



Graver Technologies

Technical Bulletin-Air Cooled Condensers & Graver Technologies LLC - AFA2005 Success

Overview:

Power plants with Air Cooled Condensers (ACC) can suffer from corrosion product transport issues which can be detrimental to plant performance and reliability. Due to the very large surface area of an ACC even small corrosion rates can result in significant levels of iron oxides being transported into the condensate system. If these corrosion products are not removed from the condensate they can be transported into the feed water which may result in deposition within boiler water walls and super heaters. This can lead to boiler tube failures due to overheating of the tubes and an increased requirement to chemically clean the boiler if not proactively addressed.

This Graver Technical bulletin is focused on an air cooled supercritical 750 MW coal fired power plant that has previously reported severe ACC corrosion and significant corrosion product transport within the water steam cycle. Several strategies were developed at the plant to both reduce corrosion within the ACC and also to minimize the transport of corrosion products from the condensate into the feed water and boiler. The power plant utilized 2 x 50% duty condensate filters (5um nominal), followed by 2 x 50% duty mixed bed condensate polishers to remove particulate and ionic impurities from the condensate. While this system provided good condensate quality with respect to ionic contaminants, the removal of particulate iron did not meet the plants requirements (polished condensate <2ug/L Fe).

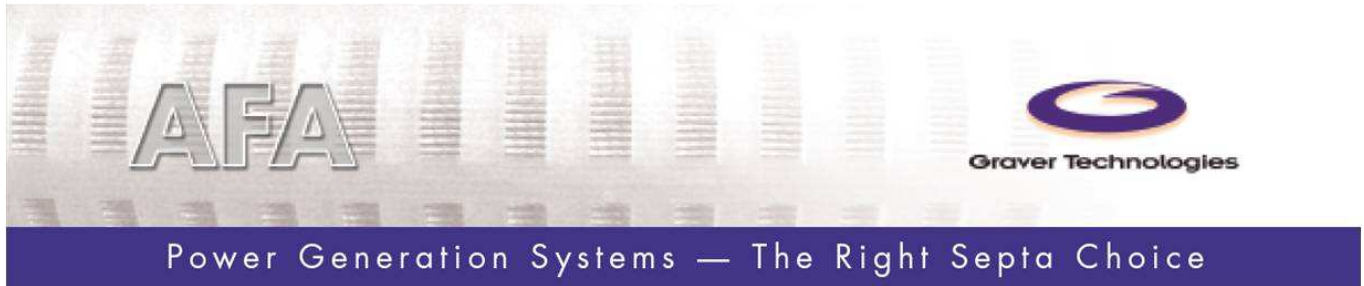
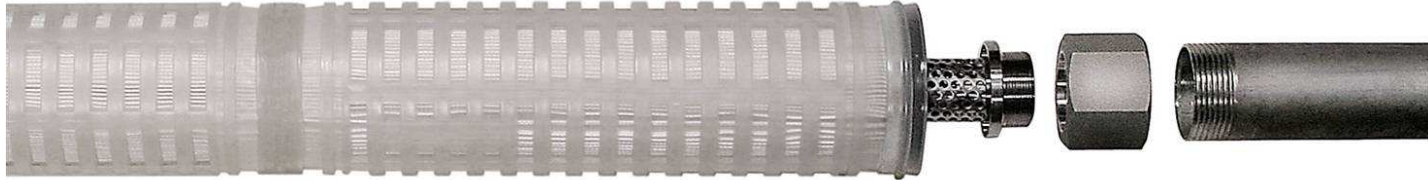
Solutions:

Cycle chemistry changes were implemented at the plant to reduce corrosion within the ACC, however it was decided that corrosion product removal from the condensate also needed to be improved to meet plant requirements for feed water quality, minimizing the risk of deposits forming in the boiler. Testing at the power plant indicated that the condensate filter system was not performing as desired and that replacement of the existing filter elements with a high quality back-washable filter element was likely to provide the increase in filtration performance required by the power plant.

Enter Graver Technologies' AFA2005:

Graver Technologies' AFA2005 (5um absolute) all polypropylene pleated media filter elements were selected to replace the existing wound polypropylene elements. The new filter elements resulted in an immediate increase in filter efficacy with less than 1ug/L of iron measured in filtered condensate. Backwash frequency of the new elements is significantly lower than that of the previous elements, reducing filter down time and decreasing backwash water consumption. The AFA2005 are preventing significant quantities of corrosion products from being transported into the boiler, while also reducing the amount of iron fouling on the polisher resins. The reduction in resin fouling has resulted in time and water savings while cleaning the resins. Cleaning time and cleaning water consumption have been reduced by around 90%, this is expected to extend condensate polisher resin life which can be damaged by excessive physical and chemical cleaning.

To find out how Graver Technologies can solve your Condensate Polishing application, contact your area manager or Brian Raab at 302-731-3512.



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