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TECHNICAL PUBLICATION

INFORMATION & STRATEGY FOR THE FACILITY MANAGER

Cleaning Iron Fouled Water Loops with IronSolv®Plus

An Off-line Cleaning Program

Corrosion in water loops leads to the formation of soluble and insoluble iron oxides. Soluble iron oxides can precipitate and deposit on heat transfer surfaces, reducing efficiency and increasing energy cost. Insoluble iron oxides can plug pipes, impede flow rates, and cause other complications such as erosion, resulting in the premature failure.

When a loop is fouled with iron oxides, it has to be cleaned to mitigate the above consequences. Depending on the severity of the fouling, the cleaning methods can range from simple filtration to the application of IronSolv®Plus. This product is designed to remove iron oxide deposits by chelation and de-agglomeration. It is designed for off-line application. The system must be taken off service and not in operation during cleaning. After cleaning, the loop must be drained and flushed. If cleaning cannot be done off-line, consult our company for a different cleaning program. The IronSolv®Plus is inhibited to protect the base metal from corrosion during cleaning. Regardless, be prepared to uncover leaks. Removing deposits that were sealing off holes in corroded areas will result in leaks. However, consider that it is better to uncover these holes under a controlled situation than to discover them when the operation can least afford a shutdown.

Below are some general guidelines on how to apply IronSolv®Plus.

Pre-Installation

Install a pot feeder. This simplifies the dosing of any chemical treatment during and post cleaning. The IronSolv®Plus can be fed via a pot feeder, or pumped directly into the loop.

Install a side stream filter for the removal of any residual solids post cleaning. For closed loops, use cartridge type filters. For open loops, use backwashable filters, such as, sand filters.

Pre-Flushing

For water loops containing high levels of suspended solids, microbes, or acidity, drain and refill the loop to remove as much solids as possible before adding the IronSolv®Plus. Excess solids will consume some of the chemicals, leaving less of it for the deposits. Further, clean water will have more capacity than dirty water to absorb any additional solids that will be dispersed by the chemicals. Refill the loop via a water meter to know the water volume, for determining chemical dosages.

If the loop is mildly fouled, there is no need to drain the loop.

Applying the IronSolv®Plus

- The amount of IronSolv®Plus needed is proportionate to the volume of water in the system. If possible, reduce the water volume to reduce the amount of this chemical needed.
- Add IronSolv®Plus at about 5% of the water volume, more or less depending on the severity of the deposits.
- Circulate the IronSolv®Plus for 2-4 weeks. If needed, cleaning time can be extended by another 2 weeks.
- Keep pH between 7 - 8. If needed, adjust pH with Hydrochloric acid, Sulfuric, or Citric Acid.
- If there are multiple equipment, circulate the water through all the equipment to ensure that they are all treated.
- If there are multiple recirculating pumps, run the pumps alternately to ensure that all pump legs are treated.
- It is imperative that there is water flow throughout all loops including any secondary loops to ensure proper distribution of treatment chemicals to all areas.
- Flush all dead legs during the cleaning process for the same distribution reason.
- Find a corroded section of a pipe that you can remove during the cleaning process to inspect for progress.
- During an off-line cleaning, there is no need to run the filter.
- Discontinue the cleaning process when the desired cleanliness level is achieved.
- Drain the loop completely. Refill and flush the loop with fresh water. Continue flushing until the flush water is clear.

Other Basic Guidelines

- Always add chemicals to water, not the other way around.
- If you are adding multiple chemicals, add one chemical at a time; wait until the preceding chemical has dissipated before adding the next chemical.
- Add chemicals slowly to minimize any violent reaction; this also allows the chemicals to dissipate between additions.
- Run the circulation while adding any chemicals to minimize slugging the chemicals and to ensure proper dissipation.
- During the cleaning of any deposits, ions will be taken into the cleaning fluid. These ions may be regulated for discharge by the local EPA authorities. It is the responsibility of the user to comply with these regulations.

Post-Cleaning

Proper chemical treatment must be employed immediately after cleaning to prevent flash corrosion. Start filtration and implement proper bleed-off as needed.