ChemTreat
Case History

Danaher Water Quality Group Provides Integrated Treatment Solution for Aerospace Customer

Background

A Northeastern airplane parts manufacturer needed help meeting their state's phosphate discharge limits. They are currently limited to discharging 900 pounds of phosphate per year, which equates to approximately three pounds a day. ChemTreat had been treating the manufacturer's boilers and feedwater for years, so the environmental manager approached us for assistance.

The ChemTreat sales and R&D teams began researching the contributing factors to the phosphate discharge. They found that the plant was treating their wastewater with aluminum chloride and polymer, which removed most, but not all, of their phosphate as orthophosphate. After testing each bath and rinse water system for eight months, ChemTreat pinpointed the problem: phosphonate use in the customer's plating process. Phosphonates do not react with traditional treatments and must be converted to orthophosphate.

Solution

Using an instrument created by Hach, a ChemTreat sister company, the R&D team found that the phosphonate could be reverted to orthophosphate with an oxidant, persulfate, and ultraviolet (UV) light. Based on these findings, the team built a pilot system to facilitate phosphonate conversion to orthophosphate, but switched out persulfate for hydrogen peroxide, which is supplied by ChemTreat-affiliated USP Technologies. Sister company Trojan Technologies provided technical support on the UV light application.

Results

The trial was successful, and ChemTreat is now implementing it on a large scale at the customer site to convert as much phosphonate as they can before discharging to the waste stream.

In addition to the phosphonate conversion system, ChemTreat also began treating the customer's wastewater with our recently-developed technology, P8200L. This product uses a rare earth mineral to capture the available orthophosphate in the waste stream, replacing traditional coagulants such as ferric- and aluminum-based products. P8200L precipitates in the clarifier as a solid waste, resulting in non-detectable orthophosphate residuals in the final effluent.

P8200L has greatly reduced the customer's discharge issues with turbidity, measured as total suspended solids, and aluminum from the former aluminum chloride treatment.

By joining forces with other companies within the Danaher Water Quality Group (Hach, Trojan Technologies, and USP Technologies), ChemTreat was able to provide a custom wastewater treatment solution to help this airplane parts manufacturer meet their state phosphate discharge requirements.

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