

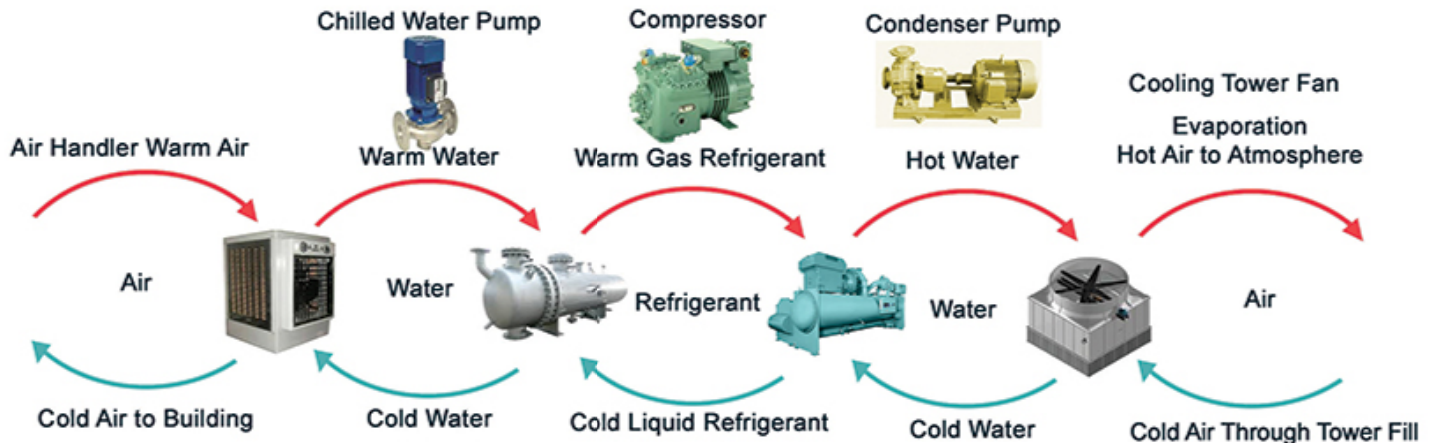


*Separation of scale -
prevents the Corrosion,
Bio-fouling,
Scaling,
Micro-Organism growth
&
spread of airborne bacteria
in CW structure.*



Continuous scale / hardness removal and onsite disinfectants generation - mitigate the scaling, corrosion, bio-fouling & bacterial infection in Cooling Tower Water Distribution System. In order to overcome the limitations of conventional cooling water treatment (addition of chemicals or by water softening), Tiaano ventrued with M/s. HVS, Singapore and developed "Tiaano-HVS EISr" – removal or separation of scale/hardness by electrolytic operation. Tiaano-HVS EISr produces Oxidants in the water; Oxidants prevents the Corrosion, Bio-fouling, Scaling, Micro-Organism growth & spread of airborne bacteria.

Cooling Tower Operation:



How Tiaano-HVS EISr works:

- ➔ Accelerated scale precipitation within a reactor.
- ➔ Production of active alkaline ionic species - enabling automatic active pH manipulation to control corrosion.
- ➔ Continuous online generation of active oxidants - as a replacement to biocides and oxidising agents.

Technical Innovation:

- ➔ Proprietary Ultra-Short Pulsed DC Technology.
- ➔ Highly Efficient Oxidation - Reduction Process.
- ➔ Cold Electrochemical Activation System.
- ➔ Functionalised Electrodes Design.
- ➔ Self-Cleaning Electrodes.

Potential Benefits for Cooling Tower operation:

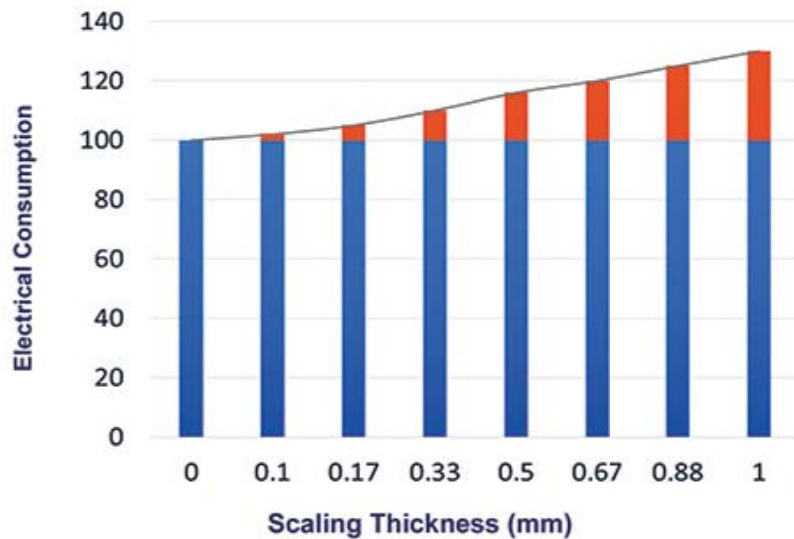
- ➔ 100% savings on chemicals.
- ➔ 70 ~ 100% savings on blowdown water.
- ➔ 10 ~ 50% savings on labour cost.
- ➔ 20 ~ 40% of water savings.
- ➔ 05 ~ 15% of energy savings of cooling fan.
- ➔ 02 ~ 04% energy savings of chiller.

Advantages over existing non-chemical treatment system:

- ➔ Green technology.
- ➔ Zero Bleed Loss.
- ➔ Low energy Consumption.
- ➔ Modular design.
- ➔ Zero Toxic Sewer Load.
- ➔ No toxic chemical storage hazard.
- ➔ Small footprint.
- ➔ Easy operation.
- ➔ Low maintenance.



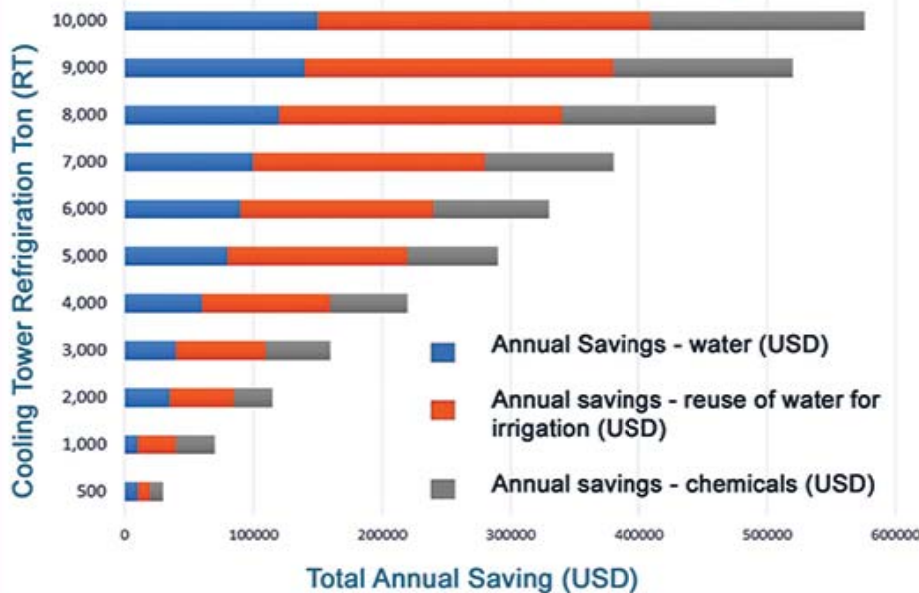
Energy loss due to Scale deposition



One mm thick of scale/slime fouling (acting as insulator) will cause 30% more energy consumed.

The scale/slime formed on cooling tower infills affect water distribution and dirty condenser tubes will reduce overall heat transfer efficiency

Cooling Tower Saving Calculation



Basic Assumptions:

- ▶ Saving calculation is based on actual case studies done by Tiaano-HVS.
- ▶ Chemicals cost: 0.3\$/m³ (make up water)
- ▶ Water cost = 1.5\$/m³ (including sewage disposal costs)
- ▶ Tower operation: 2000 hrs/yr.

Scale Separated as Mg/L by Tiaano-HVS EISr





Quality Policy

"To deliver products of the **highest attainable quality** in accordance with applicable codes, standards and customer's specifications by continually improving the effectiveness of the quality management system" is our Quality Policy.



- ★ ASME code fabrication standard.
- ★ TEMA design standards for heat exchanger.
- ★ API standards for tank & Pump fabrication.
- ★ ANSI B16.9 specifications for piping.
- ★ Full NDT capabilities.
- ★ Complete in-plant testing.
- ★ Scheduled or emergency repair or replacement service.
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- ★ Warehouse stock of Titanium, Tantalum, Niobium, Zirconium, Nickel, Hastelloy, Monel, Inconel, X-750, Ruthenium, Platinum & Iridium.
- ★ ISO 9001-2008 certified quality source.

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