FlexPro®

One of the Most Substantial Cooling Water Research Discoveries in Decades

ChemTreat's commitment to research and development is focused on delivering solutions that provide a significant advantage for our customers.

The **drive for innovation** is greater than ever, as our customers look to navigate constantly-changing regulations and restrictions to better protect our environment and conserve water. The most common customer request is to **remove phosphate** from cooling water programs without sacrificing performance. Since the elimination of chromate, phosphate-based corrosion inhibitors have dominated the industry, but they have not delivered the same level of results. With our R&D team firmly committed to developing an alternative solution for our customers,

ChemTreat solved this underperformance problem.

Millions of pounds of FlexPro® have been utilized in the industry, confirming the program results exceed those of previous phosphate-based programs.

Targeted Improvement	ChemTreat Advantage	Annual Economic Impact
Eliminate PO_4 in discharge with improved corrosion protection	WATER	Customer able to meet permit requirements and eliminate algae blooms
Reduce bacteria fouling and mineral deposition in cooling water system	ENERGY	Cleaner system means improved heat transfer efficiency and less biocide demand
Decrease amount of sludge generation in cooling water system	WASTE	Less bacteria fouling reduces cleaning and disposal costs
Improve algae control to lower air restrictions on cooling tower	AIR	Cooling tower efficiency improvements while reducing drift/opacity concerns
Improve corrosion rates to provide outage extensions and reduce heat exchanger replacement	PRODUCTION	Lower iron and TSS discharge concentrations

ChemTreat cannot guarantee results.

How FlexPro® Works as a Metal Passivator

- With FlexPro®, water chemistry changes have less impact because the product acts directly on the metal surface.
- FlexPro® inhibitor bonds chemically to metal surfaces, forming a passive layer.
- Once surface is passivated, only a maintenance amount is required to maintain the passive film.
- The program works similarly to stainless steel, which has materials like chrome and molybdenum added to form passive layers as the steel is oxidized. Instead of adding inhibitor to the internal metal, we add FlexPro® externally through the bulk water.

FlexPro® Offers Several Key Benefits

- Forms a persistent film, treating the metal surface, not the bulk water.
- Offers unprecedented protection during system upsets and excursions with a broad control band and tenacious film.
- Reduces algae growth potential, providing cleaner systems with reduced biocide consumption.
- Performs well in both zero-hardness and high-hardness waters.
- Effective for steel, copper, and aluminum metallurgies.
- Impacted less by makeup water iron and/or aluminum carryover.
- Lower aquatic effects and a more favorable EH&S profile than current phosphorus-based programs.

proper protection

without adding nutrients for bacteria/algae growth

Laboratory Corrosion Study Results 30-Day Exposure @ 50°C (122°F)

Untreated: 60 mpy

FlexPro© Program: < 1 mpy

Analyte	Value
pH	7.33
Conductivity, µmho	197
"M"-Alk, as $CaCO_3$, mg/L	30
Ca, as $CaCO_3$, mg/L	28
Mg, as $CaCO_3$, mg/L	10
Iron, as Fe, mg/L	<0.05
Copper, as Cu, mg/L	<0.05
Zinc, as Zn, mg/L	<0.05
Sodium, as Na, mg/L	45
Potassium, as K, mg/L	3.9
Chloride, as Cl, mg/L	38
Sulfate, as SO_4, mg/L	15
Nitrate, as NO_3, mg/L	<0.10
Silica, as SiO_2, mg/L	5
LSI	-0.16
Larson Skold index	1.62

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