



Cooling Water Cleaning System

DaJaBaRa



KMX CO., LTD

DaJaBaRa Scale Collector

● Cooling Water Cleaning System

- It removes the scale which is fixed to the equipment of the cooling water system by using the principle of electrolytic method. (Removes solid scales by using 'Electrolytic Technology')
- This is Cooling Water Cleaning System which prevents scales from being generated at Cooling tower filler, circulation piping, Evacon tube, etc. (Prevents re-gaining Scales on Pipes, Filter, Tubes etc)
- It removes the scale which is fixed in cooling towers and heat exchangers while preserving water quality and atmosphere. (Saving and improving the quality of water while it removes scale)
- It kills bacteria and microorganisms such as legionella and salmonella in cooling water, and removes green algae. (Reduces Bacteria and microorganisms (i.e as legionella and salmonel) and removes green algae)
- Using environmentally friendly products(DaJaBaRa), which has caused water pollution and environmental pollution by using existing high-risk chemicals, it excelled in environmental protection and energy saving after installation. (Eco-Friendly by reduces using chemicals)

● Installation Location

- CW Supply piping between cooling tower and heat exchanger

● Processing Capacity (RT : Ton of Refrigeration)

- The processing capacity per unit of cooling water cleaning system should be greater than the replenishing volume of the cooling tower.
In the case of 500RT, the circulation volume of the cooling water is 390ton/hr, so
 $390\text{ton/hr} \times 0.012 = 4.68\text{ton/hr}$ (replenishment amount of the cooling tower).
The standard processing capacity per unit of 500RT is 5.0ton/hr and this is greater than 4.68ton/hr which is the replenishment amount of the cooling tower and so, install 1unit of 500RT.

DaJaBaRa Installation Effect

- ▶ **Arresting Ca^{2+} (calcium ion), Mg^{2+} (magnesium ion), such as scale generating ions dissolved in water onto cathode surface**
 - Maintaining the concentration to below the solubility
 - Preventing scale generation
- ▶ **Inhibits generation of microorganisms production by radical hydroxyl and chlorine**
 - Inhibiting Slime
 - Inhibiting green algae
- ※ **Radical hydroxyl group : Strong chemicals for oxidizing with non-toxic character from the known substances (fluorine, ozone, chlorine)**
- ▶ **Anti - Corrosion**
 - Prevents corrosion by changing cooling water into alkaline water



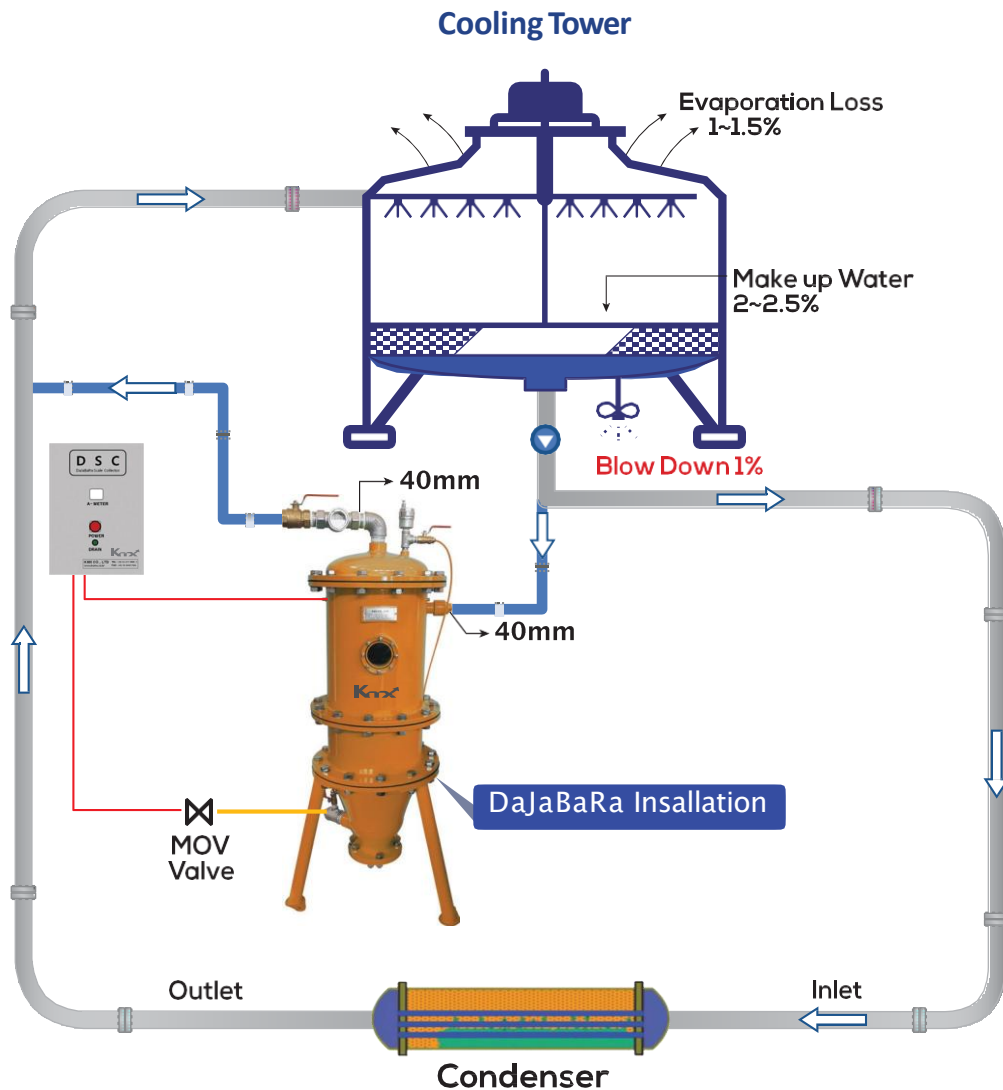
Cooling Tower



Cooling tower Facility



Installation mimic



※Blow down : The amount of water to be discharged in order to prevent foreign matter or dust from dissolving in the cooling water(1%)



Cooling Water Cleaning System Installation Before and After

Installation Inside



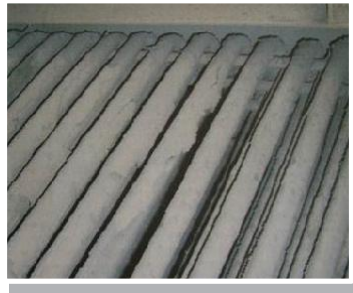
Inside before installation



Cooling tower Facility View



Outdoor Installation



Before



After



Cooling Water Cleaning System (Progress)



DaJaBaRa Installation



1month after installation



Scale Collection



Before Cleaning



After Cleaning



Cooling Water Cleaning System and Removal of Microorganisms



Other Water Quality Changes

Date	ph	Current	Total Hardness (ppm)	Replenishing water	Cooling Water Temp. (°C)		
					Atmosphere	Entrance	Exit
8/3	8.93		37		25	36	34
8/5	8.36	4.6	44		32	38	36
8/12	8.31	4.8	36	Injected	33	39	37
8/18	8.44	5.6	34	Injected	32	39	38
8/23	8.49	5	62	Injected	30	32	28
9/2	8.41	6	72		22	30	27
9/21	7.56	0.5	54		24	28	24
9/28	7.37	0.5	32		22	31	26



DaJaBaRa - Expectation After Installation

1. Preventing and arresting various scales in the cooling water system
2. Dajabara inhibits various microorganisms occurrence by generating hypochlorous acid (HOCL) with a sterilizing effect.
3. No need to stop the equipment in operation in order to remove the scales in the cooling water system.
4. 5~10% energy savings by improving efficiency of the Heat Exchanger
5. Coolant BLOWDOWN can be reduced water consumption by 70% to 80%.
6. Reduced input costs of disinfectants and microorganisms for cooling water cleaning






Electrolytic chemical process

- Water flows between the anode (+) and the cathode (-) through an electrolytic water bath. In this process, basic pH is formed on the surface of the cathode and acidic pH is formed on the surface of anode.
- Through chemical reactions on the cathode surface, CaCO_3 , MgCO_3 , etc. are separated and removed.
 - $\text{Ca}(\text{HCO}_3)_2 + 2\text{OH}^- \rightarrow \text{CaCO}_3 \downarrow + 2\text{H}_2\text{O} + \text{CO}_2^-$
 - $\text{Mg}(\text{HCO}_3)_2 \rightarrow \text{MgCO}_3 \downarrow + 2\text{H}_2\text{O} + \text{CO}_2^-$
- Through the chemical reaction of the anode surface, it transforms a part of the chloride into a small amount of active chlorine, and acts as a sterilizer.
 - $\text{HO}^- - e \rightarrow \text{OH}^\circ$ (Radical Hydroxyl), $\text{Cl}^- \rightarrow \text{Cl}^\circ$ (Radical Chlorine), $2\text{Cl}^\circ \rightarrow \text{Cl}_2$ (Chlorine Molecule)



Cooling Water Cleaning System Specification Selection

Ex. **KMX -**

Capacity	Color	Voltage	Frequency	IT Applicability
A	B	2	60	IT
A:500RT B:750RT	B:Blue G:Green O:Orange	1:110V 2:220V	50Hz 60Hz	IT:IT Applied N:IT Not Applied
				



Product Specifications

Product Name ()	DaJaBaRa Scale Collector ()	
	500RT	750RT
Model ()	KMX-AO260IT	KMX-BB260IT
Power ()	AC 110/220V, 50Hz/60Hz	AC 110/220V, 50Hz/60Hz
Power Consumption ()	250W (MAX)	250W (MAX)
Size ()	Height() 1108mm, Width() 520mm	Height() 1320mm, Width() 520mm
Weight ()	120KG	155KG
Processing Capacity ()	5m ³ /h	7.5m ³ /h
Supply Voltage ()	DC24V	DC24V



www.kmx.co.kr
KMX CO., LTD

Head Office

28-10, Jinjangyutong-ro, Buk-gu,
Ulsan, Korea
TEL : +82 - 52 - 277 -9890~1

Place of Business

1963 Uljimbuk-ro, Buk-myun,
Uljin-gun, Gyoung-buk, Korea
TEL : +82 - 54 - 782 - 7441~2
FAX : +82 - 70 - 4369 -7966

Busan Factory

53, NoksanSandan 77-ro, G
angseo-gu, Busan, Korea TE
L : +82 - 51 - 717- 3770~2
FAX : +82 - 51 - 717 -3880