



SEL Saves Major Textile Producer Over \$25,000 Per Year

BACKGROUND

A textile – dyeing and finishing – plant in the Mid-Atlantic region of the U.S. was facing an uphill battle with color issues and associated exponential costs at their wastewater treatment plant. This plant is primarily involved with the knitting and dyeing of seat belts with the ye component in the wastewater consisting of roughly an 85% acid and 15% dispersed dye.

A series of equalization tanks is used for pH adjustment if necessary. The main treatment consisted of a series of reaction tanks where a coagulant and flocculant are added before entering a DAF (Dissolved Air Flootation). The current chemistry involved the use of an epi-amine/inorganic blend as the main coagulant. This product was injected into the first reaction tank where air diffusers were used to mix. Next an emulsion based anionic flocculant (activated via excel feeder) was injected above the water line in the second reaction tank. This water would then mix with the recycle water containing dissolved air and flow into the DAF. Supernatant from the DAF went to a holding tank where it is discharged to the local POTW. The previous vendor's solutions focused exclusively on the chemical application and not the overall treatment process. The customer was forced to find an alternative answer as the cost of the chemical treatment program continued to rise along with the mounting pressure to maintain environmental compliance. They turned to SEL for a solution.





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SOLUTION

Our objectives were to find a less toxic and lower demand coagulant, remove enough color to keep under the 300 unit limit and enhance the treatment system for optimal operation. A similar chemistry to the epi-amine was discovered during the jar test screening. Solids generation from the chemical was minimal due to its organic nature. This chemical, **SElfloc 1638**, took roughly 50% less than the current chemical to achieve the same amount of color reduction. In addition, the LC50 for the SElfloc 1638 was **six times less toxic** than the epi-amine/inorganic blended product.

Next we looked at enhancing the treatment process. The coagulant injection point was moved further back in the system to allow for more mixing time, the air diffusers were replaced with mixers to reduce the high cost of using plant air, the anionic flocculant injection point was moved to the line where the coagulated water and recycle water meet for a more stable floc particle formation/improved collision rate, the recycle water flow rate was paced with the incoming flow to the DAF, chemicals were paced off of incoming flow and sludge rake speeds were adjusted to maintain a dryer cake.





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RESULTS

The color in the discharge water has averaged 200 units and there are contingency plans in place when the dye house dumps some concentrated dye to the treatment system. The lower usage of coagulant, process treatment changes and compliance has resulted in an estimated \$25,000 per year savings to this textile plant. Contact SEL for your custom solution at 919-751-1001 or CustomerService@selaboratories.com.



Drier Cake

**Effluent Color <200
PtCo with No Floc
Carryover**

