

# Perspectives in Drying

*Process Cleaning* recently spoke with three companies with extensive experience in drying. Each approaches this segment of the market from a slightly different angle, supplying products for both large and small parts, ranging from air knives to ovens.

Here's a closer look at what these companies have to offer and how they are finding ways to grow in this challenging market.

**CHRIS FELIX, EDITOR**

**Barrett Division  
of Kinefac Group**

**K**inefac Corp. (Worcester, MA) has been in the machine tool business since 1962. Howard Greis, president, explains how the company brought Barrett Centrifugals into the fold and how cleaning and drying products have grown to become an important part of its centrifuge business. He says that to stay alive in the production machine business, a company needs to get ahead of the wave. "There are plenty of suppliers of lathes and milling machines and other commodity machines," he says. "Our goal as a company is to find market niches where we can provide the best possible product." Kinefac initially focused on cylindrical die rolling machines to roll threads and forms. "While in that business, we got to know the problems of parts cleaning and other related processes. We brought our solutions to the automotive parts business and began adding machining capabilities that would fit into other applications. We then expanded into extrusion machines and double-end turning machines, mostly for shaft-like parts."

As Kinefac grew, company management began to see other companies that could benefit from this same kind of product leadership and strategic technology. It went on to acquire a couple of different companies that brought new capabilities to the mix. One of these companies, Barrett Centrifugals, was purchased in 2004 and presented a new opportunity. "Barrett had a long history dating back well into the 1800s," explains Greis. "While previous generations had a lot of success with new market developments, the business had become a bit stagnant. Kinefac saw the potential of their products by applying their capabilities in a wide range of unusual applications."

Essentially, Barrett sells a unit that creates centrifugal force and applies it to all different types of parts to do one



**Howard Greis, President,  
Barrett Division  
of Kinefac Group**

of a number of different things. The most common of these applications is to reclaim the cutting oils from chips. Greis says, "To reach new markets, we saw beyond the part cutting process and began thinking about parts cleaning. That meant loading a batch of small parts in the centrifuge pan, flushing them with hot water or some cleaning solution right in the machine, then spinning them with enough heat and air circulation to achieve significant drying." As time went on, demand called for the ability to handle bigger parts and do even more drying until gradually the company developed ways to put the parts into racks inside the machine to wash them right there. Because the racks already separated the parts from each other, warm air easily passed through for successful drying.

"Our goal has been to integrate the washing and drying of parts in one handling in a Barrett centrifuge, and now that's what we offer," Greis states. This part of the business has only been up and running for about two years, and although the economy has taken a toll, there has been a lot of interest throughout the parts making industry, and in particular, in medical parts.

The folks at Barrett feel they can provide the highest level of technology. With a lab the company has developed, it has been able to move steadily forward with innovation, then testing, evaluating and demonstrating how clean parts are, how much fluid is removed, what it takes to remove dirt, and what defines dirty and clean. "Using centrifugal force, we've developed some unique methods of cleaning parts that have very tiny holes in them, such as hypo tubes, and we're looking at all sorts of other medical parts," says Greis. "The medical industry is a great example, as it demands increasingly cleaner parts. The trick is knowing exactly what you mean when you say clean. How do you define a relative term like that? One of the things we're good at is helping to set up standards of what should be expected so we have a defined, and thereby engineerable, process. We've always done this in all of our other products as well—clearly define the objective and then develop the process that will meet that objective. We do that effectively in washing, drying or the whole process together. We're convinced that spin plus heat can't be beat."

**BARRETT CENTRIFUGALS INC.**, can be contacted by calling 800-228-6442 or visiting [www.barrettinc.com](http://www.barrettinc.com).

## Cincinnati Industrial Machinery

**J**osh Donay, divisional president at Cincinnati Industrial Machinery (Cincinnati, OH), breaks the drying process down into three basic elements—time, temperature, and air velocity. "The point is to separate the liquid from the part," he says. "While various methods can be used to achieve this goal, the eventual result is the transfer of the liquid to the atmosphere through evaporation by using time and temperature, the velocity of the air to blow off the water or by some combination of both methods."

The selection of which process depends on the part configuration and degree of dryness required. Donay also emphasizes the significance of determining how dry a part needs to be for its specific application. "People need to know what 'dry' means to them," he explains. "You don't want to waste time, effort and money drying parts any more than you need to, based on what you're going to do with the parts. The *cost* of drying goes up progressively with each level of dry."

One additional important factor that must be considered is the possibility of problems created if, in the process of drying, a water spot is left on the part. Spotting can result in rejection of the product and can be difficult to solve if it is not considered in the initial design.

Although the concept of drying seems simple, it is one of the most important aspects of having a system that meets the customers' expectations. Review of the application with an experienced professional to determine proper process is vital to producing a quality product.

Cincinnati Industrial Machinery is a full service manufacturer of turnkey cleaning applications and systems specializing in the design and installation of high-volume cleaning and preparation machinery, ovens, paint and finishing systems, and specialty machinery. Donay stresses that drying equipment is only a part of the many areas



**Josh Donay,**  
Divisional President,  
Cincinnati Industrial Machinery

of parts cleaning and finishing segments of the industry that his company serves.

The company offers multiple cleaning solutions including belt washers, drum washers, cabinet and turntable washers, powder coating finishing systems, other pretreatment equipment, dry-off ovens, can wash systems, cure ovens, conveyors, waste treatment equipment, and air makeup.

“We take the same level of product quality, technology, manufacturing integrity and engineering excellence our customers have experienced in our can washing equipment and apply it

to our drying ovens,” says Donay. Company service engineers are available to help ensure the accuracy of oven temperature balance to promote peak performance. This balancing targets problem areas to help a company reduce part rejection, eliminate hot and cold spots, reduce overall temperature, reduce fuel usage, increase efficiency, produce better product quality, and increase burner reliability.

**CINCINNATI INDUSTRIAL MACHINERY**, can be contacted by calling 513-769-0700 or visiting [www.cinind.com](http://www.cinind.com).



**J**etAir Technologies LLC (Ventura, CA) designs and manufactures high speed centrifugal blowers, air knives and drying/blow-off systems. As is particularly appropriate for today’s economy, Dan Snyder, vice president of engineering development, says that the company is strongly pushing efficiency.

“This approach is truly in line with our technology,” he explains. “We are the only company that combines a direct drive blower system with high speed.” He describes high speed as 20,000 rpm, which he says is needed for blow off of intricate machined parts, printed circuit boards or other similar components.

One of the advantages of the direct drive system is the absence of a belt, which often causes friction losses exceeding 7%. In fact, these blowers have as many as 30 fewer parts, allowing for a smaller, more efficient system that can weigh less than a third of other systems of similar horsepower.

JetAir’s blower systems also use variable frequency drives (VFDs), which allow operation in the 10- to 20-horsepower

range without a starter. These drives enable the user to vary the frequency going to the motor for efficient acceleration. Pushbutton controls of the drives allow quick optimization of the horsepower settings for a particular application rather than requiring a belt change or inefficient air bleed-off.

Snyder says that the other distinct advantage of the VFDs is that they are “smart.” “You can hook them up digitally or with an analog signal or with different kinds of communication cards such as an ethernet,” he explains. “These options allow the user to adjust the speed, depending on what’s going on in the line.” Overload control and spike-free starting can also protect the systems. “The nature of high speed centrifugal, whether it’s a belt system or direct drive, is that if you open it up—maybe a hose comes off—the centrifugal will take off, pulling as many amps as it can get,” Snyder continues. That shift in power can burn out a motor. The smart VFD notices if too many amps are being pulled, and it shuts down the

system. The result can mean huge savings, particularly considering that these blowers are typically located on remote parts of a line, where they’re not monitored regularly.

JetAir has been making direct drive high speed blowers for about four years. It has a strong presence in the food and beverage industry, with many installations in large bottling companies. A target market for the company is OEM process cleaning companies. According to Snyder, “Our systems are really ideal for that market because of the smaller size, with no huge belt housing and much improved access. But much of that business was pursued about 10 years ago, and is currently



**Dan Snyder, Vice President,  
Engineering Development,  
JetAir Technologies LLC**

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flooded with belt-driven systems. Because of our commitment to efficiency, we are approaching every application where old belt-driven blowers are used and compressed air is blown to atmosphere.

“As we continue to focus on efficiency, we have some interesting technologies that we’re right around the corner with. With the air knives, our company has pursued more different kinds of air knives than anybody in the business,” Snyder says. JetAir pioneered a tube that, instead of a slit, has a series of nozzles. The series of nozzles throws air further. In a process cleaning world, this is a big advantage because often an air knife cannot get directly up to a part. By being able to project air further, it can get to harder to reach spots. The nozzles are designed similar to a jet engine shape, with parabolic curves that allow clean efficiencies. The nozzles are about 1/2 inch diameter and three inches long. Computational fluid dynamics testing shows that this design does a better job of straightening the air out in one direction, taking longer to diffuse, and thus allowing it to go further. Typical air knives are effective only about 1 1/2–2 inches away.

**JETAIR TECHNOLOGIES LLC** can be contacted by calling 805-654-7000 or visiting [www.jetairtech.com](http://www.jetairtech.com).

### COMPRESSED AIR VS BLOWERS

Consider all factors—including system cost, time in company resources and production output.

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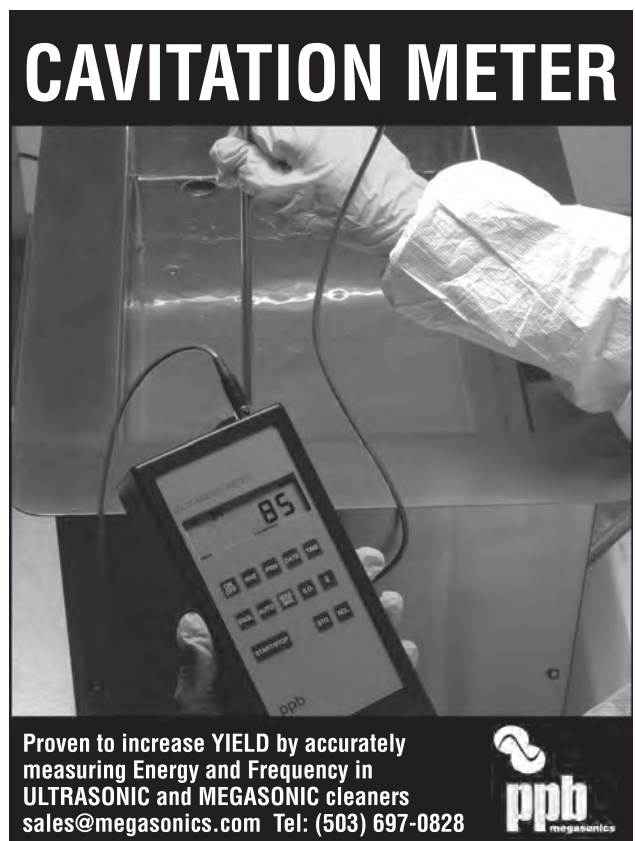


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