

ACHIEVE A COMPETITIVE ADVANTAGE
BY OPTIMIZING PRODUCTION
WITH SPRAY TECHNOLOGY



RE WASHING
TS WASHING
DEGREASING
MOISTENING
NOWMAKING
REPARATION
UR BURNING
ER AERATING
AL TREATING
NE SPRAYING
SCRUBBING
AR WASHING

ST CONTROL B BLOW-OFF

SANITIZING
CE WASHING

ESIVE SPRAY

ER COOLING

LL COOLING

D INJECTION

APPLICATION

RE ADDITION

NE MAKKING

OOD SAFE

ERVENTIONS

SUCCEEDING IN TODAY'S
COMPETITIVE GLOBAL
INDUSTRIAL MARKETPLACE

REQUIRES SMART PARTNERS

For tens of thousands of industrial manufacturers and processors worldwide, Spraying Systems Co. is one of those trusted partners. We're in plants like yours every day solving production problems, finding ways to reduce waste and advance sustainability initiatives and recommending changes to improve product quality and worker safety. Using unique spray technology, we help customers optimize a wide range of operations requiring cooling, coating, cleaning, drying, lubrication and more



Local sales and support

We have hundreds of spray technology experts working from more than 90 sales offices around the world to ensure fast, local, hands-on service.

Unique spray technology that can have a dramatic impact on the bottom line

One example is our Precision Spray Control (PSC) technology that ensures uniform application of coatings and lubricants with minimal waste — even when operating conditions change. This technology has helped many manufacturers save hundreds of thousands of dollars annually.

Most complete range of spray technology product solutions available

Spray nozzles, automated spray systems, spray headers, manifolds and injectors, spray dryers, tank cleaning products, drying systems and more are produced for quick delivery from strategically-located manufacturing facilities on six continents.





ETHYLENE PRODUCER INCREASES PRODUCTION

An ethylene producer needed to spray quenching oil to cool the temperature of a gas stream in a cracking furnace. Selecting the appropriate nozzles for various gas flows was challenging.

& RUNNING SMOOTHLY EVERY DAY & EXPLORE

INNOVATIVE WAYS TO BOOST
YOUR PRODUCTIVITY, IMPROVE
QUALITY & REDUCE WASTE

CEMENT BOARD MANUFACTURER REDUCES LABOR

A cement board manufacturer was experiencing quality issues caused by inconsistent manual application of a release agent. Over-application was wasteful and stained the final product. Under-application caused damage when the product was removed from the forming board.

Big production improvements sometimes come from unexpected sources.

Spray technology is often one of those sources since it is generally used in all cleaning, coating, cooling, lubricating, humidifying, spray drying, fogging, misting, fire protection and dust control operations. Our specialty is finding ways to improve efficiency in these operations to positively affect profitability.

For more real-world case studies, see spray.com/result

ELECTRONICS POWDER PRODUCER ELIMINATES DOWNTIME

A leading producer of powders used in the electronics industry needed to clean large tanks. Manual high-pressure cleaning took up to twelve hours and required workers to enter the tanks, causing serious safety concerns.



ETHYLENE PRODUCER

SOLUTION

The right nozzles for optimal gas cooling were selected using proprietary gas cooling calculations and Computational Fluid Dynamics (CFD) modeling. After analyzing gas velocity, temperature and other factors, specific insertion points and spray direction for FullJet® full cone nozzle lances were selected. The decision was validated by CFD modeling prior to fabrication.

RESULTS

2X 20% 1ETHYLENE PRICE MONTH
OUTPUT PREMIUM PAYBACK

Installing the nozzle lances helped the plant double ethylene output. The cooling system enabled a significant production increase of a top-grade product, which sells at a 20% price premium. The increased production and added revenue generated a payback period of one month for the investment in CFD modeling and nozzle lances.





CEMENT BOARD MANUFACTURER

SOLUTION

An AutoJet® Modular Spray System controlling hydraulic PulsaJet® nozzles solved the release agent application problem. The spray nozzle manifold provided uniform coverage of the forming board prior to the cement coating. The system allowed operators to easily adjust the flow rate for different conveyor speeds so the proper volume of release agent was applied. Using Precision Spray Control (PSC) to generate very low flow rates, the need to use air atomizing nozzles and compressed air was avoided.

RESULTS

NO REDUCED 6
MANUAL CHEMICAL MONTH
LABOR USAGE PAYBACK

The AutoJet Spray System eliminated the manual labor previously required for release agent application. Quality issues were resolved and chemical consumption was greatly reduced, generating a payback period of six months.





A TankJet® AA190AGH tank cleaner provided effective cleaning of the entire tank interior. An adjustable ball fitting allowed flexible positioning of the spray turret in the tanks. High-impact cleaning decreased the cleaning time to about 45 minutes and workers no longer needed to enter the tanks.

RESULTS

\$75K 90% 9
ANNUAL REDUCTION IN MONTH
SAVINGS DOWNTIME PAYBACK

Seven large tanks were equipped with TankJet cleaning equipment, eliminating the need for workers to enter the tanks. Cleaning downtime was reduced by more than 90% and the reduction in labor saved more than US\$75,000 annually. The equipment cost was recouped in approximately nine months.





TEXTILE MANUFACTURER IMPROVES QUALITY & REDUCES DOWNTIME

A textile manufacturer needed to precisely manage the moisture profile of fabric to ensure proper dyeing and finishing. The spinning discs previously used to apply water did not provide consistent droplet size or uniform coverage across the width of the fabric. In addition, frequent disc breakdowns caused excessive downtime.

MAINTAIN BRAND VALUE & TOP QUALITY

WHILE INCREASING

OPERATIONAL FEEICIENCY

CAN MANUFACTURER IMPROVES QUALITY & INCREASES PRODUCTION

A can manufacturer needed to wash, rinse and dry beverage cans to remove lubricants prior to applying a protective coating to the interior and a decorative coating to the exterior. The company was experiencing poor wash quality and numerous cans were being knocked over in the washer.

From standard hydraulic spray nozzles to fully automated spray systems, our spray solutions provide innovative ways for you to achieve your quality goals while maximizing output and minimizing production costs.

OSB MANUFACTURER MAINTAINS QUALITY & INCREASES PRODUCTION

An oriented strand board manufacturer needed better control over the addition of moisture to the OSB mat surface to ensure board quality and minimize press time.

For more real-world case studies, see spray.com/results



TEXTILE MANUFACTURER

SOLUTION

An AutoJet Spray Controller and a spray header with PulsaJet® automatic spray nozzles maintained the desired 12% moisture content despite commonly fluctuating line speeds of 20% or more. Use of Precision Spray Control (PSC) ensured optimal drop size, spray angle and uniform coverage across the width of the fabric.

RESULTS

UNIFORMREDUCED11MOISTURELABORMONTHCOVERAGEDOWNTIMEPAYBACK

The AutoJet® Spray System maintained a consistent moisture profile. Product quality was improved and enabled a price increase. Downtime and labor to maintain the system decreased significantly. The investment in new spray technology was recouped in less than 11 months.





CAN MANUFACTURER

SOLUTION

Special headers equipped with ProMax® QuickJet® nozzles positioned above and below the conveyor ensured thorough washing. The quick-connect nozzles operated at low pressure and provided the ideal flow rate and spray angle. The large spray drops produced by the nozzles improved wettability and increased impingement on hard-to-reach areas of the cans.

RESULTS

REDUCED 13% 1PRODUCT PRODUCTION WEEK
SCRAP INCREASE PAYBACK

The new can wash headers improved the washing process and prevented cans from being knocked over. Scrap was significantly reduced and generated a 13% production increase. The customer recouped its investment in the system in less than a week.





OSB MANUFACTURER

SOLUTION

A PanelSpray® system equipped with PulsaJet nozzles precisely added the proper volume of water to the mat and automatically adjusted for line speeds ranging from 40 to 140 ft./min. (12.2 to 42.7 m/min.). Controlling the flow rate using PSC ensured uniform coverage across the entire width of the mat.

RESULTS

5% 10% 6
PRODUCTION ENERGY MONTH
INCREASE REDUCTION PAYBACK

Consistent surface moisture addition enabled the OSB producer to maintain board quality and strength while reducing press time. In addition to a production increase of more than 5%, the decreased press time saved 10% of the energy consumed per press cycle. These factors generated a payback period of approximately six months for the system.





POWER PLANT REDUCES AIR POLLUTION

A power plant needed a NOx control system that would reduce emissions by 30% to meet compliance standards. The company needed alternatives to a custom system with a US\$1,000,000 price tag recommended by a leading air pollution control equipment company.

OPERATE WITH LESS IMPACT ON OUR ENVIRONMENT

& IMPROVE YOUR
BOTTOM LINE BY
USING OPTIMIZED
SPRAY TECHNOLOG

SNACK MANUFACTURER REDUCES WATER CONSUMPTION

A leading snack manufacturer wanted to improve cleaning operations while reducing water consumption. The manufacturer had dozens of production facilities, each using hundreds of hydraulic flat spray nozzles.

Our spray equipment enables manufacturers and processors around the world to operate more efficiently and reduce water, chemical and energy use. In addition, our company is committed to reducing the environmental impact of our global manufacturing centers.

For more real-world case studies, see spray.com/results

WINE BOTTLE MANUFACTURER REDUCES ENERGY CONSUMPTION

A manufacturer of wine bottles needed to blow broken glass off production lines. Homemade air nozzles fabricated from crimped stainless steel tubing were effective but consumed large volumes of compressed air and were extremely expensive to operate.



POWER PLANT

SOLUTION

Using proprietary gas cooling calculations and drop size data collected in our test labs, our solution featured eight injectors installed on three levels. Computational Fluid Dynamics (CFD) modeling validated the system design. Air purge injectors, equipped with hydraulic WhirlJet® hollow cone nozzles, were designed to withstand high temperatures and keep a urea/water solution cool enough to prevent vaporization and nozzle clogging.

RESULTS

45%REDUCED1/3 THE COSTREDUCED NOXOPERATINGOF COMPETINGEMISSIONSCOSTSSOLUTIONS

The injectors enabled the plant to reduce NOx emissions by 45% and earn emission credits that were sold. Wall wetting was eliminated and the use of hydraulic nozzles eliminated the need for costly compressed air. The solution was just one-third the cost of a competitor's solution and saved the power plant several hundred thousand dollars.





SOLUTION

Comprehensive spray optimization audits at multiple plants determined that nozzles operating at lower flow rates could be used for cleaning without compromising effectiveness. Standard VeeJet® flat spray nozzles that use up to 80% less water were installed.

RESULTS

80% 700M \$10MLESS WATER GALLONS ANNUAL
CONSUMED SAVED SAVINGS

By replacing an average of 500 nozzles per plant location with lower capacity VeeJet nozzles, the snack manufacturer reduced cleaning water use by 700 million gallons (2.65 million m³) annually. The annual savings in water and energy to heat the water totaled US\$10,000,000.





WINE BOTTLE MANUFACTURER

SOLUTION

WindJet® Air Cannon packages effectively blow broken glass from the conveyors. The low-maintenance, low-noise systems consisted of a 2.5HP blower and an air cannon. The uniform high-velocity air streams produced by the systems eliminated the need for compressed air.

RESULTS

ELIMINATED\$161K1COMPRESSEDANNUALMONTHAIR USAGESAVINGSPAYBACK

Prior to installing the WindJet Air Cannon packages, the customer had been spending almost US\$170,000 annually on compressed air. The annual operating expenses for the seven WindJet Air Cannon packages was about US\$8,500 – a savings of more than US\$161,000. The cost of the new systems was recouped in just over one month.





AUTOMOTIVE COMPANY REDUCES MISTING & OVERSPRAY

An automotive company needed to lubricate metal blanks prior to stamping a variety of parts, including Class A exterior pieces. The air atomizing spray guns used to apply lubricating oil created significant misting and were inconsistent in applying the oil.

NOTHING IS MORE IMPORTANT

THAN THE SAFETY
OF YOUR EMPLOYEES
& YOUR CUSTOMERS

WASTE-TO-ENERGY PLANT ELIMINATES DANGEROUS MAINTENANCE OPERATIONS

A waste-to-energy plant wanted to reduce the costly compressed air and maintenance its Spray Dryer Absorber (SDA) required. A difficult-to-spray lime slurry injected into the SDA tower scrubs pollutants from the plant's exhaust gas stream. The previous solution of dual-fluid nozzle lances required a lot of compressed air and frequent maintenance. Two workers spent three hours per day on the difficult and dangerous process of removing dried slurry build-up.

No other provider can match the spray technology we offer to improve the safety of your production environment. Products and systems are available that reduce worker exposure to hazardous chemical fumes, minimize overspray of liquids that create slip hazards and eliminate the need for employees to enter tanks, climb on large equipment and conduct maintenance from catwalks. Our offering also includes a growing line of AutoJet® Food Safety Spray Systems designed specifically to help food processors ensure the safety of their products.

For more real-world case studies, see spray.com/results

MEAT PROCESSOR ENSURES FOOD SAFETY

A meat processor specializing in whole muscle and roll stock products wanted to ensure food safety while reducing the expense of the functional ingredients used as antimicrobial agents. Their priorities included cost control, shelf life and clean labels.



AUTOMOTIVE COMPANY

SOLUTION

An AutoJet® Spray System, which included a spray manifold equipped with PulsaJet® electric spray nozzles, ensured accurate application of lubricating oil to the top and bottom of the metal blanks even as line speeds varied. The hydraulic nozzles eliminated misting and overspray. For added efficiency, dovetail spray tips were used on the nozzles to speed replacement time and provide automatic spray pattern alignment.

RESULTS

70%REDUCED1DAILY OILENERGYYEARREDUCTION& WASTEPAYBACK

The AutoJet Spray System eliminated compressed air and greatly decreased misting for improved worker safety. In addition, the system reduced energy consumption for the lubrication operation and reduced the volume of waste oil being hauled away, improving the plant's sustainability efforts. Finally, the system reduced daily oil usage by 70% and allowed the manufacturer to achieve a one-year payback period on their investment.





WASTE-TO-ENERGY PLANT

SOLUTION

Computational Fluid Dynamics (CFD) modeling and FloMax® anti-bearding nozzles provided the solution to excessive maintenance time and compressed air use. Based on the airflow analysis in the SDA, four FloMax nozzle lances were designed to generate the precise drop size and minimize compressed air use. The FloMax anti-bearding air caps eliminated build-up on the nozzles, so daily nozzle maintenance was eliminated.

RESULTS

ELIMINATED MINIMIZED 15SAFETY COMPRESSED MONTH
CONCERNS AIR USAGE PAYBACK

Switching to FloMax nozzle lances allowed plant operators to shut down a 200HP compressor dedicated to the previous injection system and eliminated safety concerns for maintenance personnel. Based on the compressed air and labor savings, the new spray system provided a payback period of 15 months.





MEAT PROCESSOR

SOLUTION

An AutoJet Food Safety Spray System using PulsaJet automatic spray nozzles constructed from FDA-compliant materials precisely dosed the antimicrobial agent into the packages before meat products were inserted. Vacuum-sealing of the package distributed the antimicrobial evenly around the product — a process proven effective by the USDA/ARS. The AutoJet system controlled application of the antimicrobial agent on a bagger as well as a roll stock line.

RESULTS

ALT-2 CLEAN \$300,000 STATUS LABELS ANNUAL ACHIEVED ACHIEVED SAVINGS

The AutoJet Food Safety Spray System helped the processor achieve ALT-2 status with typical log reductions ranging from 1.8 to 2.8 for whole muscle and roll stock products. Product quality and shelf life remained consistent. Clean labels were achieved since lauric arginate is considered a processing aid and was used at low levels. The reduced cost of the antimicrobial generated an annual savings of US\$300,000 per year.

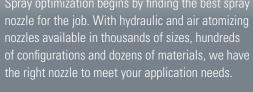




SAVE THOUSANDS YEAR-AFTER-YEAR

Spraying Systems Co. is the world's leading manufacturer of industrial spray products and services. We offer the largest selection of spray products and the most advanced testing and Computational Fluid Dynamics (CFD) modeling services available in the industry. Local spray expertise is just a call or click away. Our teams are standing by and ready to help streamline your operations and make your job easier.











of spray controllers and turnkey spray systems which include pumps,

Our most advanced systems offer Precision Spray Control (PSC).

sensors and other hydraulic and pneumatic components. AutoJet systems

help customers ensure product quality while minimizing production costs.



- "The automated spray system has enabled us to produce better quality product and save on material usage."
 - Maintenance manager, food processing plant

- "Good equipment, easy to operate and maintain. Knowledgeable staff and quick response. Great follow up."
 - Process engineer, large manufacturing company

- "The AutoJet® spray system and spray manifolds have helped reduce our chemical consumption more than I anticipated."
 - Chemical engineer, chemical processing plant

- "Spraying Systems Co. offers valuable products coupled with a great engineering and sales team that have a helpful attitude and provide what you need."
 - Maintenance manager, engineering and construction firm

THINK YOUR APPLICATION IS UNIQUE? WE CAN HELP

TAKE A LOOK AT WHAT OUR CUSTOMERS HAVE TO SAY

We work hard to meet the needs of our customers and always request feedback on our performance. Our customers report a 98% satisfaction level and state they will purchase from us again.



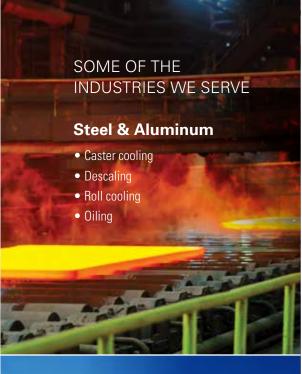
"Those guys take the time to make an explanation and suggest what we need; Fast response time. Products last a long time. We don't look elsewhere."

- Plant manager, mid-size textile producer
 - "We were able to produce a new SKU because of the automated spray system."
 - Project engineer, top 100 food processing plant

- "Our automated spray system reduced overspray and cut our lubrication costs in half. In addition, there is a safety benefit - not having lubricant on the floor."
 - Production manager, food processing facility







Petrochemical Industry

- NOx control
- Feed injection
- Gas cooling

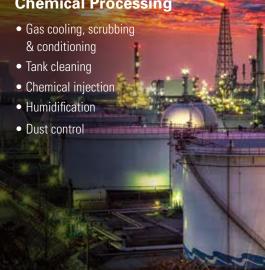


Stamping & **Metal Forming**

- Lubrication
- Precision coating
- Parts washing & drying



Chemical Processing



COMMON **MATERIALS** WE'VE SPRAYED

- Adhesives & glues
- Alcohol
- Anti-foaming agents
- Ammonia
- Ascorbic acid
- Butter
- De-ionized water
- Detergents
- Dyes & inks
- Eggs/Egg wash
- Emulsions
- Enzymes
- Ethanol
- Fat
- Fire retardant
- Fragrances/Aromas
- Gels
- Glazes/Syrup
- Lecithin
- Lignin powder
- Lotions
- Lubricants/Release agents/Silicone
- Marshmallow
- MDI-based polyurethane
- Milk
- Mold inhibitors
- Oils
- Resin
- Rust inhibitor
- Urea
- Slurries
- Water
- Wax

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FLIMINAT
ASING
AERATIN

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ATING I ROBOTIC APPLICATIONS I MARKING ATING I MOISTURIZING I CHEMICAL INJECTION ZING I FOGGING I MISTING I GAS COOLING DAM CONTROL I CLEANING I DESUPERHEATING TROL I PRESSURE WASHING I PARTS WASHING I SULFUR BURNING E SPRAYING I GAS SCRUBBING I CAR WASHING ING I PRODUCE WASHING I CHEMICAL DOSING EAL COATING I CASTER COOLING I DESCALING ONTROL I FEED INJECTION I CFD MODELING I DOITION I NAIL LINE MARKING I RELEASE AGENT TONS I FOOD SANITATION I PRECISION COATING

ROLL COOLING | OILING | NOX CONTROL | FEED INJECTION | CFD MODELING |

WAX APPLICATION | MOISTURE ADDITION | NAIL LINE MARKING | RELEASE AGENT

PLICATION | FOOD SAFETY INTERVENTIONS | FOOD SANITATION | PRECISION COATING

PRAY DRY | PARTS DRYING | TANK CLEANING | COATING | DISPENSING | GLAZING

LAMINATING | ROBOTIC APPLICATIONS | MARKING | FLAVORING | HUMIDIFYING

LUBRICATING | MOISTURIZING | CHEMICAL INJECTION | PASSIVATING | COATING

ILIZING | FOGGING | MISTING | GAS COOLING | ABSORPTION | FIRE PROTECTION

RINSING | FOAM CONTROL | CLEANING | DESUPERHEATING | MIST ELIMINATION

COOLING | DUST CONTROL | PRESSURE WASHING | PARTS WASHING | DEGREASING

MOISTENING | SNOWMAKING | SURFACE PREPARATION | SULFUR BURNING | WATER

AERATING | METAL TREATING | BRINE SPRAYING | GAS SCRUBBING | CAR WASHING

CONTROL | AIR BLOW-OFF | SANITIZING | PRODUCE WASHING | CHEMICAL DOSING

ADHESIVE SPRAY | PAINTING | SEAL COATING | CASTER COOLING | DESCALING

I ROLL COOLING | OILING | NOX CONTROL | FEED INJECTION | CFD MODELING



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