



Solenis Treatment Program Significantly Reduces Corrosion Rates in Manufacturing Plant's Cooling System

PerforMax Millennium™ Advanced Cooling Water Treatments and Drew™ 2105 Cooling Water Treatment

Background

By applying the new PerforMax Millennium cooling water treatment program, a Southeastern U.S. manufacturing plant experienced vastly improved results in corrosion inhibition. Additionally, the fouling factor of the water has been maintained at a very manageable rate.

Previous Program

Lean cooling tower makeup at this facility is concentrated to approximately 5 cycles of concentration. The recirculating cooling tower water can be characterized as having a low Langelier Saturation Index (0.4 LSI at 130° F/54° C) with relatively low hardness and alkalinity. The table below summarizes typical system parameters.

System Water Chemistry

Calcium Hardness:	65 ppm
Total Alkalinity:	90 ppm
Conductivity:	600 mmhos
pH:	8.0

The previous cooling water treatment program was based on molybdate, organic and inorganic phosphates, and polymer dispersant technology, dosed at 125 mg/L. Additional water treatment included an algacide and a non-oxidizing microbiocide. Fouling had traditionally been kept in check, but the carbon steel corrosion rates ranged from 1.0 to 6.5 mils per year (mpy).

Solenis Solution

PerforMax Millennium advanced cooling water treatments were designed to meet the criteria for reducing corrosion rates and improving fouling to stressed systems in alkaline waters. PerforMax Millennium products contain complex, synergistic blends of several polymer dispersants plus organic and inorganic phosphates.

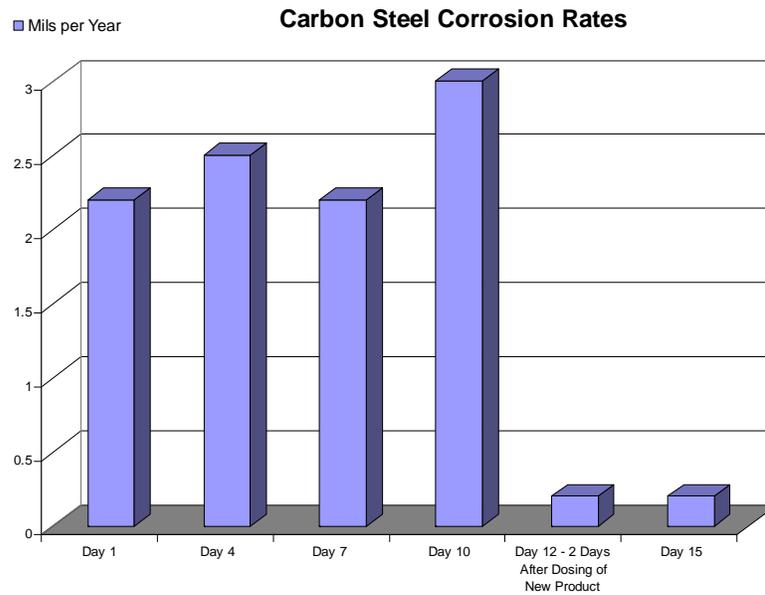
This patented* technology from Solenis was developed to provide outstanding corrosion control results, optimum protection from scale and fouling control, and an improved environmental profile through the use of new components not used before in industrial water treatment.

Corrosion protection with the PerforMax Millennium series comes from a blend of both anodic- and cathodic-based inhibitors. Fouling and scale control is delivered through a novel combination of high performance polymeric dispersants. With the introduction of Drew 2105 cooling water treatment, dosed at 90 mg/L, superior corrosion inhibition results were immediately realized. Carbon steel corrosion rates dropped drastically from approximately 3 mpy to less than 0.3 mpy after the incorporation of the new technology. Fouling of the cooling system was not affected, as the fouling factor was maintained at less than Rf in $\frac{\text{hr-ft}^2-\text{° F.}}{\text{BTU}}$.

BTU

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*U.S. Patent #6,464,90



Corrosion rates expressed in mpy based on continuous corrosion monitor testing before and after the dosing of Drew 2105 cooling water treatment.

Conclusions

Minimizing the effects of corrosion at this Southeastern U.S. manufacturing plant was the impetus to investigate an improved cooling water treatment program. The carbon steel corrosion rates were considered to be unacceptable by the plant's utility and operations personnel. PerforMax™ Millennium advanced cooling water treatment allowed the plant to significantly improve corrosion inhibition and reduce fouling. The addition of Drew™ 2105 cooling water treatment provided maximum performance never before experienced at this facility.