



Spraying Systems Co.[®]

Experts in Spray Technology

A GUIDE TO FOOD SAFETY & SANITATION USING SPRAY TECHNOLOGY

SOLUTIONS FOR MEAT & POULTRY, BAKERY,
CHEESE, TANK CLEANING & MORE



TABLE OF CONTENTS	PAGE
AUTOJET® FOOD SAFETY SYSTEMS FOR MEAT & POULTRY	3-5
AUTOJET FOOD SAFETY SYSTEMS FOR BAKED GOODS & CHEESE	6-7
SANITATION EQUIPMENT	
TankJet® Tank Cleaning Equipment	8-9
GunJet® Spray Guns & Conveyor Cleaning Nozzles	10
PATHOSANS® CLEANING & SANITIZING SYSTEM	11
For On-site, On-demand Generation of Cleaning Solutions	



EXTEND SHELF LIFE & PREVENT RECALLS WITH SPRAY TECHNOLOGY

Using spray technology to apply antimicrobials and mold inhibitors on food and in packaging has become a proven, cost-effective approach to pathogen protection and extending shelf-life. Spray technology is also widely used to apply sanitizers and chemicals for effective, repeatable cleaning of equipment, floors, walls and more. To ensure optimal results, partnering with a supplier with a proven track record in food safety and sanitation is critical.

We have the largest dedicated sales and support team in the world. With more than 90 offices, we have coverage on six continents. Our specially-trained food safety and sanitation specialists, sales representatives and spray technology centers are in your area and ready to help you effectively and efficiently control pathogens in your plant and prevent recalls.

Visit spray.com or call 1.800.95.SPRAY or 1.630.665.5000 to speak with a local spray expert.



AUTOJET® FOOD SAFETY SYSTEMS FOR MEAT & POULTRY

AutoJet Food Safety Spray Systems ensure uniform application of cleaning agents and sanitizers on conveyors and precision application of antimicrobials in packaging or directly on meat and poultry products.



BENEFITS:

- Safer food at a lower cost through reduced use of expensive additives
- Added intervention steps enhance food safety and can extend shelf life, meeting the demanding requirements of processors and retailers
- Adjust additive volumes for increased operating versatility
- Tightly-controlled application rate control enables efficient use of high-quality, natural antimicrobials
- Easily integrate into existing product lines to avoid costly reconfiguration

SYSTEM MODULES:

- **Fluid Delivery** – PulaJet® automatic spray nozzles with UniJet® spray tips or UniJet bodies and spray tips in FDA-compliant materials. Nozzles are typically mounted on spray headers. Other mounting options are available
- **Spray Control** – AutoJet spray controller for automated systems. Many optional features are available to get the right precision for your spray application
- **Fluid Supply** – Stainless steel pressure pot with liquid level sensor and pressure relief valve

IDEAL FOR:

- Conveyors
- Bagged whole muscle products
- Hot dogs, links and formed products
- Fresh meats – subprimals and trim
- Packaged poultry products
- Sliced meat and poultry products



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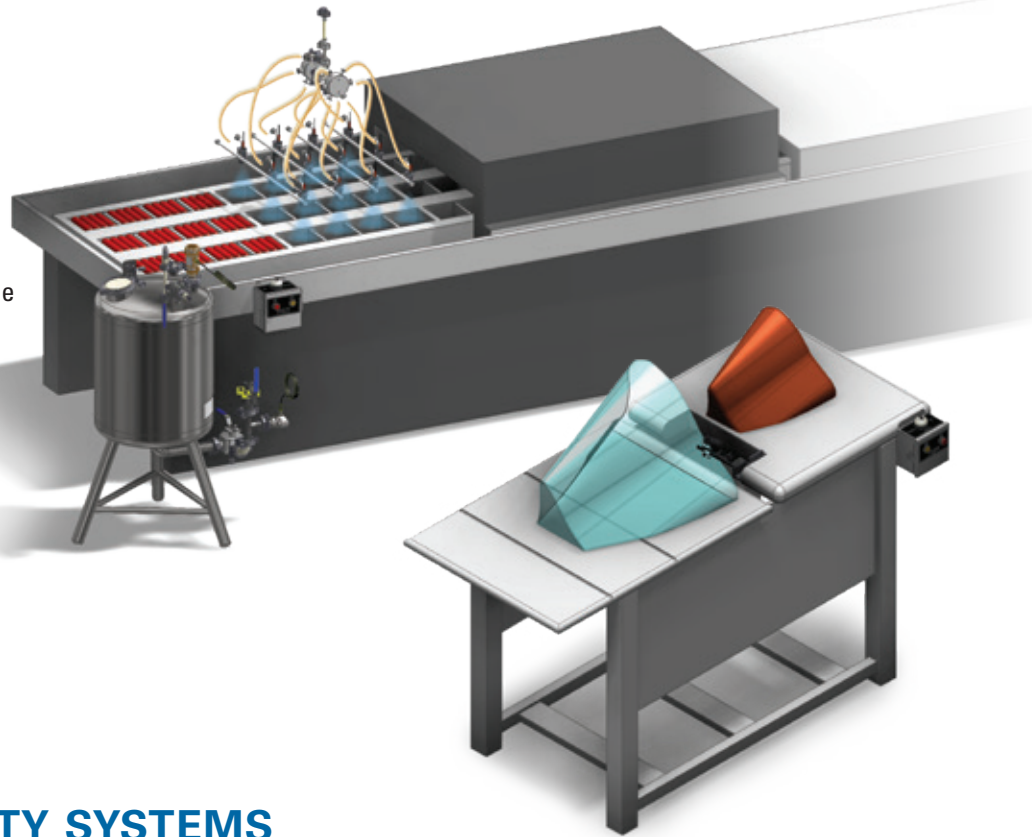
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BAGGED WHOLE MUSCLE PRODUCTS & HOT DOGS

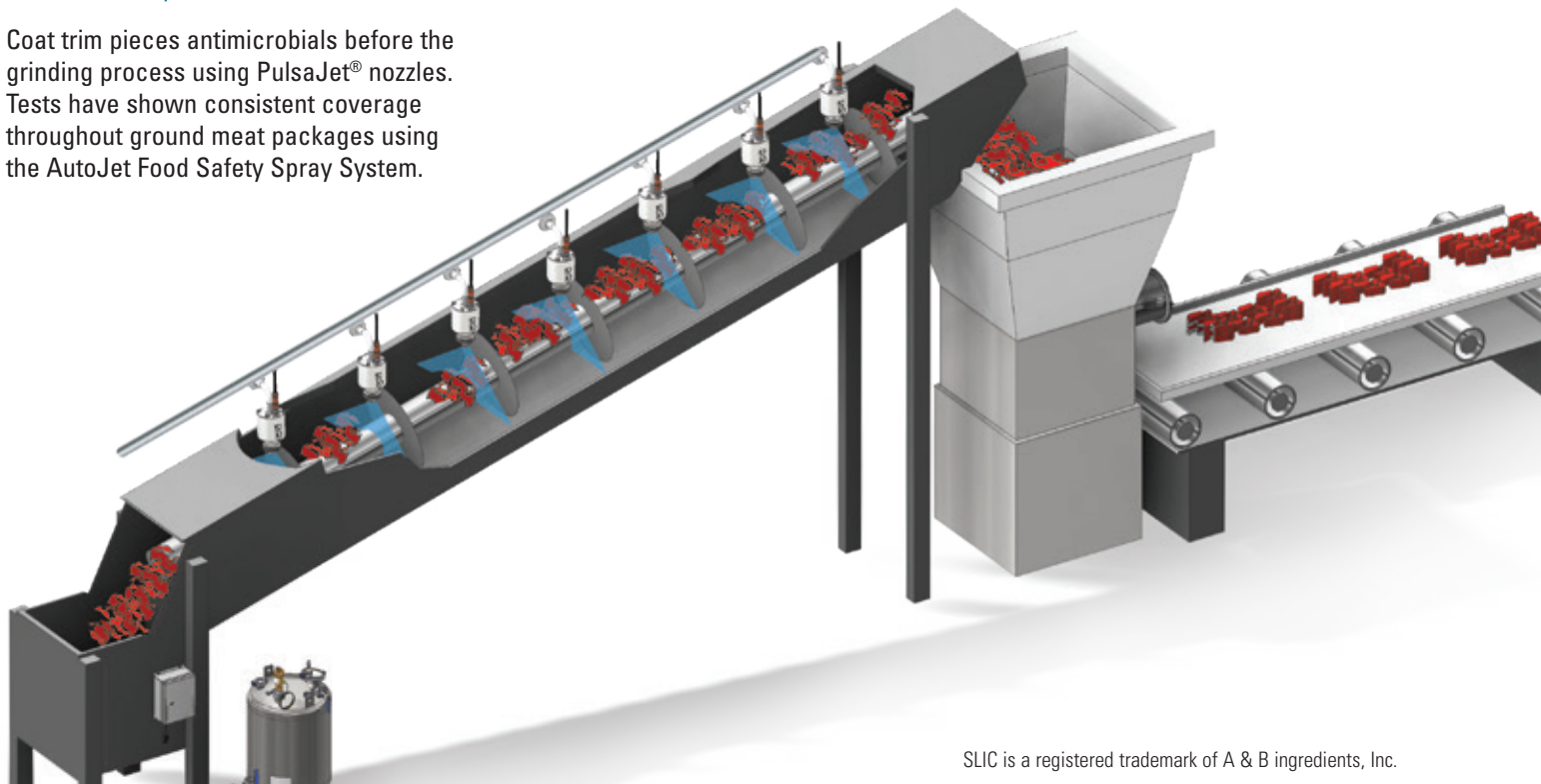
Antimicrobials are sprayed into vacuum packages before sealing. Vacuum-sealing of the packages distributes the antimicrobial evenly around the product. The efficacy of this SLIC® (Sprayed Lethality in Container) process has been established by the USDA/ARS.



AUTOJET® FOOD SAFETY SYSTEMS ARE IDEAL FOR USE IN A WIDE RANGE OF OPERATIONS

TUMBLERS, MIXERS & BLENDERS

Coat trim pieces antimicrobials before the grinding process using PulsaJet® nozzles. Tests have shown consistent coverage throughout ground meat packages using the AutoJet Food Safety Spray System.

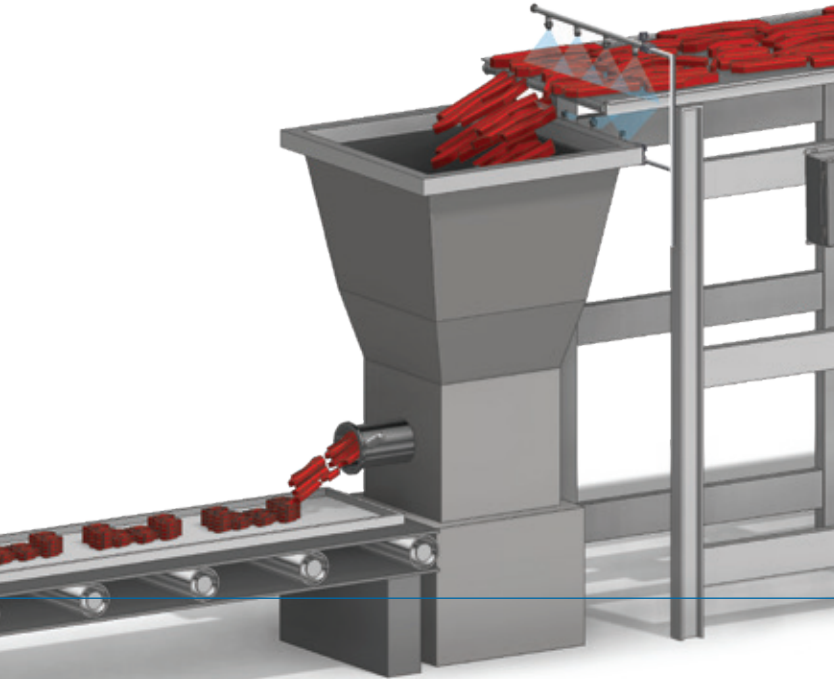


SLIC is a registered trademark of A & B ingredients, Inc.



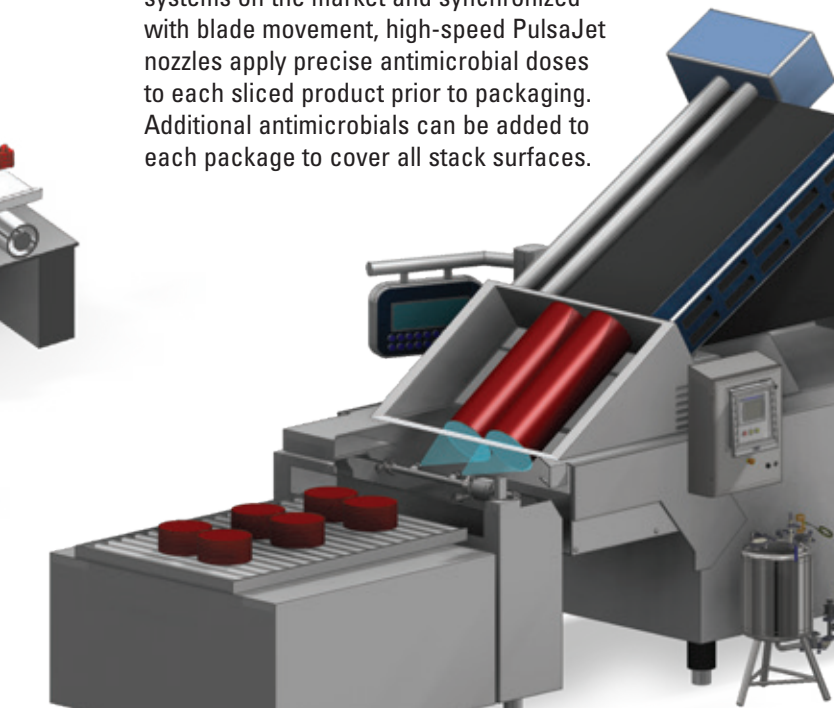
CONVEYORS & FRESH MEATS

Multiple PulsaJet® nozzles uniformly coat conveyors with sanitizers or apply antimicrobial agents to conveyORIZED meat and poultry products.



SLICED PRODUCTS

Integrated in the most advanced slicing systems on the market and synchronized with blade movement, high-speed PulsaJet nozzles apply precise antimicrobial doses to each sliced product prior to packaging. Additional antimicrobials can be added to each package to cover all stack surfaces.



OLD WORLD PROVISIONS: ANNUAL SAVINGS OF \$300,000

Old World Provisions, a meat processor specializing in whole muscle products and roll stock products, is using the AutoJet® Food Safety Spray System to reduce the expense of functional ingredients used as antimicrobial agents. A single system is being used on a roll stock line and a bagger operating at six packages per minute.

THE RESULTS INCLUDE:

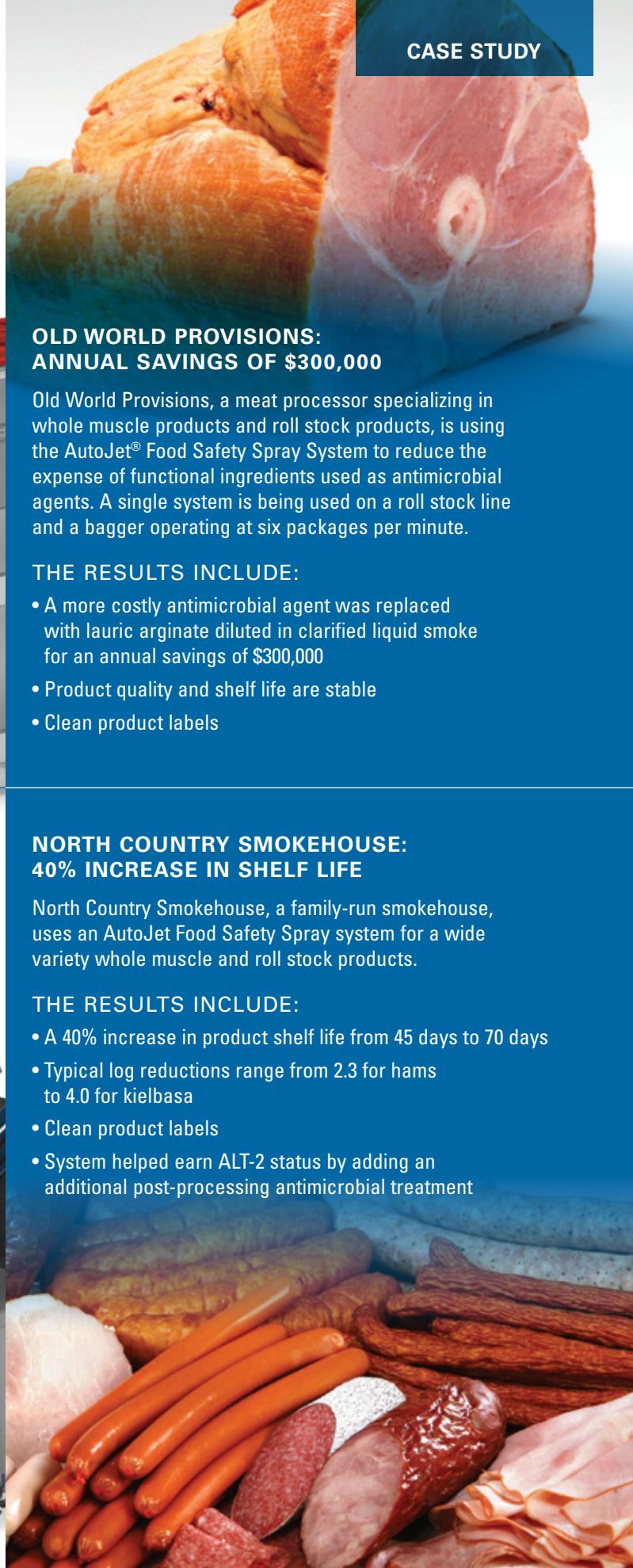
- A more costly antimicrobial agent was replaced with lauric arginate diluted in clarified liquid smoke for an annual savings of \$300,000
- Product quality and shelf life are stable
- Clean product labels

NORTH COUNTRY SMOKEHOUSE: 40% INCREASE IN SHELF LIFE

North Country Smokehouse, a family-run smokehouse, uses an AutoJet Food Safety Spray system for a wide variety whole muscle and roll stock products.

THE RESULTS INCLUDE:

- A 40% increase in product shelf life from 45 days to 70 days
- Typical log reductions range from 2.3 for hams to 4.0 for kielbasa
- Clean product labels
- System helped earn ALT-2 status by adding an additional post-processing antimicrobial treatment



AUTOJET® FOOD SAFETY SPRAY SYSTEMS FOR BAKED GOODS & CHEESE

PRECISE, ACCURATE PLACEMENT OF MOLD INHIBITORS

AutoJet Food Safety Spray Systems are ideal for the application of mold inhibitors on a wide range of baked goods and cheese. The systems typically consist of PulaJet® automatic spray nozzles, an AutoJet spray controller and a spray manifold.

- Complete coverage of the product
- AutoJet spray controller with built-in application software provides accurate placement and uniform coverage of mold inhibitors and preservatives to ensure food quality, extend shelf-life and minimize waste
- Using Precision Spray Control, application rates remain consistent even when operating conditions like line speed changes
- Increase production flexibility by using a single spray set-up with a wide flow rate range for different batches. In some operations, PulaJet nozzles can replace air atomizing nozzles and eliminate costly compressed air use and minimize misting and overspray for improved worker safety
- Agitation keeps suspensions mixed thoroughly



SYSTEM MODULES

- **Fluid Delivery** – PulaJet automatic spray nozzles with UniJet® spray tips in FDA-compliant materials
- **Spray Control** – AutoJet Model 1750+ Modular Spray System or Model 2150+ Spray Controller
- **Fluid Supply** – Stainless steel pressure pot with liquid level sensor and pressure relief valve



THE SECRET TO UNIFORM MOLD INHIBITOR APPLICATION: PRECISION SPRAY CONTROL (PSC)

PSC is achieved by turning electrically-actuated PulsaJet® spray nozzles 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.

NOZZLES SPRAYING 90% OF THE TIME



NOZZLES SPRAYING 50% OF THE TIME



NOZZLES SPRAYING 25% OF THE TIME



PSC BENEFITS:

- Reduce product scrap caused by over- or under-application of mold inhibitors
- Reduce the use of costly mold inhibitors by applying the proper coating volume directly on the target
- Simplify clean-up
- Minimize misting for a safer work environment
- Increase production flexibility with batch control
- Eliminate compressed air in some applications

COMMERCIAL BAKER EXTENDS SHELF LIFE BY SEVEN DAYS, SAVES MORE THAN \$19,000 ANNUALLY

A large South American bakery uses an AutoJet® Food Safety Spray System to apply a preservative to bread before packaging.

THE RESULTS INCLUDE:

- Seven day increase in product shelf life
- A 60% decrease in customer returns due to quality issues caused by over-application
- A reduction in preservative use for an annual savings of \$19,000

CHEESE PROCESSOR SAVES \$143,000 ANNUALLY WITH AUTOMATED SPRAY SYSTEM

A cheese processor eliminating over- and under-application problems applying a costly mold inhibitor – natamycin – to blocks of cheese on a moving conveyor by using an AutoJet Food Safety Spray System.

THE RESULTS INCLUDE:

- Reduced mold inhibitor consumption by nearly 50% – a savings of US\$143,000 per year
- The manufacturer is no longer plagued by unacceptable mold counts



TANKJET® TANK CLEANING EQUIPMENT

There's a TankJet tank cleaning for every tote, tank, vat or vessel. Options include tank cleaning nozzles, spray balls and high-impact tank cleaning machines. A few of the more-widely used products in food plants are featured here, but there are dozens more.

SANITARY TANK CLEANING EQUIPMENT

If your operations require sanitary tank cleaning, you'll find a solution in our TankJet product line. Self-draining, threadless designs that meet the requirements of 3-A Sanitary Standard 78, Spray Cleaning Devices Intended to Remain in Place, are available.



TANKJET 78 TANK CLEANER FOR TANKS UP TO 40 FT (12.2 M) IN DIAMETER:

New, turbine-driven tank cleaner provides high-impact 360° cleaning – more than 30 times the cleaning power fixed spray balls and 10 times the impact of most rotary spray balls. The unit retrofits existing spray ball installations and is easy to maintain – assembly/disassembly requires just a few minutes and no tools are required. A smaller version is available for tanks up to 25 ft. (7.6 m) and is suitable for use in milk, cheese, yogurt and food processing tanks and spray dry towers.

TANKJET 28500R FOR TANKS UP TO 18 FT (5.5 M) IN DIAMETER:

Ideal for CIP operations, this fluid-driven sanitary nozzle provides low pressure cleaning and rinsing of tanks.

IDEAL FOR:

- Rinsing, cleaning and sanitizing tanks of all sizes
- Clean-in-place operations



TANKJET 63225-3A SPRAY BALLS FOR TANKS UP TO 13 FT (4 M) IN DIAMETER:

Stationary, self-draining spray balls are ideal for sanitary applications. They feature polished 32Ra interior and exterior surface finishes.

TANKJET D41800-3A FOR TANKS UP TO 12 FT (3.7 M) IN DIAMETER:

Compact, constant speed nozzles provide up to four times the impact of conventional rotating nozzles. They feature a patented design that eliminates internal bearings and races. Ideal for sanitary applications.

The 3A symbol is a registered trademark of 3-A Sanitary Standards, Inc.





FLUID-DRIVEN & MOTORIZED TANK CLEANERS & NOZZLES

For fast, thorough cleaning of totes, drums, vats and tanks of all sizes, automated cleaning is essential. Tanks will be returned to service more quickly, chemical and water use decreased and worker safety improved by eliminating the need to enter tanks. Choose from hygienic and standard versions.

TANKJET 360 FOR TANKS UP TO 100 FT (30 M) IN DIAMETER:

- High-impact, high-efficiency tank cleaning machine for hard-to-remove residues
- Outperforms other fluid-driven units – more consistent impact over the entire pressure range

TANKJET 80 & 80H FOR TANKS UP TO 50 FT (15.2 M) IN DIAMETER:

- Slow, rotating speed provides excellent dwell time on tank surface and improves cleaning
- Self-cleaning, flow-through design. Hygienic version without exposed gears available
- Optional external CIP nozzle helps clean unit and drop pipe

TANKJET AA190HYG FOR TANKS UP TO 40 FT (12.2 M) IN DIAMETER:

- Motorized units provide thorough, quick cleaning and trouble-free operation
- Easy maintenance

TANKJET 75 & 75H FOR TANKS UP TO 30 FT (9.1 M) IN DIAMETER:

- Ideal for medium impact cleaning; provides adequate impingement cleaning of small tanks without the expense of a high-impact unit
- Self-draining, flow-through design. Hygienic version without exposed gears available
- Simple design; can be rebuilt in about 5 minutes

TANKJET 14 & 16 FOR TANKS UP TO 24 FT (7.2 M) IN DIAMETER:

- Rotating units provide better cleaning than static spray balls
- Effective impingement ensures complete coverage



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Spraying Systems Co.®

GUNJET® SPRAY GUNS & CONVEYOR CLEANING NOZZLES

Improve cleaning of equipment and general plant areas with spray nozzles and spray guns designed to optimize cleaning. We have products to shorten cleaning time, sanitize hard-to-reach areas, reduce the use of costly chemicals and more.



CU150A GUNJET SPRAY GUNS

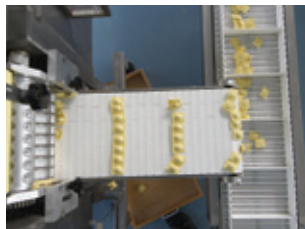
High-impact, low-pressure CU150A GunJet spray guns offer versatile performance. Guns feature an adjustable spray pattern – from hollow cone to solid stream – and interchangeable orifice caps for quick and easy change of spray capacity.

BENEFITS

- Clean without spreading contaminants
- Conserve water and chemicals
- Durable and reliable – all stainless steel with white corrosion-resistant outer cover designed for food plants
- Ergonomic design reduces operator fatigue

IDEAL FOR:

- General plant and equipment clean-up and sanitation
- Conveyor cleaning
- Equipment cleaning



CONVEYOR & EQUIPMENT CLEANING NOZZLES

VeeJet® flat spray nozzles are typically used for rinsing, cleaning and sanitizing conveyors due to the uniform coverage provided by overlapping spray patterns. Conventional and QuickJet® quick-connect styles are available in a wide range of spray angles, capacities and materials.

BENEFITS

- Eliminate manual cleaning and ensure cleaning consistency
- Clean conveyors thoroughly – high-impact flat spray nozzles with narrow angle sprays remove tough residues
- Reduce downtime with quick-connect nozzles which allow spray tips to be changed by hand



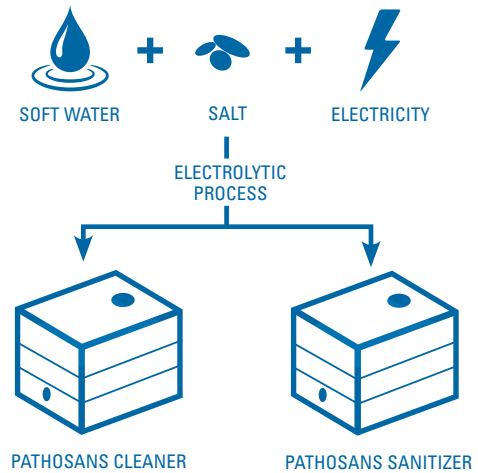


PATHOSANS® CLEANING & SANITIZING SYSTEM

The PathoSans system produces a powerful cleaner and sanitizer on-demand in your food processing facility using just salt, water and electricity. The solutions are produced in ready-to-use concentrations and are fragrance-free and non-irritating to eyes and skin. The cleaner and sanitizer produced by the system are just as effective as traditional chemicals but are safer for employees, better for the environment, support your corporate goals and enable you to provide a “clean that says you care”.

BENEFITS

- Flexible solutions – clean and sanitize everything in your facility including trays, pans, conveyors, floors and common areas. Can also be used in your CIP/COP systems
- Improved worker productivity – fewer health problems due to exposure to concentrated toxic chemicals; more time can be spent on cleaning and less time getting in and out of safety gear
- Drain and disposal safe
- Cost-effective – potential for savings compared to the use of traditional chemicals



IDEAL FOR:

- Bakeries
- Dairies
- Food and beverage processing facilities



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