GTY Co., Ltd. (Sales) / Tashima Engineering (Technical Support) — Product Presentation

Ion Water

Magnetic Water Treatment System

Clean pipes. No chemicals. Zero running cost.

Thinking about the connection between the global environment and people — Better water for future generations

Agenda

01 **Current Challenges in Water Systems**
Scale, rust & slime problems in pipes

02 **What is Ion Water?**
Overview, JWWA certification & patented technology

03 **How It Works (The Science of Magnets)**
Lorentz force, ion collision & cluster model

04 **Three Key Benefits**
Scale removal, rust prevention & disinfection

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Proven results in factories, homes, hotels & restaurants

06 **Product Line-up**
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07 **ROI & Cost Benefits**
Maintenance-free, zero running cost, longer equipment life

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Section

01

Current Challenges in Water Systems

Is the water you use every day truly safe — now and in the future?

4 Common Problems Hidden Inside Pipe Systems

Scale Build-up

Calcium, magnesium & silica crystallise and coat the inner pipe walls — causing blockages and energy loss.

Chemical Treatment Costs

Acids and anti-corrosion agents must be dosed regularly. This adds cost, labour and environmental burden.

Red Rust Corrosion

Iron reacts with water to form Fe_2O_3 (red rust). This causes pinholes, leaks and red discolouration.

Ongoing Maintenance Burden

Monthly cleaning and bi-annual inspections are required. In factories, this can mean costly production shutdowns.

Traditional Chemical Treatment vs. Ion Water

Chemical Treatment (Conventional)

- ✕ Monthly cleaning required
- ✕ Ongoing chemical dosing cost
- ✕ Cooling water stays cloudy
- ✕ Risk of equipment shutdown from scale
- ✕ Wastewater disposal burden

VS

After Installing Ion Water

- ✓ Cleaning only once every 5 months
- ✓ Chemical cost: zero
- ✓ Cooling water stays crystal clear
- ✓ Longer equipment lifespan
- ✓ No chemical waste — eco-friendly

Section

02

What is Ion Water?

A magnetic water conditioner installed directly onto your pipe — no electricity, no chemicals, no maintenance.

Ion Water — Product Overview

Certifications & Patents

JWWA (Japan Water Works Assoc.) Cert. No. Z-122
Patent Registration No. 3701077
Utility Model Registration No. 3033968

Compatible Applications

Cold water and hot water systems
Municipal water, industrial water, agricultural water

Operating Principle

Lorentz force generated by powerful permanent magnets
(No electricity, chemicals or external energy required)

Maintenance

Maintenance-free after installation
Running cost: $0

Section

03

How It Works — The Science

Water passes through strong magnets, creating an electrical field that fundamentally changes its molecular behaviour.

The Fundamental Principle: Lorentz Force

$$F = q (V \times B)$$

F: Lorentz Force (electrical force) q: Electrical charge V: Flow velocity B: Magnetic field (Gauss)

Key insight: The stronger the magnetic field (B) and the faster the flow (V), the higher the performance.

① **Water accelerates through the orifice**

The narrowed inner bore increases flow speed, maximising the Lorentz force as water crosses the magnetic field lines.

② **Ions collide and form crystal nuclei**

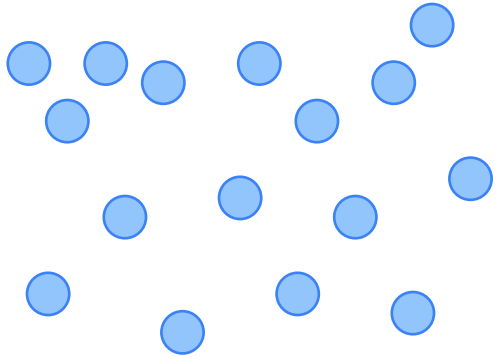
Ca^{2+} and CO_3^{2-} ions are attracted together, forming larger clusters inside the water rather than attaching to pipe walls.

③ **Existing scale and rust gradually dissolve**

As the ion concentration near the pipe wall drops, previously deposited scale is ionised, softened and flushed away.

Water Cluster Model (Theoretical Image)

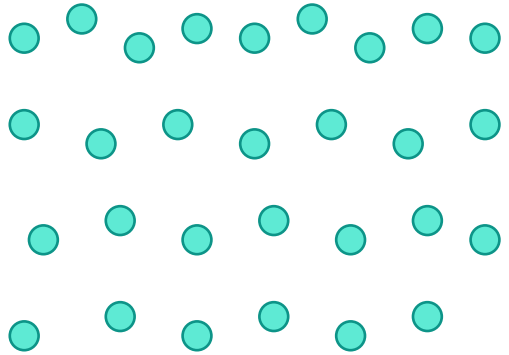
Untreated Water



Large molecular clusters
(lower penetration)

Magnetic treatment

After Ion Water Treatment



Smaller molecular clusters
(higher penetration & cleaning power)

Note: The water cluster model is theoretical. There is currently no established method to directly measure or fully prove this effect.

Section

04

Three Key Benefits

Scale removal / Rust prevention / Partial disinfection

Benefit ① Scale Prevention & Removal

What is scale?

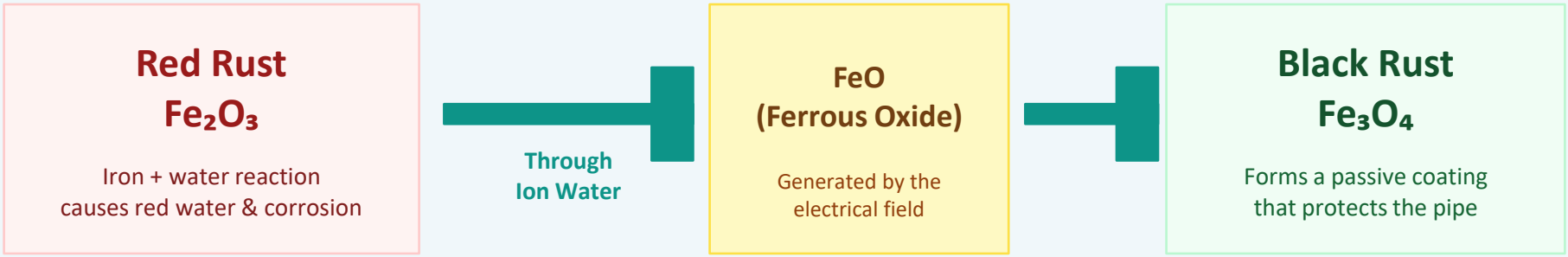
Scale is a thin, hard layer of calcium, magnesium or silica that crystallises and coats the inner pipe wall — causing poor water flow, water quality deterioration, energy loss and equipment failure.

How Ion Water Removes Scale

1. The magnetic field forces Ca^{2+} and CO_3^{2-} ions to bond in the water flow
2. Crystal nuclei form in the centre of the pipe — not on the walls
3. The lower ion concentration near the wall causes existing scale to dissolve and flush away
4. Reports of zero new scale build-up even after 2+ years of continuous use

Case: Industrial temperature controller (TE-2M2) — scale fully eliminated after 8 months | Restaurant pasta boiler (TE-15M6) — scale removable by hand after 1 month

Benefit ② Red Rust Suppression & Protective Coating



Fe_3O_4 (black rust / magnetite) is insoluble in water and acts as a stable, self-healing anti-corrosion barrier on the inner pipe wall.

Note on lined pipes: Even internally lined (PVC-lined) pipes are not rust-proof. Rust commonly forms at threaded joints, leading to contamination and blockage.

- Industrial — Chiller unit (JLF-4): Red water stopped after 9 months. No more chemicals. Bi-annual maintenance eliminated.
- Commercial — Business hotel valve (TE-32M6): Red rust inside the valve converted to black rust (protective coating) after 12 months.

Benefit ③ Partial Disinfection Effect

The electrical field created by Ion Water partially decomposes water (H_2O), releasing activated oxygen (O•). This reactive oxygen provides a partial bactericidal effect.

Note: Activated oxygen is highly unstable and instantly bonds with other substances, making it harmless to humans even when ingested.

Joint research data — Dept. of Dentistry & Oral Surgery, Shinshu University School of Medicine (Presented at the Japanese Society of Dentistry for Medically Compromised Patients, Nagoya, May 2005)

Measurement	Before Ion Water	After Ion Water
Live bacteria count (median)	**5,900 CFU/ml**	**1,700 CFU/ml**
Water temperature (avg. ±SD)	22.8 ± 3.0 °C	21.6 ± 0.6 °C

→ Bacteria count reduced by approximately 71% (P<0.05, Wilcoxon signed-rank test)

Method: Water samples taken from an air turbine tube at 13:00 each weekday (Mon–Fri) over 5 consecutive days.

Section

05

Case Studies & Results

Before-and-after results across diverse installations

Installation Case Studies — Before & After

Industrial — Temperature Controller

TE-2M2 | After 8 mo.

Scale on heater unit completely eliminated. No chemical treatment used.

Commercial — Restaurant Pasta Boiler

TE-15M6 | After 1 mo.

Scale that previously required tools to remove could be peeled off by hand.

Industrial — Chiller Unit

JLF-4 | After 9 mo.

Red water stopped. No chemicals needed. Twice-yearly maintenance eliminated.

Commercial — Business Hotel Valve

TE-32M6 | After 12 mo.

Red rust inside the valve converted to protective black rust (Fe_3O_4).

Residential — Municipal Water Pipes

TE-15M6 | After install

Red discolouration at the tap gradually cleared. Rust particles flushed out.

Building — Storage Tank / Cooling System

TE-80M12 | After 5 mo.

Tank water remained visibly clear without any chemical dosing.

Application Areas

Municipal Water (Residential & Commercial)

Houses, apartments, hotels, shops, hot spring facilities

- Longer pipe / boiler / heater lifespan
- Cleaner baths — better washing performance
- Reduced toilet odours
- Lower long-term maintenance costs

Industrial Cooling Water

Cooling towers, chillers, temperature controllers

- Reduced maintenance frequency
- Improved production quality
- Elimination or reduction of chemical dosing
- Improved heat exchange efficiency & productivity

Combustion Systems

Boilers, water heaters, generators, vehicles

- Improved fuel economy
- Reduced exhaust emissions
- Dedicated BM-series models available for boiler fuel-saving applications

Section

06

Product Line-up

Model selection guide by application, pipe diameter & magnet count

Model Selection Guide

System Type	Model	Magnets	Pipe Size	Notes
Circulation system (2 magnets)	TE-15M2 to 50M2	2	13–50 mm	For industrial circulation loops with low contamination. Recommend only for recirculating systems.
New installation / direct flow (4–8 magnets)	TE-15M4 to 50M8	4–8	13–50 mm	Ideal for new pipes or recirculating loops. Use M6/M12 if water quality is poor.
Existing installation (6–12 magnets)	TE-15M6 to 50M12	6–12	13–50 mm	For single-pass lines or heavily contaminated long-distance loops. Most effective on existing systems.
Large-diameter flange type	TE-65M18 to 100M16	12–18	65–100 mm	For large buildings & factories with large-bore pipes. JIS 10K flange compatible.
Residential (HS series)	HS-15 / HS-20	6	13–20 mm	Two sizes for homes. Max. 50°C. Cost-effective entry model.
Special / combustion (BM series)	BM-10 / BM-15 / BM-20	6–12	10–20 mm	Boiler fuel-saving device. Compatible with kerosene, gas, light oil & heavy oil.

How to Select the Right Model

Match the pipe diameter

Always select Ion Water to fit the existing pipe diameter. Do not upsize — selecting a model too large for the pipe reduces effectiveness.

More magnets = better performance

For heavily contaminated pipes or long runs, choose a higher-magnet model. The hierarchy is: more magnets >> fewer magnets.

Slow flow? Go one size smaller

In low-flow or low-velocity situations, selecting a slightly smaller bore model increases water speed and improves the magnetic effect.

Recirculating loops are ideal

Water passes through the device multiple times, compounding the effect. For single-pass systems, use 6 magnets or more.

Check water usage rate if a sub-tank is present

Confirm that the stored water is consumed within 24 hours to ensure continuous treatment.

Install on new pipes for best results

Ion Water works on existing systems, but installing on new pipes yields faster and stronger results from day one.

Section

07

ROI & Cost Benefits

Maintenance-free + Zero running cost + Longer equipment lifespan

6 Reasons to Choose Ion Water

Zero Chemicals — Eco-Friendly

No chemicals or additives of any kind. No wastewater to dispose of. JWWA-certified safe for drinking water systems.

Completely Maintenance-Free

Once installed, no power, refills or replacement parts are ever needed. Permanent magnets last semi-permanently.

Zero Running Cost

No electricity. No chemicals. No replacement parts. One-time investment — costs nothing to run.

Works with Any Water Type

Cold or hot water. Municipal, industrial or agricultural supply. Wide product range to cover every application.

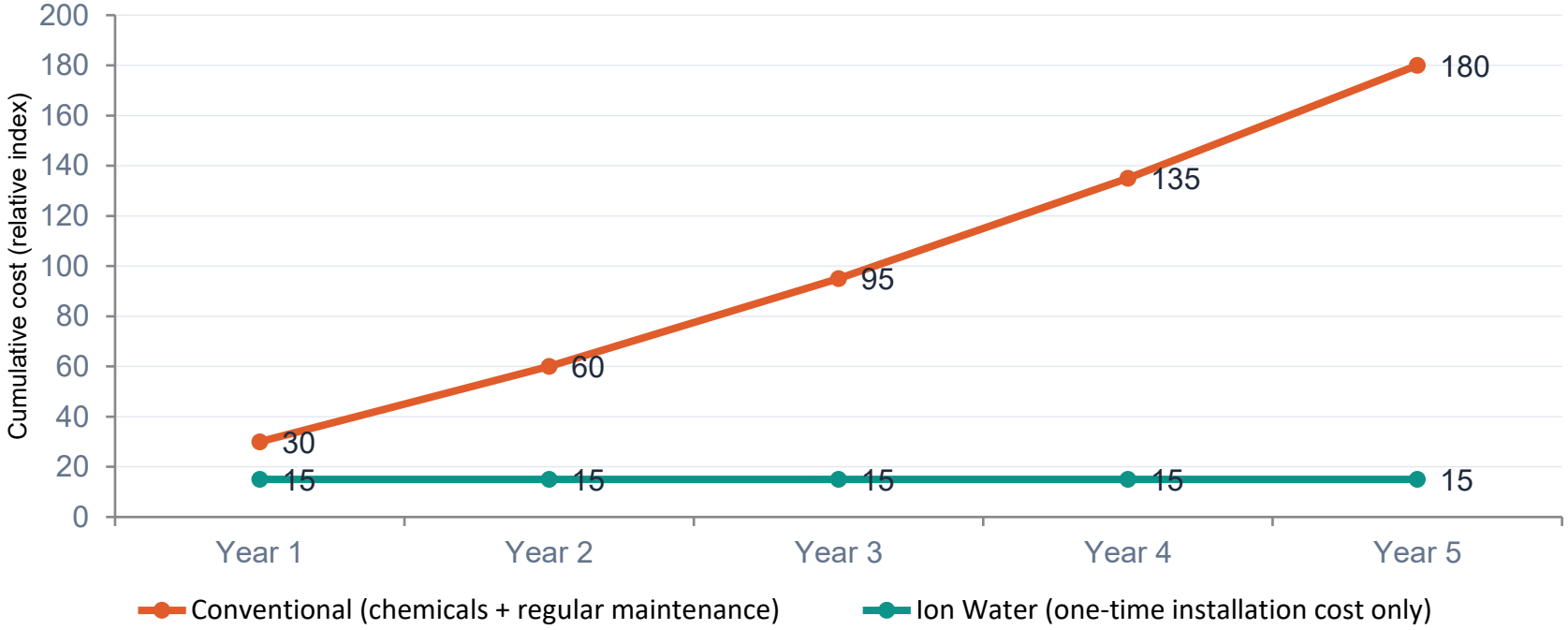
Extended Equipment Lifespan

Protecting pipes from scale and rust dramatically reduces repair costs and delays the need for full system replacement.

Improved Energy & Production Efficiency

Eliminating scale build-up restores heat-exchange efficiency, lowering energy bills and improving cooling and combustion performance.

Cumulative Cost Comparison (Illustrative)



Note: This chart is for illustrative purposes only. Actual costs vary by scale, application and site conditions.

Section

08

Summary & Q/A

Questions and quotation enquiries welcome

Summary: Why Choose Ion Water?

1. One device solves three problems simultaneously: scale, rust and bacteria
2. No chemicals, no electricity, no maintenance — zero running cost, forever
3. Trusted technology: JWWA certified, patented, ISO 9001 quality system
4. Proven across diverse applications: homes, factories, hotels, hospitals and more
5. Extends equipment lifespan — reduces capex, opex and environmental impact

Contact Us / Request a Quote

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