



Looks impressive,
cleans impressive:
Solid carbon dioxide,
also known as dry
ice, makes clean
dreams come true.

COMPANY
Cold Jet

LOCATION
Loveland, Ohio, USA



Dry Ice blasting

Sand, water and abrasive media are a thing of the past. The American company Cold Jet is revolutionizing cleaning with its dry ice blasters.

For almost 25 years Dave Burbrink has been burning for dry ice—and for technical challenges. The PCS 60 contains a lot of engineering passion of the Cold Jet Technical Director.

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Cincinnati, on any Sunday in the early 1970s: The food on the table is steaming less and less, and little Dave is severely trying the patience of his parents; he is too absorbed to hear their calls. He has just found the right Lego blocks for his truck's hood. "I'm part of the first generations to play with Legos. Back then there were hardly any assembly plans for them, so if I wanted a certain thing, I had to figure out how to build it myself," recalls Dave Burbrink almost 50 years later.

Not much has changed since then. Burbrink can still forget his home city of Cincinnati, his workplace in nearby Loveland, the surrounding state of Ohio and the rest of the world around him when there is a technical problem to solve. That is still his passion. "The toys just got bigger," he says with a wink, meaning the challenges that became more and more demanding over the course of his career. Burbrink worked for 20 years as an external

product designer for Cold Jet. Four years ago, he became part of the engineering team, advanced to the position of Global Design and Technical Director and assumed responsibility for the global design of the company's ECaSP systems. ECaSP stands for Environmental Cleaning and Surface Preparation, but that does not really say anything about the company's cool main attraction; Cold Jet has been developing and producing industrial cleaning systems that utilize dry ice as the cleaning media since 1986. When cut and propelled at high pressure onto a dirty surface, the solid carbon dioxide cleans so gently and efficiently that it makes a lasting impression on observers. Burbrink was blown away himself when he came into contact with Cold Jet for the first time almost 25 years ago. "I was wearing sneakers with white rubber soles and had them blasted out of curiosity. After that, I knew that this is really something special," he says.





The hard way or the soft way? With the PCS 60, Cold Jet has for the first time developed a dry ice blasting system that allows users to choose between 28 particle sizes.

Cold Jet wants more

Dry ice, manufactured by repurposing carbon dioxide that is produced as a byproduct of industrial processes such as sugar fermentation in breweries, removes contaminants from surfaces, but does not leave any secondary waste of its own. Dry ice sublimates, or transitions from solid to gas, when it impacts the surface being cleaned. In addition, it is safe for the environment, non-conductive, non-toxic, non-abrasive and is safe and approved for use in foodstuffs. It can be extremely powerful, for example when used to remove tar from asphalt

pavers—or quite gentle, including cleaning debris from sensitive electrical equipment. “With a dry ice blaster, you can even remove the M from an M&M and it’s still safe to eat afterward,” says Burbrink, whose enthusiasm is reminiscent of the little boy marveling at his creations long ago.

But something crucial has changed since then. When in doubt, Burbrink no longer needs to come up with ideas completely on his own when working toward a particular goal. He has his team, and support from partners such as ebm-papst, which assisted with Cold Jet’s latest major success, the PCS®60 dry ice blaster. It reached the market

The PCS 60 works with three-millimeter dry ice pellets. They are poured in at the top.

Five drive units set the selected settings. Thanks to their IoT capability, the data can also be monitored online.



The intuitive control panel allows users to set the desired ice particle size, pressure and feed rate.

With a constant flow and a pressure of 20 to 300 psi, the PCS 60 blows the ice where it is dirty.

“The idea was to achieve the same results with less dry ice, less air and less noise in less time.”

DAVE BURBRINK — TECHNICAL DIRECTOR AT COLD JET

this year, kicking off the new Aero2® series. “The idea was to achieve the same results with less dry ice, less air and less noise in less time,” explains Burbrink. “We wanted to develop a machine with more functionality, and we wanted to make it smaller.”

Smart drives

That posed some tough challenges for Cold Jet’s product developers. They brought Craig Kovarik, an ebm-papst sales engineer, on board and discussed uncertainties about specifications such as speed and torque with him. “Craig and his coworkers

helped us to select the right specs,” says Burbrink. But of course it took more than just the selection of specifications to finish the job. “We needed drives that are able to cover a broad range of parameters. And we needed “smart” drives that can communicate to others via IoT about quantities like speed, amp draws or motor temperature. ebm-papst supplied us with this intelligence.”

The PCS 60 now uses five smart K4 drive units from ebm-papst that provide convincing performance and low power consumption. One drive unit transports the dry ice at variable speeds to the cutting mechanism and two drive the precision



cutting wheels. Another drive controls the separation between the cutting wheels so the size of the ice particles can be precisely controlled. The fifth drive unit transports the small or tiny dry ice particles to the air stream, which propels the dry ice particles at pressures between 20 and 300 psi (1.4 bar to 20.7 bar).

Hard or soft

Taken together, the result is a dry ice blaster that satisfies all of Cold Jet's requirements for the new machine and includes 28 dry ice particle size options. At the highest level, the PCS60 utilizes three-millimeter dry ice "pellets." At the lowest level, the three-millimeter pellets are cut to micro-particles that are 0.3 millimeters across. This type of precision allows users to find the most effective set-

ting for each unique application. This aspect also enables the user to clean a broad range of applications, from aggressive to very gentle cleaning.

"The range of applications that this makes possible is unbelievable," says Burbrink. For example, the PCS60 can cut a wooden plank or remove the print from a business card. "All with one machine," says Burbrink with unbridled enthusiasm. Thus far, users did not have the choice of using the same blaster to remove graffiti or clean off injection molds. "Injection molds are very sensitive to surface contaminants. If you touch one, a fingerprint could be left behind that could end up on a plastic part. So it's correspondingly hard to clean these molds without damage. But we can do this with our equipment," says Burbrink—his eyes gleaming just as they did when he was a kid solving Lego problems. ●

The dry ice blasters from Loveland go to customers in a wide variety of industries. Because where cleaning must be residue-free and food-safe, dry ice is ideal.

WATCH THE VIDEO ABOUT THE DRY ICE BLASTER IN ACTION AT:

mag.ebmpapst.com/coldjet