



Spraying Systems Co.®

ACHIEVING SUSTAINABILITY SUCCESS

CASE STUDIES





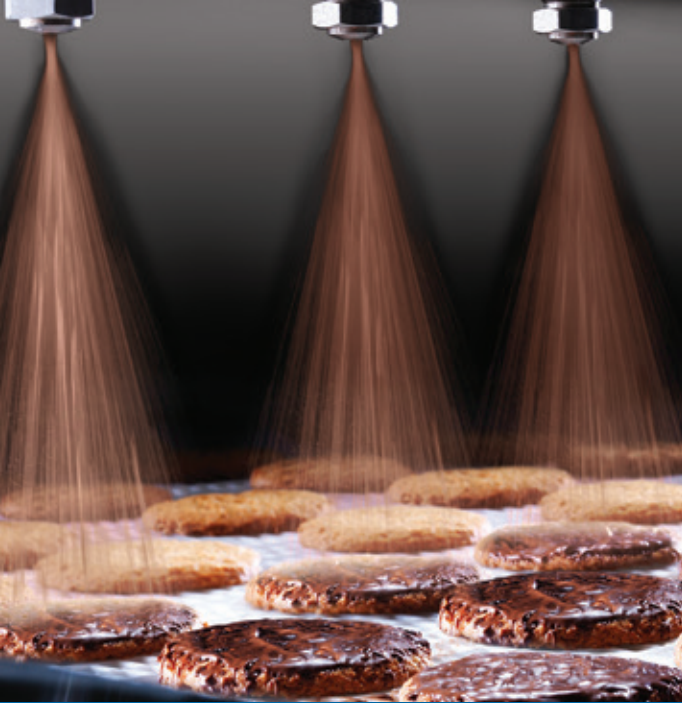
Helping Manufacturers Operate More Sustainably Through Precision Spray Technology

Resource conservation, waste reduction, worker safety and environmental protection are top-of-mind with most manufacturers. Taking steps to address these issues without disrupting production and reducing profitability can be challenging. We're uniquely qualified to help manufacturers advance their sustainability goals with our technology. In fact, we've been doing it for decades by helping customers save resources, time and money.

In the pages that follow, you'll learn how our spray technology has helped manufacturers reduce water, energy and chemical use; minimize waste and scrap; decrease pollution; and improve food and worker safety.

How can we help you? Visit spray.com/sustainability or contact your local spray expert to learn more.







REDUCE
WATER
USE



REDUCE
ENERGY
USE



REDUCE
CHEMICAL
USE



DECREASE
WASTE &
SCRAP



IMPROVE
FOOD & WORKER
SAFETY

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WATER USE REDUCED BY 80%



A snack food producer was committed to reducing water in its plants. As part of that initiative, we evaluated a single cleaning operation and determined the same cleaning effectiveness could be achieved using nozzles that produced less flow than the ones currently installed. Testing by the producer verified our findings, and conveyors are now cleaned using the nozzles that operate at lower flow rates.



SUSTAINABILITY RESULTS:

- Reduced water use by more than 500 million gallons per year – an 80% reduction
- Saved more than US\$3 million on water and wastewater treatment
- Saved US\$7 million in energy use by heating less water for cleaning
- Advanced overall sustainability goal of reducing water use by 25% by 2025

OTHER BENEFITS:

- ROI achieved in less than five days



WATER USE REDUCED BY 31 MILLION GALLONS PER YEAR

A national paper and packaging company was looking to reduce natural resource consumption and minimize waste. We determined that downsizing the nozzles in use would provide significant water savings with no impact on paper quality.

SUSTAINABILITY RESULTS:

- Reduced water use by 31 million gallons per year
- Saved more than US\$93,000 annually on water, energy and wastewater treatment
- Decreased drying time and energy use in the press section due to a decrease in paper wetness

OTHER BENEFITS:

- ROI achieved in approximately four weeks





DECREASED WATER USE BY 78%

A pharmaceutical manufacturer needed to reduce water use and the downtime required to clean two processing tanks while maintaining rigorous cleaning standards. Our TankJet® AA190 tank cleaner now provides effective, high-impact cleaning using significantly less water in a fraction of the time.

SUSTAINABILITY RESULTS:

- Decreased water use by 78% per wash cycle

OTHER BENEFITS:

- Cleaning time decreased from one hour to 12 minutes – an 80% reduction – even with stubborn residue
- Savings of US\$774,000 annually due to reduced water use and downtime
- ROI achieved in approximately two weeks



WATER USE REDUCED BY 1.2 MILLION GALLONS

A manufacturer of hair and skin care products was searching for a way to reduce water use, especially heated water. A US\$1 million boiler room expansion was imminent unless the water reduction initiative was successful.

We recommended changing out the tank cleaning equipment in 14 large mixing tanks. The manufacturer was skeptical a change in equipment could have much of an impact. Testing in our spray labs validated our savings estimate.

The tanks are now cleaned with our motor-driven TankJet tank cleaners. High-impact sprays remove residue quickly and effectively in half the time previously required.

SUSTAINABILITY RESULTS:

- Saved 1.2 million gallons of water annually
- Reduced energy use by 21%
- Eliminated the need for US\$1 million boiler expansion

OTHER BENEFITS:

- Reduced cleaning downtime by 50%
- Reduced operating costs by eliminating frequent repair and replacement parts required by previous equipment



REDUCED ENERGY USE SAVES US\$500,000 ANNUALLY



A can manufacturer, using a variety of compressed air nozzles and open pipes in several cooling and drying applications, needed a more energy-efficient solution. Our WindJet® Air Knife packages, powered by regenerative blowers, eliminated the need for compressed air in four operations. Three blowers now deliver clean, heated air to four air cannons and six air knives using minimal energy.



SUSTAINABILITY RESULTS:

- Decreased compressed air use by nearly 3,800 SCFM for an annual savings of US\$500,000. The reduction in energy use qualified the manufacturer for a government energy grant

OTHER BENEFITS:

- ROI achieved in less than one month



REDUCED ENERGY USE SAVES US\$100,000 ANNUALLY

A waste-to-energy plant, injecting lime slurry into an SDA tower for pollution control, was using spray lances equipped with conventional air atomizing nozzles. Compressed air use was high and the lime slurry build-up on the nozzles was time-consuming and challenging to remove. Use of our FloMax® anti-bearding nozzles eliminated both problems.

SUSTAINABILITY RESULTS:

- Dramatically reduced energy use enabled the retirement of one 200 HP air compressor and decreased operating costs by US\$100,000
- Improved worker safety; workers no longer need to remove slurry from nozzles due to special air caps that resist build-up

OTHER BENEFITS:

- Longer nozzle wear life
- Workers redeployed to other tasks





INK USE SLASHED BY 50%

A manufacturer of oriented strand board (OSB) was experiencing a high reject rate. The spray nozzles in the marking system clogged frequently, leaving gaps in the nail lines. In addition, over application of ink created a messy work environment. The boards are now marked using our PanelSpray®-NM Nail Marking System. Scrap due to inconsistent marking has been eliminated. Clogging is no longer a problem. Nozzles are cleaned automatically at the end of each cycle and ink is properly mixed prior to application.

SUSTAINABILITY RESULTS:

- Eliminated board rework and scrap
- Reduced ink use by 50%
- Improved worker safety by eliminating excess oil on floors

OTHER BENEFITS:

- Reduced clean-up time from 16 to two hours during maintenance shutdowns
- ROI achieved in one year



CHEMICAL USE DECREASED BY 75%

A building products manufacturer was using workers equipped with spray guns to apply a release agent on molds. Over application of the release agent resulted in waste, quality problems and worker safety issues. By automating the application with our AutoJet® Precision Spray Control (PSC) System, the release agent is now applied directly in the molds and nowhere else, resulting in a dramatic reduction of release agent use.

SUSTAINABILITY RESULTS:

- Decreased release agent use by 75%
- Reduced scrap caused by release agent pooling in molds
- Eliminated slip hazards caused by oil mist accumulation on floors

OTHER BENEFITS:

- Reduced maintenance time for oil mist clean up
- Annual savings of US\$60,000





LUBRICANT USE DECREASED BY 70%



An automotive company used air atomizing spray nozzles to lubricate metal blanks prior to stamping various parts. The use of compressed air created dangerous, messy misting, and the nozzles were unable to achieve consistent application of the oil. Installing our AutoJet® Precision Spray Control (PSC) System with hydraulic PulsaJet® nozzles solved both problems. Compressed air use was eliminated and PSC now enables the proper amount of oil to be uniformly and consistently applied – even when line speed changes.



SUSTAINABILITY RESULTS:

- Decreased oil use by 70%
- Eliminated compressed air use and energy related costs
- Minimized airborne oil mist, improving worker safety and health
- Reduced disposal of hazardous waste

OTHER BENEFITS:

- Reduced the number of nozzles required for lubrication by 52%
- ROI achieved in one year



OIL USE DECREASED BY 89%

A steel mill, using a homemade system to apply oil on carbon steel strip, was plagued with a high reject rate due to inconsistent coverage. Our AutoJet® Precision Spray Control (PSC) System solved the problem. The proper volume of oil is now applied consistently across the full width of the strip, even when line speed varies.

SUSTAINABILITY RESULTS:

- Reduced oil use by 89%
- Reduced reject rate and scrap

OTHER BENEFITS:

- ROI achieved in less than five months





REDUCED SURFACTANT USE SAVES US\$1.4 MILLION PER YEAR

A producer, applying a surfactant to high-purity fibers, was challenged by over saturation of the fiber during line startup and slowdown. In addition, when sheet breaks occurred, the system continued to spray surfactant. The excess surfactant was wasteful and created a dangerous work environment. The installation of an AutoJet® Precision Spray Control (PSC) System resolved these issues. The system automatically adjusts the application rate based on line speed to ensure the proper volume of surfactant is always applied. In addition, sensors are used to signal the system to shut down when the fiber is not detected.

SUSTAINABILITY RESULTS:

- Decreased surfactant use by 15% per roll; annual savings of US\$1.4 million
- Decreased scrap rate by eliminating over saturation issues
- Improved worker safety by eliminating overspray

OTHER BENEFITS:

- Improved profitability through reduced chemical use
- ROI achieved in two months



MOLD INHIBITOR USE REDUCED BY 60%

A cheese packaging company, using hydraulic nozzles to spray mold inhibitor on products, was struggling with overspray and inconsistent coverage. The current process was wasting the costly chemical, generating a high scrap rate and creating a messy, hazardous work environment. Our AutoJet® Precision Spray Control (PSC) System now ensures the cheese blocks are uniformly coated with the proper amount of mold inhibitor. The mold inhibitor is applied directly on the cheese and nowhere else.

SUSTAINABILITY RESULTS:

- 60% reduction in mold inhibitor use – an annual savings of US\$130,000
- Decreased scrap rate
- Enhanced food safety and shelf life
- Improved worker safety by eliminating slippery overspray on equipment and floors

OTHER BENEFITS:

- Reduced maintenance time by 75%
- ROI achieved in less than two months





ELIMINATED USE OF HARSH CLEANING CHEMICALS



A large chicken hatchery used traditional chemicals for equipment cleaning and sanitizing. Personal protection equipment (PPE) was required for those working with the chemicals to prevent burns and fume inhalation. Our PathoSans® on-site generation system now produces powerful, non-hazardous solutions in ready-to-use concentrations right in the hatchery. The solutions are just as effective as traditional chemicals but are safer for workers and drain and disposal friendly. PPE is no longer required.



SUSTAINABILITY RESULTS:

- Improved worker safety by eliminating the use of harsh chemicals
- Safer for the environment – solutions require no special disposal
- Eliminated pollution associated with chemical deliveries and hazardous container disposal

OTHER BENEFITS:

- Improved worker retention and productivity
- Increased profitability – hatchery is saving 20% compared to the use of traditional chemicals



DANGEROUS STEAM LEAKS ELIMINATED

A leading sulfuric acid producer was spraying molten sulfur in furnaces with steam-jacketed injectors. However, steam leaked from an internal bellows and threatened worker safety. We designed a new injector using a special packing gland and eliminated the need for the bellows joint.

SUSTAINABILITY RESULTS:

- Eliminated steam leaks and risk to worker safety

OTHER BENEFITS:

- Increased production time by eliminating downtime to repair steam leaks. Value: US\$42,000
- Improved profitability – our injectors cost less to purchase and maintain





MINIMIZED EXPLOSION RISK

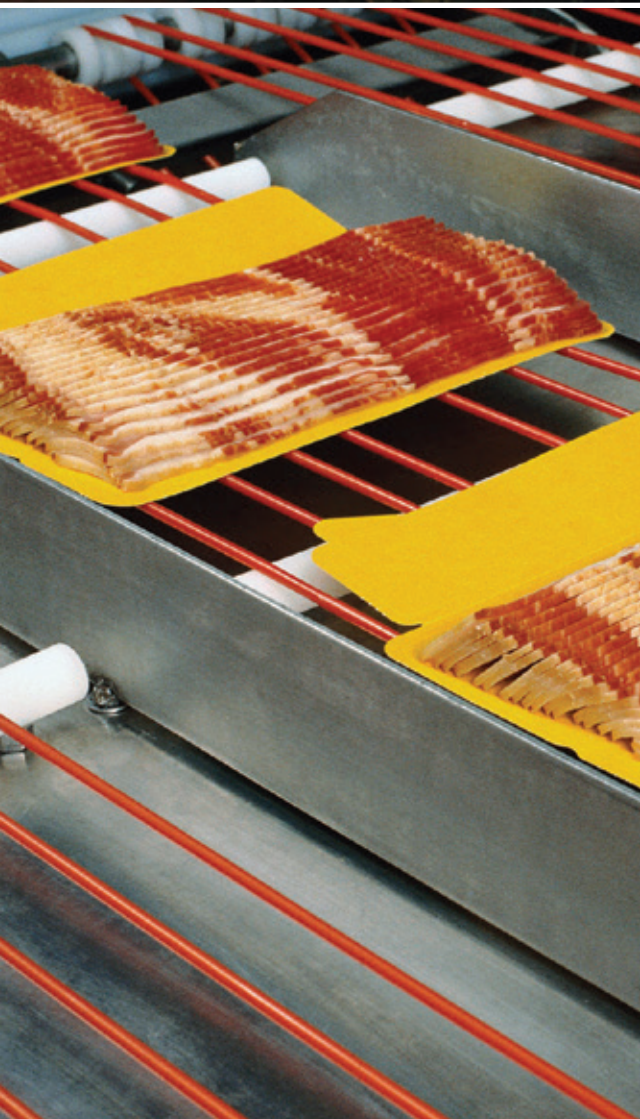
A leading coal producer was using hydraulic nozzles to humidify the air and prevent ignition in underground mines with high concentrations of methane gas. However, the droplets produced by the nozzles were too large to provide proper humidification and created a wetting problem. Our FloMax® air atomizing nozzles are now used. The nozzles produce very small droplets using low flow rates to create a curtain of fine mist that dissipates the methane gas through proper humidification.

SUSTAINABILITY RESULTS:

- Significantly reduced risk of explosion due to methane gas build-up

OTHER BENEFITS:

- Enabled the coal producer to mine areas previously deemed too dangerous
- ROI achieved in under two weeks



HAZARDOUS MANUAL CLEANING OF DUCTWORK ELIMINATED



A bacon producer had maintenance crews on ladders dismantling large slippery ductwork panels. Once the panels were removed, workers used spray guns and brushes to remove grease. Our TankJet® tank cleaners have automated the cleaning process. Ducts are now cleaned quickly and effectively without disassembly, and manual labor is no longer required. Automating cleaning with the TankJet 9 tank cleaning nozzles achieved a 65% reduction in water consumption.

SUSTAINABILITY RESULTS:

- Eliminated potential risks to worker safety
- Slashed water use by 65% through faster, more efficient, controlled cleaning

OTHER BENEFITS:

- Decreased cleaning time by 50%
- Workers have been deployed to other tasks





Our focus on sustainability reaches far beyond our own operations. Our advanced spray technology helps thousands of customers reduce water, energy and chemical use, decrease waste and scrap, and improve safety. **Learn more about how we can help you at spray.com/sustainability.**

For more information on our *Sustainability Initiatives and Results* report, email us at sustainabilityops@spray.com.



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