

BIO-CLEAN

PIPELINE BIO-TREATMENT OF COOLING WATER

ENERGY SAVING

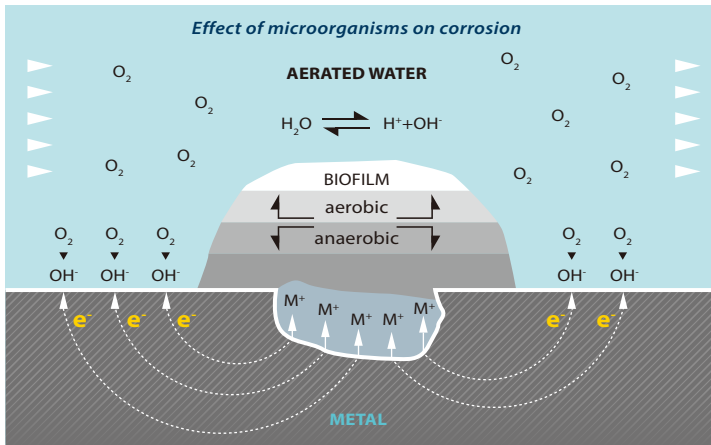
MATERIAL SAVING

MAINTENANCE REDUCING

ENVIRONMENT PROTECTION

The specific efficacy of Bio-Clean

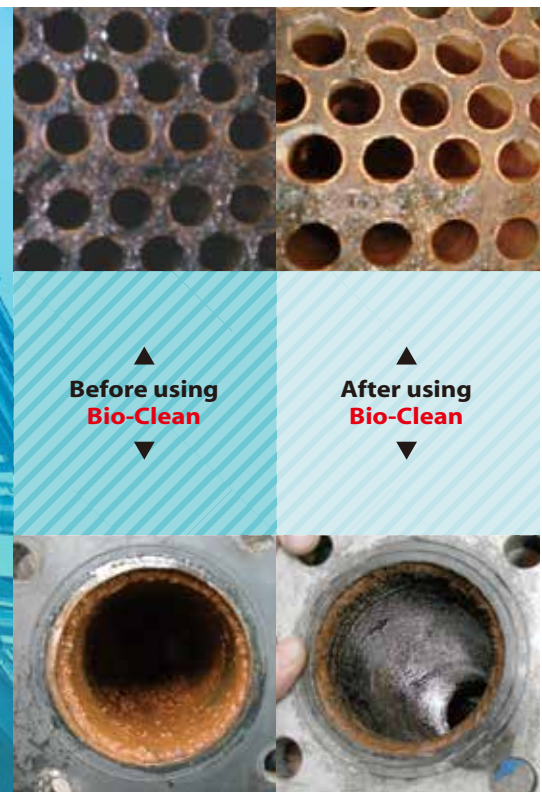
- 1 Corrosion prevention and cure: Any facilities of metal or nonmetallic tubularity, such as Iron, copper, steel, titanium alloy, tempered glass fiber, cement piping aqueduct...etc., Bio-clean can clean up the inhabited rusty oxide and slack the constantly dissolutive corrosion. Meanwhile, it can form a whole pipeline protection.
- 2 Scale prevention and cure: Bio-clean it works by straticulate penetration, dissolving away, dispersing the inhabited scale. It won't cause canaliculus plugging and can further avoid pipeline plugged, besides, to prevent the second fouling on tube inner surface.
- 3 Microbial slime prevention and cure: By dispelling the inserted microbial slime on tube inner surface, and eradicating corrosion and Legionella Pneumophila which caused by microbe.
- 4 The effect upgrade of Heat exchanger: By dispelling smudge bio-film and reinforce the condensed effect of heat exchange.
- 5 Minify the electric conductance of water: By preventing the redox corrosion.
- 6 Minify the muddy substance of water: By upgrade the cleanliness of water.
- 7 Excellent environment companionability: Under physical environment, just require a several hours during decomposing period of half capacity. It won't accumulate or cause any environmental impact.



The structure bio-film on the tube inner surfaces and the sketch map of corrosion

The Application range of Bio-Clean

- For All kind of liquid pipeline equipment (Including freshwater, seawater, wastewater, underground water...etc.)
- Central Control Air-condition Cooling water Tower
- Ice water maker
- Cooling mechanics
- Air compressor equipment
- Heat exchange equipment
- Biological wastewater dripping filter tower and Biological rotary plate
- Cooling system of Generator
- Firefighting pipeline system equipment
- Frozen pipeline system equipment
- Swimming pool and SPA
- Water supply equipment in Manufacturing process system



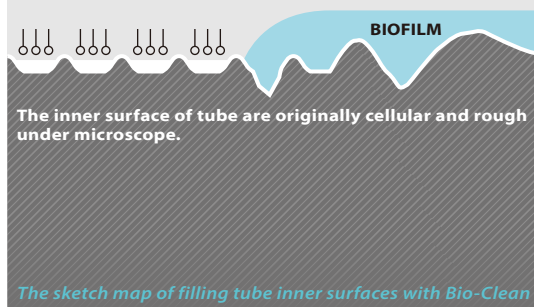


Following the development of industry and commerce, people's living quality has been upgrading. Consequently, the consumption of electricity and water has been escalating year by year as well. So that, how to save energy and how to reduce the consumption of electricity and water resource have become the key subject for all over the world to research recently.

As spending on the electricity and the water capacity for cooling water are the major expenses of the industry, and the standard of water consumption and discharge would be the primary factor to evaluate in the industrial investment.

Bio-Clean is a concept of changing general water system to control water quality by biotechnology.

Bio-Clean is a bio-active composition, themolecule size about 10^{-9} m. The hollows of tube surface can be easily varnished filling up by Bio-Clean and developed a sort smooth surface. After the hollows have been fill up by the Bio-Clean. There will be formed a sort of hydrophobic water-repellent membrane.

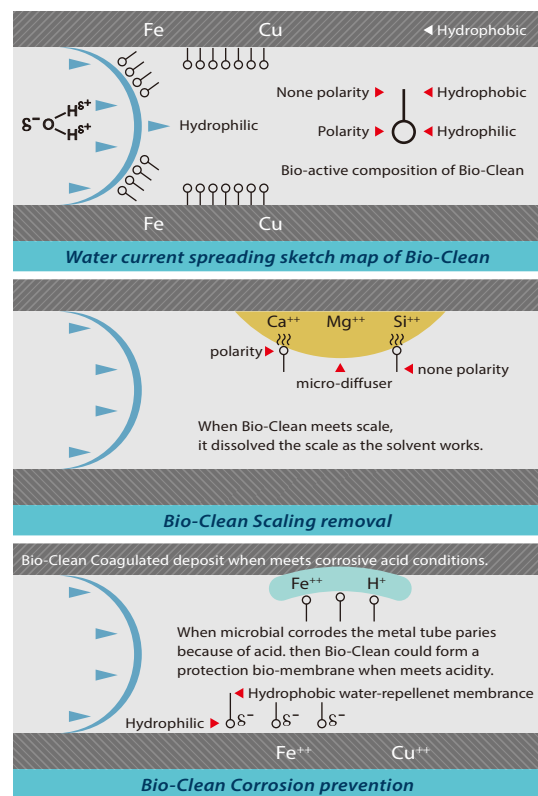


Bio-Clean Pipeline Bio-Treatment of Cooling Water

Bio-Clean is a bio-treatment to apply for protecting the inner surfaces of the cooling system, which builds up a layer of liquid mobile bio-film on the inner surfaces of the cooling and heat exchange system. It can protect various material of Iron, Copper, Titanium, Alloy and plastic. Meanwhile, it does not only can remove the microbial slime and scale, but also inhibit corrosion and cleanup macro fouling and adhered algae. This product only treat the interface between tubing surface and water entity, and it really no need to change the bulk water quality so that it's applicable to every kind of water, such as seawater, freshwater, underground water and running surface water...etc.

The Characteristics of Bio-Clean

- 1 Repairing rapidly the thready pothole on tube inner surface, and becoming smooth surface by bio-material with NANO concept to prevent suspension bacteria accumulated to reduce build-up of scaling.
- 2 When tube inner surface scaled, Bio-Clean would produce Micro-diffusion effect, and by applying the flow current of water to peel away the scale.
- 3 Cut off the biological adhesion mechanism, and increase the eliminated efficiency on inserts or mucilage, it effectively eradicates the development of Macro-fouling, Algae and Zebra Mussel.
- 4 It's no harm or toxic to the environment and biological, so it's applicable even to drinking water, and also can be decomposed naturally without affection to the water quality.
- 5 It only treats the interface between tubing surface and water entity, and it really no need to change the bulk water quality so that it's applicable to every kind of water, such as seawater, freshwater, underground water and running surface water...etc.
- 6 It's applied on protecting the tube inner surfaces without changing water quality, no need to setup any elaborate controller of adding dosage and water control system.
- 7 To achieve the best effect by the most economic spend.



The comparison of cooling water treatment

Items	Untreated	General treatment	Bio-Clean Pipeline treatment
Environment Compatibility	Forcing house for bacillus	Water quality become crossresistant easily, and discharge water with toxic.	Thru LD ₅₀ test and certified by CNLA Lab, it's Nontoxic and very good companionability to environment.
Anti fouling	NONE	FAIR	By film infiltrate, dissolved, dispersed and cleanout the fouling
Anti corrosion	NONE	Invalid to some metal and metalloid.	Effective to all kinds of material and can form an entire protection for pipeline.
Anti lichenous and Inhibit bacillus , Legionella Pneumophila and Algae	NONE	Remove algae instantly, but easily clogged up, also with strongly antibacterial , but effect crossresistant easily	Peeling gradually, no need to change water, and strongly antibacterial with no derivative side effect. Also can effectively inhibit against Legionella Pneumophila.
Water Quality Watch & Control	NONE	Require an online monitor, so the operation will be complicated.	No need any Monitor equipment.
Dosage Method	NONE	Require a specific equipment and storage so that there's public safety worry.	Regularly add to cooling tower, so no storage concern..
Maintenance	NONE	OFTEN	NONE
Energy saving	POOR	FAIR	Around 10%
Water Saving	NONE	FAIR	Saved 20% up, and applicable to any Water quality

Dosage: The mixing ratio is 10 c.c. of Bio-Clean for 1,000 liters of water.

Caution: Bio-Clean is not suitable for use in Plate Heat Exchanger.



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