- Renewed GOST mark

2013
- Attended the 15th China International Industry Fair(Shanghai)
- Selected the Global Innovation Program
- Selected the overseas public procurement market PQ-100
- Obtained Poland Hygienic Certificate

2014
- Attended the water control symposium and exhibition in Jeju
- Concluded a Project Agreement with JeonBuk Techno Park
- Renewed the Buy JeonJu Certificate

2015
- Concluded a Project Agreement with K-water
- Attended the AUSA Annual meeting and exposition(Washington)
- Attended the Water control symposium and exhibition in Jeju
- Obtained USA NSF Certificate

2016
- Attended Water control symposium and exhibition in Jeju
- Attended Water Korea in Pusan
- Signed the MOU with the Republic of Tatarstan

Water is the source of life

Clean! Healthy Life!
Living water **IOREX**

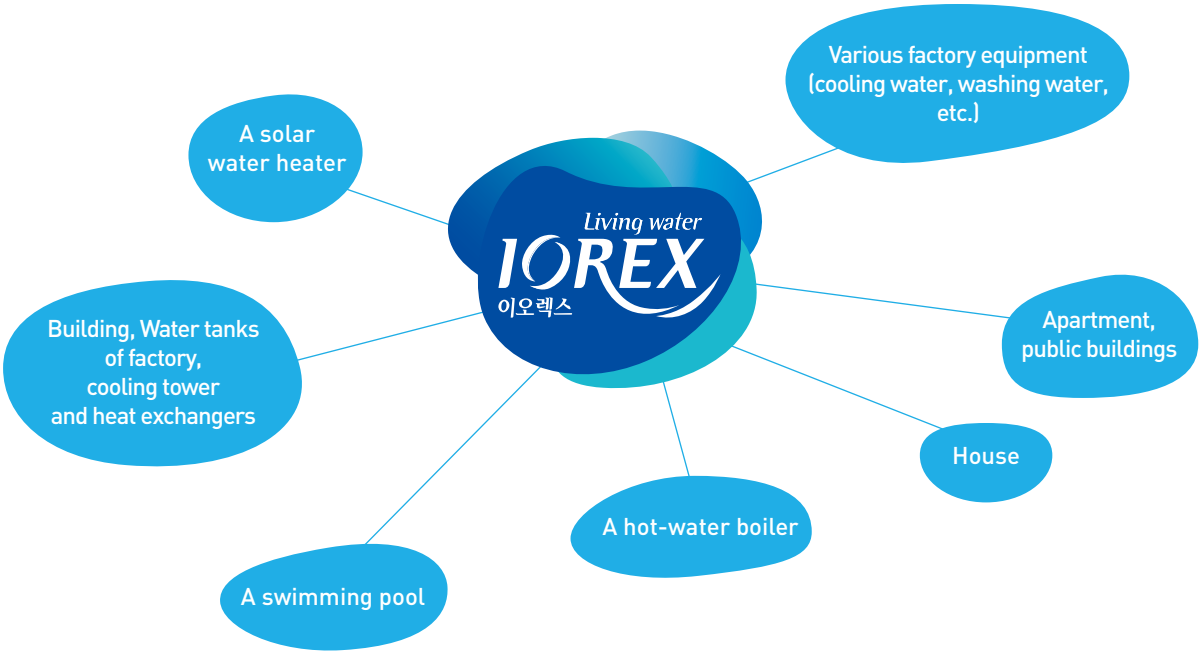
Current Status of Water Treatment Management

- Pipe corrosion due to rust and scale
- Discontinuance of water supply due to the maintenance of facility and piping
- Reducing the time limit of endurance of facility and piping
- Continuous increase in facility maintenance/repair
- Occurrence of red water caused by rust

Effects of IOREX Installation

- Prevention and removal of rust and scale
- Sterilization of bacteria contained in water
- Increased efficiency of piping/facility equipment
- Reduction management/maintenance cost of piping/facility equipment
- Extension of lifespan of piping/facility equipment
- Growth promotion in animals and plants
- Resistance against pathogens of animals and plants

Installation Instructions



Specifications

Type	Model	Pipe Diameter		Length		Outside Diameter		Weight		Effective Range	
		inch	mm	inch	mm	inch	mm	pound	kg	yd	m
SCREW	IOR-APT	1/2	15	8.3	190	2.5	60	5.5	2	196	180
	IOR-15	1/2	15	17	410	3.5	90	11.4	5	251	230
	IOR-20	3/4	20	18.5	410	4	105	17.8	6.5	317	290
	IOR-25	1	25	20.5	520	4.5	120	19.8	10	382	350
FLANGE	IOR-32	1 1/4	32	21.5	580	5	140	30.8	16	514	470
	IOR-40	1 1/2	40	21.5	580	5	140	48.5	21	634	580
	IOR-50	2	50	23.5	580	6	170	66.1	33	929	850
	IOR-65	2 1/2	65	27.5	640	6.5	210	99.2	45	1,050	960
	IOR-80	3	80	27.5	700	7	220	132.2	60	1,257	1,150
	IOR-100	4	100	29.5	750	7	265	198.4	90	1,476	1,350
	IOR-125	5	125	29.5	750	8	320	253.5	117	1,695	1,550
	IOR-150	6	150	29.5	750	13	320	341.7	150	1,914	1,750
	IOR-200	8	200	30	775	16.5	405	496	230	2,296	2,100
	IOR-250	10	250	30	775	18	455	639.3	290	2,570	2,350
	IOR-300	12	300	30.5	775	19	475	661.3	307	2,788	2,550
	IOR-350	14	350	31.5	800	20	520	771.6	327	3,280	3,000
	IOR-400	16	400	31.5	800	24	600	837.7	370	3,609	3,300
	IOR-500	20	500	31	800	28	711	1,565.2	710	4,374	4,000
	IOR-600	24	600	33	850	33	850	2,204.6	1,000	4,374	4,000

The Best Brand of Scale and Rust Control Apparatus IOREX

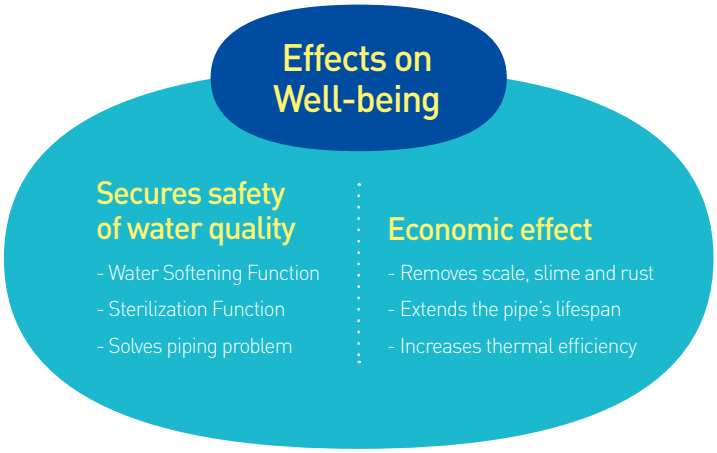
IOREX is a water treatment system that can prevent or remove rust and scale in pipelines by simply installing it in any water pipe, for clean and efficient maintenance. Different from the conventional systems which may be hazardous to the environment and/or require complicated chemical process, IOREX is an economical and environment-friendly water treatment system that uses the flow of water as its source of power.

IOREX Process

When water passes through IOREX, it generates static electricity due to friction on the surface. When the electric charge of the static electricity level becomes high, water molecules are decomposed by discharging the electrons to the farthest orbit. Therefore, a strong electric field is formed by the motion of the electrons, and water becomes electrically-charged when it passes through the static electric field.

Micro Bubble
- Clusters of 30~300
- Forms clusters of 5~6 water molecules
- Generates ion activated water with small zeta potential
- Improves affinity and permeability of water

Turbulence jet
- From turbulence Jet
- Formed by collision between carbon nozzle and water
- Turbulence generated
- Entropy increased
- Generates strong static electric field



Features

CONVENIENT	Easy installation. Short line shutdown of traffic control
SAFETY	Biocompatible material(carbon) based-maximum safety
ECO-FRIENDLY	No power, no chemical, no maintenance required
ECONOMICAL	Semi-permanent service
PRACTICAL	No pressure drop. Suitable for a wide range of water quality

INDUSTRIAL
(Waterworks, industrial facilities)

Extends the lifespan of pipelines and facilities; improves thermal efficiency; prevents failure or performance deterioration caused by scale; saves maintenance expenses

WELL-BEING
(building, apartment housing, domestic)

Enables a pleasant bath; sterilizes microorganisms in water; improves skin condition; demonstrates cleansing effect; provides healthy water generation effect

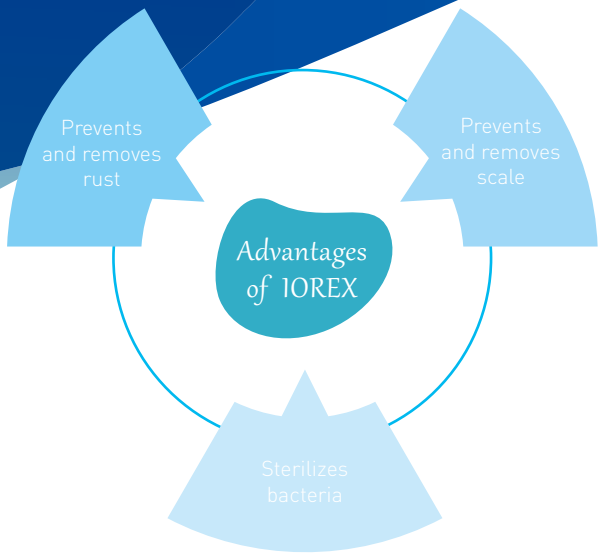
LIVESTOCK FARMING

Faster and healthier growth; improves feed efficiency; reduces mortality by improving resistance against diseases; improves product quality; improves productivity in hygienic environment; reduces stench from manure

Gardening

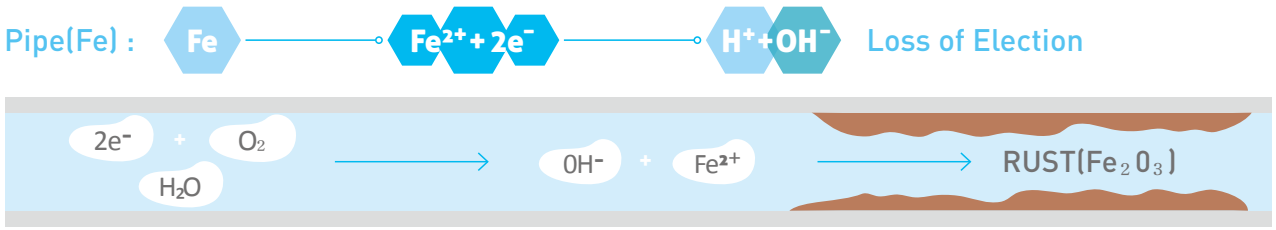
Promotes faster growth rate through faster nutriment intake; maintains freshness for a longer period of time; reduces use of agricultural chemicals due to improved resistance against diseases; increases yield due to improved photosynthesis

Formation of Rust and Scale, and Operation Principle of IOREX



Formation of Rust

- To lose an electron is called oxidation, and iron rusting is called oxidation reaction.
- Electrons coming out of iron when iron loses electrons undergo oxidation, and water combines with oxygen in a pipe.
- Fe^{2+} ion formed on the surface of iron creates Fe_2O_3 combining with $20H^-$.

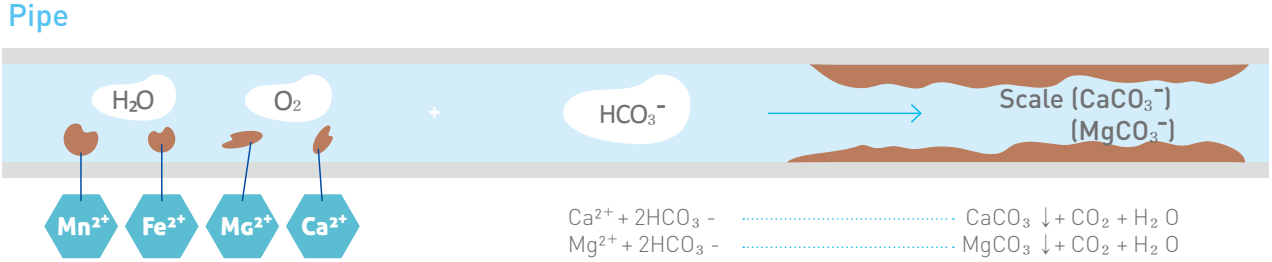


ANODE(+) : $Fe \rightarrow Fe^{2+} + 2e^-$
CATHODE(-) : $2e^- + 1/2\ O_2 + H_2\ O$

$Fe^{2+} + 2OH^-$ ..... $Fe(OH)2$
$Fe(OH)_2 + 1/2\ O_2 + H_2\ O$ ..... $2Fe(OH)_3$
$2Fe(OH)_3 \rightarrow Fe_2\ O_3 + 3H_2\ O$

Formation of Scale

- Metallic components(acicular structure) such as iron, calcium, manganese and magnesium and non-metallic components such as nitrogen and salts dissolve in water.
- Scale is formed when the cation of metals and the anion of nonmetals combine and crystallize due to the effect of temperature, etc., and these attach inside the pipes and other materials.
- Rust or fur is formed first, and then scale is formed on it.



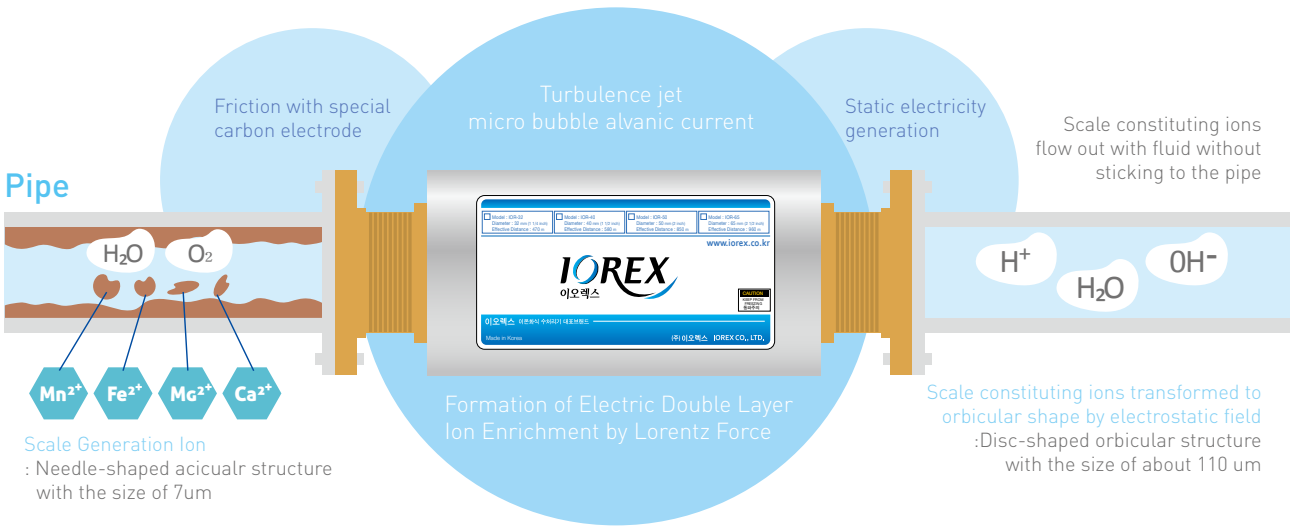
$Ca^{2+} + 2HCO_3^-$ ..... $CaCO_3 \downarrow + CO_2 + H_2\ O$
$Mg^{2+} + 2HCO_3^-$ ..... $MgCO_3 \downarrow + CO_2 + H_2\ O$

Prevention and Removal of Rust

- Generated electrons prevent the occurrence of rust through reaction with red rust.
- It takes about 1 - 4 weeks to prevent the formation of rust. Rust comes out when it is washed away and flows by the existing fluid pressure. The formation of rust stops afterwards.
- Subsequently, through the continuous help of electrons, it is maintained as iron (Fe) that is no longer ionized, and the existing rust slowly dissipates.

Prevention and Removal of Scale

- Scale particles of the acicular structure change to the disc-shaped orbicular structure by chemical reactions and static electricity, as they attach to scale configuration ions receiving static electricity when IOREX passes.
- Ionized H+ and OH- ions further suppress the combination/formation with scale configuration ions.
- Scale structure gradually breaks down, after the scale changes to soft form through the separation of the combination of cation(+ ion) and anion(- ion) as the relaxation action in the structure is accelerated when needle shape becomes orbicular.



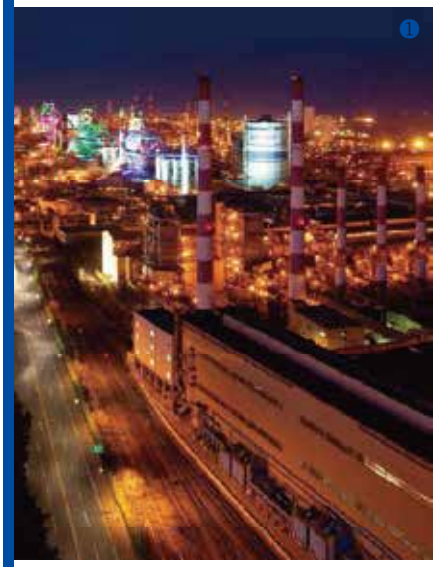
Economical efficiency!
Durability!

These goals can be achieved with
IOREX, the ion water
treatment system!!

FOR INDUSTRY

Korea

❶ POSCO
❷ POSCO
❸ Sejong City Prime Minister's Office
❹ NHN
❺ Samsung Hotel-Geoje
❻ Buan New and Renewable Energy Village
❼ Hyundai Heavy Industries CO., LTD.
❽ Jeonnbuk Government Complex



GS 칼텍스

Installation date : June 2006
Pipe diameter : IOR-250
Usage : Firefighting water private use, pump seal water supply, plate water supply

Military

Mountain Peak Cheonwang–class, landing ship

Overview

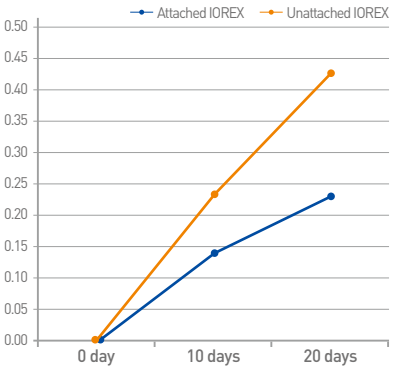
- Model IOR–40A*2
- Installation date June 2013

Navy ship water supply line(nickel pipe)

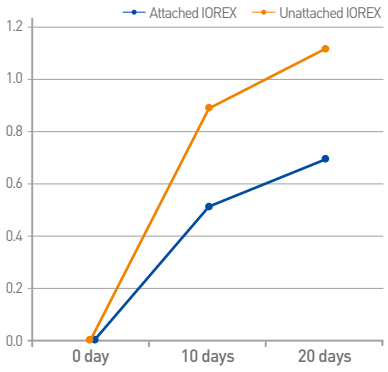
Days	Item	Ni (mg/L)	Cu (mg/L)	Color	Turbidity (NTU)
0 day	attached	0.000	0.000	0	0
	unattached	0.000	0.000	0	0
10 days	attached	0.140	0.526	0	0
	unattached	0.235	0.897	6	0
20 days	attached	0.232	0.705	0	0
	unattached	0.429	1.124	14	0

Initial Installation

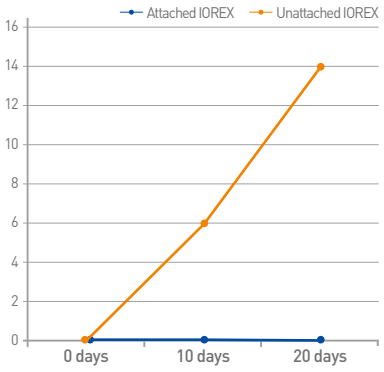
Change of Ni concentration by time



Change of Cu concentration by time



Change of Color concentration by time



Military

Capital Defense Command

Overview

- Installation part: Water tank discharge Line
- Model: IOR-100A
- Installation date: October 20, 2011

Before installing IOREX

Date : September 8, 2011

Turbidity			Iron			General Bacteria			Total Coliforms Bacteria		
0.5NTU less			0.3mg/L less			100CFU/ml less			Non detected/100ml		
Lavatory	Unit 2	Unit 7	Lavatory	Unit 2	Unit 7	Lavatory	Unit 2	Unit 7	Lavatory	Unit 2	Unit 7
0.56	3.75	3.26	0.13	0.89	0.39	8	26	17	Non detected	Non detected	Non detected

After installing IOREX

Date : January 20, 2012

Turbidity			Iron			General Bacteria			Total Coliforms Bacteria		
0.5NTU less			0.3mg/L less			100CFU/ml less			Non detected/100ml		
Lavatory	Unit 2	Unit 7	Lavatory	Unit 2	Unit 7	Lavatory	Unit 2	Unit 7	Lavatory	Unit 2	Unit 7
0.28	0.10	0.16	0.21	0.09	0.27	0	0	0	Non detected	Non detected	Non detected

Military

Jinhae Navy Swimming Pool

Overview

- Model: IOR-150A
- Installation date: August 2013

Donghee Auto

IOREX Test in Air Handling Unit's
Water Softener(scale)

Overview

- Model — IOR-100A
- Installation date — December 19, 2010
- Water softener IOREX test — December 19, 2010~July 19, 2012(19 months)
- Inspection procedure
  - Cleaning the air handling unit before IOREX installation, cleaning 1/2 of the illuminator and window on the air handling unit
  - Noticeable verification on effect after about 6 months

Without IOREX

Air handling unit without IOREX

Air handling unit without IOREX

10% spray functionality due to clogged nozzles

With IOREX

Air handling unit with IOREX (100A)

Air handling unit with IOREX

100% spray with hardly any clogged nozzles

The Office of Waterworks Daegu

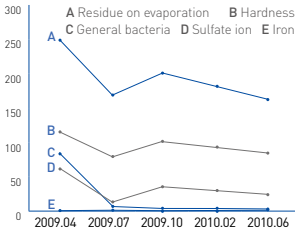
The Analysis of the Effects on IOREX Installation

Overview

- Model — IOR–200
- Inspection period — April 30, 2009~June 24, 2010(14months)
- Inspection point — Water purification station, end user(Rm 10/27, building B, Dongin Apartment)

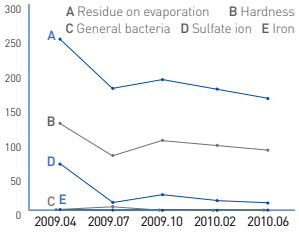
End user(Rm 10, Building B, Dongin Apartment)

Choice of installation / Inspection list	Before installation	3 months later	6 months later	10 months later	14 months later
	Date/April 2009	Date/July 2009	Date/October 2009	Date/February 2010	Date/June 2010
01. General bacteria	**84.0**	3.0	0.0	—	0.0
41. Hardness	**116.8**	80.0	102.9	—	86.9
51. Residue on evaporation	**257.0**	171.0	204.0	—	167.6
52. Iron	**0.00**	0.00	0.00	—	0.00
55. Sulfate ion	**65.0**	15.0	38.0	—	26.0



End user(=Rm 27, Building B, Dongin Apartment)

Choice of installation / Inspection list	Before installation	3 months later	6 months later	10 months later	14 months later
	Date/April 2009	Date/July 2009	Date/October 2009	Date/February 2010	Date/June 2010
01. General bacteria	**0.0**	12.0	0.0	0.0	0.0
41. Hardness	**116.1**	79.8	101.9	99.0	87.1
51. Residue on evaporation	**259.0**	177.0	203.0	191.0	159.0
52. Iron	**0.34**	0.16	0.00	0.00	0.00
55. Sulfate ion	**65.0**	15.0	39.0	31.0	26.0



Gyeongju

Busan

Jeonju

Gwangju

POSCO(Steel Mill)

Comparative Check on the Adherence of Scale

Overview

- Model IOR-80A, 200A, 300A
- Installation date June 2008 / November 2008 / February 2010

Dismantled Comparison

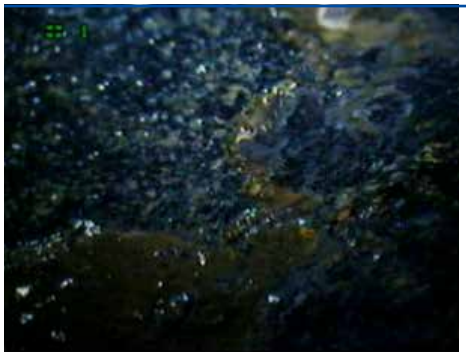
(POSCO Inspection Data)

40 days after

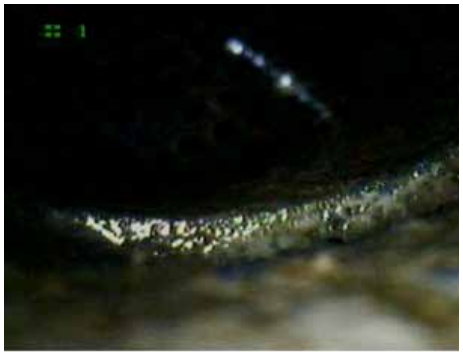
- Calcium scale was removed.
- Evident division was witnessed in the inlet/ outlet.

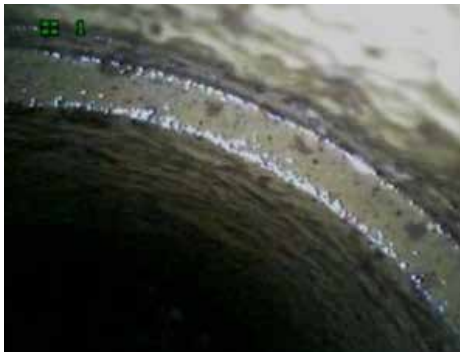
Endoscopic comparison

(POSCO Pipe Endoscopic Photograph)



4 Months later





- Dirt and stains removed
- Condition of Corrosion is Improved

SEOUL HANA Building

Visual comparison

Overview

- Model IOR–80A
- Installation date August 18, 2007

Installation Photos

Before installation

After installation

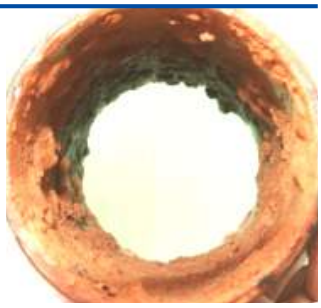
Installation of the inspection point

Visual comparison

Before installation (August 18, 2007)

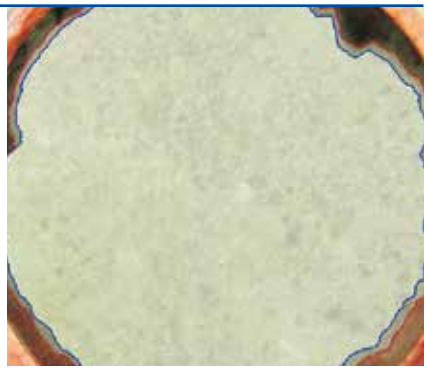
1st inspection (January 29, 2008)

2nd inspection (July 25, 2008)



3rd inspection (May 6, 2009)

2nd and 3rd cross comparison



After installing IOREX, the scale was reduced a lot.

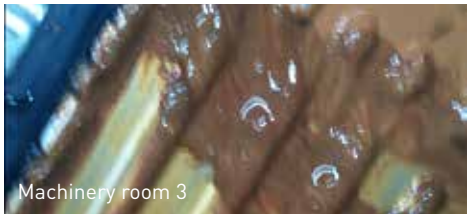
Apartment

Heat exchanger Comparison

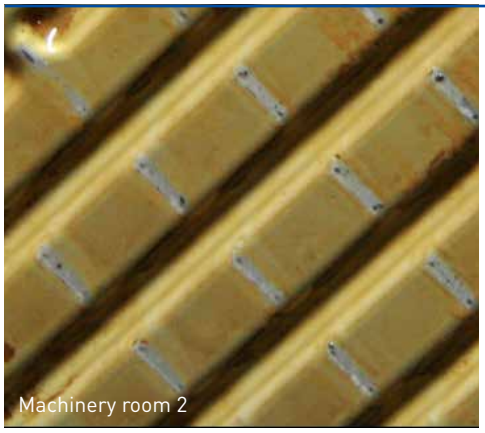
Overview

- Model: IOR-125A(Water supply line)
  IOR-40A(Hot water supply line)
- Installation date: April 06, 2010

Heat exchanger with no IOREX



Heat exchanger with IOREX



Visual Comparison of Heat exchanger plate

1 years after IOREX installation_August 14, 2011

Significant difference was observed in scale deposition.

Almost no foreign material in heat exchanger plate installed with IOREX.

Heat exchanger with no IOREX

Heat exchanger with IOREX

Comparison of scale volume

1 years after IOREX installation_August 24, 2011

Scale was placed on white paper and decomposition was compared.

Significant scale difference was observed.

Scale in the heat exchanger on which IOREX was installed showed fine particle with almost no foreign material and scale was clearly removed.

Examples of IOREX Utilization

Saemangeum Industrial Complex Development Project _ IOR-600A

Jeonju Mansung development area (Judicial officer town) _ IOR-400A

Jindo Seokkyo Elementary School _ IOR-50A

Seoul National University of Education _ IOR-100A

Chungbuk JeungPyeong Swimming Pool _ IOR-80A

Sejong Prime Minister's Office _ IOR-65A, 150A

Daejeon Korail _ IOR-50A,65A,100A

Kindergarten _ IOR-40A

Gyeongsangbuk-do Technical Center for Agricultural Cooperative _ IOR-80A

Gyeonggi-do pyeongtaek-si Leechoong Cultural and sports centre _ IOR-80A

Jeonbuk Small and medium Business Administration _ IOR-65A

Ulsan Economic Promotion Agency _ IOR-100A

Clean! Healthy Life!

Global IOREX!!

FOR INDUSTRY

Global

❶ Hermitage Museum, Russia
❷ Training Center in Jiangsu, China
❸ Kirofski Factory, Russia
❹ DV-ALYANSSTROI, LLC, Russia
❺ Signed the MOU between IOREX and The Republic of Tatarstan

ALCOM BHD Malaysia

Scale prevention effect

Overview

- Model IOR–80A, 200A
- Installation date January 2006

Testing of the Sample(Montkiara) Before IOREX Installation

The pipe is almost clogged with scale.

Testing of the Sample(Montkiara) After IOREX Installation (about 40 days after)

Scale is notably reduced.

Before IOREX installation

After IOREX installation

Hermitage Museum Russia

Scale prevention effect

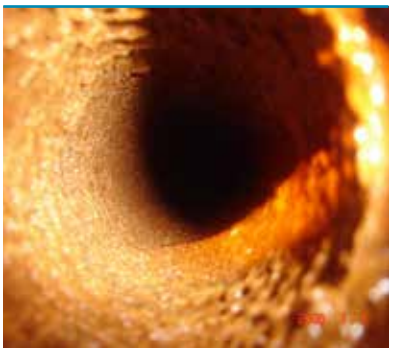
Overview

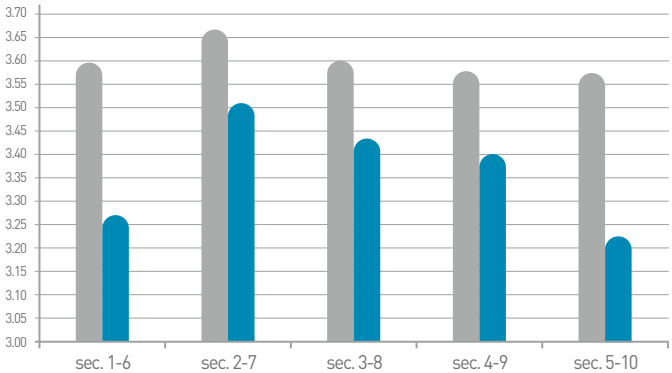
- Model IOR-40A
- Installation date December 2005

The diagram of change in average values of thickness of walls (mm) in sections "before" and "after" the device installation

Before installing IOREX

After installing OREX





No	Before IOREX Installation Pipe Size (1st July, 2005)(mm)	After IOREX Installation Pipe Size (14th October, 2005)(mm)
1	3.58	3.22
2	3.62	3.21
3	3.67	3.25
4	3.65	3.35
5	3.59	3.38
6	3.61	3.42
7	3.61	3.47
8	3.59	3.51
9	3.62	3.31
10	3.63	3.56
11	3.58	3.32
12	3.57	3.41
13	3.63	3.39
14	3.58	3.41
15	3.58	3.38
16	3.54	3.39
17	3.58	3.12
18	3.63	3.35
sub total	64.86	60.45
average	3.603	3.358
reduce size	-0.245mm	

Training Centre in Jiangsu China

Visual comparison

Overview

- Model IOR–50A, IOR–200A
- Installation date May 2010

IOR-50A

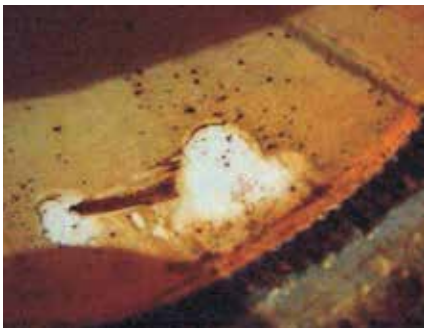
Before installation

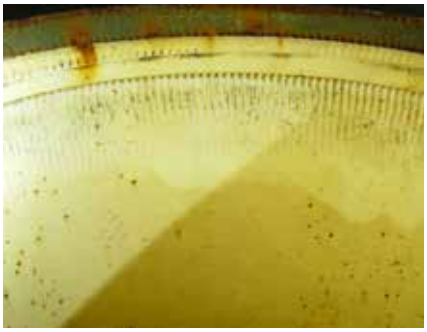
After installation

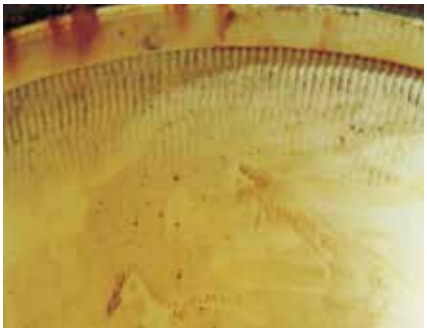
IOR-200A

Installation

After installing IOREX, the original material of the drain pipe has become neat and clean.







Examples of IOREX Utilization

Ho-Chi-Minh Mausoleum [Vietnam]_ IOR-80A×7

Hai Phong [Vietnam]

_ IOR-150A

Sawaco [Vietnam]

_ IOR-150A

Smit Chemistry plant [China]

_ IOR-40A

Alliance holdings, co. [Russia]

_ IOR-25A, 50A

DV-ALYANSSTROI, LLC [Russia]

_ IOR-300A

Good Morning Enterprises Inc [Canada]

_ IOR-20A, 25A, 50A, 65A

BIOGENIC GROUP IND ECOM LTDA [Brazil] _ IOR-20A, 25A, 50A

HYUNDAI MOTORS (India)

_ IOR-100A

Water World Science [Canada]

_ IOR-20A, 25A

Magma BioTechnology Co., Ltd [China]

_ IOR-15A, 20A, 25A, 40A, 50A, 200A

Satang Jaya [Malaysia]

_ IOR-APT

Moscow City [Russia]

_ IOR-50A, 80A

Enjoy Healthy Water with a Single Installation!

Soft water effect

Water passing through IOREX is easily absorbed by the skin and alleviates allergies and skin disorders as it has excellent permeability and affinity.

Sterilization effect

Maintains cleanliness of pipes by removing rust and scale inside the pipes and removes colon bacillus and general bacteria through the embedded antimicrobial substance.

Economics

- Semi-permanent use by a single installation.
- No electricity bill or maintenance cost.
- Extends the lifespan of piping.
- Increases the thermal efficiency of a boiler.

Living water IOREX 이오렉스

Gardening

Greenhouse, farm, flower farm and other crops

(Rose, paprika, cucumber, tomato, eggplant, lettuce, bean sprouts, etc.)

- Promotes effective growth with quick absorption of nutrition from roots
- Maintains freshness during storage and transportation
- Reduces use of agricultural chemicals with the increased resistance against germs
- Increases harvest with active photosynthesis

Agricultural Technology and Science Research Center, Jiangsu Province, China

Before IOREX installation — **After IOREX installation**

Nonsan Lettuce Yesmin(August 2008)

Before IOREX installation — **After IOREX installation**

Livestock Farming

Hog farm, poultry farm, and farms for cows, Korean cows, ducks, and other livestock

- Provides sterilization effect
- Improves productivity and quality
- Improves feed intake and feed efficiency
- Reduces mortality by strengthening resistance against disease
- Promotes growth rate and health
- Reduces stench from manure

Freshwater Fish Farm

Duck/Chicken Farm

Cow Ranch/Hog Farm

Living water

IOREX

이오렉스

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