



AUTOJET® PRECISION SPRAY CONTROL SYSTEMS

FOR INDUSTRIAL COATING APPLICATIONS



Spraying Systems Co.
Experts in Spray Technology





THE SECRET TO UNIFORM COATING: PRECISION SPRAY CONTROL

Applying coatings and release agents can be challenging. In order to achieve uniform coating, processors have often tolerated the waste of costly coatings, misting, excessive maintenance downtime, high scrap rates and more. Now there is a way to eliminate all those problems and apply the exact amount of coating required directly on the target – even when using high-viscosity coatings. AutoJet® Precision Spray Control Systems provide unmatched accuracy to ensure uniform coating with minimal waste.

In the pages that follow, you will learn more about how AutoJet Precision Spray Control Systems work and see how easy it is to configure a system to fit your exact requirements.





TABLE OF CONTENTS

	PAGE
AUTOJET® PRECISION SPRAY CONTROL SYSTEMS OVERVIEW	4-7
ACHIEVING RESULTS WITH AUTOJET PRECISION SPRAY CONTROL SYSTEMS	8-9
OPTIONS AND SPECIFICATIONS	10-15


IS YOUR COATING SPRAYABLE?

The answer to this question is, almost always, yes. We have a proven track record of using spray technology to apply just about every coating including viscous wax, oils, gels and more. The best way to determine if your coating is sprayable is with a proof-of-concept test in our spray laboratories.

Here's a partial list of coatings being successfully applied with spray technology:

- | | | | |
|---------------------------------|---------------------|--------------------------------------|------------------|
| • Adhesives/glue | • Dyes and inks | • Gels | • Oils |
| • Alcohol (Zone 1 version only) | • Emulsions | • Lignin powder | • Resins |
| • Anti-foaming agents | • Enzymes | • Lotions | • Rust inhibitor |
| • Ascorbic acid | • Ethanol | • Lubricants/release agents/silicone | • Urea |
| • De-ionized water | • Fire retardant | • MDI-based polyurethane | • Wax |
| • Detergents | • Fragrances/aromas | | |





AUTOJET® PRECISION SPRAY CONTROL SYSTEMS OVERVIEW: SUPERIOR PERFORMANCE

AutoJet® Precision Spray Control Systems consist of PulsaJet® automatic spray nozzles and an AutoJet spray controller. Many systems also include a spray manifold. These systems use Precision Spray Control (PSC) to ensure coatings are applied consistently, uniformly and with minimal waste even when conveyor line speed changes.

PSC uses an AutoJet spray controller to turn electrically-actuated PulsaJet nozzles on and off very quickly to control flow rate. The cycling is so fast that the flow often appears to be constant. Flow rate changes are based on line speed and occur almost instantaneously to ensure the proper application rate.

PSC also enables a single PulsaJet nozzle to produce a wide range of flow rates. Electrically-actuated hydraulic versions can achieve very low flow rates – comparable to the flow rates of air atomizing nozzles. Using hydraulic nozzles eliminates the need for costly compressed air and minimizes the misting and overspray problems often associated with air atomizing nozzles.

PSC BENEFITS:

- Reduces product scrap caused by over- or under-application of coatings
- Reduces the use of costly coatings by applying the proper coating volume directly on the target
- Increases production – fast cycling (up to 15,000 cycles per minute) of nozzles keeps pace with high line speeds



HOW PRECISION SPRAY CONTROL WORKS

Electrically-actuated spray nozzles are turned on and off very quickly to control flow rate. This cycling is so fast that the flow often appears to be constant.

With traditional nozzles, flow rate adjustments require a change in pressure. Changing pressure also changes the nozzle's spray angle/coverage and drop size. With PSC, pressure remains constant enabling flow rate changes without changes in spray performance.

NOZZLES SPRAYING 90% OF THE TIME



NOZZLES SPRAYING 50% OF THE TIME



NOZZLES SPRAYING 25% OF THE TIME



- Eliminates maintenance time to clean excess coating from equipment and/or floor due to over-application
- Improves worker safety by minimizing misting
- Eliminates the need for compressed air in some operations

SEE THE BENEFITS OF PSC:
spray.com/psc



UNMATCHED COATING SYSTEM VERSATILITY

PulsaJet® nozzles and an AutoJet® spray controller are required to achieve PSC. Many systems include a spray manifold as well to ensure proper fluid delivery to the nozzle. A wide range of nozzle, controller and manifold options are available so performance can be tailored to the specifics of the coating viscosity and desired level of automation.

Zone control panels can be added to any PSC system. This allows nozzles to be turned off as needed to accommodate different products or sheet widths. Three versions are available: manual, digital and digital with timer.

Contact your local sales engineer for system selection assistance and a no-obligation demonstration.



PULSAJET NOZZLES:

- Available with a wide range of flow rates
- Recirculating and temperature control designs
- Hydraulic and air atomizing versions

SPRAY MANIFOLDS:

- **98250 spray manifold** for use with hydraulic and air atomizing PulsaJet spray nozzles
- **63600 heated and non-heated manifolds** for use with hydraulic and air atomizing PulsaJet nozzles
- **Heated manifolds** for use with temperature-controlled hydraulic PulsaJet nozzles
- **Recirculating manifolds** for use with heated fluids and hydraulic PulsaJet nozzles

AUTOJET SPRAY CONTROLLERS:

- **AutoJet Model 1550+ Modular Spray System** with basic on/off spray control and Precision Spray Control for up to eight PulsaJet nozzles
- **AutoJet Model 2008+ Spray Control Panel** provides timing and sensor control and Precision Spray Control for up to 16 PulsaJet nozzles*
- **AutoJet Model 2250+ Spray Control Panel** with sophisticated real-time monitoring and closed-loop control for up to 16 PulsaJet nozzles*

*AutoJet Model 2008+ and Model 2250 spray control panels can be configured for use with more than 16 PulsaJet nozzles upon request

SEE DETAILED SPECIFICATIONS ON PAGES 10-15

AUTOJET PRECISION SPRAY CONTROL SYSTEMS: IDEAL FOR A WIDE RANGE OF COATING, MOISTENING AND LUBRICATING APPLICATIONS

Here are just a few examples of how others are using our systems:

- Coating wood chips with resin in the production of engineered wood panels
- Coating flat glass with zinc citrate on float line to prevent corrosion
- Coating aluminum or steel strips with oil to prevent corrosion
- Spraying de-dusting oil to prevent fibers from becoming airborne in the production of fiberglass insulation
- Applying release agent to prevent concrete building materials from sticking to molds
- Spraying wax in wood chip blender in MDF production
- Adding moisture to panel boards before pressing
- Applying adhesive for tail tie of tissue rolls
- Spray nonskid coating to packaging materials to prevent movement during shipping
- Spraying fire retardants on textiles
- Applying release agents mats, cauls and press belts in board production
- Spraying lubricants on metal sheets before stamping
- Adding fragrance to kitty litter
- Spraying release agent onto metal belts to prevent plastic pellets from sticking
- Applying moisture to textiles to properly control dyeing and finishing operations

AUTOJET® ZONE CONTROL PANELS:

- **Manual version** allows up to eight spray zones to be created. One toggle switch controls each zone and each zone can consist of multiple nozzles. The number of nozzles per zone is determined by the driver capacity of the controller
- **Digital version** provides similar performance to the manual version but it is designed for operation with an external control system
- **Digital version with timer** offers the greatest operating flexibility. Users can set the delay and spray times of the nozzles in each zone to ensure nozzles spray only when the target is in the proper position





ACHIEVING RESULTS WITH AUTOJET® PRECISION SPRAY CONTROL SYSTEMS

80,000 POUNDS OF MONTHLY REWORK ELIMINATED WITH NEW SPRAY SYSTEM

Problem: An aluminum producer was using flat spray nozzles mounted on a header to apply oil to strip to facilitate forming and help prevent corrosion. The nozzles sprayed the same amount of oil continuously. Changes in line speed resulted in over- and under-application problems. Coil rejection rates were high.

Solution: Oil coverage on the strip is now uniform and waste has been eliminated since the installation of the AutoJet system. Precision Spray Control ensures the proper application rate based on line speed variations from 300 to 1200 ft/min (91 to 366 m/min). In addition, the system uses zone control to turn nozzles off when narrower strip widths are run to prevent oil waste.

RESULTS:

System payback: four months

Coil reject rate due to uneven oil application: 0%

Decreased oil consumption: 40%

Reduced maintenance time: workers no longer clean excess oil from equipment and floor

NEW SPRAY SYSTEM HELPS REDUCE SCRAP BY 75%

Problem: A glass manufacturer needed to apply a thin coating of zinc citrate on flat glass while it was on the float line. The coating protects the glass from corrosion and discoloration. The current system didn't apply the coating uniformly and required excessive maintenance. Product quality suffered.

Solution: An AutoJet Precision Spray Control system now provides a uniform coating of the zinc citrate solution even when line speed changes. The hydraulic nozzles can be activated individually to accommodate different ribbon widths. In addition, the nozzles are mounted on a frame which can be easily rolled away from the production line for quick maintenance.

RESULTS:

System payback: less than one month

Scrap reduction: 75%

Decreased use of zinc citrate solution: 60%

Maintenance time decrease: one hour daily to 3 hours per month





SEE MORE DETAILS ON THESE &
DOZENS MORE RESULTS STORIES AT
spray.com/results

AUTOMATED SPRAY SYSTEM LOWERS OPERATING COSTS AND IMPROVES PRODUCT QUALITY

Problem: A manufacturer of high-quality, custom-dyed textiles needed to control the amount of moisture in the fabric to ensure proper dyeing and finishing. Spinning discs were being used to apply water, but the droplet size and coverage were inconsistent. In addition, frequent disc breakdowns caused excessive downtime and reduced production time.

Solution: An AutoJet® Precision Spray Control System applies the required volume of water to maintain the desired 12% moisture content. Flow rate is automatically adjusted by the system based on line speed that varies up to 20%. Coverage is uniform across the entire width of the fabric.

RESULTS:

System payback: less than 11 months

Quality: improved, enabling a price increase

Decreased maintenance downtime: reduced significantly

Annual savings: US\$19,000

TISSUE PRODUCT MANUFACTURER REDUCES OPERATING EXPENSES AND REDUCES WASTE STREAM

Problem: A commercial tissue manufacturer wound toilet tissue around a cardboard tube. Plastic end caps were inserted into individual rolls after they were cut from the long tissue “log” into individual rolls. The core tubes and caps were costly and ultimately discarded after the tissue roll was used, creating unnecessary waste.

Solution: An AutoJet Model 1550+ Modular Spray System applies a light mist onto tissue as it is wound directly onto a thin metal rod. PulsaJet® nozzles are triggered by the winding machine and spray just long enough to ensure the tissue sticks to the metal rod. After the tissue roll is fully formed, the metal rod is pushed out of the roll, leaving only tissue product. Cardboard tubes and plastic end caps are no longer used.

RESULTS:

System payback: less than seven months

Sustainable product: cardboard core tubes and plastic end caps have been eliminated from the waste system



AUTOJET® SPRAY CONTROLLERS

System control options range from simple to sophisticated and offer Precision Spray Control. Choose the level of automation best suited to your operation.



AUTOJET MODEL 1550+ MODULAR SPRAY SYSTEM: BASIC CONTROL

- Automatic on/off control and Precision Spray Control of up to eight PulsaJet® nozzles
- Self-contained unit – set-up takes minutes
- Wetted parts available with food contact materials of construction
- Equipped with a pump, a pressure pot or without any integrated liquid supply
- Touch screen HMI with diagnostic screens for easy user control and troubleshooting
- Precision Spray Control ensures uniform coverage and accurate flow rate adjustments based on line speed
- Easily configured spray timing control for accurate placement of sprayed liquid to help ensure product quality and minimize waste
- Optional zone control to turn individual nozzles in a manifold on/off



AUTOJET® MODEL 2008+ SPRAY CONTROL PANEL: INTERMEDIATE CONTROL

- Automatic control of up to 16 PulsaJet® nozzles
- Cycles PulsaJet nozzles up to 50% faster to ensure uniform coverage of conveyors and moving objects at even faster line speeds
- Operates PulsaJet nozzles at up to 250% higher pressure to spray higher viscosity coatings
- Distance-based timing control ensures more accurate placement of intermittent sprays at variable line speeds
- Wide range of input and output signals to allow use of a variety of sensors, including trigger sensors, line speed sensors, pressure transducers and more
- Optional zone control to turn individual nozzles in a manifold on/off
- Precision Spray Control ensures uniform coverage and accurate flow rate adjustments based on line speed
- Integrates easily with other plant control systems
- Available with food contact materials of construction
- Touch screen HMI with diagnostic screens for easy user control and troubleshooting



AUTOJET MODEL 2250+ SPRAY CONTROL PANEL: ADVANCED SPRAY CONTROL

- Automatic control of up to 16 PulsaJet nozzles
- Real-time monitoring and closed-loop control of spray pressure and flow control
- Optional second channel provides independent control for a second spray manifold or a second production line
- Cycles PulsaJet nozzles up to 50% faster to ensure uniform coverage of conveyors and moving objects at even faster line speeds
- Operates PulsaJet nozzles at up to 250% higher pressure to spray higher viscosity coatings
- Precision Spray Control ensures uniform coverage and accurate flow rate adjustments based on line speed
- Integrates easily with other plant control systems
- Available with food contact materials of construction
- Touch screen HMI with diagnostic screens for easy user control and troubleshooting



APPLICATION-SPECIFIC AUTOJET SYSTEMS

Standard AutoJet Systems are also available for specific coating applications. **Ask your sales engineer for additional information.**

- AutoJet Lubrication Systems
- PanelSpray® Systems
- AccuOil™ Systems



PULSAJET® AUTOMATIC SPRAY NOZZLES

PulsaJet automatic spray nozzles are constructed of stainless steel, PPS, PEEK™ and EPDM or Viton® seals for maximum chemical resistance. PulsaJet nozzles are also available for spraying alcohol in Zone 1 hazardous locations. Certified by FM approvals, these nozzles are constructed of stainless steel, PPS, PEEK™ and have FFKM seals.

The compact design and simple mounting options for PulsaJet nozzles enable them to be easily integrated into most production areas. Wear parts for all PulsaJet nozzles are easily accessible to minimize routine maintenance time.



PulsaJet nozzles are available in a wide variety of configurations, including:

- Hydraulic or air atomized sprays
- Auto-alignment of flat spray tips
- Recirculation of sprayed liquid
- Temperature control to enable spraying of heated viscous liquids
- Special coatings for improved corrosion resistance
- Special construction for enhanced moisture protection

Precise liquid distribution for all PulsaJet automatic spray nozzles is provided using UniJet® spray tips. Standard UniJet tips are available in 303 or 316 stainless steel and offer a wide range of flow rates and spray angles.

Premium UniJet PWMD and PWMM spray tips offer improved spray uniformity for critical coating applications. The tapered edges ensure even coverage when overlapping sprays are required and the low volume behind the spray orifice results in improved spray distribution. UniJet PWMD and PWMM tips are available in 303 stainless steel and offer a wide range of flow rates.



MODELS

AA10000AUH-03
AA10000AUH-03-QC



Liquid inlet connection	1/8" NPT or BSPT
Minimum flow rate at 40 psi (2.8 bar) and 10% duty cycle	.0017 gpm (0.006 lpm)
Maximum flow rate at 100 psi (7 bar) and 100% duty cycle	0.47 gpm (1.8 lpm)
Maximum rated pressure	100 psi (7 bar) (250 psi with 2008+ controller)
Maximum liquid temperature	200°F (93°C)
Power	24VDC, 0.36 amp
Maximum operating speed	10,000 cpm (15,000 cpm with Model 2008+ controller)
Model -03 accepts UniJet® TPU spray tips.* Model -03-QC accepts QuickJet® QSVV quick-connect spray tips.* Construction: Stainless steel, Viton® or EPDM seals, PPS and PEEK™.	

MODEL

AA10000AUH-10



Liquid inlet connection	1/8" NPT or BSPT
Minimum flow rate at 40 psi (2.8 bar) and 20% duty cycle	.02 gpm (0.075 lpm)
Maximum flow rate at 100 psi (7 bar) and 100% duty cycle	1.6 gpm (6.1 lpm)
Maximum rated pressure	100 psi (7 bar)
Maximum liquid temperature	150°F (65°C)
Power	24VDC, 1.05 amp
Maximum operating speed	5,000 cpm
Accepts UniJet TPU tips.* Construction: Stainless steel, Viton® or EPDM seals, PPS and PEEK.	

MODEL

AA10000AUH-03-Z1



Liquid inlet connection	1/8" NPT or BSPT
Minimum flow rate at 40 psi (2.8 bar) and 10% duty cycle	.0017 gpm (0.006 lpm)
Maximum flow rate at 100 psi (7 bar) and 100% duty cycle	0.47 gpm (1.8 lpm)
Maximum rated pressure	100 psi (7 bar)
Maximum liquid temperature	104°F (40°C)
Power	24VDC, 0.36 amp
Maximum operating speed	10,000 cpm
Accepts UniJet TPU tips.* Used in Zone 1 hazardous areas. Construction: Stainless steel, FFKM seals, PPS and PEEK.	

MODELS

AA10000AUH-104210
AA10000AUH-104214
AA10000AUH-104215



Liquid inlet connection	1/8" NPT or BSPT
Minimum flow rate at 40 psi (2.8 bar) and 10% duty cycle	.0017 gpm (0.006 lpm)
Maximum flow rate at 100 psi (7 bar) and 100% duty cycle	0.47 gpm (1.8 lpm)
Maximum rated pressure	100 psi (7 bar) (250 psi with 2008+ controller)
Maximum liquid temperature	200°F (93°C)
Power	24VDC, 0.36 amp
Maximum operating speed	10,000 cpm (15,000 cpm with Model 2008+ controller)
All three models accept Premium UniJet PWMD spray tips with 5° offset for auto spray pattern alignment.** Model 104210 – Rear liquid inlet. Model 104214 – Side liquid inlet for low profile mounting. Model 105215 – Rear liquid inlet with front port for liquid recirculation. Construction: Stainless steel, Viton® or EPDM seals, PPS and PEEK.	

*More information: *Industrial Spray Products Catalog* 75-HYD, pages C24-C31
 **More information: Data Sheet, PWMD UniJet Tips



MODEL

AA10000AUH-72440-1/4



Liquid inlet connection	1/4" NPT or BSPT
Minimum flow rate at 40 psi (2.8 bar) and 10% duty cycle	.0017 gpm (0.006 lpm)
Maximum flow rate at 100 psi (7 bar) and 100% duty cycle	0.47 gpm (1.8 lpm)
Maximum rated pressure	100 psi (7 bar) (250 psi with 2008+ controller)
Maximum liquid temperature	150°F (65°C)
Power	24VDC, 0.36 amp
Maximum operating speed	10,000 cpm (15,000 cpm with Model 2008+ controller)
<p>Accepts Standard UniJet® tips. Jacketed design keeps unit at consistent temperature.*</p> <p>Construction: Electropolished or Chromium Nitride coated magnetic SS, Stainless steel, Viton® or EPDM seals, PPS and PEEK.</p>	

MODEL

AA10000AUH-0050



Liquid inlet connection	5/32" (4mm) tube fittings
Minimum flow rate at 40 psi (2.8 bar) and 5% duty cycle	.0009 gpm (0.003 lpm)
Maximum flow rate at 100 psi (7 bar) and 100% duty cycle	0.080 gpm (0.303 lpm)
Maximum rated pressure	200 psi (14 bar)
Maximum liquid temperature	150°F (65°C)
Power	48VDC, 1.0 amp
Maximum operating speed	25,000 cpm (sold only with Model 2008+ controller)
<p>Accepts Premium UniJet PWMM spray tips with 5° offset for auto spray pattern alignment.**</p> <p>Construction: Stainless steel, Viton® or EPDM seals, PPS and PEEK.</p> <p>For dosing applications, spray time as low as 1 ms can be achieved.</p> <p>Available only as part of the PuslaJet Mini Low Flow Spray System.</p>	

MODEL

AA10000JJAU



Liquid inlet connection	1/8" NPT or BSPT
Minimum flow rate at 5 psi (0.34 bar) and 10% duty cycle (1650 Fluid Cap)	0.0017 gpm (0.0064 lpm)
Maximum flow rate at 40 psi (2.8 bar) and 100% duty cycle (2850 Fluid Cap)	0.14 gpm (0.53 lpm)
Maximum rated pressure	100 psi (7 bar) (250 psi with 2008+ controller)
Maximum liquid temperature	200°F (93°C)
Power	24VDC, 0.36 amp
Maximum operating speed	10,000 cpm (15,000 cpm with Model 2008+ controller)
<p>Accepts standard JJ air atomizing setups.****</p> <p>Specify appropriate retainer cap when ordering.</p> <p>Construction: Stainless steel, Viton® or EPDM seals, PPS and PEEK.</p>	

MODEL

AA10000JAU-10



Liquid inlet connection	1/4" NPT or BSPT
Minimum flow rate at 5 psi (0.34 bar) and 20% duty cycle (2050 Fluid Cap)	0.0027 gpm (0.010 lpm)
Maximum flow rate at 20 psi (1.4 bar) and 100% duty cycle (80150 Fluid Cap)	.75 gpm (2.84 lpm)
Maximum rated pressure	100 psi (7 bar)
Maximum liquid temperature	200°F (93°C)
Power	24VDC, 1.05 amp
Maximum operating speed	5,000 cpm
<p>Accepts standard J air atomizing setups.****</p> <p>Construction: Stainless steel, Viton® or EPDM seals, PPS and PEEK.</p>	

*More information: *Industrial Spray Products Catalog* 75-HYD, pages C24-C31

**More information: Data Sheet, PWMD UniJet Tips

***More information: *PuslaJet Mini Low Flow Spray System*, Bulletin 705

****More information: *Air Atomizing and Automatic Spray Nozzles Catalog* 75AA-AUTO, pages B24-B31





SPRAY MANIFOLDS

98250 HYDRAULIC PULSAJET® SPRAY MANIFOLD

- Use with PulsaJet hydraulic and air atomizing spray nozzles
- User specified lengths, number of nozzles and nozzle spacing
- User-adjustable nozzle spacing
- Dual inlet ports for liquid recirculation
- Aluminum or stainless steel construction
- IP64 wiring configuration available for single channel or independent banking of nozzles

63600 HYDRAULIC SANITARY JACKETED PULSAJET MANIFOLD

- Heated or non-heated operation
- Hot water jacket can be used as a cooling jacket
- Housing and all internal liquid and conduit lines of header are 316L stainless steel construction

63600 AIR ATOMIZING SANITARY JACKETED PULSAJET MANIFOLD

- Heated or non-heated operation
- Hot water jacket can be used as a cooling jacket
- Housing and all internal liquid and conduit lines of manifold are 316L stainless steel construction





HELPFUL RESOURCES

AutoJet® Model 1550+ Modular Spray Systems	Bulletin 626
PanelSpray® Systems	Bulletin 632
AutoJet Lubrication Systems	Bulletin 685
AutoJet 2008+ Precision Spray Control System with Zoning	Bulletin 734
Industrial Hydraulic Spray Products	Catalog 75
Industrial Hydraulic Spray Products	Metric Catalog 75M
Air Atomizing & Automatic Spray Nozzles	Catalog 75
Air Atomizing & Automatic Spray Nozzles	Metric Catalog 75M

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Experts in Spray Technology

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