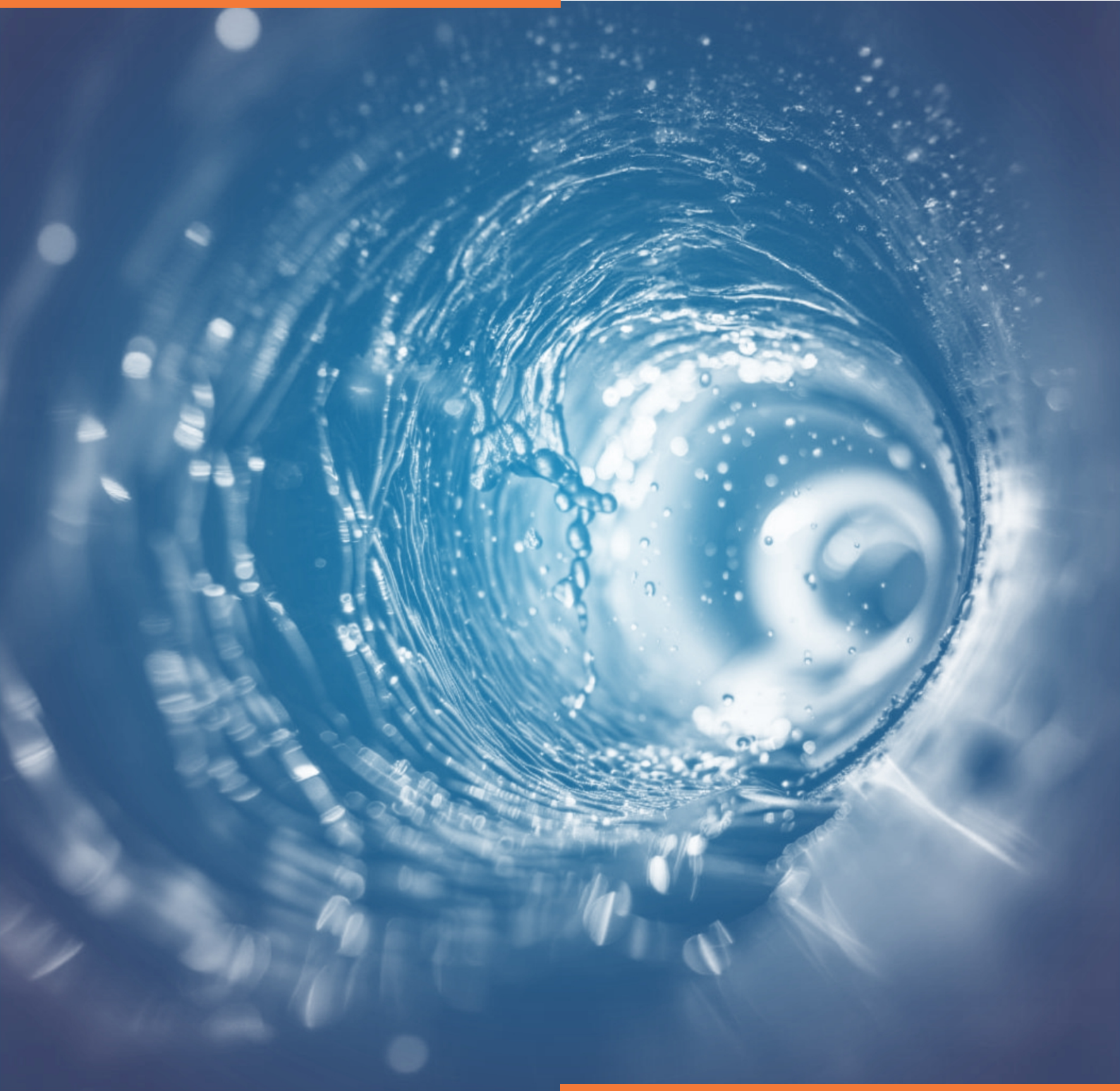


# HYDROPULSE

EFFECTIVE DESCALING  
ELECTRONIC WATER CONDITIONER



**Revolutionizing Water, Empowering Every Sector.**









# HYDROPULSE

## The Ultimate Water Treatment Solution

**HYDROPULSE by Mizusun sets a new standard in water management, providing a chemical-free, energy efficient solution to tackle hard water issues. It effectively prevents scale buildup, reduces biofilm, and enhances system performance, delivering unmatched reliability and savings.**

**By leveraging cutting edge scientific research, innovative product design, and proven application techniques, HydroPulse delivers tailored, high-quality solutions to meet the unique needs of the clients.**





LIMESCALE

# Treat and protect water from scale buildup

## HOW SCALE IS PREVENTED WITH HYDROPULSE TECHNOLOGY

HydroPulse technology, developed by Mizusun, uses a precision-tuned frequency to alter the physical behaviour of these dissolved minerals. When the HydroPulse signal is induced into the water, it triggers the formation of tiny, stable mineral clusters. These clusters remain suspended in the water, preventing them from attaching to internal surfaces as hard scale.

### Understanding the Problem : What Causes Scale?

Hard water contains dissolved minerals like calcium and magnesium, which form limescale deposits in pipes, storage tanks, and heat exchangers. These minerals exist as Total Dissolved Solids (TDS) and form scale when water is exposed to heat, pressure fluctuations, or evaporation leading to reduced flow, higher energy use, and equipment damage.

### Hydropulse Long Term Impact : Scaling Reversal & Efficiency Restoration

Even existing scale begins to soften and break down over time. Since the minerals stay in suspension, they are flushed away gradually. This results in cleaner pipelines, improved heat transfer, reduced maintenance, and longer equipment life all without the use of chemicals or salts.

#### Impact and Cost of Scaling in Cooling Tower

Aspect	Impact of Scale Formation	Estimated Cost/Effect
Heat Transfer Efficiency	Scale reduces heat exchange performance	1 mm scale = <b>10–15%</b> drop in cooling efficiency
Energy Consumption	Chillers and pumps consume more power	<b>5–15%</b> higher electricity bills
Chemical Costs	Increased usage of anti-scalants, biocides, pH controllers	<b>20–30%</b> rise in chemical expenses
Water Usage / Blowdown	Higher blowdown needed to control TDS and prevent scaling	<b>10–20%</b> increase in water usage
Maintenance & Downtime	Frequent cleaning, acid descaling, system shutdowns	Rs. <b>20,000–1,00,000</b> per session
Equipment Life	Accelerated wear and corrosion of metal parts	Reduces lifespan by <b>30–40%</b>
System Failure Risk	Risk of Legionella, chiller trips, fan motor failure	Costly repairs and compliance issues
Environmental Impact	More chemical discharge and CO <sub>2</sub> emissions	Penalties, ESG issues, and carbon tax liabilities

#### The Hidden Costs of Scale in Boiler System

Aspect	Impact of Scale Formation	Estimated Cost/Effect
Fuel Consumption	More fuel needed to maintain output due to insulation by scale	1 mm scale = <b>2–3%</b> increase in fuel use; 5 mm = up to <b>20–25%</b>
Heat Transfer Efficiency	Reduced efficiency due to thermal resistance	<b>10–30%</b> drop in heat transfer efficiency
Maintenance & Downtime	Frequent cleaning, descaling, shutdowns	<b>₹10,000–₹50,000</b> per cleaning cycle (varies by system size)
Equipment Life	Corrosion under scale, overheating, early failure	Reduces boiler life by <b>30–50%</b>
Water & Chemical Usage	Higher chemical treatment & blowdown water needed	<b>10–15%</b> increase in water & chemical costs
Carbon Emissions	More fuel = more CO <sub>2</sub> emissions	<b>+3–5%</b> CO <sub>2</sub> for every 1 mm of scale
Safety Risk	Increased pressure, risk of failure or accidents	Potential liability & insurance cost hike
Operational Costs	All of the above lead to increased operating expenses	<b>₹1–5</b> lakhs/year for mid-size industrial setup



# Eliminate and treat algae and biofouling

## HOW HYDROPULSE TECHNOLOGY AFFECTS BACTERIA AND ALGAE

HydroPulse product by Mizusun is designed to tackle not only scale but also the biological fouling caused by bacteria and algae in water systems. When water passes through the HydroPulse signal inducer, the specialised electric field charges the bacterial and algal cells. This charge creates a protective hydration layer around the cells, leading to increased osmotic pressure. As a result, the cells swell and eventually rupture, effectively neutralising them.

### ADDITIONAL BACTERIA AND ALGAE CONTROL MECHANISMS:

**Cell Lysis** This is the process where a cell breaks down or is destroyed due to external stress or physical forces. The unique HydroPulse signal is believed to promote this natural phenomenon, adding in the continuous breakdown of microbial colonies.

**Electroporation Effect** The electric field generated by hydropulse also disrupts the cell membrane integrity of single-cell waterborne microorganisms, effectively leading to cell death without the need for high heat or harsh chemicals.

**Biofilm Disruption** The continuous signal not only prevents fresh bacterial growth but also helps to break down existing biofilm layers on pipe surfaces by agitating them, gradually cleaning the entire water system over time.

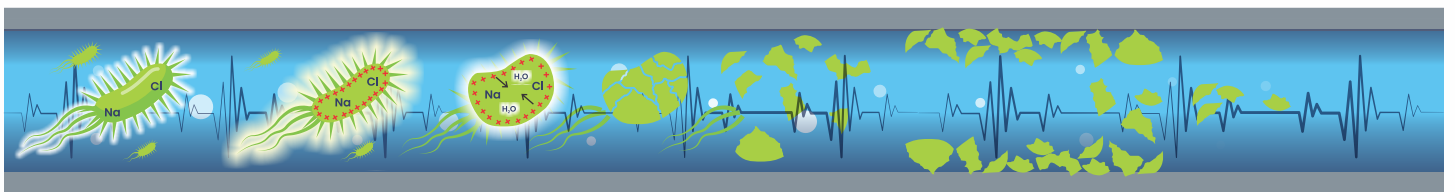


fig : Bacterial Cell rupturing under hydropulses electric feild

This comprehensive approach ensures cleaner, safer water and more efficient system performance, reducing maintenance costs and extending equipment life.





## REDUCE AND PREVENT INTERNAL PIPE CORROSION

### HOW HYDROPULSE TECHNOLOGY REDUCES CORROSION

Corrosion in water systems can significantly impact efficiency and lead to costly maintenance. HydroPulse technology by Mizusun is designed to tackle this challenge effectively.

**Electricfield Protection** The unique electronic signal generated by HydroPulse forms a coaxial electromagnetic field by metal pipes. This field disrupts the electrochemical processes necessary for internal pipe corrosion, reducing overall corrosion rates by up to 65%. This protective layer prevents metal ions from breaking away, extending the lifespan of the piping system.

**Reduction of Microbial Influenced Corrosion (MIC)** MIC occurs when certain bacteria, like sulfate reducing bacteria (SRB), create localised corrosion by forming pinholes in metal surfaces. HydroPulse technology inhibits these harmful microbes by disrupting their cellular structure and biofilm formation, effectively reducing MIC by up to 95%.

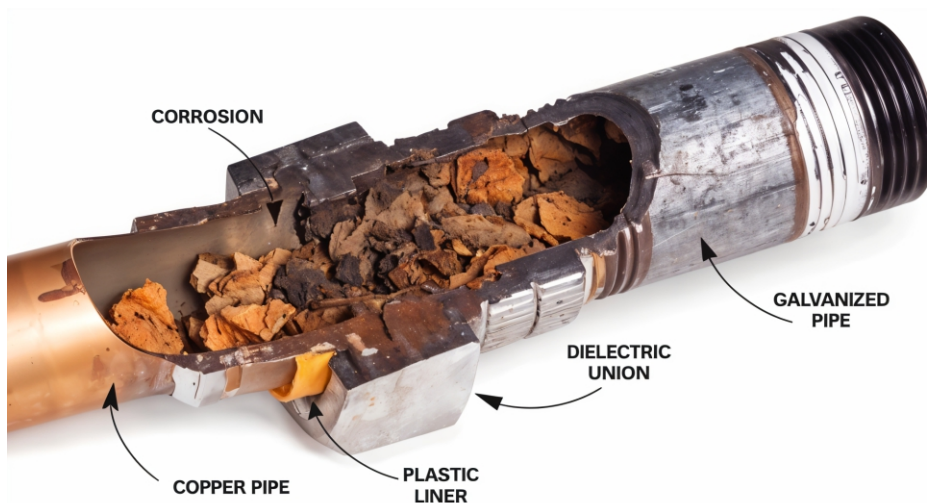


fig : Corrosion in an unprotected water application

Together, these mechanisms provide comprehensive protection against corrosion, ensuring longer lasting, more reliable water systems without the need for harsh chemical treatments.





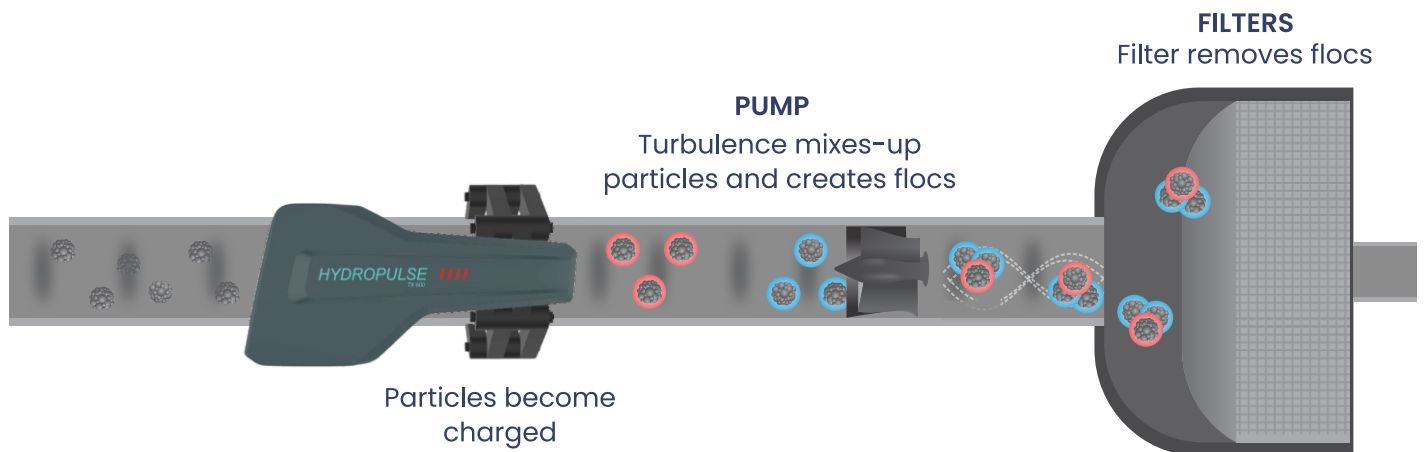
# Enhance Water Filtration and Purification Systems

## HOW HYDROPULSE TECHNOLOGY ENHANCES FILTRATION EFFICIENCY

HydroPulse water conditioners utilise advanced Hydro Polarization technology to cluster fine suspended particles in the water into larger micro flocs. As water passes through the HydroPulse unit, making them easier for filters to capture.

**This enhanced filtration process significantly improves the performance of existing filtration systems by**

- Reducing the frequency of backwashing by up to three times
- Lowering water consumption during each backwash cycle by upto 50%
- Improving clarity and purity in treated water systems

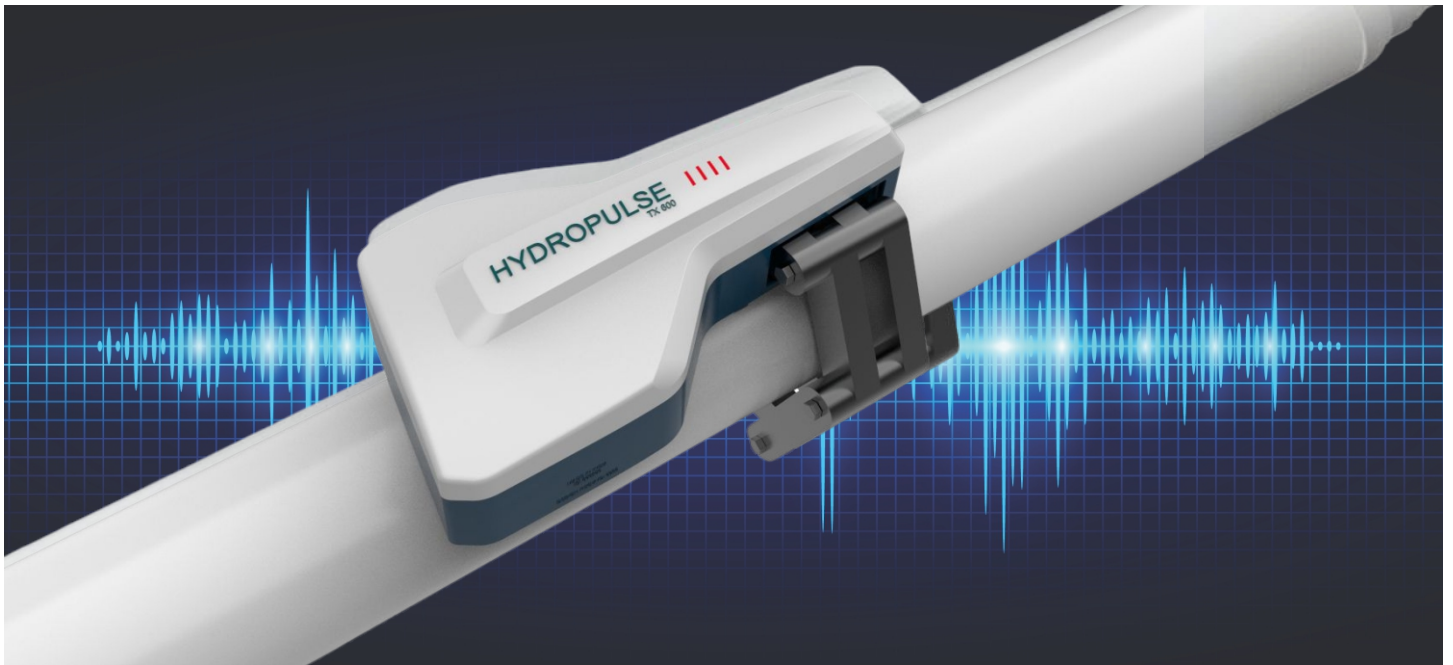


**In industrial and wastewater applications, HydroPulse may also support**

- Lower polymer usage
- Higher sludge cake dryness
- Reduced maintenance and operational costs

**By improving filtration efficiency without chemicals or mechanical filters, HydroPulse delivers a sustainable, cost effective solution that boosts system performance while conserving water and energy.**





# Advanced Non-Chemical Water Treatment Excellence

## HOW HYDROPULSE WORKS

HydroPulse Works powered by Mizusun, Made in India. HydroPulse by Mizusun is an advanced physical water treatment system developed to tackle hard water issues and enhance the efficiency of industrial and commercial water systems.

Engineered with Ingenious Hydro Polarisation technology, Hydropulse offers a chemical free, salt free, low maintenance solution that prevents Scale formation, biofilm development corrosion and improves water quality throughout the system.

At the core of Hydropulse is a specially designed electronic transducer that generates a modulated signal. This signal is induced directly into the water through the pipeline regardless of whether it's made of metal, PVC, or composite through a set of precision mounted signal inducer. The water Inside the pipe becomes the medium through which the signal travels, ensuring treatment across the entire system.

The unique frequency alters the physical behaviour of dissolved minerals primarily calcium and magnesium by triggering the formation of Microcrystalline structures that remain suspended in the water instead of sticking to the internal pipe surfaces. Over time, existing scale deposits are loosened and gradually washed away. This effect not only prevents new scaling but also enhances flow efficiency, reduces pump strain, and improves thermal transfer in heat exchange systems.

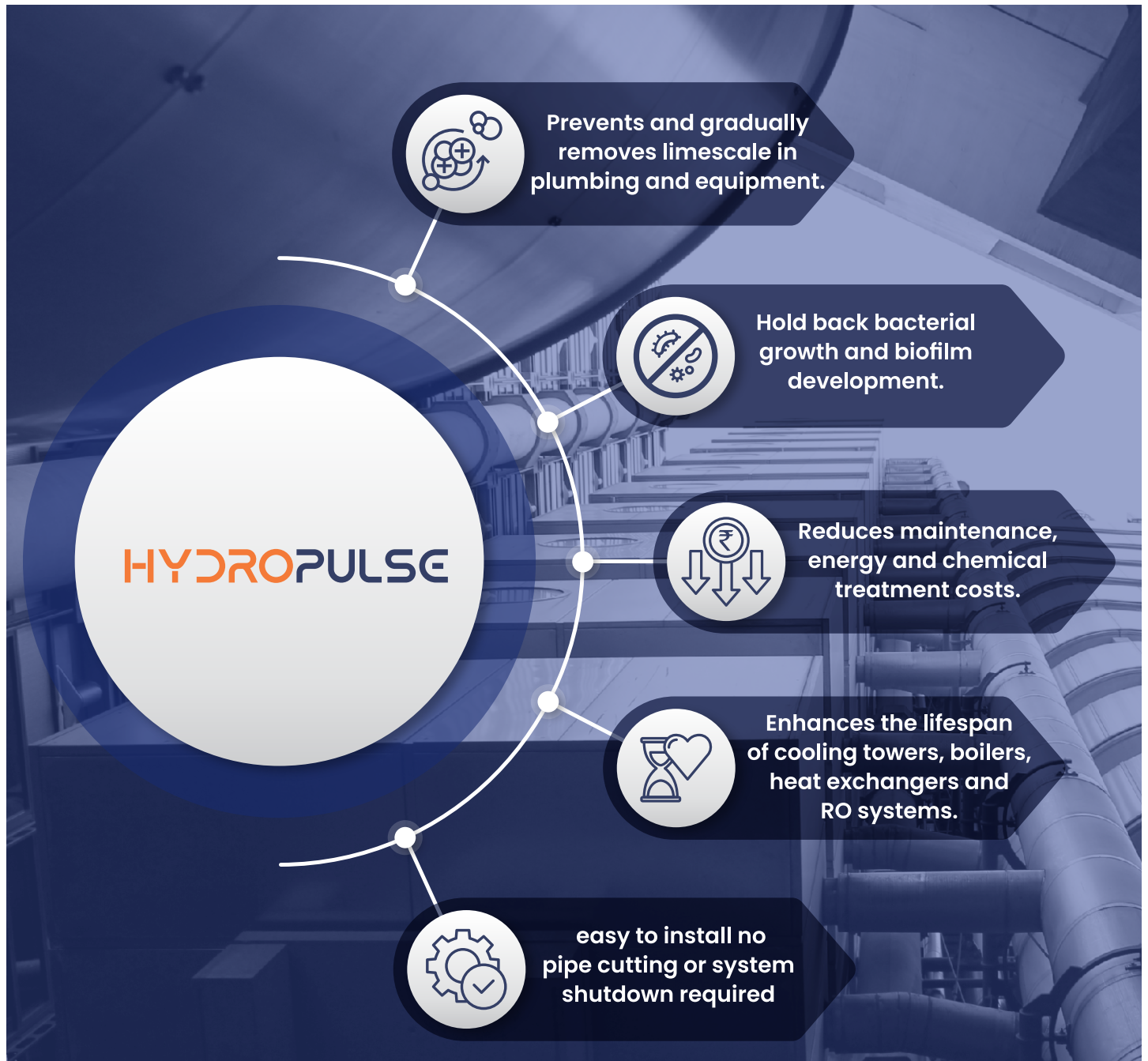


## Why Choose HydroPulse for Your Industry?

- ✓ 100% Chemical-Free
- ✓ Zero Maintenance
- ✓ Energy Efficient
- ✓ Eco-Friendly Solution
- ✓ Universal Installation
- ✓ Improves Equipment Life
- ✓ Reduces Operational Costs
- ✓ Made in India



# KEY BENEFITS OF HYDRO PULSE TECHNOLOGY



Non-intrusive,  
easy installation without  
plumbing modifications



Continuously transmits a  
protective signal throughout  
the entire water system



Provides 24/7 protection  
against scaling  
and biofouling



Compatible with  
existing electrical systems  
without interference

Hydropulse units are designed for continuous operation and are compatible with a wide range of pipe sizes and industrial applications. With Make in India innovation by Mizusun, HydroPulse is a trusted solution for sustainable water management across sectors.



# PARTNERED APPLICATIONS

These systems effectively prevent scale buildup in plumbing infrastructure, equipment and appliances, ensuring efficient water management and quality across diverse sectors.



## COOLING TOWERS

HydroPulse prevents scale buildup on fill media and internal piping, improving cooling efficiency and reducing chemical usage. It helps maintain optimal water circulation and reduces frequent descaling or shutdowns.

## BOILERS AND HEAT EXCHANGERS

Prevents scaling on heating surfaces, ensuring consistent heat transfer and reducing fuel consumption. Extends equipment life and minimises breakdowns due to hard water scaling.



## CHILLERS AND HVAC SYSTEMS

Improves overall system efficiency by keeping condenser tubes and pipelines free of scale. Leads to lower energy usage, fewer service calls, and prolonged compressor life.

## WATER FILTRATION UNITS

Keeps RO membranes and filters cleaner by preventing mineral scale deposition. Reduces clogging, maintains flow rate, and lowers operational downtime.



## POWER GENERATION AND INDUSTRIAL PROCESSES

Ensures uninterrupted water flow in turbines, condensers, and reactors by eliminating mineral scaling. Increases system reliability, efficiency, and lowers water treatment costs.

## IRRIGATION SYSTEMS

Prevents clogging of drip and sprinkler nozzles, especially in high TDS or hard water areas. Supports uniform water distribution and reduces maintenance for agricultural systems.





## NEXTGEN MODELS FOR TARGETED APPLICATION



### HYDROPULSE MARLIN SERIES

HydroPulse Marlin Series tackles hard water issues in homes and buildings by preventing limescale buildup, extending appliance life, reducing maintenance, and improving efficiency. It delivers safer water for bathing, protects plumbing, and keeps water gentle on skin and hair without changing mineral content.

### HYDROPULSE INDUSTRIAL

HydroPulse Industrial Series protect cooling towers, boilers, heat exchanger, chillers, piping etc., systems from hard water damage by preventing scale buildup. It boosts thermal efficiency, cuts energy use, and reduces downtime without chemicals or maintenance. Custom sizes fit diverse industrial needs, delivering cost effective, sustainable performance.

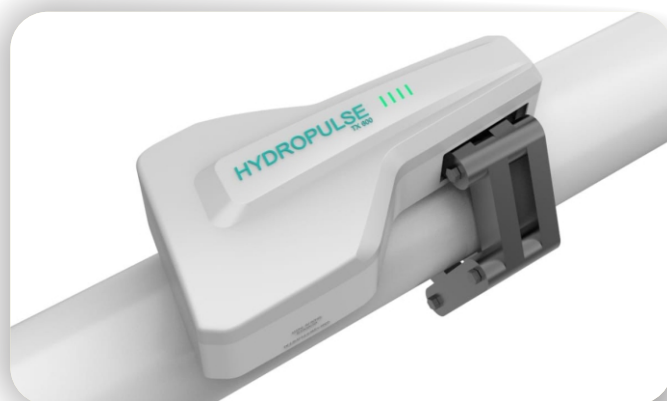


### HYDROPULSE COMMERCIAL

HydroPulse Commercial Series is designed for hotels, hospitals, malls, salons, and more where water quality impacts service and equipment. It prevents limescale, improves flow, reduces utility costs, and extends appliance life. Easy to install and chemical free, it ensures smooth, cost effective operations.

### HYDROPULSE AGRI

HydroPulse Agri Series tackles hard water in irrigation and livestock systems by preventing scale in pumps, nozzles, and filters. It improves water flow, soil quality, and overall plant and animal health chemical free. Custom units fit any setup, offering easy, low maintenance, and efficient water management for agri businesses.





# HYDROPULSE

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