



**Optimizing Production with Precision Spray Control**

# Process improvements with fast payback

Although your spray system may be a small part of your entire operation, **spray optimization can have a major impact on product quality and productivity.** The benefits of precision spray control can be considerable, especially if you're spraying high-cost fluids or your product quality is affected by your spraying operations.

**Industries that can benefit significantly from a precision spraying system include:**

- Food Processing
- Chemical Processing
- Automotive and Metal Fabrication
- Pulp and Paper
- Roofing Materials
- Cement
- Steel

**Automating your spray application can pay for itself in just a few months by:**

- Reducing overspray and saving chemicals
- Reducing manual labor
- Improving product quality through precise and uniform coating
- Simplifying production line setup and reducing downtime
- Increasing throughput and conveyor speed
- Improving regulatory compliance and emission control

## Our comprehensive approach...

### Experts in Spray Technology

AutoJet® Technologies is a division of Spraying Systems Co., the global leader in spray technology. For more than 70 years, Spraying Systems Co.'s sole focus has been helping customers improve quality and lower costs through spray system optimization. The company's four Centers of Excellence provide products and services that will help you improve your productivity.



### Spray Nozzles

**Spray optimization begins with selecting the best spray nozzle for your application.**

Your local spray specialist will conduct an audit of your system to look for savings opportunities. With nozzles available in dozens of materials, hundreds of configurations and thousands of sizes, Spraying Systems Co. can provide the right nozzle for your manufacturing needs.



## Solving manufacturing challenges with precision spray control

### Precise drop size control in a steel mill's gas cooling application eliminates regulatory fines

**Problem:** Gas cooling is a complex process used in steel mills, paper mills, power plants, and cement plants. Insufficient gas cooling can lead to environmental problems, noncompliance fines, costly manual labor for maintenance, and unnecessary downtime.

A steel mill using a baghouse to filter dust from the hot gas stream needed to reduce the gas temperature in order to prevent damage to expensive baghouse filters. But the filters were often ruined and duct walls became wet and coated with dust buildup when too much cooling water was used. The resulting dust slurry was considered a hazardous waste that had to be disposed of carefully under governmental regulations.



improves your productivity



### Spray Control

**AutoJet® Spray Systems further improve spray nozzle performance.** AutoJet Technologies is the spray control and automation division of Spraying Systems Co. We know from experience that a spray nozzle can only perform properly if the entire spray system operates efficiently. All system components – nozzles, pumps, sensors and other apparatus – must be accurately controlled to optimize nozzle performance.



### Spray Fabrication

**Spray systems are built for easy integration into your operations.** Spraying Systems Co.'s in-house fabrication experts engineer custom lances, manifolds and adapters to ensure proper nozzle placement and to simplify installation and maintenance.



### Spray Analysis

**Spraying Systems Co.'s state-of-the-art labs are fully equipped to verify spray nozzle selection and performance.** When specialized testing is required, the company's Spray Analysis and Research Services group can perform spray characterization, performance testing, proof-of-concept testing and prototype development to ensure your system will perform to your standards.



### The AutoJet Technologies Solution:

An AutoJet Gas Cooling System solved this customer's problems with effective evaporative cooling without wall wetting. Using closed-loop temperature control, a dedicated spray controller monitors the outlet gas temperature with multiple sensors, adjusts the flow appropriately and maintains the optimal drop size sprayed from ten FloMax® air atomizing nozzles.

**Reduction of the dust slurry allowed the steel mill to comply with governmental regulations and eliminate damage to baghouse filters, resulting in annual savings approaching US\$200,000**

# Powerful spray solutions configured to meet your needs

AutoJet® Spray Systems monitor, control and ensure peak performance of Spraying Systems Co. spray nozzles, providing quick payback through improved product quality and production efficiency. These systems range in complexity from manual valve packages to fully automated systems using closed-loop control. No matter how simple or complex the solution, AutoJet Spray Systems use precision Spraying Systems Co. nozzles as the starting point in the three-step design process.

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## Select the right spray nozzle

Based on decades of applications experience, we'll help you select the best spray nozzle for the job. AutoJet Spray Systems deliver the fastest possible response time from automatic spray nozzles.

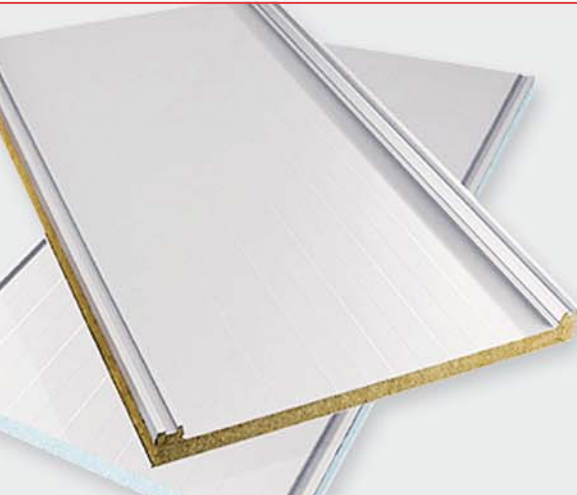


2

## Determine the right level of spray control

From basic on/off control to fully-automated, closed-loop spray control, AutoJet Spray Systems can make your production more efficient than ever before. Systems equipped with AutoJet Spray Controllers feature powerful on-board application software that eliminates the need for on-site programming by your staff. These dedicated spray controllers can monitor and automatically adjust spray performance to compensate for changes in operating conditions that affect your productivity.

## Solving manufacturing challenges with precision spray control



### Pulse width modulated flow control creates high turndown ratio for door manufacturer

**Problem:** A manufacturer of metal doors needed an automated system to apply water to act as a catalyst for an adhesive used in the assembly process. The volume of water applied was critical to adhesion and the system needed to automatically adjust for substantial variations in line speed. Inconsistent water spray was causing quality problems that were only detected after the doors emerged from the oven, resulting in significant scrap.

## Basic Control

### Manual Valve Packages

Manually monitor and regulate key spray control inputs. Complete systems include nozzles, pressure tanks, valves and regulators. Components are enclosed in a single panel for easy wall mounting.



## Intermediate Control

### Model 2050 Spray Controllers

Pre-set spray variables are electronically monitored in real-time. Onboard timing control software maximizes automatic spray nozzle performance.



## Advanced Control

### Model 2250 Spray Controllers

Pre-programmed spray controller monitors and automatically adjusts spray performance based on your process variables, such as conveyor speed, temperature and batch control.



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## Select a system configuration



Many of our spray systems are standard designs which have been proven in a wide variety of spray applications. Design options for some standard AutoJet Spray Systems can be specified on-site by your local sales engineer using SprayPro Express® software. Custom designs to meet your specific application requirements are also available.

## The AutoJet® Technologies Solution:

Using speed sensors to determine line speed and proximity sensors to detect the presence of doors for spraying, an AutoJet Spray System applies the precise volume of water catalyst required at line speeds ranging from 0.1 m/min to 15 m/min. Using Pulse Width Modulated (PWM) flow control and PulsaJet® Automatic Spray Nozzles, the system provides a turndown ratio of 1000:1 with a single spray nozzle.

**Precise and reliable spray control resulted in higher product quality with a payback period of 3 months calculated by the customer.**

## Standard spray systems

### Fluid Delivery Systems

Economical systems provide efficient spray control at the push of a button with a variety of flow rates and pressure ratings. Standard pump-motor sets maximize the performance of most Spraying Systems Co. hydraulic spray nozzles, headers and tank cleaning nozzles.

See Bulletins AT157B and AT160B for more information



### Modular Spray Systems

Self-contained systems ranging from basic to advanced spray control provide improved coating performance in many industries, including food processing, metal stamping and paper.

See Bulletin AT159B for more information



### PulsaJet® Spray Systems

High speed spray systems eliminate misting and overspray of coatings with precise intermittent cycling.

See Bulletin 605 for more information



## Solving manufacturing challenges with precision spray control

### Meat processor improves food safety and dramatically reduces chemical consumption

**Problem:** A ready-to-eat meat processor needed to accurately spray an antimicrobial agent into container cavities prior to filling and vacuum sealing.

#### The AutoJet® Technologies Solution:

An AutoJet System using PulsaJet® Automatic Spray Nozzles sprays low doses of antimicrobial agents into multiple cavities prior to product insertion. An AutoJet Spray Controller uses a trigger signal from an indexing conveyor to activate the spray during the conveyor's dwell time. The controller also monitors pumps and flow sensors to confirm proper flow rates for each spray nozzle. Unacceptable flow conditions trigger fault messages and system shutdown.

**More effective and economical than chemical baths or direct spraying, this method provides pathogen reduction of greater than 6 log 10 and chemical savings estimated at more than US\$1,000,000 per year.**



## Heated Spray Systems

Fully jacketed spray systems provide even heating without burning, to ensure uniform thickness of viscous coatings with minimal overspray.



## Gas Conditioning Systems

Provides highly accurate closed-loop temperature control using FloMax® air atomizing nozzles.



See Bulletin 540  
for more information

## How advanced spray control improves system performance

### High Speed Cycling

AutoJet Spray Controllers have onboard software to drive Spraying Systems Co. automatic spray guns at speeds up to 10,000 cycles per minute for precise intermittent spraying without any programming.

### Pulse Width Modulated (PWM) Flow Control

By cycling an electrically-actuated spray nozzle quickly at a controlled frequency, flow rate can be controlled very precisely. PWM flow control allows relatively low flow rates with clog-resistant larger spray tips, minimizes overspray and can greatly reduce chemical consumption. Extremely high flow turndown ratios can also be achieved at a single pressure.

### SprayCheck™ Monitoring System

A miniature sensor mounted near the orifice of a PulsaJet® automatic spray nozzle optically detects a spray pattern emerging from the spray tip. Each “spray” signal sent by an AutoJet Spray Controller is confirmed with a “spray present” signal from the sensor to verify spray application. The SprayCheck Monitoring System is perfect for critical spray applications affecting product quality.

### Spray Shaping

Algorithms provide a way to intermittently spray moving targets without overspray. By quickly adjusting flow rates and fan air pressure on Spraying Systems Co. VMAU automatic spray nozzle, an adjustable flat fan pattern can trace the footprint of round and oval shapes without waste.

## Moisturizing system reduces scrap for manufacturer of corrugated cartons

**Problem:** A corrugated carton manufacturer was experiencing product quality problems. Clogged nozzles were causing uneven moisturizing that led to product damage. Excessive scrap and manual rework resulted.

### The AutoJet® Technologies Solution:

An AutoJet Spray System monitors and controls a moisturizing header for each sheet that is combined in the corrugated material. Each spray header features air atomizing nozzles equipped with cleanout needles to prevent nozzle plugging. The turnkey system maintains the proper flow rate automatically based on line speeds that vary from 150 - 325 fpm. Operators can select different sheet widths on a touch panel to ensure that spray coverage matches the sheet in production.

**This moisturizing system provided the customer with an estimated annual savings of US\$60,000 in reduced scrap and rework costs.**





# AutoJet

TECHNOLOGIES

A Division of *Spraying Systems Co.*

## North America

P.O. Box 7901  
Wheaton, IL 60189-7901 USA  
Tel: 630.665.5000  
Fax: 630.665.9462  
E-mail: [info@autojet.com](mailto:info@autojet.com)

## Europe

Industriezone Poortakker  
Buchtenstraat 2  
B-9051 Gent (Sint-Denijs-Westrem) Belgium  
Tel: +32 (0) 92.44.65.65  
Fax: +32 (0) 92.44.65.66  
E-mail: [info@autojet.be](mailto:info@autojet.be)

## South America

Rua Salgado de Castro, 332  
09920-690 Diadema – São Paulo Brazil  
Tel: +55 (11) 4043.4233  
Fax: +55 (11) 4043.3573  
E-mail: [info@autojetbr.com.br](mailto:info@autojetbr.com.br)

## Asia

### Japan

TK Gotanda Building, 8 Floor  
5-10-18 Higashi-Gotanda  
Shinagawa-ku, Tokyo, Japan 141-0022  
Tel: +81 (3) 3445.6031  
Fax: +81 (3) 3442.7494  
E-mail: [info@spray.co.jp](mailto:info@spray.co.jp)

### China

E Section, No. 28 Factory  
No. 500 Fu Te Dong Er Road  
Wai Gao Qiao Free Trade Zone  
Shanghai, 200131  
P.R. China  
Tel: +86 (21) 5046.1928  
Fax: +86 (21) 5046.1043  
E-mail: [info@spray.com.cn](mailto:info@spray.com.cn)

Represented by:

[www.autojet.com](http://www.autojet.com)

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