

NYSP2I Performs Water Reuse Assessment for Flint Creek Resources

Flint Creek Resources (Flint Creek) is a cerium oxide or “ceria” resource recovery company located in Gorham, NY. As a sustainability-minded company, Flint Creek reconstitutes waste ceria slurry and distributes the product back to optics companies for precision lens grinding operations.

Challenge

As part of a proprietary ceria reclamation process used by Flint Creek, wastewater is generated and then chemically treated prior to sewer discharge. However, due to restrictions imposed by the local sewer authority, Flint Creek is not able to discharge more than 200 gallons per day. As a result, Flint Creek is unable to expand operations despite opportunities for increased revenue. Flint Creek contacted the New York State Pollution Prevention Institute (NYSP2I) for assistance in identifying sustainable solutions to reuse water and hence reduce the amounts of water used and wastewater generated.

Solution

An on-site assessment was performed to better understand water and chemical use at each key point of the operation. Based on this assessment, two different water reuse options were identified that include two different types of membrane filtration. Option 1 involved the utilization of ultrafiltration (UF) membranes to filter water prior to chemical wastewater treatment, which enables reuse of water and process chemical. Option 2 focused on the use of nanofiltration (NF) on treated wastewater, which would provide clean, reusable water but with no process chemical recovery opportunity. Comprehensive on-site filtration testing was performed to determine the optimum process conditions for each option.

Results

NYSP2I was able to determine that Flint Creek could reuse up to 90% of their water (180 gal/day) for both Option 1 and Option 2 (either UF or NF), and only 20 gal/day of water would be purchased and discharged to sewer. Option 1 using UF would incur fewer environmental impacts since process water and chemical can be recovered before any wastewater treatment, so reductions in use of process chemical and treatment chemicals would be realized. Option 2, which filters post-treated water, would still require full utilization of process and treatment chemicals.

In any case, opportunities to reuse water were identified that would allow Flint Creek to expand operations at their current location. Direct savings related to reduced chemical and water costs were estimated to be ~\$4,000 for Option 1. The main driving force to implement would emanate from increased revenue as a result of expanded production, but the potential economic gain has not yet been quantified. The costs to implement were estimated to be approximately \$20,000. Due to Flint Creek’s focus with being sustainability-driven, the company is considering implementation for both economic and environmental reasons.

CHALLENGE

- Flint Creek Resources wanted to identify ways to cost-effectively reduce the amount of wastewater being generated by Flint Creek

SOLUTION

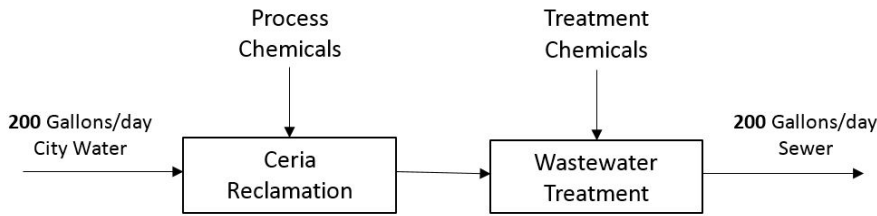
- NYSP2I conducted a site assessment to better understand water and chemical use at each key point of the operation

RESULTS

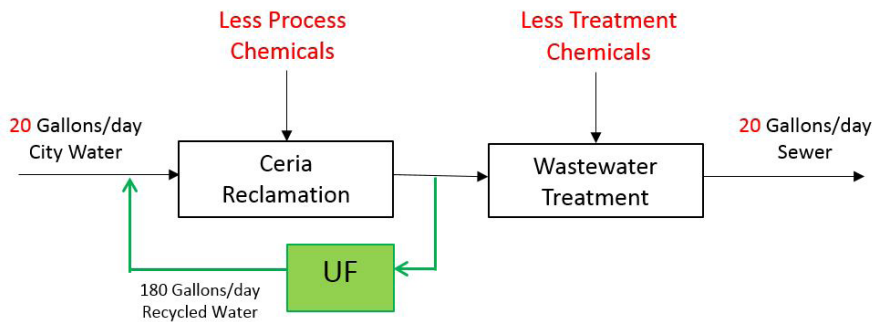
- NYSP2I was able to determine that Flint Creek could reuse up to 90% of their water (180 gal/day)
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TESTIMONIAL

Current Operation



NYSP2I Proposed Option



"NYSP2I was very thorough in evaluating our process and identifying the key factors to consider when evaluating various paths to an improved solution. The staff was very accessible and flexible with scheduling. At the conclusion of the project two viable alternatives were presented which will give Flint Creek Resources options based on the business environment when the modifications are eventually implemented."

- Mark Mayton, President
Flint Creek Resources

NYSP2I PARTNERS



New York Manufacturing Extension Partnership

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