



Spraying Systems Co.
Experts in Spray Technology



AUTOMATED & PRECISION SPRAY CONTROL: A PET FOOD PROCESSOR'S BEST FRIEND

Pet food processors apply a wide range of palatants, antioxidants, and other additives at different stages of production to enhance product quality and extend shelf life. Manual application is prone to errors and inconsistencies. Often, those errors are only identified in the final product, generating high volumes of scrap.

As a result, processors struggle with:

- Over-application, which is wasteful and costly
- Inconsistent application, which results in product quality issues, elevated scrap, and production slowdowns
- Misting, which increases downtime and causes worker safety issues

Trends in pet humanization are also driving pet food processing requirements to meet standards similar to that of human food production. And when it comes to food safety, there is no room for risk-taking. The Food & Drug Administration (FDA) is also establishing guidelines for pet food manufacturers to meet ingredient and labeling standards, similar to those enforced with human food regulatory requirements.

Improve consistency and safety, increase throughput, decrease scrap, and protect your reputation.

There is a more efficient and cost-effective way to apply coatings, additives, mold inhibitors, and release agents while boosting production. Automated spray systems are revolutionizing pet food processing by ensuring the proper volume of additive is applied uniformly and directly. The result is better quality products, minimal waste, lower operating costs, and increased production.

PRECISION SPRAY CONTROL – DRAMATICALLY REDUCE THE USE OF ADDITIVES & INCREASE EFFICIENCIES WITHOUT COMPROMISING QUALITY

Precision Spray Control (PSC) systems provide exceptional accuracy and consistency with minimal waste by ensuring the proper amount of coating is uniformly applied. PSC systems automate flow rates by turning electrically actuated spray nozzles on and off to match pet food production speed variations in real time. This cycling is so fast that the flow often appears to be constant.

In the past, flow rate was typically controlled by manually adjusting spray pressure. However, adjusting pressure can dramatically change the spray angle and drop size. With PSC systems, the flow rate from a single nozzle can be varied without changing pressure. Flow rate changes are based on operating conditions, such as line speed and product weight in the tumbler/coater. The flow rate changes almost instantaneously to ensure the proper application rate. Changing the flow rate without changing the angle and drop size results in uniform application.

PSC SYSTEMS ARE AN IDEAL SOLUTION WHEN YOUR OPERATION REQUIRES:

- Using costly coatings or chemicals
- Consistent, precise, and uniform coverage
- Intermittent and variable spraying
- Flexibility – ability to adjust spray performance based on line speed, temperature, humidity, or product changes
- Manual monitoring and supervision during production
- Frequent maintenance

PRECISION SPRAY CONTROL SYSTEM COMPONENTS

SPRAY CONTROLLERS

Spray control options range from very simple systems that provide on/off control and automatic air and liquid control to sophisticated systems that provide real-time monitoring of spray performance and automatic adjustments based on factors, such as line speed fluctuations.

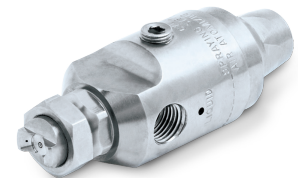


Spray control panels

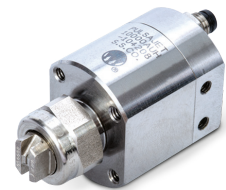
PRECISION NOZZLES

The nozzle is the heart of your spray operation. Spray nozzles are precision-engineered components designed to deliver very specific performance. Choosing the correct nozzles is critical. There is a wide range of hydraulic and air atomizing nozzles specially designed for the precise application of coatings, additives, oils, release agents, and more.

- **Automatic air atomizing nozzles** are air-actuated and ideal for coating and moistening where accuracy is critical with dozens of set-ups, body styles, and spray patterns to choose from.
- **Electrically actuated spray nozzles** are extremely versatile and ideal for coating with a wide range of non-viscous and viscous coatings.* A single nozzle provides a wide range of flow rates and low flow hydraulic atomizing nozzles can eliminate the need for compressed air. Electrically actuated spray nozzles can cycle at speeds up to 15,000 cycles per minute, keeping pace with fast line speeds and, with high transfer efficiency, they can minimize waste and mess. There are several styles and dozens of spray tips to choose from to achieve the desired performance.



Automatic air atomizing nozzle



Electrically-actuated spray nozzle

MANIFOLDS & HEADERS

Spray manifolds, an integral part of automated spray systems, play a crucial role in optimizing nozzle performance during various pet food processing coating operations. Manifolds ensure proper fluid and air flow to nozzles as well as proper nozzle positioning to minimize and often eliminate quality problems. They can also reduce downtime by simplifying changeover between batches. Spray manifolds can be used on a wide range of nozzles and are configured to meet application requirements.



Automatic air atomizing nozzle manifold



Standard spray manifold

* For high-viscosity coatings, recirculating and/or temperature-controlled versions are available.



UNLEASH SPRAY AUTOMATION & PRECISION & LET YOUR PET FOOD LINE RUN...

IMPROVE PRODUCT QUALITY & CONSISTENCY – REGARDLESS OF BATCH, SHIFT, EMPLOYEE OR VARIATIONS IN RECIPES OR FORMULAS.

You can improve product quality and minimize costs, while uniformly applying flavorings, oils, palatants, vitamins, and other supplements. Processors are often shocked to discover how much coating material they waste within their operations.

OVER-APPLICATION & MISTING ARE THE PRIMARY CAUSES OF WASTED COATINGS & OCCUR WHEN:

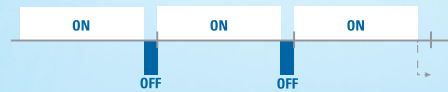
- More coating is applied than necessary
- Coating is poorly applied and sprays on areas surrounding the target
- Coating is dispensed continuously instead of intermittently when needed
- Misting, which increases downtime, waste, and creates worker safety issues

Precision spray control processes eliminate coating waste through the automatic adjustment of the application rate. PSC systems cycle on/off to maintain a consistent flow rate ensuring the exact amount of coating is applied and not a drop more.

There is no need to spray continuously, even if the product is in close proximity. By applying the coating directly on the target, PSC systems deliver accurate, consistent spray coverage, applying the coating only when and where it is needed.

HOW PRECISION SPRAY CONTROL WORKS

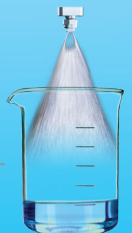
NOZZLES SPRAYING
90% OF THE TIME



NOZZLES SPRAYING
50% OF THE TIME



NOZZLES SPRAYING
25% OF THE TIME



SPRAYING RELEASE AGENTS ON PANS & CONVEYORS

To prevent kibble or treats from sticking to dryer belts, release agents are often applied. Traditionally, systems with air atomizing nozzles have been used. The compressed air that atomizes the release agent results in messy, wasteful misting and high operating costs. (See Figure 1)

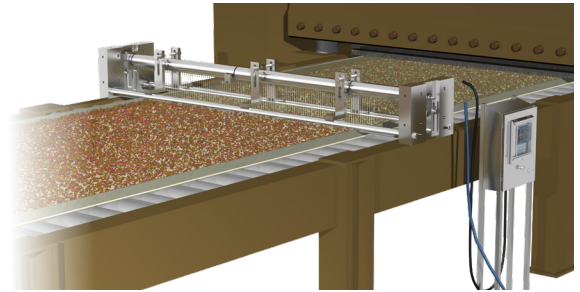


FIGURE 1: PSC applies release agents and oil uniformly and with very little waste to prevent kibble or treats from sticking to dryer belts.

MINIMIZING SCRAP & REWORK

Inconsistent application of coatings and ingredients can wreak havoc on product quality. In some cases, products can be reworked, but often the rejected product is scrapped. Rework and scrap are costly and wasteful. If the coating problem isn't detected prior to product shipment, the negative impact can be even greater, jeopardizing customer satisfaction and business.

Precision Spray Control systems ensure the proper amount of coating is applied – even with variations in line or machine speed or changes in other operating conditions. Eliminating the inconsistencies inherent in manual application of coatings, dipping, or brushing technologies and using pressure to adjust flow rate. (See Figure 2)

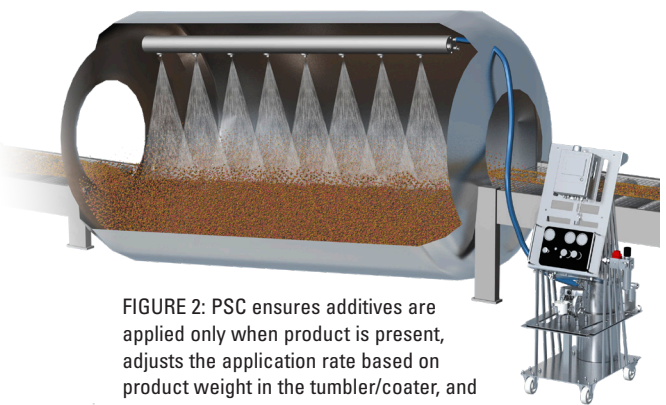
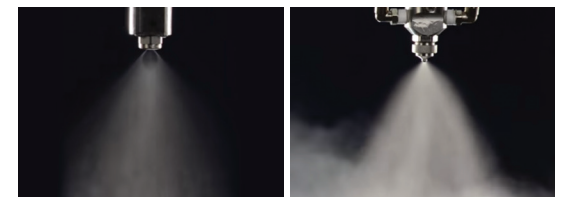


FIGURE 2: PSC ensures additives are applied only when product is present, adjusts the application rate based on product weight in the tumbler/coater, and alerts operators when tanks are low or in the event of an application problem.

PRECISION APPLICATION OF RELEASE AGENTS ELIMINATES MISTING, PROTECTING WORKERS WHILE REDUCING SCRAP & DOWNTIME

One of the biggest threats to worker safety is slip hazards caused by oils, lubricants and other coatings dripping and spilling on the floor during application. Precision Spray Control systems eliminate the wasteful overspray that creates slippery equipment and floors.

PSC systems dramatically improve air quality by reducing misting. Electrically actuated hydraulic nozzles can replace air atomizing nozzles in most operations. When used with PSC systems, electrically actuated hydraulic nozzles can produce larger droplet sizes. These larger drop sizes increase transfer efficiency, focusing spray exactly where needed, while improving coverage without using compressed air. The result is precision application of coatings with minimal misting. (See Figure 3)



Electrically-actuated hydraulic nozzle

Air atomizing nozzle

FIGURE 3: Shows the difference in misting and bounce-back between an electrically-actuated hydraulic nozzle and a traditional air atomizing nozzle spraying at the same flow rate.

ADDITIONAL BENEFITS OF PRECISION SPRAY CONTROL SYSTEMS:

- **Eliminate manual application or adjustment of flow rate**
- **Eliminate the need for compressed air, reducing energy costs**
- **Efficiencies in applications result in wastewater savings**

MEETING THE CHALLENGES OF PET FOOD HUMANIZATION & CONFRONTING EXPANDED REGULATION IS JUST THE BEGINNING.

MANUAL APPLICATION

VS

PRECISION SPRAY CONTROL



EASILY INTEGRATE PSC INTO EXISTING PRODUCT LINES
TO AVOID COSTLY RECONFIGURATION.



AUTOMATED & PRECISION SPRAY CONTROL: A PET FOOD PROCESSOR'S BEST FRIEND

A PEDIGREE IN AUTOMATED & PRECISION SPRAY CONTROL

Food processing plants around the world depend on our spray technologies for applications ranging from coating and cleaning to tank washing and lubrication. Our experts help customers optimize performance while maximizing food safety.

Spraying Systems Co. has been the world's leading manufacturer of spray nozzles for more than 85 years. With tens of thousands of standard products, we have the right nozzle for your application.

Our engineering and manufacturing resources can help solve your toughest spray technology challenges. Local spray technology experts provide fast, hands-on service and we offer quick delivery from strategically located manufacturing facilities on six continents. Backed by our factory Technical Services staff, they are your first resource for all spray technology questions.

IS PRECISION SPRAY CONTROL RIGHT FOR YOUR OPERATION?

If your operations involve spraying coatings, flavorings, and additives, or applying mold inhibitors and release agents, the answer is 'yes.' For many pet food manufacturers, uniform coating alone can be a gateway to reduced scrap, improved worker safety, lower operating costs, and increased production.



For more information on Precision Spray Control systems, contact your local spray specialist at 1.800.95.SPRAY or visit spray.com/petfood.

USE LESS, CONSUME LESS, WASTE LESS, & RISK LESS – PUTTING SUSTAINABILITY INTO PRACTICE

The shortlist of plant priorities includes productivity, savings, efficiency, product quality, and safety. That's not surprising. But did you know that increasing your plant's sustainability can help you achieve those objectives?

Every day, we help companies around the world reduce water, energy, and material use, decrease waste, minimize environmental impact, and improve worker safety.



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