

“A New Approach to Migrant Iron Control in Industrial and Power Generation Steam Systems”

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Abstract:

Area of Interest:

TCO (Total Cost of Operation) Reduction and Asset reliability.

Objectives:

Describe a relatively new technology treatment class to the United States already well established in Europe which utilizes Film Forming Amines (FFA) to improve boiler system migrant iron control compared with established program approaches.

Abstract Details:

A new class of FFA programs are becoming more widespread in the United States power and manufacturing plants to protect the sites steam generation assets. Classic filming amines were typically Octadecylamine (**ODA**) were used for years typically fed to steam headers to protect the areas of steam condensation from carbonic acid attack. Benefit was that it was a hydrophobic barrier to protect metal from attack. There were many difficulties in applying this class of amines in both power and industrial plants. Weaknesses in ODA technology would include:

1. The treatment had to be applied to steam when condensed above pH 7.5 and if the steam pH fell below that ranges, the film would strip off often resulting in fouling of traps and turbines
2. Hydrocarbon contamination would strip the amine resulting in the above cited fouling.
3. The treatment could not be utilized in higher pressure steam extraction and condensing turbines which carried purity requirements the technology could not meet.
4. Little benefit was provided for preboiler equipment protection (heaters and deaerators)

The modern filming diamines and diamides off the hydrophobic barrier methodology but without the undesirable traits of the ODA class programs. The new class of FFA's offer:

- Suitability for use in steam systems operating up to 2500 psig
 - Minimal contribution exchangeable cations for high pressure systems
- Reduced migrant iron generation and transport throughout steam systems preboiler, drum, and condensate equipment.
- Proven passivation durability for cycling equipment being layed up.
- A field test (Patent Pending) for FFA developed in our labs.
- Potential for improved heat transfer.



The FFA programs offer improved asset protection from corrosion and the generation and transport of migrant oxides especially iron.

The presentation will explore this technology and share data generated from chemical manufacturing and power generation systems which have improved performance and results.