



CASE STUDY: WATER TREATMENT

Water Treatment Optimizations Featuring Yardney Multi-Media Filter Deliver Big Benefits to Automotive Glass Manufacturing Plant

YARDNEY MULTI-MEDIA

FILTERS are designed to remove organic and inorganic suspended solids down to 5 microns for enhanced water quality filtration. The multi-media filters can be used as a stand-alone system, a pretreatment option, or in conjunction with other filtration technologies. The multi-media filtration system utilizes a vertical side shell depth of 60" with accompanied reverse stacked medias for progressive filtration through the filtration system. All Yardney industrial media filters utilize a simple backwash system for ease of operation and consistent water quality.

CHALLENGES

In the Midwest, a glass fabrication plant specializes in the production of high quality safety glass assemblies for automotive manufacturers in the U.S. and abroad. Among the plant's manufacturing operations is a grinding and drilling process that is used to refine the edges of all automotive glass products to create a smooth finish. The grinding process is lubricated with a water system. Previously, the resulting waste stream was conveyed to settling basins to remove suspended glass fines ranging from 5 to 50 microns in diameter.

Owing to the amount of solids loading, settled glass fines had to be jackhammered and manually extracted from the settling basins every quarter. The glass fines waste was then transported to a local landfill for disposal. The extraction process required the service of mechanical contractors and because of the difficult and demanding conditions of the work, sourcing this job was challenging.

Despite cleaning the basins on a quarterly basis, the plant was challenged with the total suspended solids (TSS) limits of its wastewater discharge permit. Recognizing the need for a sustainable solution to both meet the permit conditions and ensure future operational efficiency, the plant embarked on a project to revamp its waste management processes.

SOLUTIONS

Tightening the Process Flowsheet

In collaboration with vendors, the plant formulated a phased project to enhance glass fines removal, mitigate solids loading to the settling basins, and shift towards recycling recovered glass fines in lieu of landfilling. The centerpiece of the project was the installation of a multi-media filter from Yardney Water Filtration Systems that provides robust removal of suspended glass fines from the glass grinding lubrication process.

continued > next page



ABOUT YARDNEY WATER FILTRATION SYSTEMS

Founded in 1965, Yardney Water Filtration Systems is a recognized leader in water filtration solutions for agriculture, golf, turf, landscape, industrial, commercial, and municipal markets worldwide. Featuring built-to-last fabrication and Made in USA quality, Yardney filters deliver reliable, long-term performance and extended product lifecycles. Yardney's offerings include filtration systems in either ASME code or non-code construction utilizing technologies such as manual and automatic screen filters, centrifugal sand separators, sand media, multimedia, granular activated carbon (GAC), and specialized media to address contaminants such as iron, manganese, arsenic, and PFAS. The company supports a sales network spanning the United States, Mexico, and Europe, bolstered by strategic dealer alliances that ensure a robust global presence.

To seamlessly integrate the Yardney system into the plant's process flowsheet, a sidestream of contaminated water is redirected from the front end of the settling basins and passed through the multi-media filter at a rate of 250 gallons per minute. The resulting slurry undergoes dewatering through an automatic filter press, recovering water and producing a dry cake discharge suitable for recycling.

Savings and Sustainability

The Yardney multi-media filter achieves a near 90% solids removal rate—enabling the plant to meet the permissible effluent TSS concentrations specified in its wastewater discharge permit. Furthermore, the multi-media filter alleviates loading to the settling basins, reducing the cleaning frequency from every quarter to less than once a year. This resulted in substantial savings, with annual settling basin cleaning and disposal costs plummeting from \$46,000 in 2002 to \$9,000 in 2007 after project implementation.

With a system in place capable of handling greater glass fines loading, the plant was free to expand production, and since 2004, productivity has surged by 38%. The project also led to a 50% reduction in the concentration of glass fines in wastewater discharged to the city wastewater treatment facility and enabled the plant to divert approximately 200 tons of glass fines annually from the landfill to a glass recycler. Recognizing the project's success, the plant was honored with a Green Factory Environmental Achievement Award.



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