

# Removing swarf magnetically

Canister fine filters are effective for removing swarf from coolant, but Engis Corp. found that the large quantity of swarf that's often generated when single-pass bore finishing was causing its customers too much downtime to replace clogged filters. For heavy swarf-producing ferrous applications, the Wheeling, Ill.-based manufacturer of honing systems determined it needed an additional coolant cleaner before the canister and found a solution in the Model CS5-7 magnetic coolant cleaner from Eriez Magnetics, Erie, Pa.

"We currently add Eriez magnetic separators to some of our filtration systems where there is a large amount of swarf being produced so the canister fine filters can last longer before becoming clogged and needing replacement," said Bob Marvin, Engis product manager. "The magnetic separator removes about 90 percent of the total swarf, and the canister is then able to remove the remaining particles down to 10µm."

Engis stated that single-pass bore finishing in-

volves a series of preset diamond-coated tools that pass through a bore with a single in-and-out stroke movement while the tool, part or both are rotating. Generally, each tool is set progressively larger in diameter, in ever-reducing increments, while the size of the diamond particles is also reduced. The relatively slow spindle speeds and the tool's free-cutting action do not generate much heat, so honing oil or water-based coolant is applied for lubricity rather than cooling. This allows the swarf produced to be flushed away before embedding into the tool.

Clean coolant extends tool life and enables tools to impart a finer surface finish.

"Clean coolant becomes even more critical when using through-coolant tooling," said Dan Zimmerman, metalworking market manager for Eriez. "Contaminants in the coolant can clog coolant passages and reduce coolant flow, resulting in overheating, poor tool per-

**END USER:** Engis Corp.  
(800) 993-6447  
www.engis.com

**CHALLENGE:** Reduce downtime caused by replacing coolant-filtering canisters when single-pass bore finishing ferrous workpieces.

**SOLUTION:** A magnetic coolant cleaner positioned before the canister filter.

**SOLUTION PROVIDER:**

**Eriez Magnetics**  
(814) 835-6000  
www.eriez.com

out of the swarf, the material discharges over scraper blades into a swarf pan and the coolant continues through," he explained, adding that the canister filter will then remove the nonmagnetic material as well as any remaining magnetic particles down to 10µm. The Model CS5-7 is rated at 21 gpm and uses a ceramic magnet. The company's magnetic circuit is designed to capture magnetic particles as small as 12µm.

The improvement in canister life in a bore-finishing system with a magnetic separator depends on the application. "We've heard a magnetic filter extending canister filter life up to four or five times," Zimmerman said.

Other than occasionally exchanging the swarf pan, which can be done without shutting down the system, Zimmerman said there are no other maintenance tasks for the magnetic separator. Eriez recommends that its magnetic coolant cleaner run continuously even when the bore-finishing machine is idle. "As the coolant flows through, it continuously cleans the system," Zimmerman said. **CTE**



Eriez Magnetics

For heavy swarf-producing ferrous applications, Engis Corp. added the Model CS5-7 magnetic coolant cleaner from Eriez Magnetics before the canister filter on its single-pass bore finishing machines.

formance and poor part finishing."

Unlike canister filters that fill up with contaminant, Zimmerman said the magnetic coolant cleaner is self-cleaning. "As the magnet pulls magnetic material