

Cooling Tower Circulation Water Treatment System

IGADEN CO., LTD.

Benefits

- Eliminates scale contained in the circulation water in the cooling tower, as well as preventing scale buildup inside piping (prevents piping from getting clogged by eliminating scale).
- Improves pump efficiency to conserve power and control CO₂ discharge.
- Prevents red rust on piping and equipment.
- Reduces water use and wastewater discharge to save on water costs.
- Provides a measure for COD of wastewater by using no chemicals.
- Controls algae and water-bloom.
- Helps de-sliming.
- Eliminates Legionella.



Effects of the Cooling Tower Circulation Water Treatment System

As the temperature in the cooling tower rises to a degree optimal for bacteria growth, scale within the piping accumulates due to algae, bacteria, and concentrated circulation water, causing blockage in the heat exchanger. This in turn leads to issues such as decrease in efficiency in heat exchange and growth of Legionella nesting in the scale inside the piping. (Mold fungi appear if regular cleaning is not well maintained.)

Chemical products have traditionally been used to deal with these issues. However, as the circulation water is evaporated and concentrated by the heat of evaporation, chemical component discharge (COD) during automatic overblow (blowdown) has been a recent concern. Thus, the maintenance cost is high.

The chemical-free water treatment system "MICRO WATER SYSTEM" (patented) reduces maintenance, and operates while conserving energy at low costs. It can also separate and collect the scale in the circulation water, control saprophytic contamination, kill algae, and conserve water. Especially, this system has consistently been delivered to many ISO 14001 certified companies, garnering attention.

Consumables / Inspection and Maintenance

Consumables: The consumable electrode plates need to be replaced every six months or one year.

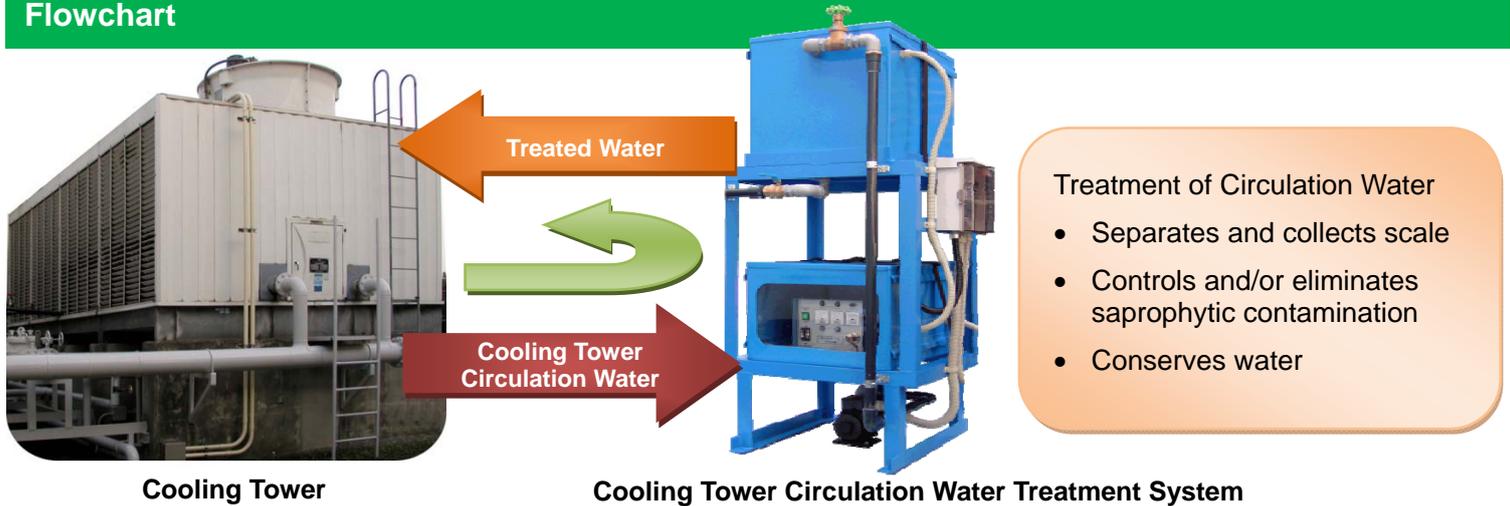
Inspection and Maintenance: The system operates automatically, but periodic inspections are necessary.

Installation Cost of the Circulation Water Treatment System

System installation to the cooling tower will be estimated based on the environment of the installation site.

- Consumable Electrode: 12,000 yen/month
- 5-Year Lease: 56,000 yen/month
- Optional Maintenance Contract: 30,000 yen/service
- Electricity: 4,500 yen/month

Flowchart



Cooling Tower Circulation Water Treatment System: Installed Image



Inside the Cooling Tower: Images Before and After Installation



BEFORE (Chemically Fed)



AFTER Installation of Cooling Tower Circulation Water Treatment System

Cost Reduction Effect by the Introduction of the System

This environment-friendly, chemical-free system for water quality improvement can assist in major cost savings.

Example: 12-Month Lease with Package Purchase

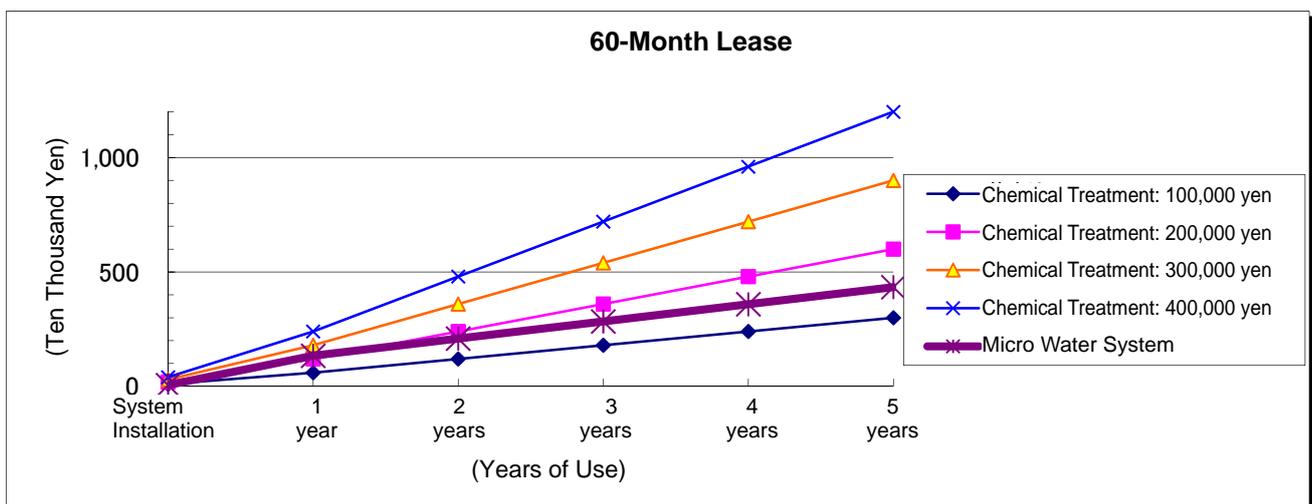


If the current cost is 200,000 yen/month, the cost of the system can be recovered in about 1.3 years.

Condition: If the cooling tower operates continuously for the year, a 12-month implementation of the water quality improvement system is required. After the lease term matures and the title of the systems is transferred, the only costs will be for electricity and consumable electrode plates.

* The 12-month lease comparison chart above includes the fees for electricity, consumable electrode plates, and system construction.

Example: 60-Month Lease of This System

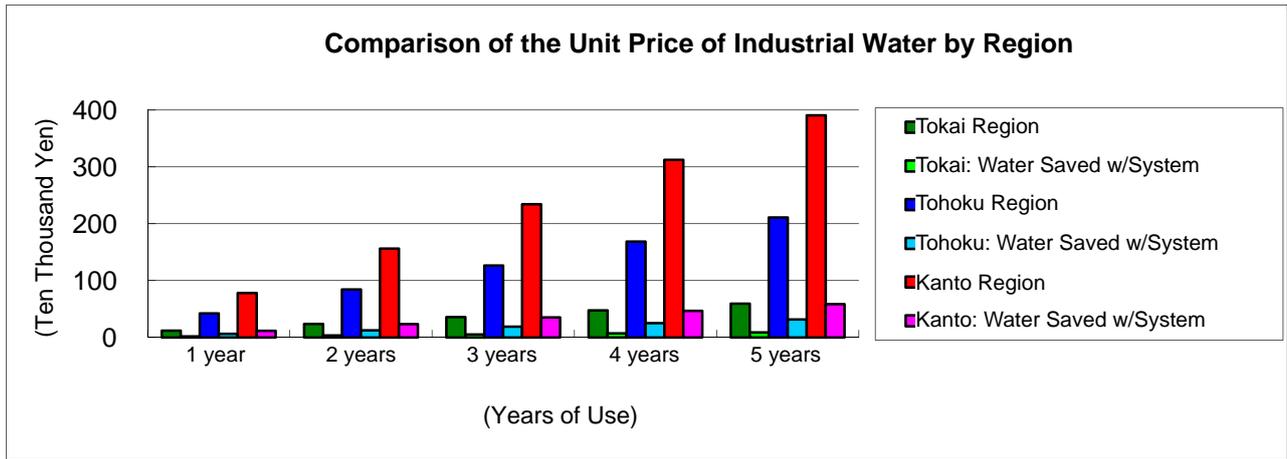


The cost of the system can be recovered in about one year if the current cost is 200,000 yen/month, and in two years if the current cost is 150,000 yen/month.

Condition: If the cooling tower operates continuously for half the year, a 60-month implementation of the water quality improvement system is required. After the lease term matures and the title of the systems is transferred, the only costs will be for electricity and consumable electrode plates.

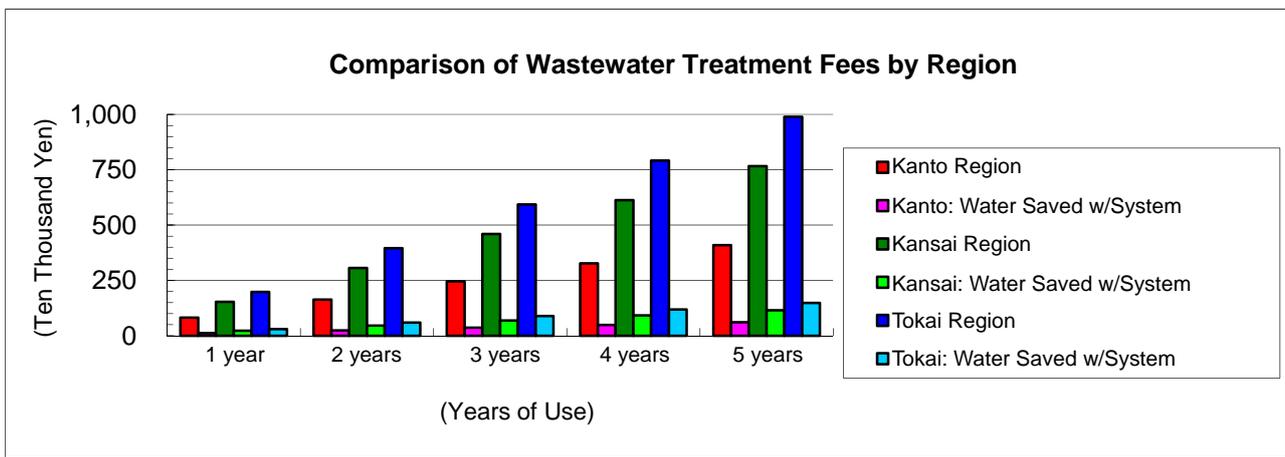
* The 60-month lease comparison chart above includes the fees for electricity, consumable electrode plates, and system construction.

Effect of Cost Reduction by Conserving Water up to 85%



Operating a cooling tower while freely discharging industrial water without treating the cooling tower circulation water using chemicals or other means appears to cost nothing. However, the fees for industrial water supply and wastewater treatment will be a huge waste of money.

The operating costs before the installation of a water quality improvement system (20 t/day) (accumulated for a year) are compared with those after the installation on the assumption that the system operates continuously year-round and that the maximum rate of water conservation to be expected is 85%/day (refilled 15%/day).



Although the extent of savings differs depending on the region, cost-savings can be enhanced through water conservation.

The lease fee includes various costs for the work we perform on our own (consumable electrode plates, standard installation construction, and warranty for spontaneous failure of the system).

Fees for periodic inspections and cleaning are not included.

A maximum 85% water conservation can be achieved in the following fashion: Industrial and/or underground water of approximately 30 to 150 $\mu\text{s}/\text{cm}$ (in electric conductivity) is concentrated by the heat of evaporation, rising to approximately 1,000 $\mu\text{s}/\text{cm}$. With 1,000 $\mu\text{s}/\text{cm}$ established as the maximum concentration value, the electric conductivity is forcibly lowered to approximately 800 $\mu\text{s}/\text{cm}$ by refilling with automatic overflow. Water conservation can be achieved by repeating this operation (Any value can be established as the electric conductivity).

■ Manufactured and Distributed by:

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■ Dealership:

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