Case History
#10-084

# FlexPro® Plus Non-Phosphorus, Non-Zinc Corrosion Inhibitor: A Great Option for a Unique Steel Industry Non-Contact Cooling System

*"FlexPro® Plus solved what could have been a really big problem when we did not have any good options from a design or operations standpoint."*

*– Customer*

## Background

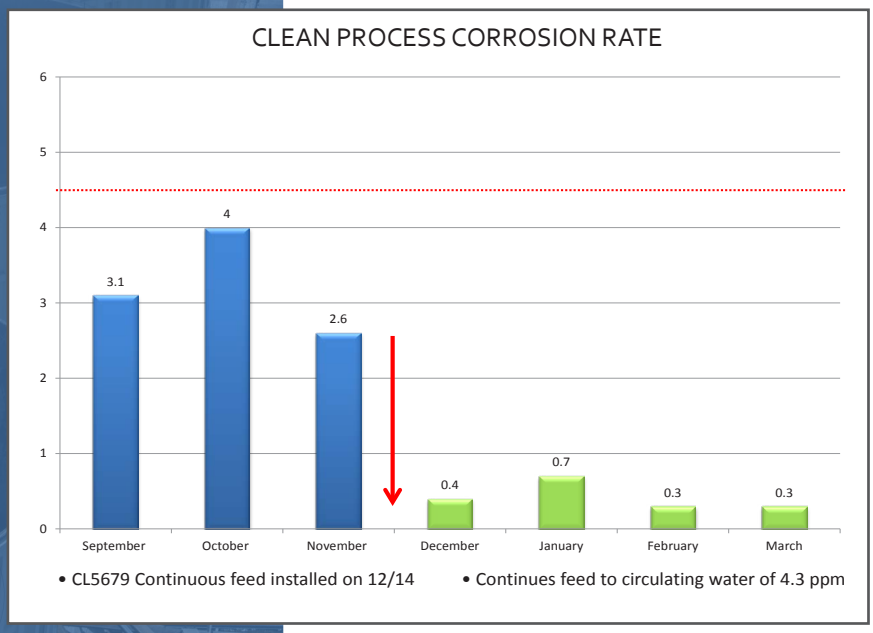
A non-contact cooling system in a direct reduced iron plant operates at 130–140°F and makes up with mostly reverse osmosis (RO) water. The plant design did not account for the operating conditions and a typical phosphate-based scale and corrosion control program was specified. The system metallurgy is mild steel with stainless steel heat exchangers. Plant operations require control at 400 µmhos. The system Langelier Saturation Index (LSI) is negative, indicating highly corrosive water. The standard phosphate-based chemistry was incapable of producing an acceptable result, and the plant agreed to evaluate the FlexPro® program after the second set of corrosion coupons was tested.

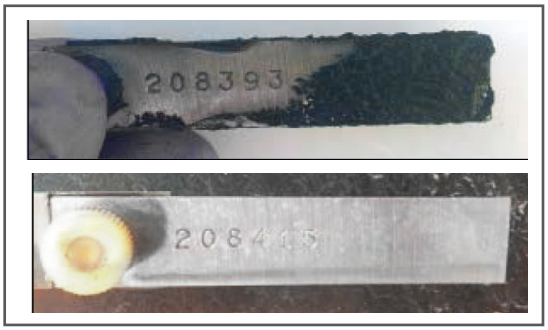
## Solution

A plan was developed to use ChemTreat's FlexPro® Plus to passivate the system. This was followed by an optimization process to determine an ongoing maintenance dose to maintain passivation and achieve acceptable corrosion rates.

## Results

**With the introduction of FlexPro® Plus, the average corrosion rate decreased by 87 percent. In the time FlexPro® Plus has been in use, the average corrosion rate has been maintained at less than 0.5 mpy. The operating conditions remain the same.**




30 Days In The System: Before and After FlexPro® Plus

CH10-084 EN-CH
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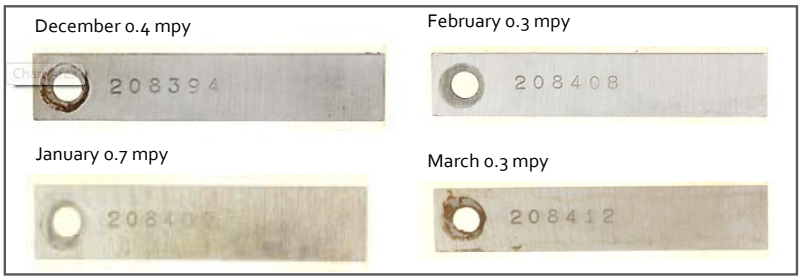
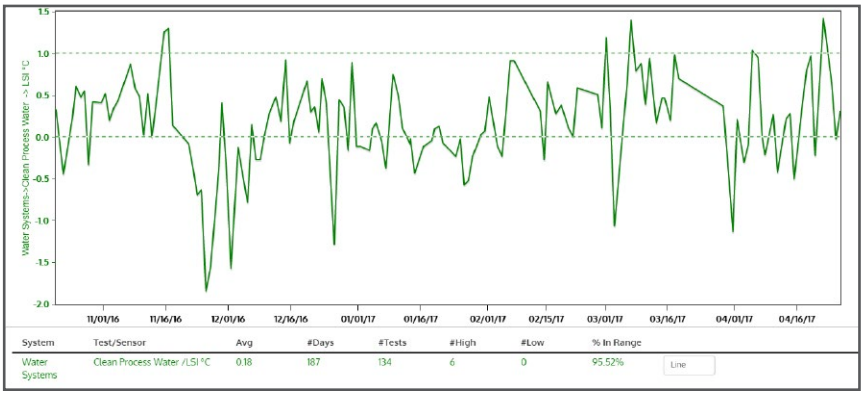
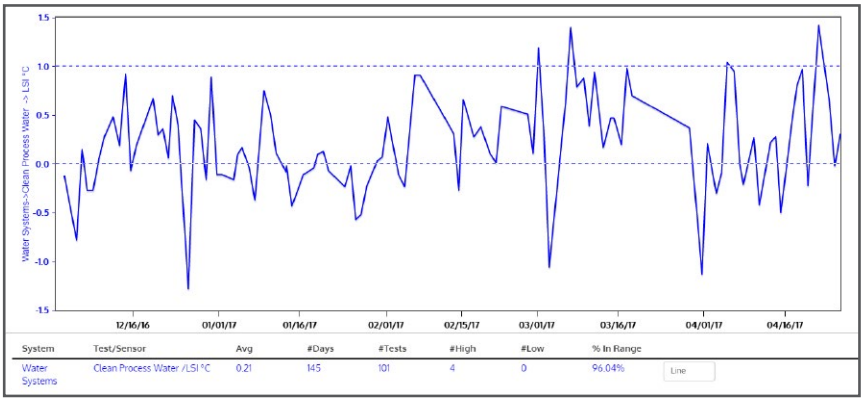
## Coupons Pulled with FlexPro® Plus



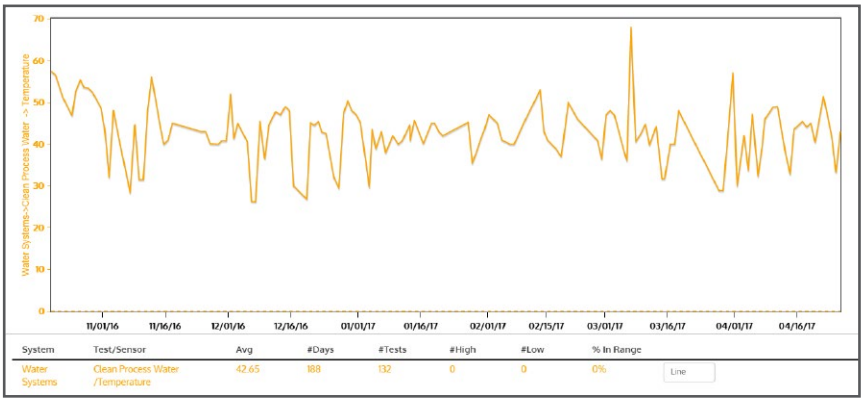

## Clean LSI All Time




## Clean LSI Since December




## Clean Process Temperature

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Results are examples only. They are not guaranteed.
Actual results may vary