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THE PRODUCTS YOU NEED AND PERFORMANCE YOU CAN COUNT ON

You'll find thousands of automatic and air atomizing nozzles, spray controllers, and spray manifolds in this catalog but you can also visit spray.com to see thousands of other spray products. Featured products include hydraulic spray nozzles, handheld spray guns, tank cleaning equipment, air nozzles and nozzles for specialized operations like descaling, trim squirt, spray drying, fire protection and more. We offer the widest range of spray products available, so you're sure to find a solution that delivers the performance you need.

PRECISE, DEPENDABLE PRODUCT QUALITY

Your satisfaction is important to us. Our products are manufactured to exacting standards to deliver the promised performance each and every time you order. We are ISO 9001:2008 and 14001:2004 certified. Products ship only after undergoing our rigorous quality control and testing programs. If you have any concerns about the quality of any of our products, contact us immediately. We will address your issues and take corrective action as needed.

PRODUCTS WHEN YOU NEED THEM

Most of our spray nozzles are readily available and will be shipped within days of your order. If you need expedited service, let us know. Our ten manufacturing locations are strategically located around the world to help ensure quick and cost-effective product delivery.

SPECIAL REQUIREMENTS? TELL US WHAT YOU NEED.

If one of our standard products isn't quite right for your equipment, just let us know. Customization can range from simple changes in materials to specially-designed nozzles to meet exacting performance requirements.

We work with hundreds of OEMs and provide services like these:

- Special nozzle designs
- Private labeling with unique part numbers
- Special packaging
- Customized maintenance and operating instructions





THE SERVICES YOU NEED, WHEN AND WHERE YOU NEED THEM

OUR SOLE FOCUS ON SPRAY TECHNOLOGY ENSURES RESULTS IN YOUR OPERATIONS

Since spray technology is all we do, we have a level of expertise that can't be matched. Our sales engineers are factory-trained and only sell our spray products. Need to increase throughput in a coating operation? Eliminate waste or lower scrap? Cool products more quickly? Suppress dust? Minimize water and chemical use in cleaning operations? Just give us a call. With sales offices on six continents and more than 90 sales offices, we are in your area and ready to help.

WHAT CUSTOMERS SAY ABOUT OUR SERVICE

"We are very pleased with Spraying Systems Co. Wish all vendors were as good."

"Very pleased – awesome is the best way to describe Spraying Systems Co. service."

"A+ on service. Sales engineer responded quickly and visited my facility to review various product options for my application."

"Rep always provides prompt answers. Knows the full product line inside and out."

"I get more technical support from Spraying Systems Co. than any other vendor."

"The local rep. came right out – didn't even know the size of the project at the time."

"Spraying Systems Co. provides solutions – not just parts."

"More knowledgeable than any other equipment company we work with."

"We get the products we need, when we need them. Each and every time we order."





SPRAY CONTROL OPTIMIZES SPRAY NOZZLE PERFORMANCE

SPRAY CONTROL

Spray nozzles can only perform properly if the entire spray system is operating efficiently. That's why we offer a wide range of AutoJet® spray controllers. Choose from basic automatic control, monitoring of spray variables or automatic adjustments of spray variables based on what is happening in your process. Adding a spray controller can help:

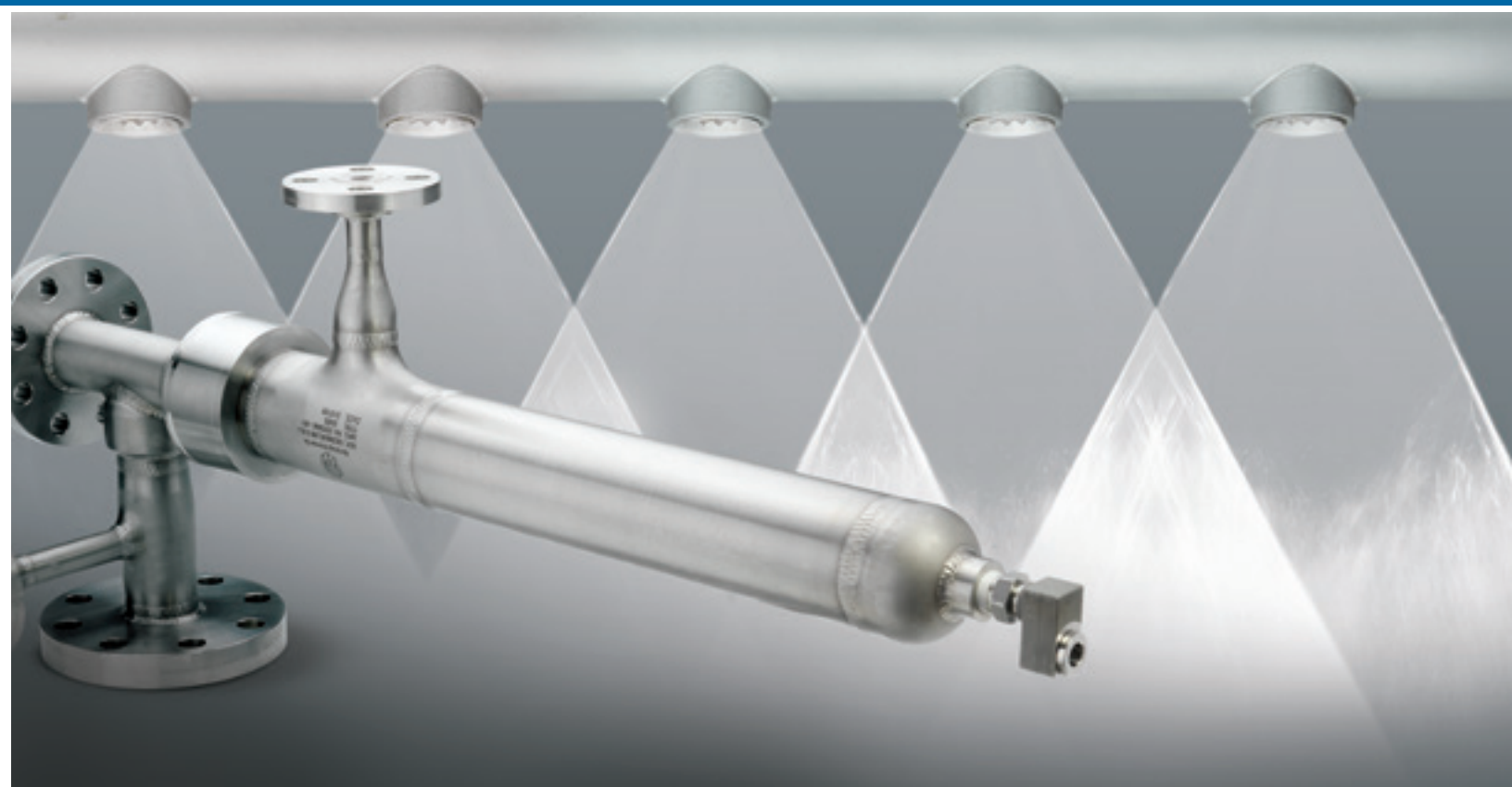
- Increase production through automation and enable operation at variable line speeds
- Reduce labor costs by eliminating manual operation, system monitoring and changeover of nozzles between batches
- Lower operating costs by eliminating overspray and waste through precision spraying
- Improve worker safety by minimizing exposure to harmful chemicals

Application-specific systems are also part of our offering for more demanding spray operations.

TURNKEY SYSTEM OPTIONS

- AccuCoat® Heated Spray Systems for viscous coatings
- AutoJet® Antimicrobial and Mold Inhibitor Spray Systems for food safety applications
- PanelSpray® System for engineered wood products
- AutoJet® Tissue and Web Lamination Spray System for tissue and other hygienic products
- AutoJet® Gas Cooling System for pollution control

Additional options include systems for dust suppression, NOx control and humidification. Check with your local sales office; system availability may vary by region.



SPRAY MANIFOLDS, HEADERS AND INJECTORS

The equipment that supplies fluid to spray nozzles can have a big impact on performance. If the fluid flow isn't adequate or the fluid delivery device isn't suitable for the operating environment, performance may be compromised. Unlike feed devices built by fabricators or in-house staff, our spray manifolds, headers, showers, injectors, lances and quills are designed to optimize the performance of our spray nozzles and streamline your operations.

You can specify the length, number of nozzles, nozzle spacing and connection type for most of our manifolds and headers. Spray injectors can also be customized. You can specify nozzle type, nozzle placement, materials, coatings and specialized testing services.

The next time you order spray nozzles, take a moment to consider your fluid delivery equipment. Talk to your local sales engineer about ways to maximize performance and service life and simplify maintenance.

PRODUCT OPTIONS INCLUDE:

- Basic spray nozzle manifolds with a C-channel to facilitate spray nozzle set-up and adjustment
- Pipe-in-pipe spray manifolds with nozzles mounted inside a slotted pipe for protection against build-up and damage
- Modular spray manifolds with easy-to-access tubing and fittings to simplify set-up and cleaning
- Heated spray manifolds for use with viscous solutions
- Sanitary spray manifolds to ensure food safety
- Built-to-order spray manifolds
- Automatic brush showers that keep nozzles clean without process interruption or maintenance downtime
- Built-to-order spray injectors for use in demanding environments such as refineries, power plants and chemical production
- Spray quills and lances for use in environments where spray performance is less critical



PERFORMANCE VALIDATION BEFORE YOU BUY

TESTING SERVICES HELP ENSURE PRECISION SPRAY PERFORMANCE

In new spray applications or applications where spray performance is critical, it is important to understand how factors like these affect performance:

- Operating conditions such as pressure, temperature and variable line speeds
- The liquid being sprayed
- The placement and position of nozzles in relation to the target

In many cases, experience and theoretical calculations can provide an indication of actual spray performance. However, testing in our spray labs determines actual performance and can eliminate costly specification mistakes or quality problems after installation. During testing, we can adjust operating conditions and/or test different nozzles until we find the exact spray performance required in your application.

Common tests include:

- Spray characterization
- Spray angle
- Drop size distribution
- Evaporation rate
- Spray impact
- Residence time
- Spray pattern
- Dwell time
- Spray coverage

A LOOK INSIDE OUR LABS

Evaluating sprays requires very specialized equipment. In fact, some of our equipment was designed by our spray engineers and is used only in our facilities. Our test equipment includes:

- Spray patternators to measure spray distribution
- Impact testers to determine impact throughout a spray
- Laser diffraction and Phase Doppler particle size analyzers to measure drop size and spray velocity
- Laser sheet imaging analyzers to evaluate spray shape and distribution
- Wind tunnel to determine the effects of air currents and gas flows on sprays





ADVANCED MODELING SERVICES AND MANUFACTURING CAPABILITIES FOR COMPLEX AND DEMANDING APPLICATIONS

It is not feasible to replicate operating conditions for every application. Gas cooling, chemical injection, spray drying and tablet coating are just a few applications where we cannot spray some liquids for safety reasons or procure comparable process equipment. Yet, in these applications, understanding spray performance is often critical to process efficiency, product quality, equipment longevity and even worker safety. That's when we use sophisticated modeling tools to predict spray performance.

- Computational Fluid Dynamics (CFD) models illustrate flow patterns, velocity, temperature, gas/liquid distributions, droplet trajectories, internal system pressure and more in scrubbers, towers, ducts and dryers. Our models use data we've collected in our spray labs to reduce the error factor and precisely predict spray performance
- Fluid Structure Interaction (FSI) examines the interaction between fluid dynamics and structural integrity. This enables us to determine the materials required to withstand mechanical stresses such as load, pressure, turbulence, corrosion and more

Demanding applications often require the use of special materials and compliance with various manufacturing codes and testing standards. We can produce nozzles, quills, injectors and headers to exacting standards and conduct a wide range of tests to validate construction.

MANUFACTURING AND TESTING CAPABILITIES

Manufacturing:

- ASME, Boiler and Pressure Vessel Code
- ASME B31.1 Power Piping Code
- ASME B31.3 Process Piping Code
- Welding to ASME B&PV Code Section IX
- cGMP
- Canadian Registration Number requirements

Testing in accordance with ANSI®, ASTM® standards:

- Ultrasonic
- Radiographic
- Liquid penetrant
- Hardness
- Hydrostatic
- Magnetic particle examination
- Positive material identification

See Trademark Registration and Ownership, page i-1.

Learn more about our testing and modeling services at sprayanalysis.com



HOW YOU CAN BENEFIT FROM SPRAY SYSTEM OPTIMIZATION

WAYS TO LEARN MORE

EXPERT ADVICE AT YOUR PLANT

No-charge spray system evaluation – Your local sales engineer will inspect your current spray operations and provide suggestions on how to improve efficiency. Evaluations can focus on a specific area such as reducing water or compressed air use, tank cleaning, automation opportunities and more.

Complimentary Lunch and Learn workshops –

Select a topic, choose a date and invite your colleagues. We'll provide lunch and an informative 60-minute session. Popular topics include *Spray Nozzle Basics*, *Understanding Drop Size* and *How to Reduce Use of Costly Chemicals*.

Spray demos and proof-of-concept trials at your facility –

Your local sales engineer will conduct demos and tests on-site so you can see how a product will work in your environment. When operating conditions don't allow an on-site demo or test, other arrangements can be made.

TESTS AND DEMONSTRATIONS AVAILABLE AT REGIONAL SPRAY TECHNOLOGY CENTERS

Throughout North America, we have several Spray Technology Centers. These facilities are equipped to conduct proof-of-concept tests and technology demonstrations. Seminars including live demonstrations on various topics are also conducted throughout the year. Schedules vary by region so contact your local sales engineer for information.

SUSTAINABILITY ASSESSMENT PROGRAM

Let our team of experts help you identify actionable ways to:

- Reduce water, chemical and energy use
- Reduce scrap and waste
- Improve worker safety

We will visit your plant and evaluate your essential spraying applications and uncover ways to help your operations become more efficient, productive, sustainable and safe. Visit spray.com/sustainability-assessment for more information.





EDUCATIONAL RESOURCES

Video demonstrations and tutorials on spray.com and [YouTube.com/sprayingystems](https://www.youtube.com/sprayingystems)

Explore our video library and learn about new spray products and techniques; best practices in maintenance procedures; what to look for in a spray pattern and more.

Technical guides and white papers on spray.com

- *Optimizing Your Spray System*, Technical Manual 410
- White papers address a wide range of topics. Here are a few examples:
 - Less Time & Lower Costs
 - Optimizing Spray Performance
 - Strategies to Reduce Your Water & Chemical Footprint
 - Optimizing the Efficacy of Antimicrobial Application on Meat & Poultry

Case studies on spray.com

More than 75 case studies demonstrate the benefits other processors have experienced through spray optimization. See spray.com/results.

Catalogs on spray.com

- Hydraulic Automatic Nozzles
- Automatic and Air Atomizing Nozzles, Spray Controllers and Spray Manifolds
- TankJet® Tank Cleaning Products
- WindJet® Air Products
- SprayDry® Nozzles
- Spray Technology for Steelmaking
- Spray Technology for Pulp and Papermaking
- Car Wash Products
- GunJet® Handheld Spray Guns
- Plus dozens of market- and product-specific technical bulletins





ORDERING PRODUCTS

For assistance with product selection and ordering, please contact your local sales office. Sales engineers are available and will help you determine which products best meet your application requirements. Call **1.800.95.SPRAY** in North America. If you are outside of North America, call **1.630.665.5000** or visit **spray.com** to find information for the sales office in your area. For your convenience, there are multiple ways to place an order: phone, fax and online.

In North America

Phone: 1.800.95.SPRAY | Fax: 1.888.95.SPRAY

Outside North America

Phone: 1.630.665.5000 | Fax: 1.630.260.0842

Online ordering is also available. Visit [spray.com/sprayfinder](https://www.spray.com/sprayfinder). You'll find helpful selection tools, detailed product specs and 3D CAD models for our full product line and live chat for immediate assistance.

FINDING PRODUCTS

- Consult the Product Index on **page i-3** if you know the name of the product
- Consult the Part Number Index on **page i-5** if you have the part number. Part numbers are shown alphanumerically on **page i-6**
- Selection assistance is available by calling your local sales office