

Piston Manufacturer Seeking More Efficient Water Treatment Solution

Karl Schmidt Unisia Marinette, Wisconsin, USA

Challenge

Karl Schmidt Unisia (KUS), a subsidiary of Kolbenschmidt Pierburg AG, is one of the leading piston manufacturers in North America. They provide pistons for passenger car/truck engines and marine, industrial and recreational applications.

The cosmetic appearance of a piston is an indicator of quality for KUS Piston's customers. In order to deliver a shiny, unblemished piston, clean water in the "quenching" bath is critical. Dirty water can leave a discolored ring or stain on the piston that is impossible to remove. Maintaining clean water is a challenge because oil, bacteria, and other contaminants collect in the water over time.

"The constant cleaning of each quench system was causing an increase in production downtime and producing more waste," according to Jeff Welty, the Foundry Maintenance Supervisor at the 1,000-employee Marinette plant. "For a single quenching system, we would need to truck away 1,200 gallons (5 m³) of waste water each time it was cleaned. This waste required special disposal that negatively affected the overall costs and it had an undesirable environmental impact."

Solution

Jeff Welty and his colleague, Al Strohl, the Facilities Manager of the Marinette Plant, turned to GE Water & Process Technologies. In October 2003, they initiated a trial using the WasteWizard industrial fluid recycling system from GE. This membrane-based system is designed for the continuous recycling of aqueous cleaner baths, mass finishing compounds, mop water and other water-based industrial fluids. This is the first application using the WasteWizard technology to treat a closed loop quench water system.



Strohl describes the WasteWizard as "functioning like a dialysis machine." The compact, point-of-use device draws water out of the quenching system and removes oil and bacteria without removing the chemistries needed to protect the pistons and the overall system. The filtered "permeate" water is returned back into the quenching system. The remaining waste is a highly concentrated liquid that deposits directly into a 55-gallon drum for disposal.

Results

"We are pleased with the results," says Welty. We initially leased the WasteWizard for the trial, but once it proved itself, we bought it. We are now in the process of purchasing an additional unit."

Welty and Strohl have calculated that the WasteWizard produces an annual savings of US\$13,645 for each quenching system, when labor, chemical and disposal costs are considered. This calculates to an ROI of approximately nine months. With the new system, no production downtime has been required for draining and cleaning. Also, the cleaner water reduces maintenance requirements on heat exchangers and pumps.

"KUS Piston is an ISO 14001 company committed to being environmentally responsible", Strohl emphasizes. "We are pleased with how this recycling project has dramatically reduced chemical usage and waste-disposal. This project makes us a more attractive vendor, because the major engine and vehicle manufacturers, who are our customers, want to purchase from environmentally responsible companies."

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