



Case Study



Secure Tec ES Minimizes Waste and Energy Requirements in Systems

OPPORTUNITY:

The customer is a diversified manufacturer of home and automotive parts and products. In their washer system, three stages of the five-stage system were heated to 130-140°F, with a stage one pH of 10.5-11 and a stage three pH of 3.8-4.5. Carryover from one stage into subsequent stages required contaminated liquids to be overflowed into the wastewater system. Feed water from the city was continuously added to replenish the water that had overflowed and evaporated from the high temperatures. Average discharge for the system was approximately 6,000 gallons per shift of operation. The alkali-based system also generated 495 gallons (nine drums) of hazardous sludge in the first ten months of the year and the wastewater treatment system simultaneously generated approximately 35 cubic yards of filter cake sludge.

The customer's original focus was to lessen the cost of the wastewater treatment system. This task was to be accomplished by changing the assumptions of preparing parts for paint so there would be a reduced load on the treatment system. As an ancillary goal when updating this system, the customer hoped to decrease their energy consumption. As such, they began looking for a solution that could operate at a lower temperature to minimize the heat required to achieve a quality result.

THE DUBOIS SOLUTION:

The DuBois technical team partnered with the manufacturer to change the chemistry in their washer system from a cleaner and iron phosphatizer in a five-stage system to a Secure Tec ES. This product is a low temperature, multi-metal cleaner/phosphatizer that allowed for the idling of burners in one stage and the reduction of temperatures in the first stage to 115°F and the second to 80°F. Secure Tec ES is an ideal product for energy-saving operations. It cleans and coats in one step, producing a corrosion-resistant conversion coating. Having tested a variety of parts in the Sharonville Application Engineering labs, the customer was confident in the product's efficacy on their steel, aluminum, iron, zinc, and galvanized parts.

KEY BENEFITS:

Moving to Secure Tec ES provided the customer the flexibility to adapt their system for optimization and increased line speed without the need for large capital expenditures. Since implementation, the customer **increased their maximum line speed from 20 feet per minute to 29**, with excellent substrate preparation. Looking to the future, with modifications to their dry-off oven and powder paint formulation, they have calculated that they could increase to more than 40 feet per minute as their operations expand.

They have reported that they have also seen a significant decrease of precipitated waste stream and water needed to be reintroduced. Because of the decreased operating temperature, there is less water leaving the system via evaporation. Additionally, all stages are now back flowed, so any chemical carryout is recycled into the stage where it originated, negating the need for overflow as a contaminant control mechanism for maintaining the cleanliness of subsequent stages.

The result is a much less expensive approach to the preparation of parts. The sludge from the wastewater treatment system has been significantly decreased, resulting in much smaller waste and less lengthy cleaning operations. The customer has estimated a **\$100,000 annual savings** with the combined decrease in chemical, labor, and waste service expenses and a reduction in feed water and energy requirements. The customer has emphasized that these improvements would not have been possible without their DuBois technical team and look forward to partnering with them on future developments.



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