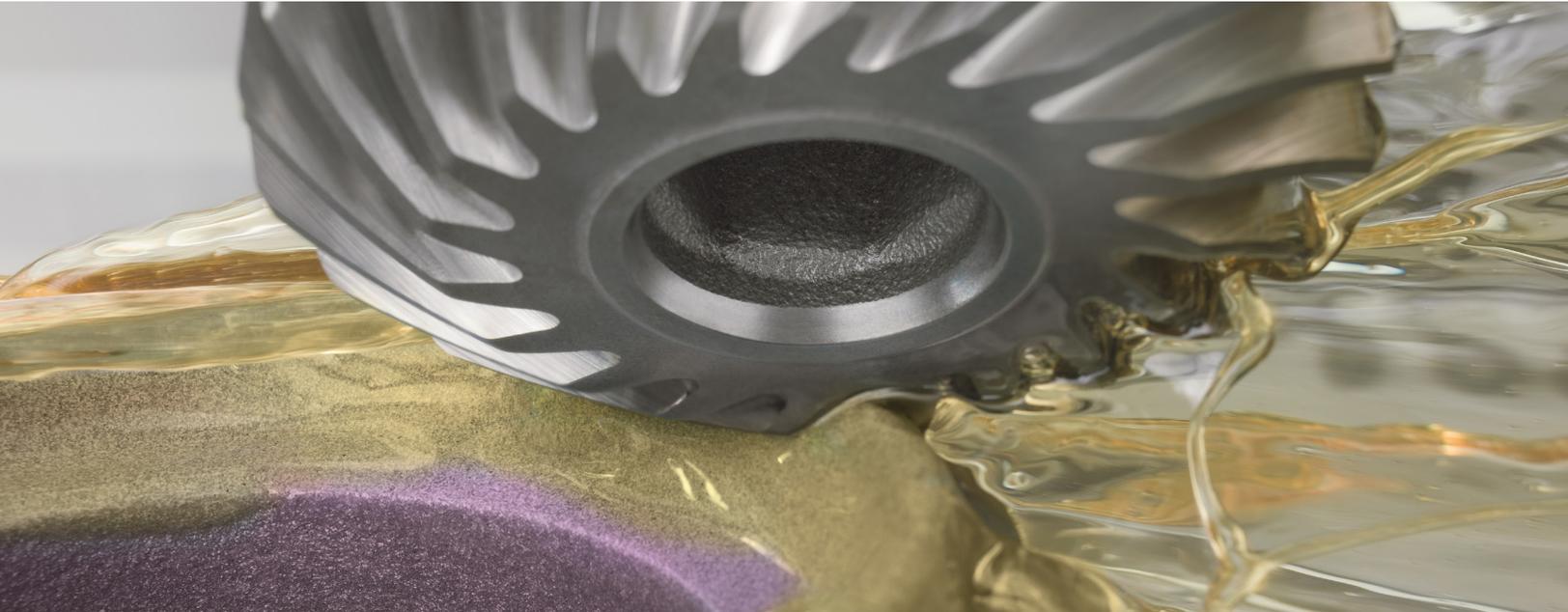


The Gleason Works Evaluates Waste Reduction Opportunities for their Machining and Plating Operations



The Gleason Works

The Gleason Works, located in Rochester, New York, is a world leader in the development, manufacture and sale of gear production machinery and related equipment. The Company's products are used by customers in automotive, truck, aircraft, agriculture, mining, wind power, construction, power tool, marine industries, and a diverse set of customers serving various industrial equipment markets.

Challenge

Certain areas of The Gleason Works manufacturing rely on the use of oil-based machining coolants. These coolants eventually become waste and are processed on-site using an oil/water separator and evaporator before being disposed of as hazardous waste. The coolant made up approximately 57% of all The Gleason Works' hazardous waste over a one year period. Additionally, there were several operations within the plating area of their facility that were generating hazardous waste. As a result, The Gleason Works wanted to identify waste reduction opportunities related to their machining and plating operations.

Solution

The New York State Pollution Prevention Institute (NYSP2I) assisted The Gleason Works with evaluating hazardous waste reduction opportunities at their manufacturing facility. NYSP2I focused on three main areas to identify practical options to reduce hazardous waste: process coolant management, waste coolant management, and metal finishing operations. NYSP2I performed a baseline analysis of their current operating processes to identify potential improvement areas. After gathering this information, NYSP2I developed potential schemes which included evaluation of additional technologies to improve management of process and waste coolant. Finally, an economic study was conducted to provide The Gleason Works with an understanding of the feasibility of implementing new technologies.

Challenge

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Solution

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Results

- Coolant recovery equipment, while more costly, provides opportunities to reduce coolant purchase costs, up to \$12,000/year, with a payback period of at least 2-3 years
- Reducing coolant waste could potentially save up to \$10,000/year
- Diverting copper sludge from the plating room to a reclaimer can save approximately \$411/year

Results

The work performed by NYSP2I led to key findings that can support The Gleason Works with reducing hazardous waste at their facility.

- A well-defined coolant management program is needed to better monitor coolant integrity and extend coolant lifetime.
- Partial coolant recycling using an off-line separation system can reduce coolant waste by 25%.
- Use of the oil-splitting ENPROX 8533 as part of waste coolant management would allow improved separation of oil which would reduce waste by almost 500 gal/year and over 1,100 gal/year if the oil is reclaimable.
- Improving the efficiency of the evaporator operation would result in less water sent for disposal and reduce hazardous waste even further.
- Potential hazardous waste reductions related to coolant were determined to be approximately 4,000 gal/year, from 5,700 gal/year to 1,744 gal/year.
- Waste reduction associated with metal finishing operations was identified for the copper strip tank, namely copper metal recycling.

From an economic perspective, the use of ENPROX appears to be most cost-effective as related to direct reductions in waste and possible oil reclamation. Coolant recovery equipment, while more costly, provides opportunities to reduce coolant purchase costs, up to \$12,000/year, with a payback period of at least 2-3 years. Reducing coolant waste could potentially save up to \$10,000/year. Diverting copper sludge from the plating room to a reclaimer can save approximately \$411/year.

“The Gleason Works is proud to partner with RIT and NYSP2I as an integral part of our sustainability initiative. The team quickly got to work utilizing sound problem-solving methodologies and a data-driven approach to decision-making. The project resulted in an actionable set of recommendations in line with Gleason’s business and environmental improvement targets. We’re all proud of the results and methods utilized during the project – consistent with the behaviors that continue Gleason’s long-standing global leadership as the Total Gear Solutions provider.”

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