ELECTROCELL SYSTEMS

If You've Got a Cooling Tower, You've Got a Problem

ElectroCell Technology

Focus on Improved thermal transfer and equipment efficiency

Reduce

Energy Usage
Water Usage
Equipment Maintenance
Biological Growth
Tube Punching

Control

Equipment Scaling and Fouling

Enhance

Chemical Treatment Program

Increase

Equipment Life Cycle

Cooling towers evaporate condenser water to help chillers operate efficiency. A simple process - that creates plenty of complex problems.

Problem #1 - Blown Particles

Cooling towers have fans that draw in large volumes of ambient air - with all kinds of airborn dirt particles, vapors and biological material. An average cooling tower adds thousands of pounds of particles into cooling water each year - most of those particles are less than 3 microns

Where do these particles go?

> Heavier particles (>25 microns) settle in the cooling tower basin
> Smaller particles (1-10 micron) remain suspended in the cooling tower water

What problems to the particles cause?

> Suspended particles settle on heat transfer surfaces, reducing the efficiency of the heat exchange.
> Settled perticles creat a substrate to incubate bacteria.
> Some suspended particles serve as nutrients for bacteria, including Legionella.
> Suspended particles are abrasive to tube sheets, pipe fittings and pump impellers.

The bottom line:

The chiller has to work harder, using more energy; the cooling tower evaporates more water.

Until now, the solution has been a side-stream sand or centrifugal filter that require large volumes of back wash water. These filters are unable to effectively remove the smallest particles (1-3 micron) that cause most of the problem.

Problem #2 - Suluable Contaminants

The evaporation of cooling tower water concentrates soluble contaminants - minerals like calcium and silica - that cause hard, insulating deposits on heat transfer surfaces. Routing a small stream of cooling water - bleed or blowdown - and adding fresh make-up water reduces the concentration of minerals, preventing scale. Typically, 25% of system water consumption is from bleed, 75% is from evaporation.

Until now, the solution to save water has been to decrease the volume of bleed cycles.

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