

KONSOLIDATOR Ultrafiltration Reduces Operating Costs for Automotive Parts Producer

Overview

GKN Sinter Metals is a global company specializing in powder metal production for various applications. The company operates 30 plants across the world, one of which manufactures automotive transmission parts in Salem, Illinois. This location produces close to 1,500 gallons per day (GPD), about 5.7 cubic meters per day, of oily wastewater from mop water, spent coolants, and turnings run-off. Their wastewater treatment previously consisted of a series of tanks with coalescing oil-water separators, which ultimately fed an evaporator. This process relied heavily on manual operation and attentiveness which ate large amounts of time that could have been spent elsewhere in the plant. The evaporator, which was heated by electrical coils, was energy-inefficient and maintenance was costly. Additionally, frequent hauling of concentrates drove up costs and manual transfer of waste between tanks and the evaporator posed significant safety hazards.

Objective

To tackle this project, GKN turned to Koch Membrane Systems to provide a streamlined alternative to their resource and energy intensive evaporator system. Improvements to reduce time spent operating the wastewater treatment system, increase recovery, reduce labor and operating costs, and optimize energy efficiency were the driving forces behind the KMS solution.

Solution

KMS installed the KONSOLIDATOR ultrafiltration system to treat the metal parts manufacturer's wastewater. This system consists of 48 FEG PLUS tubular membranes, with a total membrane area of 105.6 ft² (9.8 m²), that are designed to treat difficult wastewater without plugging. A wide pH and temperature range make these membranes reliable in high-fouling applications.

The KONSOLIDATOR ultrafiltration system is available in seven standard sizes and is easily scalable, making it an ideal solution for plants that have plans for future expansion. The KONSOLIDATOR ultrafiltration system comes customizable with the valves and instrumentation needed. The system at GKN is the more sophisticated Plus version, but a simpler Economy version is also offered. The batch-down and cleaning process is fully automated, totaling only 1.5 hours in the GKN facility.

“When this system is running, I’m out doing other productive things for the plant”

Jeff Webb, Wastewater Treatment Operations at GKN Sinter Metals



Achievements

Since the overhaul of their wastewater treatment system, GKN has seen tremendous savings. Operators are no longer required to manually tend to the evaporator burners and time-consuming cleaning and repairs are obsolete, leading to a semi-automated process and a \$17,000 annual reduction in servicing and cleaning costs. All permeate (about 4,200 gallons or 15,900 L weekly) is now being reused, bringing down hauling costs by about 20% and the cost of floor cleaning chemicals by 20%. Finally, the decision to switch from an evaporator to membrane filtration has resulted in an estimated total energy savings of over 80% and has eliminated any concern of exhaust and air emissions issues.

Takeaways

The efficiency and performance of a plant's wastewater treatment can significantly impact other parts of the manufacturing process, as proven by the GKN plant in Salem, IL. Operators are now free to tend to other pressing tasks at the facility, knowing that the KONSOLIDATOR ultrafiltration system is running at lower costs and with greater efficiency than the previous evaporator system.



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