WATER TREATMENT TECHNOLOGY FOR INDUSTRIAL, COMMERCIAL & ENVIRONMENTAL APPLICATIONS

DECEMBER 2012 - WATER TREATMENT NEWSLETTER

Predicting Mineral Scale – *Computer Software Improves Predicting & Controlling Water Deposits*

KWT and RSC now use computer software called Water Cycle® to determine what mineral scales will form under what conditions. The software also includes data for a variety of chemical inhibitors which influence mineral solubility. Some of the uses of the software include:

1. Water conservation in cooling systems is often based on increasing cycles of concentration. The software identifies the parameters and chemistry to optimize cycles of concentration. The software also identifies treatments to extend the cycles of concentration.

2. Once through water systems such as groundwater remediation and or municipal water treatment often are limited by mineral deposits. The software identifies the specific conditions when deposits will form and which treatments can prevent them.

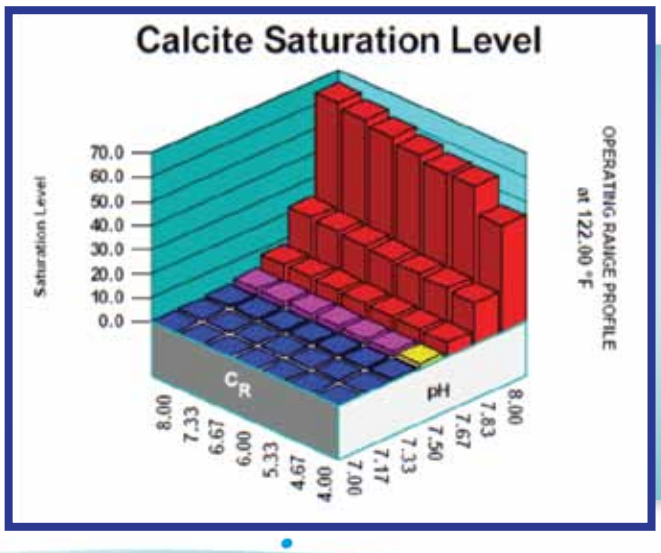
3. Reuse water or blended source waters can create unexpected or complex mineral deposits. The computer software predicts these deposits and guides the water technologist in preventative measures.

4. Some of the capabilities include deposits based on calcium, silica, iron, magnesium, aluminum, copper, barium, strontium and many more.

FOR MORE INFO:

Kansas Water Tech
kansaswatertech.com

Remediation Services Co.
remediation-services.com



Graph of Calcium Carbonate formation potential at various operating conditions ie Temperature, pH, and Cycles of Concentration for water used as Cooling Tower Makeup

Contact KWT or RSC to use this software to evaluate the scaling potential of your water systems.

For Dissolved Air Flotation Systems –

Regenerative Turbine Pumps Make a Big Difference

Dissolved Air Flotation (DAF) has been a standard for solids-liquid separation in many industries including food processing, refinery, paper-making, and waste water applications many industries. The use of regenerative turbine pumps which are designed to add controlled levels of air into a water stream have simplified and improved DAF design. Click here for this article at our KWT or RSC websites.

Corrosion Coupon Analyses

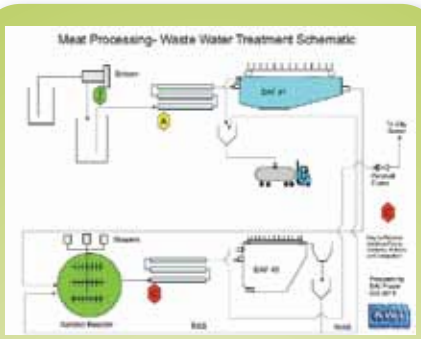
Monitoring and Improving corrosion is an important aspect of the maintenance of water systems. Corrosion coupon analysis is an inexpensive, simple and non-destructive method to monitor systems. Most industrial water systems have more than one type of metallurgy so a variety of coupons types may be required. Coupons may be placed directly in the water system or in bypass "corrosion racks". An article describing the techniques of proper corrosion coupon monitoring is located at our KWT website. Click here.

When it comes to RO monitoring –

Comparing "Apples to Apples" is critical.

Because RO operational data including membrane pressures and interstage pressures and permeate flow depend upon feedwater temperature and drive pressures "Normalizing" the data is an important technique. Only by "normalizing the data" can operators obtain reliable and accurate data.

Decisions about when to conduct CIP (Clean in Place) cleaning or membrane replacement should be made with accurate data. This is especially true for systems that have variable drives that modulate feedwater pump pressure or for sytems that use feedwater with variable temperature. Units fed by surface water especially are subject to seasonal variations in feedwater temperature. An article discussing RO data normalization is found at our KWT website. Click here.



Waste Water System with multiple DAF applications

Click here **for example Coupon Report**

RO System Operation improved with Normalized Data

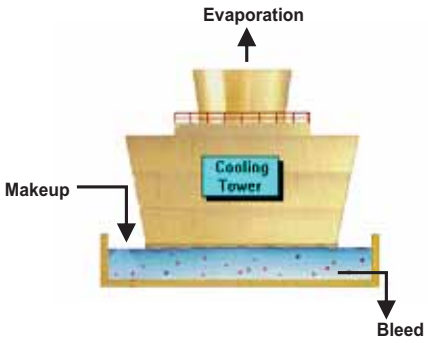
Water Treatment Mathematics –

Cooling Tower Evaporation

Knowing the evaporation rate (ER) from a cooling tower is an important operating and design parameter. It is an indication of the heat load on the cooling tower and will affect parameters such as system blowdown, cycles of concentration, chemical treatment levels and other operating parameters. Some useful equations and estimates for calculating ER are found in this document below.

Water Treatment Math
Cooling Tower Evaporation

System	Key Equations/Notes
Cooling Tower Basics	Bleed = $\frac{\text{Evaporation}}{\text{C0C -1}}$
	Makeup= Evaporation + Bleed + Drift
	COC = Cycles of Concentration COC =Cooling Water TDS/ Makeup Water TDS
Evaporation Guidelines	For Evaporative Cooling Towers Evaporation = Recirculation X $\frac{\text{Delta T}}{10}$ X .01X EF
	For Refrigeration using Evaporative Cooling Towers Evaporation = 3.0 GPM / 100 Tons Refrig.
	Typical Drift Values For Natural Draft Towers = .3 - 1.0 % X RR For Mechanical Draft Towers=.01 - .3% X RR
Est. Evaporation Factors	General Evaporation Factor EF = 1.0 (Assumes all cooling by Evaporation) EF = .9 (Allows some sensible heat transfer)
	Evaporation Factor Based on Humidity EF = .8 (Areas of High Humitity) EF = 1.2 (Areas of Low Humidity)
	Evaporation Factor Based on Seasons (Varies with Climate) EF = .65 (Winter Time) EF = .85 (Summer Time)



Cooling Tower

Dissolved Air Flotation with Regenerative Turbine Pump