

SYSTEM CUTS CLEAN-UP TIME FOR MOLD COOLING CHANNELS

Problem: Cleaning mold cooling channels was difficult for an injection molding company, causing prolonged machine downtime.



Solution: A system that pumps a non-hazardous chemical through the channels has significantly reduced cleaning times.

By Bruce Adams

CLEANING COOLING channels in molds was a tedious task at the Hazelwood, Mo., injection molding plant of Cabka North America Inc., which manufactures pallets primarily from recycled plastic.

“We would open the mold, drill out the channels and clean it to the best of our ability,” said Jose Torres, a toolroom supervisor in the plant, which puts a high priority on sustainability.

“Some of our molds are quite large, so we had to disassemble them and drill out the blockages in the channels,” he said. “Drilling was difficult, and it created a lot of dust. It might take a whole day, depending on the size of the mold and the blockages in the cooling lines, to disassemble, clean and reassemble it. I wanted to find something eco-friendly to use to improve this process.”

A colleague introduced Torres to Bryan Whitaker, technical manager of iD Additives, which offers foaming agents, purging compounds and maintenance and repair products for the plastics industry. In turn, Whitaker introduced Torres to the company’s iD Eco-Pro 360, an EPA-tested and verified, water-based, non-hazardous chemical designed to remove surface rust, calcium deposits, lime, flash rust and oxidation from molds and cooling channels. The product, which is applied using a pump and filtration unit mounted on a cart, also provides rust protection inside the channels after use.

“Jose brought me in to show him the product and its capabilities and to help them implement a baseline for preventative maintenance going



iD Additives photos

The iD Eco-Pro 360 rust removal system is water-based, EPA-tested and verified.

forward,” Whitaker said. “After setting up [the] iD Eco-Pro 360 rust removal [system] and running it, they saw a 20 percent increase in flow through their cooling lines.”

As a result, heat transfers more efficiently during the molding process and cooling times are reduced. A cleaning process that used to take up to a full day now takes significantly less.

“Now, my guys hook up the line to the cart for one hour and they can go do something else while it cleans the lines,” Torres said. “We could leave it hooked up longer to clean more out of the lines, but we know when it’s clean enough to make good products. We can clean four or six channels of the mold at the same time.”

Cabka has been using the product since the summer of 2019 and hasn’t had any problems,



Before and after images of a mold cooling passage that underwent cleaning at an injection molder.

STOP CRUNCHING MOLDS



1. The Mold Opens
1st Image

- Presence of parts
- Non-Fills
- Insert Placement



2. Ejection Enabled



3. Ejection Complete
2nd Image

- Absence of parts
- Slide Position
- Cores... etc.

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Problem Solved

according to Torres. He estimates that the company typically uses the cleaning system two or three times a week, or more often when needed.

The solution is pumped through the cooling channels via compressed air using the Eco-Pro 360 cart.

"The cart is manufactured with acid-resistant components, so it can circulate the chemicals without damaging the seals in the cart," Whitaker said. "Companies that run this chemical through their closed mold need to backflush it with water, which breaks down the chemical and prevents damage to the mold and cooling channels."

This is a warning that Torres abides by.

"Every time we clean the lines, we backflush with water," Torres said. "We run about 5 gallons of water through the lines to flush out the chemical. When we see the water run clean, it's done. Then, we run compressed air through the lines to get the water out before we start molding."

Cabka uses the chemical to clean the mold's water lines and heat exchanger. Whitaker said that in addition to cleaning conformal cooling channels, it also can be used to clean thermolators and portable chillers.

"We could use it to clean the surface of the molds, but we don't because most of our molds have an aluminum surface," Torres said. "It will leave a dark film on aluminum."

Sometime, Cabka workers clean the molds while they are in the injection molding machines, and other times they remove the molds from the machines to clean them.

"If we have some flow, we usually clean the mold on the machine. If we have no flow, we take the mold off the machine to clean it," Torres said.

The cart that pumps the chemical through the cooling channels is equipped with a disposable filter, which allows companies to clean and reuse the chemical multiple times.

"Our two biggest selling points are that the chemical has no VOCs and is non-hazardous. No [personal protective equipment] gear is required when using it," Whitaker said. "Also, companies can reuse the chemical, as long as it is filtered. Some companies offer chemicals that you can only use once or twice before you have to neutralize it and dispose of it as hazardous waste. Filters are our biggest reorder item, which is a good thing. We want customers to continue to reuse the chemical." Filters cost only \$12.50 each, he said.

Torres said he has changed the cart's filter twice in six months. He knows the filter needs to be changed when the pump makes a different type of sound while running.

The chemical is 85 percent water and 7 percent phosphoric acid; the other 8 percent is a trade secret, Whitaker said. The chemical is listed as a


Level 1 skin and eye irritant by OSHA.

The standard Eco-Pro 360 cart comes with a 20-gallon drum to contain the chemical.

ID Additives ships the chemical in the drum or in 5-gallon cans. The product also is available

in a 16-ounce spray bottle, 1-gallon can, 55-gallon drum and a 275-gallon tote. While the product is used primarily by injection molders, it also can be used in blow molding and extrusion operations.

The company recently started to offer a larger cart, the iD Eco-Pro 360 XL cart, which pumps at a flow rate of 28 gallons per minute — more than double the Eco-Pro 360 cart's flow rate of 13.5 gallons per minute. The new version is a better option for cleaning extruders, Whitaker said.

"We also have companies using it for welding, metal stamping and automotive restoration," he said. "It is a very versatile product." 

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Non-hazardous chemicals used in the cleaning of mold cooling channels



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